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CONTENTS

AUTONOMOUS WEAPONS SYSTEMS AND THE CHANGING SECURITY DYNAMICS OF SOUTH ASIA

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Abstract

Autonomous Weapons Systems (AWS), which can function without human intervention, are on the verge of causing substantial changes to the security dynamics of South Asia. Many states are currently developing AWS technologies capable of targeting without human direction. Thus, the potential exploitation of such technologies by nuclear-armed states might potentially enhance the risk of war. The advancement of AWS technologies significantly changes military strategy as they impact crisis stability, escalation management, and deterrence. India's endeavours to establish a self-sufficient military-industrial complex demonstrate its dedication to enhancing its AWS capabilities. These advancements substantially affect the region's stability, as India's AWS development is perceived as altering the security calculus and deterrence dynamics between India and Pakistan in South Asia. This paper examines the dual role of AWS in the strategic stability of South Asia and highlights the need for

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Pakistan to formulate a balanced deterrent strategy amidst evolving regional dynamics.

Keywords: *South Asia, security, Autonomous Weapon System (AWS), deterrence, stability, warfare*

Introduction

The rapid advancement of autonomous weapons systems (AWS), particularly in drone warfare, has garnered increasing attention within the field of International Relations in recent years. However, certain critical aspects have historically been overlooked in the academic and policy discourse. These facets include some implications of their use, the dynamics of human-machine collaboration in decision-making, the long-term strategic implications, the increasing role of non-state actors in deploying these systems, and the societal perceptions and public opinions surrounding their adoption. One of the key characteristics of AWS is its capacity to function independently. Once triggered, such robotic weapons can identify and engage targets without requiring additional human involvement. AWS stands out due to its increasing autonomy, moving from basic responsiveness to human-level cognitive capabilities. These systems can autonomously detect, recognise, and engage targets with aggressive force upon activation, surpassing remote-controlled devices like drones.[1]

Most contemporary weapons systems are equipped with computer-based technology, which has led to a continuous expansion of the responsibilities delegated to these programs. However, the autonomous nature of weapons systems generally pertains to their capacity to engage in cognitive processes and exercise decision-making capabilities within a specific technical framework. This capability is the foundation for seeking and discerning targets within a predetermined set of parameters, utilising sensor information. The robotics industry is currently engaged in the ongoing development of dual-use technologies and increasingly AWS.[2] Consequently,

implementing these systems may soon become an inevitable reality. Regardless of their potential advancements in technology, it is evident that autonomous weapons systems deemed dumb, necessitate immediate analytical scrutiny.[3]

India has recognised the imperative need to establish a domestic military-industrial complex capable of effectively addressing the evolving security challenges of the 21st century. Prime Minister Narendra Modi's 'Make in India' program offers a promising avenue to address this imperative.[4] Notably, Indian technological giants such as *Infosys* and *Tata Technologies* have already ventured into Artificial Intelligence (AI) and robotics.[5] To bridge the existing disparity and facilitate the development and militarisation of autonomous systems, Indian political leadership envisions a collaborative framework that encourages civilian groups to cooperate with entities like the Defense Research and Development Organisation (DRDO).[6]

Furthermore, India acknowledges the gap in its technological advancements compared to global powers and contemplates positioning itself as an importer of such technology to address this deficit. In this pursuit, the United States, as one of the dominant leaders in AI technologies, emerges as a strategic partner for India in autonomous technologies. The bilateral initiative known as the US-India Defense Technology and Trade Initiative (DTTI), solidified in 2012[7], has laid the groundwork for collaboration in defence technologies between the two countries. The US-India Defense Technology and Partnership Act, currently under deliberation in the US Congress, seeks to officially recognise India as a significant ally of the United States and ease export control limitations to facilitate technology transfer. Discussions between India's Minister of Defense, Manohar Parrikar, and the US Secretary of Defense, Ash Carter, had further cemented commitments to collaborative endeavours. India has maintained this momentum and harnessed its collaboration with the US to attain the military benefits of emerging technologies.[8]

Consequently, it is improbable that AWS would supplant human beings in this context (in the near term) due to the negligible amount of time saved. If this assertion is accurate, the legal intricacies of AWS will experience a notable decrease. Nevertheless, the efficacy of autonomous systems in other capacities, including targeting, surveillance, and damage assessment, will remain unaltered. Automation in these roles will substantially benefit a particular entity, making it imperative for countries such as India to engage actively in research and development endeavours about autonomous systems.

This research paper explores how autonomous weapon systems shape South Asia's security dynamics and the possible options for Pakistan, given India's pursuit of the AWS. This paper will embrace a descriptive-analytical research methodology incorporating qualitative data collection and analysis techniques. The paper also utilises a comprehensive literature review of existing research on AWS and its development by India, impacting the strategic dynamics in South Asia. Additionally, the research concludes potential options for Pakistan in response to this evolving security landscape.

Background

The literature concerning AWS and its influence on regional security dynamics is developing rapidly. Researchers from various fields have investigated the effects that AWS could have on crisis stability, escalation management, and deterrence measures. Many studies have focused their attention on the transformative potential of AWS in terms of altering military doctrines and strategies.

The research conducted by Jurgen Altmann and Frank Sauer[9] sheds light on the breakthroughs made in AWS technology. These advancements emphasise the potential of these technologies to change conventional warfare and their role in maintaining strategic stability. According to the study's findings, the increasing autonomy of these systems may result in a quicker decision-making process in

combat scenarios. Furthermore, these systems are projected to increase the likelihood of crisis instability and escalation threats.

Multiple studies examine the consequences of emerging technologies, such as AWS, for regional security dynamics, specifically in South Asia. Summar Iqbal Babar and Abu Hurrairah Abbasi[10] analyse the strategic incentives driving India's efforts to create technology, connecting it to broader geopolitical goals and technological ambitions. The paper examines the potential for India's technological progress to trigger competition in the region for military armaments, thereby impacting Pakistan's security strategies. Thus, the research that has been conducted highlights the multidimensional impact that AWS has had on military strategy and regional security dynamics. Using the above insights as a foundation and then developing a context for South Asia, this paper investigates the specific implications for South Asia and makes policy recommendations that Pakistan might implement.

Theoretical Framework

The emergence of AWS in South Asia, characterised by their ability to operate without direct human control, introduced a paradigm shift in military capabilities, raising concerns about their impact on regional stability. 'Technological determinism'[11] argues that technologies have the potential to alter security dynamics significantly. This deterministic impact of AWS on South Asia's security dynamics is evident in the potential reshaping of military strategies and doctrines. The inclusion of AWS by India will create a perceived imperative for Pakistan in the region to adopt or counter this technology, leading to an arms race and alterations in defence priorities to maintain strategic parity. This may result in an environment where the adoption of AWS becomes a strategic necessity rather than a discretionary choice.

Moreover, India's adoption of AWS will impact the existing status quo of strategic stability in South Asia, putting Pakistan in a situation where it may strategically substitute traditional military approaches with cutting-edge autonomous capabilities. 'Strategic Substitution' argues that if one state invests in and integrates any technology into its military strategy, it introduces a new dimension of strategic choice that reverberates among other states. Thus, India's decision to deploy AWS prompts strategic recalibrations as Pakistan assesses the impact on its security calculus. This dynamic interplay reflects the essence of strategic substitution,[12] as Pakistan is compelled to reevaluate and potentially alter its military strategies because of India's actions. In the face of this technological evolution, South Asia is experiencing a shift from conventional strategies to a more nuanced and technologically sophisticated approach, emphasising the need for a strategic substitution that influences the changing security dynamics.[13]

It is evident from the historical transformation brought about by nuclear weapons, ushering in an era of strategic stability and altering international relations, which serves as a precedent for anticipating the potential impact of AWS on the strategic calculus of South Asia. The deployment of AWS may prompt a re-evaluation of the region's military doctrines and force structures, as the nuclear capabilities did in the past. Similar to how nuclear weapons have shaped geopolitical dynamics, AWS can reshape South Asia's security landscape, necessitating careful consideration of the implications for deterrence.[14] Therefore, the introduction of AWS marks a critical juncture in the region's military capabilities, potentially altering the calculus of conflict.

Development of India's Autonomous Weapons Systems

The inevitability of the proliferation of AWS is more apparent due to technological advancements, and it is anticipated to enhance

the military dominance of the world's major powers.[15] In light of the heightened emphasis placed by Russia and China on military progress, the United States (US) is undertaking a substantial allocation of funds towards the research and development of cutting-edge technology, surpassing previous levels of investment. According to reports, the Pentagon has allocated $18 billion for its Future Years Defense Programme as a component of its third-offset strategy.[16] Much of this sum has been designated to facilitate collaboration between humans and machines and advance cyber and electronic warfare capabilities. These projects will encompass programs that facilitate human-machine collaboration, encompassing advanced decision-making processes and the advancement of exoskeleton suits and unmanned platforms. This statement conveys the inclination and determination of the largest global military power to develop and utilise autonomous weaponry. Similarly, France has endeavoured to uphold the legitimacy of creating and utilising autonomous weapons within the International Humanitarian Law (IHL) framework.

Indian military forces believe that the emerging technologies significantly alter the battle landscape. During a webinar held in June 2021, General Manoj Mukund Naravane, the former Chief of the Indian Army, recognised the significant influence of technology in defining forthcoming conflicts.[17] He stated that it would be reasonable to deduce that technology is increasingly becoming a fundamental capacity in its own right. According to General Naravane, traditional methods of warfare, which heavily relied on 'large platforms' such as tanks, artillery, fighter planes, and capital ships, are expected to become comparatively less significant.[18] AWS has emerged as the most significant disruptive technology within this context. The AWS encompasses the integration of self-mobility, self-direction, and self-determination. Weapons are exclusively present inside complete autonomy in the context of self-determination. Until now, the utilisation of AWS in military operations has primarily manifested

through deploying Unmanned Combat Aerial Vehicles (UCAVs), commonly referred to as drones, as per military terminology. According to the Indian military decision-makers, it is believed that Unmanned Aerial Vehicles (UAVs), commonly known as drones, are anticipated to witness a growing utilisation in various forms of combat in the foreseeable future. This includes their deployment by both state and non-state actors. Consequently, the Indian military deems integrating drones into all forthcoming military strategies and operations essential. The significant focus on technology, namely unmanned weapons systems, has fostered a perception that disruptive technological advancements have surpassed military weaponry.[19]

Autonomous systems have notable benefits compared to conventional weapons systems that rely on human operators. Autonomous systems offer a distinct advantage in decision-making and response time since they minimise one's decision-making process and enable more intervention in the adversary's decision-making cycle. Furthermore, AWS mitigates significant factors such as human tiredness, bewilderment, and cognitive limits arising from warfare's dynamic nature and the inherent challenges in comprehending complex situations.[20] In summary, using unmanned systems such as UAVs and UCAVs enables militaries to adopt a more risk-tolerant approach and exhibit a greater propensity for employing force. Moreover, these technologies contribute to managing the escalation ladder by mitigating the domestic reputational consequences of military actions. The loss of unmanned systems does not elicit the same pressures to respond as the loss of manned systems.

Autonomous Weapons and the Stability-Instability Paradox in South Asia

The quest for advanced technologies by powerful countries, particularly the competition between the US and China, has created complexities that affect the strategic stability of South Asia.

Specifically, the US-India strategic partnership, aimed at countering China's influence, has presented security concerns for Pakistan. In the present scenario, India's pursuit of emerging technologies can potentially exacerbate the worsening of the strategic dynamics in South Asia. India's technological progress and the necessary changes in its doctrines in response to evolving global and regional political systems pose a challenge to the stability of deterrence in South Asia.[21]

Undoubtedly, over more than two decades, nuclear deterrence has yielded stabilising consequences strategically in India and Pakistan. This state of affairs has been characterised by a mutual lack of motivation for a pre-emptive nuclear attack. Both rival powers effectively employed nuclear deterrence to prevent large-scale conflicts. Nevertheless, disruptive technologies have the potential to change the dynamics and nature of warfare[22], perhaps rendering total conflicts unfeasible while enabling the possibility of technologically-permitted and strategically-advantageous 'Smart Warfare'[23] that involves the integration of advanced technologies, AI, and data analytics to enhance military capabilities and decision-making, with a focus on precision targeting and minimising collateral damage.

The available literature indicates[24] that disruptive technologies can potentially undermine nuclear strategic stability by eroding deterrence and impacting many aspects of nuclear second-strike capabilities, such as Command, Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance (C4ISR), and force postures. The influence of these technologies on nuclear deterrence is contingent upon the technological capabilities involved in their implementation and the comprehension of the force postures of the governments they may be used against. Furthermore, integrating new technologies is expected to significantly impact the potential for accidental or unintentional nuclear escalation due to the increased vulnerability of dual-use command and control assets on cyber and military grounds.[25] Additionally, the rapid advancement of technology

may create time constraints for decision-makers, leading them to mistakenly believe that an enemy's nuclear attack is imminent and consequently decide on a nuclear response. The emerging technologies such as hypersonic weapons, drones equipped with AI-enabled AWS, space-based technologies, and cyber technologies, have detrimentally impacted doctrinal strategies and deterrence stability within this framework.

The incorporation of autonomous weapons systems into this scenario offers novel intricacies. These technologies, capable of functioning independently or with limited human intervention, augment a nation's military capacities by facilitating prompt decision-making, accurate targeting, and operational effectiveness. The inherent characteristics that render these systems appealing also contribute to the paradox of stability and instability.[26] This paradox encompasses the concept that possessing advanced military capabilities, such as sophisticated autonomous systems, can promote stability by deterring large-scale conflicts and creating instability by enabling more minor conflicts and aggressive behaviours. The presence of a dynamic equilibrium characterised by stability at one level and instability at another presents complex obstacles for strategic decision-making, particularly in Pakistan.[27]

Lethal Autonomous Weapons Systems (LAWS), which rely on AI systems for their operation, necessitate a thorough understanding of how AI is inextricably intertwined with them. In March 2018, a task force comprising many stakeholders was established under the guidance of Prime Minister Modi and Defence Minister Singh to examine the application of AI from the standpoint of national security. Multiple branches within the Ministry of Defence (MoD) have implemented at least 75 AI products and technologies or are in the advanced stages of integrating these products into their operations.[28] India has developed the Multi-Agent Robotics Framework, intending to create a cohesive unit of robotic entities that might serve as a

collective force to support the operations of the Indian Army.[29] Furthermore, the Indian Army has approximately 200 DAKSH Autonomous Robots, which can safely neutralise explosive devices in hazardous circumstances. These have been characterised as Remotely Operated Vehicles (ROV). India is collaborating with Japan in Robotics and AI, specifically focusing on their utilisation inside military systems. Similarly, India has been actively pursuing advanced applications of LAWS within its military domain. These include image interpretation, target recognition, determining the objective range, assessing the kill zone of missiles, and employing robots in more advanced configurations.[30]

Both India and Pakistan are currently acquiring advanced drone technology, which may be utilised for military purposes in the future, potentially leading to a scenario where these drones are deployed against one another. In 2016, the Indian military officially declared their plan to acquire around 5000 UAVs by 2026, with an estimated expenditure of over US$3 billion.[31] India is now engaged in the development of an anti-drone system. It effectively employed a fleet of 74 kamikaze swarm drones equipped with combat capabilities to overpower the military platforms and targets of the adversary autonomously. India has just ordered a hundred kamikaze drones, which it jointly built with Israel. These drones are intended to be deployed at the Line of Actual Control, explicitly targeting China and along the Line of Control, aiming to counter Pakistan. The newly developed drone technology incorporates an electric engine propulsion system that emits reduced noise levels. Additionally, it is equipped with an autonomous navigation system, enabling it to operate covertly at low altitudes to engage the adversary.[32]

India is in the process of incorporating a total of twelve sets of armed drone swarms into its arsenal. Approximately seven autonomous Surveillance and Armed Drone Swarms (A-SADS) are outfitted with 50-75 AI-enabled aerial vehicles. These vehicles possess

the ability to establish communication with control stations as well as with one another. The primary purpose of deploying these A-SADS is to cover regions at high altitudes. The remaining five sets can engage in offensive and defensive operations within plain and desert terrains. [33] The use of the A-SADS is expected to enhance the capabilities of field commanders by serving as a force multiplier. This advanced technology will facilitate effective Intelligence, Surveillance, and Reconnaissance (ISR) operations while enabling engagement with many adversary targets, including air defense systems, command and control centres, artillery units, tanks, infantry combat vehicles, and ammunition and fuel storage facilities. [34]

Pakistan views these moves as highly provocative, potentially destabilising strategic equilibrium in South Asia and initiating a fresh arms race. The emergence of advanced technologies, including LAWS, coupled with India's substantial investment in this field, might shift the balance of power in favour of India within the South Asian region. Moreover, a significant portion of LAWS possesses the capacity to impact coercive techniques and escalation dynamics in crises and wars between India and Pakistan. Up to this point, the principle of deterrence has predominantly persisted in India and Pakistan, when humans have endeavoured to dissuade one another from pursuing unfavourable courses of action. The influence of automated systems on the credibility of deterrent threats in the South Asian region appears to be substantial.[35]

In the future, there is a potential for an increase in the level of control over autonomous weapons, specifically about their decision-making processes regarding timing and target selection. AI-enabled autonomous technologies have the potential to cause significant harm to the adversary. Implementing automated mechanisms has the potential to greatly influence the credibility of deterrent threats between two nuclear adversaries. The state with autonomous systems, whether India or Pakistan, may appear more credible in utilising

deterrent threats against the other state without such systems.[36] However, governments without autonomous systems may be less susceptible to coercive threats from states possessing such capabilities due to reduced vulnerability to cyberattacks, limited dependence on high-tech infrastructure, and a focus on diverse military capabilities. Their emphasis on traditional military assets and alliances can act as deterrents, making it more challenging for states with autonomous systems to achieve their objectives through coercion.

Undoubtedly, states will endeavour to formulate their plans and acquire the necessary technological capacities to effectively address, prevent, or minimise the advantages presented by autonomous systems. If both opposing governments possess autonomous systems, the utilisation of such systems may be perceived as a low-risk occurrence. Hence, this might potentially incite countries in conflict to engage their opponents without transgressing established boundaries about nuclear weaponry. In February 2019, India implemented a compellence policy characterised by the restrained application of force against Pakistan. In response, Pakistan promptly maintained its deterrence capabilities. If India adopted an AWS that relies on a compellence strategy, which encompasses the threat or restricted use of force, it would introduce an additional level of escalation in the ladder of conflict, thereby undermining the stability of deterrence in the South Asian region.

In the given setting, the integration of autonomous technology in the Indian military has the potential to amplify its counterforce capabilities and increase the allure of employing it as a first-use option. The country may develop a sense of assurance in employing coercive measures against Pakistan and potentially even contemplate the possibility of a pre-emptive strike.

The deployment of LAWS amidst bilateral tensions between India and Pakistan could inadvertently escalate conflicts in a crisis-like situation. In order to counter potential threats from India, Pakistan

may find it necessary to bolster its nuclear arsenal and upgrade delivery systems, aligning with its Full Spectrum Deterrence (FSD) strategy.[37] While FSD is designed to deter conflicts across various threat levels, introducing advanced autonomous technologies in the region raises concerns about disturbing the strategic balance. To effectively address these challenges, Pakistan must actively adapt to evolving technologies, ensuring its defence strategies remain robust and responsive while adhering to the principles of responsible military advancement.

Perspectives of India and Pakistan on the Development of AWS

India and Pakistan have historically been engaged in an arms race, and any developments in the field of AWS would be of significant strategic importance, impacting regional and global security considerations. It is, therefore, imperative to examine the implications of Research and Development (R&D) and their prospective deployment and utilisation in the two nuclear-armed nations in South Asia, specifically India and Pakistan.

India's Position

India is working to advance the development of autonomous weapons systems while advocating for establishing comprehensive international rules about such technologies. Indians provide many rationales for the establishment and advancement of legal frameworks. [38] The prevailing argument often posits that autonomous weapons have the potential to assist the military establishment in various domains, such as border control and safeguarding vulnerable assets, owing to the security problem in South Asia and India's security requirements. According to their perspective, there is now no necessity for a ban on AWS, primarily LAWS, due to their incomplete operational functionality. [39] Instead, it is recommended that India actively engage in diplomatic efforts and advocate for advancing,

transferring, and utilising such weaponry. According to proponents of this technology, India must acquire a proportionate allocation of this technological advancement to position itself alongside future global powers. However, proponents from India also express their concerns regarding the potential proliferation of automated technologies to non-state actors. Nevertheless, the nation will probably prioritise the advancement of this technology before the establishment of international regulations. In the paper titled 'India and the Challenge of Autonomous Weapons', authored by Shashank Reddy, it is argued that introducing autonomous weapons will have a profound impact on the concept of warfare and will also affect the understanding and application of IHL. According to it, India aims to assume a prominent role in the global dialogue surrounding this matter while simultaneously pursuing the deployment of autonomous weapons in alignment with its security requirements and national objectives. Indian authorities assert that New Delhi must seize the opportunity and actively pursue the advancement and implementation of autonomous weapons technology.[40] Consequently, the Indian government's efforts to implement AWS will likely pressure neighbouring governments to adopt similar policies.

Pakistan's Position

Pakistan's position towards developing AWS is unambiguous and direct. The argument not only advocates for a comprehensive prohibition on autonomous technology but also asserts that unethical laws cannot be programmed to adhere to IHL, regardless of their level of complexity. [41] It has been argued that implementing AWS will reduce the threshold for engaging in armed conflict, consequently leading to a void in accountability. Utilising such weapons systems would undermine the adherence to international legal norms, compromising the security and protection of non-combatants.

> *"Pakistan has argued for a legally restricting CCW convention that pre-emptively bans the advancement and utilisation of such weapons."* [42]

Pakistan supports the prohibition of autonomous weapons because it believes they present significant problems to IHL. Pakistan is the first to advocate for a prohibition on AWS and is the most fervent advocate for a proactive ban, as seen by its active involvement in the conclusion of the Convention on Certain Conventional Weapons (CCW). Pakistan is the inaugural Non-Aligned Movement (NAM) member to assume the role of president at the CCW Review Conference (RevCon).

Pakistan also expresses ethical concerns regarding autonomous weapons, aligning with its commitment to international humanitarian norms. These concerns involve potential violations of principles such as proportionality and distinction, underscoring the country's emphasis on maintaining ethical standards in developing and deploying such technologies. As a signatory to IHL agreements, Pakistan considers the legal implications of autonomous weapons, advocating for adherence to existing frameworks that govern principles like distinction, proportionality, and accountability. Strategic considerations encompass the evaluation of the impact of autonomous weapons on regional stability, focusing on preventing conflicts or disruptions to existing strategic balances. Pakistan endorses the principle of human control over critical decisions in using force, supporting safeguards against unintended consequences. Recognising that national positions on emerging technologies evolve based on security concerns, technological capabilities, and regional dynamics is crucial.

Ambassador Tehmina Janjua, the representative of Pakistan in disarmament matters, chaired the Fifth Review Conference of the CCW in December 2016, during which participating governments expressed their endorsement of the prohibition.[43] Ambassador Zaman Mehdi,

Deputy Permanent Representative of Pakistan, at the meeting of the Group of Governmental Experts (GGE) on LAWS, 2023, discussed the technical, legal, and ethical dimensions of these weapon systems and the lack of legally-binding rules, principles, and norms despite a decade of deliberations. Pakistan highlighted concerns over the compatibility of autonomous systems with existing international law and norms and the potential humanitarian consequences of failing to develop a meaningful normative framework.[44]

Pakistan regards AWS as a highly potent armament due to its potential for future autonomous capabilities. The government asserts that in warfare, AWS could be considered highly unethical due to its potential to be the most brutal weaponry. Therefore, it is imperative to establish a clear definition to uphold the requirements of International Human Rights Law (IHRL) and ensure that judgments made during times of war are based on human judgment.

Implications for Pakistan's Deterrence Perspective

The concept of deterrence has frequently reduced instability, turmoil, conflicts, or wars. Therefore, the rationale for states acquiring or developing weapons is often justified as fostering peace and security.[45] Nevertheless, the advancement of technology has led to an escalation in the destructive capabilities of weapons, leading to enduring and irreparable humanitarian impacts. The global community has not succeeded in implementing a comprehensive prohibition on these lethal armaments, thereby prioritising the advancement of individual nations' objectives over the preservation of worldwide peace and security. AWS exemplifies this circumstance.

India's development of AWS has significant implications for Pakistan's security. If India proceeds with these advanced emerging technologies, the power dynamics in the region could change. Pakistan may need to rethink its military capabilities and strategies to balance things. There is also a worry that using autonomous weapons

might lead to accidental conflicts or make things more tense between India and Pakistan. To deal with this, Pakistan might have to invest more in technology and be more active in international discussions to make sure these weapons are used responsibly. Therefore, an inquiry arises about whether implementing AWS would enhance or undermine Pakistan's security in the South Asian region.[46] What are the ethical, legal, technological, security, and economic ramifications associated with the potential use of this technology? What strategies can Pakistan, a nation in the development process, employ to address the evolving circumstances effectively?

Options for Pakistan

The precise manner in which India will employ AWS remains uncertain. Pakistan , therefore, has a legitimate claim in seeking comprehensive discussions regarding its utilisation and position within IHL.[47] However, many of these technological breakthroughs currently exist and are likely to be employed in future military conflicts, regardless of whether human intervention is involved. Hence, the Government of Pakistan must stay updated on contemporary advancements in AWS technologies. In this context, the efficacy of AWS in tasks such as target acquisition, monitoring, and evaluation of destruction will remain unaltered.[48] Implementing automation in these roles will yield substantial benefits, including enhanced security and military dominance to a particular entity. This may also include implementing automation in military systems to encompass improved operational efficiency, rapid decision-making capabilities, and reduced human risk in high-stakes scenarios, making it imperative for countries such as Pakistan to engage actively in research and development about autonomous systems. The efficacy of AWS in alternative roles, including reconnaissance and damage assessment, will remain unchanged. These systems can continue to play crucial roles in intelligence gathering, surveillance, and assessing the impact of military actions. Implementing mechanisation in these

capabilities will provide a significant advantage to a nation. Therefore, countries such as Pakistan can actively pursue the integration of autonomous systems through technological advancements.[49]

Considering Pakistan 's defense policy and its distinct security position in the region, the country should maintain flexibility in its approach toward developing such weapons, given the seeming inevitability of the integration of AWS in the military strategies of prominent global actors. The development of AWS technology, especially, has introduced a range of potential factors that can impact global events and foreign policy decisions. The spread of AWS involves both state and non-state actors. Its proliferation raises concern because these disruptive technologies could be used in ways that might not follow international rules. The world community is inclined to continue advancing the development of AWS due to its perceived capacity for error avoidance in conflict situations unless the United Nations (UN) undertakes decisive measures to address this matter. In this particular context, Pakistan should adopt a pragmatic approach when selecting alliances or affiliations.

The advent of AWS may also likely influence national security perceptions. Additionally, international human rights organisations may exhibit a greater inclination towards advocating for the development of AWS for humanitarian causes, regardless of Pakistan 's involvement in this technological race. Furthermore, given the potential for integrating AWS with underwater and surface ships, Unmanned Ground Vehicles (UGVs), drones , and cyber technologies, it is imperative for Pakistan to monitor this emerging battlefield closely.

Under these circumstances, Pakistan can go for the following options in response to India 's autonomous weapon system proliferations:

Technological Development and Countermeasures

Pakistan has the potential to achieve technical self-reliance through substantial investments in Research and Development (R&D)

aimed at the development of autonomous weapons systems. This would allow Pakistan to achieve technological equivalence with India and maybe foster the development of inventive capacities. Pakistan can potentially reduce the impact of India's autonomous weapon systems by implementing countermeasures such as advanced cyber defences and anti-autonomous system technology. Potential countermeasures may be implemented to impede communication networks, render targeting systems inoperable, or effectively neutralise the operational capabilities of autonomous platforms employed by adversaries. Nevertheless, pursuing this alternative necessitates substantial financial resources, a resilient technology infrastructure, and proficient personnel.

Diplomatic Initiatives and Arms Control

Pakistan could address concerns about autonomous armed systems through bilateral talks with neighbouring countries, participation in regional forums like SAARC, engagement with international organisations such as the UN, and advocating for arms control treaties. One potential approach to address this issue is actively participating in international forums to advocate for establishing agreements or rules that govern the deployment and utilisation of these systems.[50] The potential mitigation of an uncontrolled arms race in South Asia might be achieved by the collaborative efforts of many states in formulating and endorsing agreements that impose restrictions on the extent and functionalities of autonomous weapon systems. Confidence-building measures (CBMs) could be relevant in addressing concerns about autonomous armed systems by fostering transparency, communication, and trust among nations. These measures aim to prevent misunderstandings and enhance cooperation. For instance, in the realm of autonomous weapons, CBMs could include sharing information about the development and deployment of such systems, engaging in joint

research initiatives, and establishing communication channels to exchange views on policy intentions.

Technological Collaborations

To counter India's advancements in developing autonomous missile systems, Pakistan could explore the option of forming strategic alliances or collaborations with technologically advanced nations. Collaborative research and joint development activities can grant Pakistan access to state-of-the-art technology, thereby equalising the technical landscape.[51] This alternative presents technological advantages and enhances diplomatic relations and regional collaboration. Nevertheless, managing intricate geopolitical factors and exchanging delicate technologies may be subject to certain constraints and limitations.

Conventional Military Enhancement

Pakistan may also prioritise investments in strengthening its conventional military capabilities in response to India's introduction of autonomous weapon systems. By enhancing traditional military strengths, such as manpower, equipment, and strategic infrastructure, Pakistan may aim to maintain a credible deterrent against potential threats posed by India's adoption of advanced autonomous technologies.[52] Pakistan's strategic objective is to maintain a wide range of capabilities by reinforcing conventional forces, thereby establishing an alternative method of addressing potential threats. This strategic approach entails enhancing the capabilities of infantry, armour, and air defense, which have historically been crucial in maintaining regional stability. The emphasis on traditional military capabilities highlights a dedication to a holistic approach to defence strategy, potentially dissuading India from exclusively depending on autonomous systems for aggressive actions.

Investment in Cybersecurity

The imperative of allocating resources towards cybersecurity is of utmost importance, considering the significant dependence on autonomous weapons systems within digital networks. Pakistan should prioritise protecting its communication infrastructure, command and control systems, and military networks against potential cyber threats.[53] Pakistan's objective in reinforcing these systems is to deter attackers from penetrating or manipulating its autonomous platforms. This strategy requires the development of a robust cybersecurity workforce, the utilisation of sophisticated encryption techniques, and the implementation of proactive monitoring mechanisms to identify and address cyber threats promptly.

Development of Ethical and Legal Frameworks

Pakistan has the potential to adopt a conscientious strategy by implementing internal ethical and regulatory frameworks to govern the development and utilisation of autonomous armed systems. Pakistan's commitment to ensuring its autonomous platforms operate within international laws and conventions is underscored by strict adherence to rigorous ethical guidelines. This involves implementing robust programming protocols that align with established norms governing the use of autonomous systems. The ethical guidelines encompass principles of proportionality, distinction, and adherence to IHL. By embedding these principles into the programming of autonomous platforms, Pakistan may guarantee that these systems operate with a strong ethical framework, minimising the risk of unintended consequences or violations of international laws during their deployment. This approach reflects a responsible stance, emphasising the importance of ethical considerations in developing and using autonomous technologies within the broader global legal framework. Nevertheless, the strategy above necessitates a thorough

investigation into ethical considerations, technological audits, and the establishment of stringent compliance processes.

Investment in Human Capital

In order to adequately address the problems presented by India 's autonomous weapon systems, Pakistan may consider allocating resources to cultivate a highly competent workforce adept in emerging technologies. The development of proficiency in domains such as artificial intelligence, robotics, and cybernetics empowers Pakistan to comprehend and mitigate adversarial systems while leveraging these technologies to gain a strategic advantage. Pakistan ensures its ability to respond effectively to the swiftly changing technological landscape by cultivating an atmosphere that promotes innovation and technical proficiency.

Ultimately, Pakistan 's choice among these options will be influenced by various factors, including technological capacity, economic considerations, strategic priorities, and evolving regional security dynamics. Each option entails a distinct set of advantages and challenges, making it imperative for Pakistan's policymakers to carefully assess and tailor their response to the specific context of India 's autonomous weapon system proliferation.

Conclusion

In conclusion, AWS and its impact on the changing security dynamics of South Asia unveil that the strategic landscape of South Asia is undergoing significant transformation. As AWS proliferates, it introduces a new dimension to military technology, reshaping regional nations' strategic interactions and considerations.

India's Autonomous Weapons System reveals a dual role, contributing to strategic stability through deterrence while introducing complexities that may reshape risk assessments and potentially alter regional dynamics. This underscores the delicate equilibrium that must be maintained in sustaining peace in South Asia.

These technologies, featuring advanced attributes like autonomous decision-making, enhance India's military capabilities. On the one hand, they contribute to strategic stability by deterring major conflicts through their precision and speed. However, beneath this stability, there is a complex interaction of instability. The qualities that make these systems attractive can encourage smaller-scale confrontations due to the impression of limited escalation risk. This dilemma has pronounced implications for Pakistan, as it alters risk assessment, potentially incentivising strategic risk-taking.

The examination of the stances and policies of key South Asian actors toward the deployment of AWS further emphasises the intricate nature of this evolving security paradigm. As these systems redefine the nature of warfare and strategic stability, it becomes imperative for policymakers and scholars to grapple with the nuanced challenges and opportunities that arise at the intersection of emerging technologies and evolving security doctrines in South Asia.

Moreover, deploying autonomous technologies can transform the nature of disputes, potentially reducing the perception of full-scale armed confrontations but introducing the risk of unintentional escalation. Competition for technological supremacy may also divert resources and contribute to regional rivalry, adding to instability. Pakistan faces the challenge of devising a balanced deterrent policy in this evolving landscape, requiring a deep understanding of changing dynamics and a steadfast commitment to regional peace. The actions of both India and Pakistan significantly influence the future security landscape in South Asia. As AWS continues to influence the security landscape, a comprehensive understanding of its implications is vital for the region's informed policymaking and strategic planning.

Following are some recommendations that can be taken into account for creating balance against India's proliferation of AWS:

- Create a dedicated institution focused on advancing autonomous weapon systems (AWS) technologies. This centre

should prioritise innovation in AWS and facilitate collaboration between military and civilian research entities.

- Invest in advanced cyber defense infrastructure to protect against potential cyber threats targeting Pakistan's AWS. This includes training a skilled cybersecurity workforce and implementing sophisticated encryption and monitoring systems.
- Actively participate in international and regional forums to advocate for arms control treaties that regulate the deployment and use of AWS. Promote transparency and cooperation through confidence-building measures.
- Pursue strategic partnerships with technologically advanced nations to access cutting-edge AWS technologies. These alliances should focus on collaborative research and development projects.
- Invest in enhancing traditional military capabilities, including manpower, equipment, and strategic infrastructure, to maintain a credible deterrent against potential AWS threats. This approach ensures a balanced defence strategy.
- Allocate resources to develop a highly skilled workforce proficient in emerging technologies such as artificial intelligence, robotics, and cybernetics. Promote educational programs and training initiatives to foster innovation and technical expertise.
- Establish a dedicated unit to monitor and analyse advancements in AWS technologies within the region. This unit should provide strategic insights and policy recommendations based on evolving security dynamics.

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A COMPARATIVE ANALYSIS OF PAKISTANI AND INDIAN DIASPORAS IN THE WEST

MUHAMMAD NAWAZ KHAN* AND KHALID H. CHANDIO**

Abstract

Pakistani and Indian diasporas are gaining more importance as their respective countries strive for a new posture in the international arena. These diasporas enable their respective countries to project positive aspects abroad, build trust, and shape perceptions that could encourage cooperation from the international community. The Indian diaspora has a significant presence in Western governments, think tanks, media, corporate businesses, and universities to influence policymakers in favour of New Delhi as compared to the Pakistani diaspora, which is missing from such important forums. Despite tremendous potential, the Pakistani diaspora in the West is disorganised and directionless. The potential of the Pakistani diaspora has been underutilised, causing a vacuum and delinking the efforts of Pakistan from its diaspora abroad vis-à-vis matters relating to Pakistan in an institutionalised way that may have steadily helped in flexing muscles on the diplomatic horizon. Little attention has been given in Pakistani literature to utilising the potential of the Pakistani diaspora, especially for narrative building, which is impacting Pakistan's image at the international level. Qualitative research based on a secondary but scientific review of academic sources is used to explore how the Indian diaspora

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is successfully strengthening positive aspects, building trust and shaping perceptions of India abroad, and how the Pakistani diaspora can play an effective role in cementing mutually beneficial relations with the outside world.

Keywords: *India, Pakistan, diaspora, comparison in the West, US-India Political Action Committee (USINPAC), lobbying*

Introduction

Diasporas are groups of people who originate from a common homeland or culture and strongly align themselves with a shared cause, especially while residing outside their ancestral country. They form an organic entity while stationed abroad and are closely interlinked when it comes to protecting the rights of their fellow colleagues and homeland. This is why they inevitably contribute to the economy of their home country and help in ushering development and goodwill. Diasporas also work for immigrants' welfare and go on to establish a number of political, social, and cultural organisations in the host country, and campaign relentlessly for the common good of both the state entities.

They incidentally create a powerful lobby to further national interests, and this is where their role is recognised in nation-building and lifting the image of their country. They work for reshaping public opinion(s) and creating new hallmarks in the realms of media, public service, investment, and transfer of hard-earned money, i.e., remittances. They also exert a structural and positive influence on various think tanks, legislators, and politicians to build relevant pressure for the benefit of their homeland. Indian and Pakistani emigration to the West and other parts of the world has essentially been a phenomenon of the twentieth century. India continues to be the largest diaspora with 17.9 million migrants (2022)[1] and US$ 87 billion remittances (2021)[2] across the world. Whereas, Pakistan continues to be the 6th largest diaspora with 9.1 million registered migrants (2022)[3] and US$ 31.2 billion remittances (2021-22)[4] from across the world.

Political and Diplomatic Clout of Indian Diaspora in the West

The Indian diasporic community exhibits a strong affinity with India and the community leaders display their merit and strength in furthering bilateral ties, and at the same time explore new avenues of cooperation in various realms of interaction. It is commonly observed that the Indian diaspora works to promote vote banks in their second home and advocates political and international policies related to their interests. They go on to influence political parties of the Western countries and strike a common denominator. For instance, in Britain, two out of the three major political parties—the Labour Party and the Liberal Democratic Party has formed the Friends of India parliamentary group,[5] and of late, has managed to extend their presence to the highest offices.

British South Asians have played a significant role in the politics of the United Kingdom (UK) and have made an impact on the British parliament, starting from Dadabhai Naoroji, the first Indian Member of Parliament (MP) in 1892[6] and Satyendra Prasanna Sinha, the first Hindu member of House of Lords in 1919[7] to Keith Vaz, member of House of Commons in 1987.[8] The Indian community in Britain has made its presence felt in the political arena of the 21st century as well. Presently, the community has fifteen members in the UK's House of Commons[9] and 11 members in the upper House of Lords.[10]

Members of Indian origin who made it to high offices in Conservative Party of Britain are Suella Braverman, Claire Coutinho, Alok Sharma, Priti Patel, Shailesh Vara, Gagan Mohindra, and Rishi Sunak, the current Prime Minister of Britain. In terms of the Labour Party, Valerie Vaz, Preet Kaur Gill, Virendra Sharma, Seema Malhotra, Tanmanjeet Singh Dhesi, Lisa Nandy, and Navendu Mishra are worth mentioning. Likewise, Munira Wilson has been elected on the Liberal Democrats ticket.[11]

The prominent Indian-origin peerages include Lord Rajinder Paul, Lord Desai, Lord Waheed Alli, Lord Bilimoria, Lord Dholakia, and especially Jitesh Kishorekumar Gadhia,[12] who is a British investment banker and Conservative Party donor.[13] Gadhia helped craft Indian Prime Minister Narendra Modi's speech in November 2020 to a full house at Wembley Stadium.[14] He financially supports the Conservative Friends of India (CFI),[15] which is linked to the Conservative Party in the UK. It is a membership-based organisation that engages with the British Indian community and has played a significant role in the Conservative campaign during the general elections of 2019, besides seeking closer relations between India and the UK to benefit both countries.[16] It lobbies for the Conservative Party in the British Indian community. Moreover, the organisation was responsible for releasing Hindi campaign songs for the Conservative Party in the 2017 elections, supporting David Cameron, Theresa May, and Zac Goldsmith.[17]

The Labour Friends of India (LFIN) is another society associated with the UK's Labour Party with the main aim of strengthening the bond between the British Indians and the Labour Party. This lobbying entity is responsible for persuading Sir Keir Starmer, leader of the Labour Party, to issue a controversial statement on the Kashmir dispute stating that: "Any constitutional issues in India are a matter for the Indian Parliament."[18]

"Traditionally, Americans of Jewish, Irish, and Eastern European heritage have been the most active ethnic lobbies on foreign policy. Over the past several decades, however, Americans of African, Arab, Armenian, Cuban, Greek, Hispanic, Mexican, and Turkish descent have been increasingly active on foreign policy issues as well. Recently, yet another group, Indian-Americans, has become increasingly involved in the foreign policy process. For these interest groups, their principal foreign policy concern is American policy toward the country or region of their origin."[19] In the post-Cold War era, the 'estranged democracies' of the United States and India have transformed into 'engaged

democracies'. An important factor contributing to the upswing in the Indo-US relations is the growing profile of the Indian-American diaspora in the United States (US). The Indian diaspora holds the prominence of being one of the top-earning, professionally qualified and fastest-expanding ethnic groups in the most powerful country of the world. It is engaged with think tanks, higher education, engineering, show-biz, international finance, Information Technology (IT), management, law, journalism, and medicine. It holds key positions in international finance and management sectors such as Ajaypal Singh Banga, President and CEO of MasterCard, Sanjay Mehrotra, Co-founder and CEO of SanDisk Corp, and Indra Nooyi, Chairperson and CEO of PepsiCo.[20]

Likewise, Indian immigrants have spread a canvas of opinion-makers, writers, and scholars across their respective second homes and have made great strides in influencing research-based think tanks, universities, and other similar policy-influencing institutions. This advantage is amplified by the absence of Pakistani competitors in intellectual spheres. Indian intellectuals, such as Ashley J Tellis, Tata Chair for Strategic Affairs and Senior Fellow at the Carnegie Endowment for International Peace; Dr Rudra Chaudhuri, Director of Carnegie India; Aparna Pande, Research Fellow and Director at the Hudson Institute; and Amar Bhattacharya, Senior Fellow at Brookings, have a notable presence in influential US think tanks like the RAND Corporation. Their contributions significantly shape US foreign policy.

The roots of Indian-origin American political organisations engulf the ethnic and professional organisations like the American Association of Physicians of Indian Origin (AAPI), and Asian American Hotel Owners Association (AAHOA),[21] which fostered ethnic activism alongside the economic agenda, creating Indian-American solidarity across professional lines. These professional developments are accompanied by groups that sought to engage the community in electoral politics, including the Indian-American Leadership Initiative

(IALI),[22] which focuses on developing leadership among the Indian-origin American Democrats. The first major Indian-American lobbying organisation, namely, the US India Political Action Committee (USINPAC)[23] tries to model itself after the American Israel Public Affairs Committee (AIPAC), one of the most powerful pro-Zionist groups of the Jewish community.[24] The USINPAC supports candidates and legislators in the US who share Indian-American concerns. The following Indian-Americans also played key roles in the Biden-Harris campaign victory:

- Shekar Narasimhan, Chairman and Founder, AAPI Victory Fund;
- Arunan Arulampalam, Deputy Commissioner, State of Connecticut, Department of Consumer Protection;
- Amit Jani, Asian American Pacific Islander Director for Biden-Harris;
- Satish Korpe, Founder, Indian American's for Biden-Harris;
- Steve Rao, Former Mayor and Current Council Member of Morrsiville, NC;
- Robinder Sachdev, President, Imagindia Institute.

One of the key objectives of USINPAC, among many, is to make efforts in promoting US-India defence and trade cooperation. It touts the Indo-US nuclear deal and various arms deals between the two states as USINPAC's key success stories. The USINPAC, by using India-Israel nexus, receives support from the American Israel Public Affairs Committee (AIPAC), which is considered as one of the most influential lobbying organisations in the US. Since its inception in 2002, the USINPAC claims to be a valuable resource for Congress, the White House, and Indian-Americans in the US and around the world.[25] The USINPAC's website is ultra-active in updating its content on a daily basis, spreading anti-Pakistan venom in its posts. The following are some of USINPAC's clippings/efforts against Pakistan among many others, available on its website:

By USINPAC

USINPAC CONTINUES TO PUSH FOR DELAYED IMF FUNDING FOR PAKISTAN

In a letter to U.S. Secretary of Treasury Steve Mnuchin, USINPAC urged assistance in opposing any International Monetary Fund (IMF) loans to Pakistan until Pakistan ends state-sponsored terrorism.

By USINPAC

USINPAC URGES U.S. TO SAY NO TO IMF FUNDING FOR PAKISTAN

In a letter to U.S. Secretary of Treasury Steve Mnuchin, USINPAC urged assistance in opposing any International Monetary Fund (IMF) loans to Pakistan until Pakistan ends state-sponsored terrorism.

By USINPAC

USINPAC OPPOSES JOHN KERRY'S $860 MILLION AID PACKAGE TO PAKISTAN

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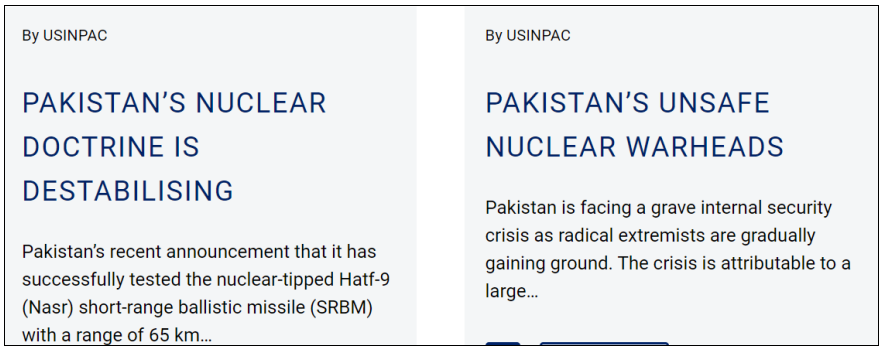
By USINPAC

PAKISTAN'S INTRANSIGENCE OVER PROSECUTION OF PERPETRATORS OF THE MUMBAI TERROR STRIKES IS HAMPERING RAPPROCHEMENT



USINPAC also works closely with the Congressional Caucus on India and Indian Americans in the House, the Friends of India Caucus in the Senate, and the US-India Business Council. Traditionally, Indian-Americans tend to be concerned and serious on important electoral states, i.e., California, Washington, New York, Illinois, Texas, and Pennsylvania and they generously raise funds for the members of their choice contesting elections. On the contrary, Pakistani-Americans have formed organisations mainly on professional lines. For example, Association of Physicians of Pakistani Descent of North America (APPNA) exists in the US but organisations like these have not been able to make substantial inroads in the US Congress. Indian-Americans also have similar organisations such as American Association of

Physicians of Indian Origin and the Asian American Hotel Owners Association. USINPAC also founded in 2002, establishing itself in Washington, DC's K-Street, hiring a staff of specialists dedicated to pushing a number of critical foreign and domestic policy goals, and putting in place a full lobbying organisational structure. As a result, it is becoming the primary lobbying organisation for not only Indian-Americans, but it also works for Indian interests.

Indian-origin American tycoons have been running lucrative businesses and enterprises. These include Manoj Bhargava, entrepreneur, philanthropist, and founder of 5-Hour Energy with a net worth of US$ 4 billion, Gurbaksh Chahal, owner of a technology company in online advertising, named Gravity4, and Naveen Jain, co-founder and chairman of Moon Express, CEO of INOME with a net worth of US$ 2.2 billion; and Vinod Khosla, co-founder of Sun Microsystems, Venture Capitalist, and founder and CEO of Khosla Ventures with a net worth of US$ 1.5 billion.[26]

Indian Information Technology (IT) graduates have also risen to top positions in what is the fastest-paced sector of the US. Some worth-mentioning names in this regard include Satya Narayana Nadella, CEO of Microsoft, Pichai Sundararajan, CEO of Alphabet Inc. and its subsidiary Google LLC,[27] Arvind Krishna, CEO of International Business Machines Corporation (IBM);[28]Thomas Kurian, CEO of Google Cloud and former President of Product Development at Oracle Corporation,[29] Shantanu Narayen, CEO of Adobe Systems, Sundar Pichai, Senior Vice President at Google who leads Android, Chrome, and Google App teams,[30] and Rajeev Suri, CEO of Nokia.[31] This fact has not gone unnoticed in European states, where the doors to hi-tech Indian immigration have opened up.

In addition, India has attracted investment in research and development centres, wholly funded and established by reputed multinational corporations like GE, CISCO, Sun Microsystems, Microsoft, IBM, Hughes Software, Intel, Oracle, Lucent Technologies,

Microsoft Sun Microsystem and Texas Instruments.[32] Such initiatives have persuaded the owners of social media to establish their regional offices in India. Facebook India has grown to five offices in Hyderabad, Delhi, Gurgaon, Mumbai, and Bangalore and expanded from a single online operations team to sales, marketing, partnerships, and policy entities that impact different areas of businesses.[33]

Likewise, Twitter (now known as X) also established its regional headquarters in Delhi.[34] These initiatives have facilitated India in influencing the security policies of social media houses to New Delhi's favour, in terms of blocking any post-sharing that highlights Indian atrocities in Indian Illegally Occupied Jammu and Kashmir (IIOJ&K), communal riots against Indian minorities, or other similar content. Ultimately, it has created a setback for the Kashmir cause, while denying rights to Indian religious minorities in this age of social media.

At the moment, when financially powerful and politically well-connected Indo-Americans[35] have stepped into US politics, the Indian government has started hiring the services of high-profile legal firms as its lobbying agents[36] for effective proliferation of the Indian policy versions on issues ranging from the nuclear tests in 1998, the Kargil Conflict,[37] to the Indo-US nuclear deal.[38] This measure plays a vital role in creating a favourable environment of opinion in the US Congress.[39] For instance, India hired Barbour Griffith and Rogers, a lobbying heavyweight, which had the former US Ambassador to India Robert Blackwill amongst its advisors.[40] Furthermore, India hired the services of Patton Boggs, a leading lobbying firm, during the Indo-US civilian nuclear agreement. Incidentally, former Ambassador to India Frank Wisner was an advisor of the group.[41] Similarly, Anurag Varma, an attorney, was the lead counsel to a coalition of Indian-American organisations, and this mattered a lot in lobbying.[42] Varma lobbied for Indian interests in several pharmaceutical firms, including Ranbaxy, the US-India Business Council, and the AAHOA.[43]

India has seemingly established a constituency in North America with Congressmen and committees of the US Congress with the help of Indian-origin American politicians including Kamala D Harris, Vice President of the US, Nimrata Nikki, former South Carolina State Legislator, former Governor of South Carolina, and former US Ambassador to the United Nations,[44] Bobby Jindal, former Governor of Louisiana (2008-2016), a former member of the US House of Representatives, and Chairman of the Republican Governors Association (Republican),[45] Ravinder Singh Bhalla, Mayor of Hoboken, New Jersey,[46] Neel Tushar Kashkari, politician, banker, and President of the Federal Reserve Bank of Minneapolis;[47] Kumar Prabhakar Barve, Commissioner, Maryland Public Service Commission, former Member and Majority Leader of the Maryland House of Delegates and former Chair of the House Environment and Transportation Committee.[48] The Indian community in the US provides a significant platform to strengthen India's relations with the US.

Like the Indian diaspora of the US and UK, Indian-origin Canadians are associated with medicine, academia, management, and engineering sectors. The Indo-Canadian professionals and politicians, such as Harjit Singh Sajjan, Minister of International Development of the Liberal Party,[49] and Ujjal Dev Singh Dosanjh, former Minister of Health, are following the same pattern of diasporic Indians in the US and UK, in gaining political prominence in the Canadian power corridors. Among the Indian diaspora, the Sikhs are considered as the most influential ethnic group in Canada, and they are critical of the violations of the rights of religious minorities in India, much like Sikh communities in the US and UK. Significantly, a prominent critic of Indian policies is Jagmeet Singh Dhaliwal, Member of Parliament (New Democratic Party), who openly raises his voice in support of the Khalistan movement,[50] and denounces Indian brutalities in Kashmir.[51] Interestingly, he was denied a visa to India for criticising New Delhi's human rights record.[52]

It is also noteworthy that Indians overcame the stigma of under-representation in European immigration by virtue of their scholarly approach and knowledge-based education curriculum. The European Union's (EU) desire to compete with the US in skilled human resources led to the opening of gates for immigration, and Indians owing to their high standards of IT and Engineering education made a mark. Professionals like engineers, nurses, business managers, teachers, and scientists have made their way to Europe. This will further strengthen the presence, and ingress of the Indian diaspora in the EU member states, promoting the culture of Indian lobbying and developing India-friendly forums at political, economic, social, cultural, and technological levels in the host states. Ultimately, the Indian narrative gets supportive voices raised in the power corridors of policymaking circles of EU member states. The cardinal features of the Indian narrative are to malign Pakistan abroad and make the China-Pakistan Economic Corridor (CPEC) controversial by defaming China and its friendly states. India is successfully engineering its diaspora channels as a foreign policy tool to achieve its end goals.

Political and Diplomatic Clout of Pakistani Diaspora in the West

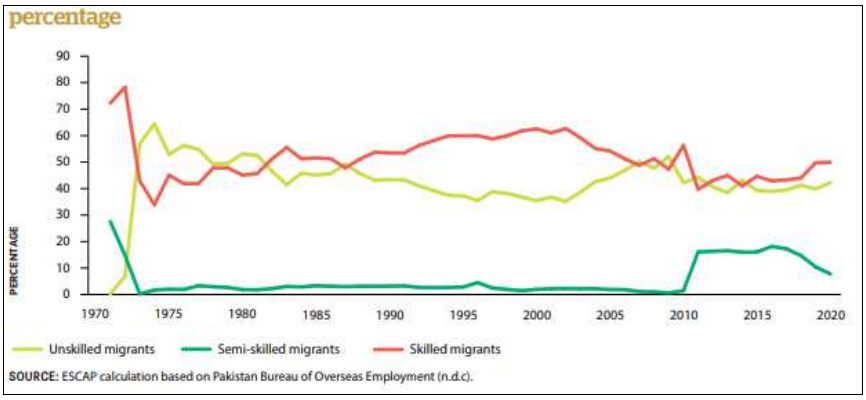
The typology of the Pakistani diaspora primarily consists of unskilled, semi-skilled and skilled migrants, professionals, physicians, engineers, businessmen, long-distance nationalists, cultural producers, and students. Figure 1 shows the skilled, semi-skilled, and unskilled composition of Pakistani migrants departing the country between 1971 and 2019.

Pakistan, despite having a sizable diaspora in the US, UK, and Europe lacks the needed muscle to portray the country's policies in foreign, domestic, and defence as well as economic vistas. This lack of direction and cohesion is a big issue and demerit. It can be said that while the Pakistani community is too emotionally close to its sense of nationalism, it has lacked the capacity to promote the same in foreign

lands for lack of unity or a policy format. The first and second generations have a strong knowledge and long history of time spent in Pakistan, and their bond with the country is reasonably pronounced. However, the third, fourth, and the upcoming fifth generation did not see the freedom struggle and Pakistan-India wars on the Kashmir dispute. It is imperative to understand the actual perception of the Kashmir dispute among the new generations. They refer to disputes in the way they have inherited from their parents and see it as a political dispute rather than one that they are emotionally attached to.

Figure 1

Skill Composition of Migrants Departing Pakistan, 1971-2019[53]



It can be said that the Pakistani diaspora has been forthcoming in sending valuable financial transactions in the form of remittances and thus, have helped the economy. The same spirit is also needed in the shape of public diplomacy on foreign land for projecting and telling the Pakistani story as the Indians do. In other words, Pakistanis are apolitical on the foreign front, and remain glued to their work, earnings, and remittances. Unlike the previous generation of diaspora, the current ones are lacking in zealously pursuing a political goal abroad for the betterment of their home country. Espousing the Kashmir cause and other issues relating to Pakistan are a case in point. This generation gap in perception has created a vacuum. An effective

diaspora leadership indispensable to lead Pakistan's narrative is required.

Whereas, the Pakistani diaspora, especially belonging to Azad Kashmir has done a wonderful job in promoting not only the liberation cause but also Pakistan's point of view vis-à-vis the referendum. Their clout has bred good results in Western countries, especially in Britain, and many other Western capitals. This has offered them an opportunity to employ their influence on the foreign policy mosaic of the host capitals. For instance, in the UK, the Pakistani community has opted for residential concentration in enclaves at particular localities (Bradford, Manchester, Oldham, Birmingham, and Rochdale, etc.), created local community organisations, and preached their goals and interests in an effective way. This was evident during the general elections of 2019, when 15 British-Pakistani MPs were elected. The winners on the Labour tickets included Tahir Ali, Khalid Mehmood, Shabana Mahmood, Naz Shah, Zarah Sultana, Imran Hussain, Muhammad Yasin, Yasmin Qureshi, Dr Rosenna Ali Khan, Afzal Khan. The winners on the Conservative tickets (ruling party) included Sajid Javid, Nusrat Ghani, Saqib Bhatti, Rehman Chishti, and Imran Ahmed Khan.[54] The notable Pakistani-origin Lords were Baroness Warsi, Tariq Ahmad, Zameer Choudhrey (Chief Executive of Bestway Group) inter alia.

Similarly, there is another effective and vibrant diaspora in the US, which comprises "new and young immigrants. Sixty four per cent are the ones living in the US for more than 10 years and 34 per cent are new to American society."[55] The Pakistani diaspora in the US has a close affiliation with natural sciences, as well as other professional organisations, including social sciences, like APPNA, which has around 30,000 members.[56] "There are roughly 0.5 million Pakistani-Americans who are employed as entrepreneurs, doctors, engineers, and lawyers. The US' fourth-largest source of medical professionals is Pakistan."[57]

Pakistani expatriates in the US are in the top echelons of corporate and government, and at times are in a more effective position than their Indian counterparts. They have wide and deep contacts in the US Congress such as Pakistani-American Democrat Dr Asif Mahmood and Shahid Ahmed Khan, who is on the President's Advisory Committee on the Arts,[58] along with moderate contacts in the US think tanks, media and universities, that go on to influence policymakers by exposing the Indian propaganda and biased policies against Pakistan. Yet, the Pakistani diaspora has not been able to compete with the power base of Indians in US society. This provides an edge to the Indian narrative over Pakistan, especially in the case of the Kashmir dispute, as well as bilateral relations with Washington. Ultimately, when it comes to strategic issues, the US intelligentsia and policymakers take the Indian tab, which comes as a rude shock to Pakistani interests.

It is observed that Pakistanis prefer to involve themselves in American politics after they acquire legal status. However, they lack the expertise and capacity compared to Indians, owing to their smaller geographical size and limited power base. As many Pakistanis are not US-born and are naturalised, it puts them at a disadvantage compared to the bigger size of the Indian population in the US. This casts imprints on US politics as well. The largest population of the Pakistani diaspora is living in New York City, including Central New Jersey, followed by Texas, California, and Houston.[59]

Like the UK and US, the Pakistani immigrants in Europe maintain contact with their homeland. They influence their homeland culturally and economically by keeping close ties, travelling to Pakistan, and investing there.[60] They aspire to contribute to both European and Pakistani societies at the same time. The religious and cultural associations of Pakistani diaspora such as Pakistani Community Germany, Pakistan Norway Association (PANA), Pakistan Association Greece, Pakistan Federation Spain, and Pakistan

Community of Barcelona,[61] are the main sources through which the Pakistani community organises and presents itself to the local governments of the European states. The European political parties often see these associations as a useful source of votes and as a means to spread their political ideologies in the Pakistani community.

Strengthening the presence and ingress of the Pakistani diaspora in the EU member states will have a cumulative effect on promoting culture and creating Pakistan-friendly forums at the political, economic, social, cultural, and technological levels.

Indian and Pakistani Diasporas' Economic Contribution to the Home Countries

One of the considerable economic assistances of the Indian community has been in respect of remittances. As per a World Bank Report, India obtained around US$ 87 billion in remittances in 2021.[62] Therefore, to mark the contribution of the Overseas Indian community in the development of India, Pravasi Bharatiya Divas is celebrated on 9 January of every year.[63]

The Indian diaspora plays a crucial role in connecting the country of origin with the rest of the world by providing access to knowledge, experience, resources, and markets to the former. It has played a central role in the field of science and technology. For instance, Silicon Valley is a symbol of Indian success. This has contributed to the development and growth of India. The large inflows of remittances help in poverty reduction and socio-economic growth in the country. The Indian diaspora contributes financially to businesses or educational institutions. It is a significant source of Foreign Direct Investment (FDI), market expansion, and technology transfer, all of which enhance a country's fiscal assets.

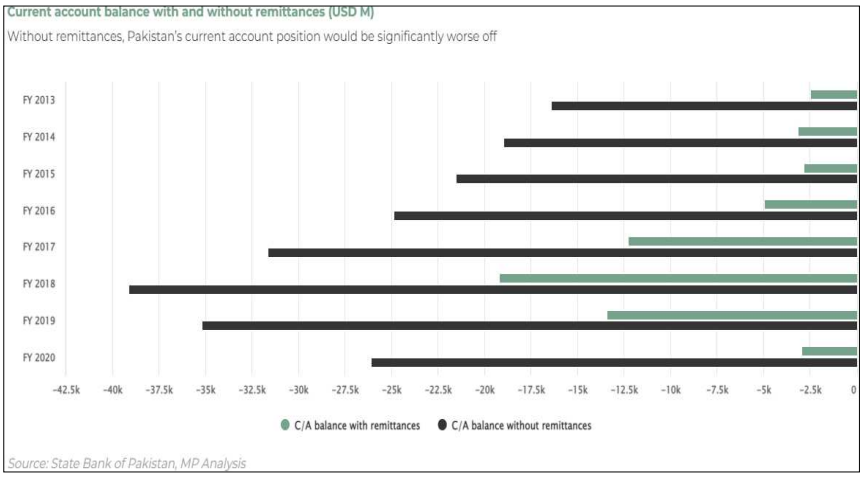
The remittances of the Pakistani diaspora are the backbone of the economy. Remittances from Pakistanis per annum were to the tune of US$ 31.2 billion in the fiscal year 2021-22.[64] They help in overcoming the current account deficit, and rollover balance of

payment on the imports side. Remittances to Pakistan have remained consistent and in fact increased during times of crisis.[65] During the COVID-19 pandemic, Pakistanis stood fast and sent in their remittances to keep the economy afloat. They reached an all-time quarterly high between July and September 2020.[66] This allowed Pakistan to achieve a current account surplus, after almost five years, and registered the highest amount in value during the last 17 years."[67]

Figure 2 below shows the country's current account deficit with and without remittances. As shown, if Pakistan had not received remittances, its deficit in 2020 would have been a staggering US$ 26 billion.[68] As remittances stood at US$ 23 billion (2020), Pakistan only had a shortfall of US$ 3 billion.[69]

Figure 2

Current Account Deficit with and without Remittances [70]



Remittances are, in fact, shock-absorbers. They keep the economy fluid and address the cash inflow constraints in foreign exchange. They add significantly to consumption and investment in Pakistan. The income that flows into expatriate Pakistanis' homes add to the vibrancy and purchasing power of the households. "These two core components of aggregate demand then stimulate growth, as an

increase in demand leads to a rise in production, employment, and eventually, productive capacity"[71] in the country.

According to the International Monetary Fund (IMF), the rise in skilled manpower abroad has buoyed Pakistani remittances. The skilled workers of Pakistan "have much more stable sources of income and, therefore, remit more money back to their dear and near ones."[72] Economic prosperity borne out of remittances can create multiplier effects. They build the capacity of the economy, because, the households in developing nations that receive remittances are far more likely to invest in entrepreneurship and education.[73] In Pakistan, where there is a low rate of literacy, remittances can help span the canvas of education and likewise promote socio-political interaction. Roshan Digital Account has played an important role in this context in stimulating the economy. The Pakistani diaspora's contribution in the socio-economic sectors of the country is laudable.

Overseas Pakistanis have rendered invaluable services and provided massive assistance during floods, earthquakes, and other calamities, including the recent COVID-19 pandemic. The Pakistani diaspora is surely contributing to the uplift and is adding value to the business, industrial, agriculture, and services sectors of Pakistan.

Pakistan Government's Approach

Pakistan has adopted an institutionalised approach to engage overseas Pakistanis based on six goals including the unification of diaspora on common national identity, offering certain national rights, drawing nationally-oriented benefits, enhancing remittances, offering socio-welfare services, and providing incentives to invest in the home country.[74]

The institutional structure of the country is reflected in the establishment of the Bureau of Emigration and Overseas Employment (BEOE) in 1971 with its affiliated organisations like the Overseas Employment Corporation (OEC), Overseas Employment Promoters

(OEPs) and Protectorate of Emigrants; the inception of the National Talent Pool in 1976; the creation of the Overseas Pakistanis Foundation (OPF) in 1979[75] and creation of the Ministry of Overseas Pakistanis and Human Resource Development (MOPHRD) in 2013.[76]

In 2009, the Ministry of Overseas Pakistanis drafted a National Emigration Policy.[77] Then, in 2013, the ministry developed a draft National Policy for Overseas Pakistanis.[78] The last initiative was to prepare a draft of the National Emigration and Welfare Policy (NEWP) for Overseas Pakistanis in 2018.[79] Three broader objectives have been defined in the NEWP including a) promotion of safe, orderly and regular emigration, b) protection and welfare of emigrant workers and their families, and c) engagement of Pakistani diaspora and reintegration of returning migrants.

Pakistan has also taken a variety of initiatives to engage, maintain and to develop a relationship with its diaspora including the right to visa-free travel, opening a bank account, buying property, the National Identity Card for Overseas Pakistanis (NICOP), the Pakistan Origin Card (POC) for foreigners of Pakistani origin, Pakistan Remittance Initiative, Naya Pakistan Calling, Call Sarzameen, Pakistan Banao Certificates, and Roshan Digital Account investment.

Hurdles in Mobilising Pakistani Diaspora

While the Pakistani diaspora forms an essential component of economic empowerment for the state of Pakistan by sending in remittances, that power potential has not translated into political muscles to this day. The denial of the right to vote for overseas Pakistanis is a case in point. This is acting as a perpetual disconnect. A National Emigration Policy and National Policy for Overseas Pakistanis were drafted in 2009 and 2013 respectively. However, both the policy drafts were not approved. The draft of the National Emigration and Welfare Policy 2018 (to engage the Pakistani diaspora and reintegrate the returning migrants) is also awaiting formal approval from the

Cabinet. The latest policy was intended to develop a Diaspora Engagement Strategy for impacting national development by all relevant stakeholders relating to Overseas Pakistanis, which could not be materialised so far. The lack of a formal strategy to engage the Pakistani diaspora has been identified as a significant challenge in fostering meaningful engagement with the community.

The remittances, donations, and charity of the Pakistani diaspora have played an important role in the rehabilitation, reconstruction, and development during natural emergencies in Pakistan. However, their contribution to generate a future economic stream to meet national objectives is insignificant even though remittances are the second largest source of income to Pakistan. The country has been unable to fully exploit the potential of its diaspora, which possesses valuable knowledge and holds unique positions that could facilitate the transfer of advanced professional expertise and skills from their resident countries to their homeland. This depicts a lack of a policy framework to encourage the diaspora to reverse-transfer knowledge advancements and techniques from the host country to the country of origin. Remittances help in alleviating poverty and generating employment opportunities. The Vision 2025 envisions increased inflow of remittances from US$ 14 billion to US$ 40 billion by 2025. However, the target could not be materialised for the lack of political will.

Embassies prefer to engage with the community members who are economically better off and well-settled rather than the 'working class' segments. It highlights the class dynamics that may shape the nature and extent of the relationship between the diaspora and the authorities. Some associations consider that the degree of engagement with the Pakistani Embassy also depends on the policies and willingness of the Ambassador.

Pakistani Embassies in the Western capitals are seen playing to the gallery by obliging the diaspora for no gainful objectives. The

elderly leadership of the Pakistani diaspora is reluctant to give space to a new generation. Unlike their elderly figures, the younger generation is also less associated with the political lineage of the country, especially on the Kashmir cause, causing a generation-gap that may create a vacuum in the future for effective diaspora leadership, indispensable to lead Pakistan's narrative abroad.

Furthermore, Pakistani diaspora is splintered on ethnic, religious, geographical, political, and professional lines. This is equally evident in their groupings in professional associations, charity, religious endowments, and political groupings. These divergent bodies do not correlate and thus are ineffective in promoting the national interest of Pakistan. Whereas, the Indian diaspora remains integrated on nationalist issues, and their political parties also have foreign segments to further their orientation. Modi's addresses to US Indian diaspora in 2017[80] and Australian-Indian diaspora in 2023[81] are cases in point where he instigated the nationalist sentiments of the Indian diaspora, while referring the Indian military prowess. He stated that "when India did surgical strikes [against Pakistan] the world experienced our power and realised that India practices restrain but can show power when needed."[82]

Contrarily, the politically influential Pakistani-Americans have normally served the interests of their home country's political parties in the host country to which they are affiliated, without realising the fact that they are crossing red lines of their home country's national interests. It has impacted the soft image of Pakistan. For instance, Democrat Dr Mahmood launched a campaign to draw attention to the arrest and solitary confinement of Khadija Shah[83] who was allegedly involved in the 9 May vandalism of Jinnah House (residence of a Corps Commander Lahore) after the arrest of Pakistan Tehreek-e-Insaf's (PTI) Chairman Imran Khan. Michael Kugelman, a scholar on South Asia at Wilson Center, Washington, has rightly argued that the Pakistan diaspora has been divided on political lines.[84]

The Pakistani diaspora lacks intellectual depth on matters relating to Pakistan. They seem to have restricted themselves to well-informed and influential components, with little or no leverage in practical essence. If no efforts are undertaken to invest more on developing the intellectual depth, the intellectual narrative is going to die in the coming years, without being transferred to the next generation. Today, a fight on perception management is being fought on social media forums, think tanks and mainstream media. However, Pakistan has been unable to mobilise a strategic team of its diaspora community on these intellective forums. Hence, the narrative of Pakistan has not be capitalised at international forums.

Conclusion

The Indian diaspora has attained prominence in the international realm, which has now become an important part of Indian foreign policy tools that offer ample opportunities to New Delhi to project and realise its ambitions. It has led from the front and has churned out some real astonishments by positively promoting not only socio-cultural and political goals and objectives in their respective second homes, but also by creating and making use of lobbies in their country's favour. This has strengthened New Delhi's narrative and perception management against Pakistan to defame the latter on international forums. The post-9/11 security setting, especially in the backdrop of the West-labelled political Islam and US-China uneasy relationship, has also encouraged anti-Muslim/Pakistan antagonism that provided another pretext for the reactivation of long-distance nationalism in the Indian lobbies. New Delhi is investing more in its diaspora to maintain strong affinity and links with the community in order to achieve national security goals. It is evident that the functioning of the Indian diaspora has always been at cross-purpose to that of Pakistan's efforts in the war against terrorism, its advocacy of

the Kashmir cause, Pakistan-China relations (especially in terms of CPEC), Pakistan-US relations, and nuclear stability in South Asia, etc.

Organisations like the Conservative Companions of Pakistan (CCP) and Labour Chums of Pakistan Group (LCPG) should be established separately in collaboration with British Conservative and Labour Parties respectively, with the aim to politically engage the Pakistani-origin British community with British political parties, besides, seeking closer relations between Pakistan and the UK. Furthermore, these organisations should be able to neutralise the insidious Indian propaganda on Kashmir, making it a constitutional and internal matter of the country. A Centre for Pakistani Diaspora Studies should be established in the leading universities of Pakistan for policy analysis. Community Welfare Attaches at the embassies have to be more responsive in looking after the interests of the diaspora. Laws may be reviewed to ensure quick redress of the community's problems. For example, digital authentication of documents can effectively resolve the community's problems. A check-list is a must for the diaspora desk officers to ensure effective utilisation of various tangibles, and how and where they can be utilised. Pakistan should set up Special Economic Zones and provide the Pakistani diaspora with an open-ended opportunity to invest and take ownership of the enterprise. Likewise, Industrial Parks and Technology Parks can be promoted wherein the expatriates can excel by bringing in their expertise and investment. The procedural work should be minimised to do away with bureaucratic red-tapism and inconvenience caused to the diaspora. NOCs and other governmental permissions should be forthcoming. Pakistan must follow China's pattern to make life easy for expatriates and investors. The Overseas Pakistani Foundation (OPF) and Ministry of Overseas Pakistani must collaborate with the Technical Education & Vocational Training Authority, National Vocational and Technical Training Commission, private vocational along with

technical institutions, and skill development companies to prepare and train labourers for the Western market.

The government should construct appropriate modes to enhance overseas employment opportunities by signing Memorandums of Understanding (MoUs) with labour-receiving countries. Ministry of Planning, Development and Reform should devise a long-term development plan that would envision an increase in remittances from the current US$ 30 to US$ 45 billion by 2030. The ministry should include the National Talent Programme for Overseas Professionals in the forthcoming 13th Five-Year Plan 2024–29. There is a need to form a committee of expert professionals comprising the concerned stakeholders such as the Ministry of Foreign Affairs (MOFA), Ministry of Overseas Pakistanis and Human Resource Development (MOPHRD), Ministry of Information/ National Database and Registration Authority (MOI/NADRA), OPF, Bureau of Emigration and Overseas Employment (BEOE), and Pakistan Missions abroad. These should be tasked with a mandate to formulate a Diaspora Engagement Strategy devising investment models and channels for the transfer of knowledge which could impact national development. A high-level committee may also be constituted to monitor implementation of the strategy.

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WOMEN INVOLVEMENT IN TERRORISM: INFLUENCING FACTORS AND PREVENTION APPROACHES

MUBEEN ASHRAF*

Abstract

In the intricate tapestry of women's participation in terrorism, especially in the tumultuous South Asian context, this research delves into the multifaceted factors motivating their engagement. Drawing upon historical insights and contemporary case studies, the study thoroughly investigates the compelling motivations driving women into the shadowy world of terrorism. It examines their resistance to oppression, pursuit of justice, and quests for revenge within a region marked by insurgency and conflict. The research methodology employed comprises qualitative data from interviews, a comprehensive analysis of historical and contemporary sources, and an exploration of the 3N, and Precht's theoretical model. These factors illuminate the complex interplay of state policies, religious ideologies, coercion, and the harrowing spectre of women trafficking. The research findings reveal the nuanced nature of women's roles in these movements, emphasising the critical need for gender-sensitive counterterrorism measures. This research equips policymakers, terrorism experts, and scholars with essential insights, guiding their understanding of the intricate contemporary landscape involving women in terrorism. Additionally, it contributes to the discussion on counterterrorism and prevention with timely recommendations and insights.

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Introduction

The involvement of women in terrorist activities is a complex and longstanding global phenomenon that extends across various historical and geographical boundaries. This research aims to explore the multifaceted role of women in terrorism, offering insights into their participation in criminal acts, violence, destruction, and, in some cases, acts of heroism, as exemplified in the life of Joan De Arc.[1] These women often find themselves labelled as criminals or terrorists, embracing roles ranging from leaders and spies to suicide bombers within extremist groups and organisations.

The history of women's participation in terrorism can be traced back to their engagement in radical and revolutionary struggles of the past. For instance, the women of Narodnaya Volya[2] demonstrated a remarkable willingness to sacrifice themselves for their cause, often surpassing their male comrades in dedication. Women have actively participated in anti-colonial and revolutionary movements in the developing world for decades.

Women's involvement in the most extreme forms of participation in terrorism varies from one group to another and is influenced by distinct reasons. In regions such as Türkiye and Sri Lanka, women's activism has a rich history, with their full participation permitted even in the early stages of these organisations. In contrast, the emergence of Palestinian women suicide bombers or isolated terrorists in Chechnya challenged societal expectations, emerging more recently, against all odds. It is crucial to recognise that a patriarchal structure often dominates the societies where these terrorist organisations are located. Nevertheless, within these patriarchal frameworks, women's involvement is often strategically planned.

Women who engage in terrorism may seem to be both literally and metaphorically 'dying'[3] to have a more active role in armed conflict, yet their participation does not shield them from exploitation. While men often undertake suicide missions motivated by religious or nationalist fanaticism, women use combat as a means to escape the confines of predetermined societal roles. When women become human bombs, they aim to make a statement, not only in the name of a country, religion, or leader, but also in the name of their gender.[4]

The willingness of women to engage in terrorist activities is harnessed both internally and externally. Within the ranks of terrorist groups, their eagerness to kill and die is exploited by male leaders. Externally, women are often portrayed and exploited by the media as symbols of the desperation of 'freedom fighters', blurring the line between portraying them as cold-blooded murderers and victims themselves.

This dichotomy is further exemplified by the societal expectation of women as gentle, submissive, and nonviolent individuals. Terrorist groups exploit this stereotype to further their cause, demonstrating that even individuals traditionally seen as 'good wives and mothers' can commit acts of violence in extreme circumstances, justifying them as responses to unjust and desperate situations.

Historically, women have played pivotal roles in terrorist organisations, as seen with Peruvian women of Andean-Indian origin in the Shining Path. The Central Committee of the militant organisation had at least eight women holding key positions, with women comprising nearly 40 per cent of the Shining Path militants.[5] The People's Will, an organisation involved in revolutionary activities, also witnessed significant female participation, with figures like Vera Figner, Maria Oshanina, Anna Yakimova, and Sophia Perovskaya being key members.[6] Even today, the legacy of these women continues to inspire revolutionary movements.

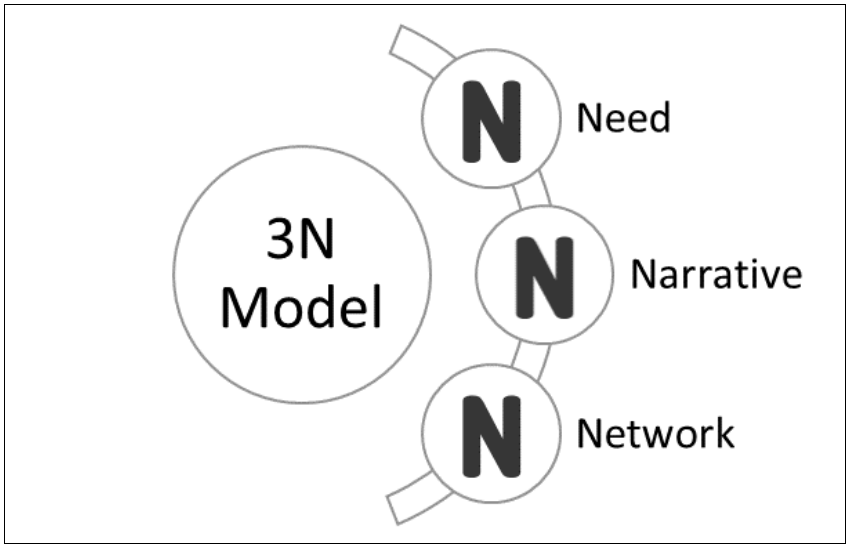
The Liberation Tigers of Tamil Eelam (LTTE) marked a turning point in the history of women in terrorism, with women comprising up to 30 per cent of the total number of suicide attackers between 1991 and 2007. Women formed specialised attack (tank) units in the Battle of Elephant Pass that displayed remarkable success on the battlefield, challenging conventional expectations.[7] In the context of South Asia, the region has not been immune to the phenomenon of women's participation in terrorism. India and Pakistan, in particular, have experienced the involvement of women in extremist groups, further highlighting the complexity and relevance of this issue to the South Asian region. Various extremist organisations in the region have harnessed the potential of women, underscoring the need for an in-depth analysis of this phenomenon in a South Asian context.

The research seeks to address three key aspects: a) a theoretical model explaining women's involvement in terrorism, b) the roles and types of female terrorists, and c) the factors influencing women's participation in terrorism. To fulfil these research objectives, a mixed-methods approach was employed, utilising both quantitative and qualitative tools, such as books, journal articles, and news articles. Additionally, a wide range of interviews were conducted with subject matter experts, including a former Director General of the Inter-Services Public Relations, Pakistan (DG ISPR), journalists, and terrorism studies experts from Pakistan, Kashmir, and Balochistan. While the focus extends beyond South Asia to encompass real examples from other regions, there are three theoretical models applied in the research. The models include the 3N model proposed by Arie W Kruglanski, another model proposed by psychologists and behavioural scientists at the Joint Military Information Support Centre (JMISC), and lastly Precht's Model of a 'Typical' Radicalisation Pattern. The study concludes with recommendations based on the findings.

Theoretical Framework

Radicalisation is the process by which an individual adopts unconventional and often violent methods to achieve their objectives. The theories on radicalisation have traditionally been non-gendered and often overlook the role of women in terrorism and extremism. This oversight is largely due to the perception of terrorism as a male-centric activity, with women viewed as weak and submissive. However, as more cases of female terrorism emerge worldwide, there is increasing attention to the theoretical roots of women's involvement in terrorism. For this research, three different models have been selected to collectively identify the various causes and motivations behind female involvement in terrorism. The first model is the 3N model and the second is Precht's Model of a 'Typical' Radicalisation Pattern.

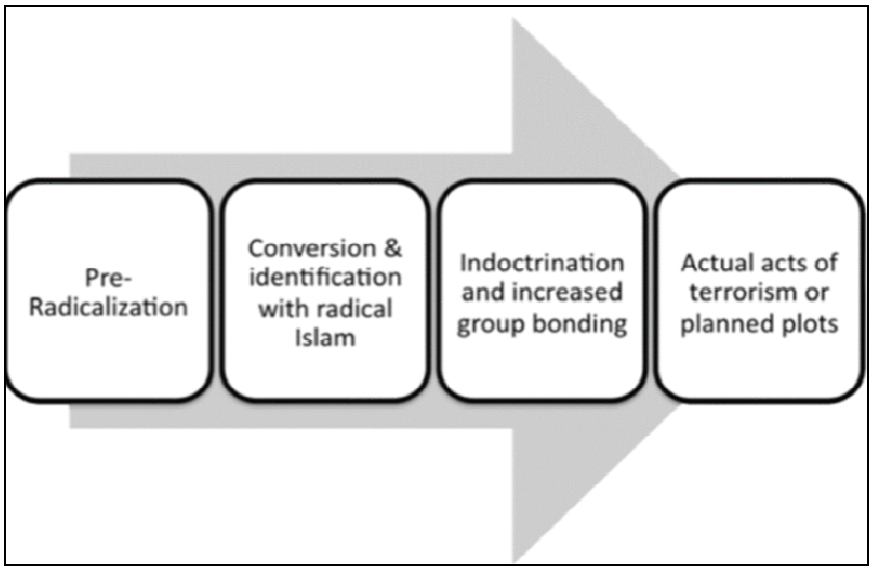
The 3N theory, developed by Kruglanski, suggests that radicalisation results from the interplay of three key factors: individuals' needs, the narratives that they encounter, and the networks that they are a part of. [8]



According to this theory, these three elements significantly influence the progression toward violent extremism. The first factor is

the need, referring to an individual's universal desire for personal significance. The second factor is the narrative, which shapes how members of a group seek significance based on the group's collective story. The third factor is the network, representing the group membership that supports the narrative and provides rewards, such as respect and recognition, to those who adhere to it.[9]

The second is the Precht model, delineating the stages of radicalisation, which aligns closely with frameworks developed by both the Federal Bureau of Investigation (FBI) and the New York Police Department (NYPD) Intelligence Unit. This model outlines a four-phase progression: pre-radicalisation, conversion and identification with radical Islam, indoctrination coupled with intensified group cohesion, and the execution of terrorist activities or formulated plots. Precht emphasises that the dynamics within small groups and the sense of identification within these groups often significantly accelerate the adoption of extremist ideologies.[10]



Precht's analysis extends to identifying and examining the factors that drive the radicalisation process in militant Islamists. He categorises these motivational factors into three groups:

- Background Factors: These involve personal challenges related to religious identity, experiences of discrimination, and issues with social integration.
- Trigger Factors: This includes influential individuals, such as mentors or charismatic leaders, and specific events or policy decisions that might provoke a reaction or drive activism.
- Opportunity Factors: These refer to the extent of an individual's access to and the likelihood of encountering extremist ideas or individuals. Such factors include physical and virtual spaces like the Internet, mosques, prisons, and various social groups or collectives.

The two frameworks offer valuable insights into understanding the motivations, recruitment strategies, and organisational roles of female terrorists. However, it is essential to recognise that while these models provide an initial understanding, they may not universally apply to every case detailing women's involvement in terrorism.

For instance, the 3N theory's 'Needs' component delves into the personal, psychological, and socio-economic motivations that drive women to engage in terrorist activities. Examples abound, such as the Chechen 'Black Widows' or female participants in the Palestinian intifada, who often cite motives like revenge or resistance. Similarly, female terrorists from the LTTE demonstrate dedication to a cause. Furthermore, narratives highlight the ideological or propaganda messages used by terrorists to attract women, as evidenced in cases involving the Islamic State of Iraq and Syria (ISIS) and the Balochistan Liberation Army (BLA).

Moreover, the social and organisational structures that facilitate women's involvement in terrorism, often termed networks, can be illustrated by examples of individuals influenced by familial bonds or common ties. The second model expands on these examples, providing a more nuanced understanding by identifying phases and determinants applicable to many cases. However, it is important to

acknowledge that these frameworks may not fully encompass every aspect of female terrorism, as individual motivations and circumstances can vary widely.

Types and Roles of Female Terrorists

Female terrorists and militants can be found across the world, participating in a wide range of activities within extremist organisations. Their roles transcend geographical boundaries, reflecting the global nature of terrorism. These roles can include operatives or foot soldiers, suicide bombers, cyberterrorists, lone wolves, leaders, spies and infiltrators, supporters and financiers, propagandists, human shields, social and political activists, and individuals with specialised roles.

Operatives or Foot Soldiers

Women actively participate as operatives in various regions, such as South Asia where groups like the LTTE had female combatants. Globally, women have served as operatives in organisations like the Irish Republican Army (IRA).[11]

Suicide Bombers

Female suicide bombers have gained notoriety in regions like South Asia and the Middle East, including instances in Pakistan, Palestine, and Sri Lanka. Beyond these areas, women have carried out suicide bombings globally, exemplified by the 2015 Paris attacks and numerous other incidents. In 2017, following the emergence of ISIS, local extremist cells recruited Noreen Leghari intending to orchestrate a suicide bombing during Easter celebrations at a church in Pakistan.[12] However, authorities apprehended Leghari before she could carry out the attack. Subsequently, Leghari confessed to being influenced by ISIS propaganda. Her case is particularly intriguing because ISIS generally does not encourage women to primarily serve as suicide bombers. This underscores the variations in women's roles, influenced

by the specific local contexts and decentralised ISIS cells and networks in Pakistan.[13]

Cyberterrorists

Women with technical skills engage in cyberterrorism, which is defined as "the convergence of cyberspace and terrorism." It involves hacking computer systems, disrupting critical infrastructure, or spreading extremist propaganda online. Sally Jones, also known as Umm Hussain Al Britani,[14] exemplifies the role of a cyberterrorist. As a British hacker and recruiter for ISIS, she harnessed her technical skills to effectively disseminate extremist ideologies and recruit individuals via social media platforms.

Lone Wolves

Female lone-wolf terrorists typically operate independently and are not affiliated with any formal terrorist group. They often carry out attacks driven by personal grievances or extremist ideologies. Lone-wolf terrorism is defined as "acts of terrorism committed by individuals acting alone or with minimal assistance, having no direct connection to any organisation." While female lone wolves are relatively rare, they are not entirely unheard of. A prominent example of a female lone wolf is Tashfeen Malik, who played a key role in the San Bernardino shooting. She and her husband were motivated by extremist ideologies and carried out the attack without formal connections with any larger terrorist organisation, embodying the classic 'lone wolf' archetype.

In another case, the lone woman arrested during the Pulwama investigation was found to have played a significant role in aiding Jaish-e-Mohammad (JeM) terrorists who executed a deadly suicide attack the previous year. According to the National Investigation Agency (NIA), Insha Jan, aged 23, was linked to the primary conspirator of the Pulwama attack while Mohd Umar Farooq was the Pakistani bomb-maker killed by security forces in Kashmir.[15]

Leaders and Commanders

Women have risen to leadership positions in South Asian militant groups like the Maoists in India. Globally, female leaders have been found within organisations like the Revolutionary Armed Forces of Colombia (FARC) and Black Widows.

Propagandists

Female terrorists globally engage in propaganda, utilising social media for recruitment. Relevant examples of the aforementioned include women affiliated with Al-Qaeda and ISIS, who are recruited through propaganda and play diverse roles, including disseminating extremist content online and participating in phenomena like the "jihadi bride" recruitment strategy.[16] Their involvement highlights the multifaceted roles women play within terrorist organisations.

Specialised Roles

Women have played pivotal roles within terrorist organisations, enhancing operational effectiveness both in South Asia and globally. These specialised roles encompass bomb-making, medical support, and recruitment. While comprehensive data may be limited, it is assumed, given the historical involvement of women in terrorism, that they also participate in bomb-making activities. This assumption is based on their long-standing contributions to various aspects of terrorist operations. In addition, women's roles as medical personnel and recruiters have been well-documented across right-wing and left-wing extremist groups, exemplified by the willingness of female doctors to join organisations such as Al-Qaeda and ISIS in South Asia.

Women's involvement in terrorism is not confined to one particular region; it is a global phenomenon. The roles that they assume within extremist organisations are diverse, multifaceted and not limited to the ones stated above, reflecting the varied motivations

and contexts in which they operate. South Asia, with its historical and ongoing conflicts, serves as a pertinent case study to understand the dynamics of women participation in terrorism and the enduring and complex nature of their roles.

Influencing Factors

Women's engagement in terrorism is driven by a complex interplay of factors. Understanding the motivations behind their actions is crucial. Here are some key factors that highlight the involvement of women in terrorism:

i. *Resistance Against Oppression:* Women have actively taken part in terrorism to resist the oppression of occupying forces in their regions. Notable examples include Maryam Goris, who plotted a car bomb attack against oppressors, and Sajida Mubarak Atrous al-Rishawi, who attempted a suicide bombing during a wedding party in response to perceived oppression.

ii. *Demonstrating Commitment:* Engaging in acts of terrorism demonstrates a strong commitment to a cause. Women, often marginalised in society, have undertaken extreme actions to assert their dedication, which has a compelling influence on male fighters. Other reasons for women's involvement in terrorism include autonomy, self-determination, and fear of sexual violence.[17]

iii. *Empowering the Family:* Becoming a female suicide bomber challenges the patriarchal norms and significantly enhances the social status of the woman and her family. The theatrics of suicide attacks may solidify the family's standing in a particular society.[18]

iv. *Resistance to Suppression:* Women have resorted to terrorism as a response to personal suppression, particularly in conservative and less educated areas. Notable cases, such as

Noreen Laghari, who felt suppressed at home and subsequently took action, exemplify this motivation.[19]

v. *Seeking Notoriety:* The allure of achieving notoriety through suicide attacks, often recorded and posted online as recruitment tools, attracts individuals looking for an escape from their ongoing circumstances. There are plenty of such female suicide bomber recruits from South Asia and the West who joined Al-Qaeda, ISIS and Al-Shabab for it.[20] Another example is Farabundo Marti's preference to join domestic terrorist groups influenced by the desire to maintain a higher status and the impact of inequality.[21]

To comprehensively analyse the motivations behind female terrorists and militants in South Asia and worldwide, it is essential to focus on some other major factors too. Every region and country has its unique dynamics and challenges, and this holds true for the motivations of women in these diverse contexts as well. The other factors include:

Revenge

Revenge serves as a prevalent motive for both men and women when they join terrorist organisations and engage in extremist activities. It can be rooted in personal factors, such as the loss of loved ones or incidents of sexual abuse by foreign soldiers. Additionally, it may have social origins tied to experiences during an occupation. Research on gender differences regarding the need for revenge has yielded varying results. While some studies suggest men may be more vengeful, others find no significant gender-based distinctions. Furthermore, the desire for vengeance appears to be unrelated to gender. Studies focusing on aggressive triggers and capabilities for revenge indicate that both men and women possess the capacity for aggressive behaviour and exhibit no gender-based disparities following frustrating events.

A notable illustration of women motivated by revenge is the Black Widows. A group of female suicide bombers primarily of Chechen origin, the Black Widows have played a significant role in the Chechen conflict against Russia since their first attack in 2000. For instance, Khava Barayev and Luisa Magomadova drove a truck filled with explosives into the temporary headquarters of an elite OMAN (Russian Special Forces) detachment in the village of Alkhan Yurt in Chechnya. While the group also includes male members, a majority of the group members are females who serve as suicide bombers and recruiters, partly driven by their desire for revenge. The motive of revenge is also found in females from Balochistan as they have seen their family members go missing or murdered in front of them. To avenge their deaths, they take part in terrorist activities and play various roles including that of suicide bombers, facilitators, etc.[22]

State

The role of governments is a significant factor in encouraging women's participation in extremist activities. A prominent example is North Korea's use of Kim Hyon Hui. When Seoul was chosen for the 1988 Olympics, North Korea, viewing it as a political affront, aimed to deter participation by orchestrating the bombing of Korean Air Flight 858, Kim Hyon Hui, a petite woman, was specifically recruited and indoctrinated to carry out this act. Her gender made her less conspicuous, and she was prepared to commit a suicidal act for her country. The North Korean operative intended to blow up an airline full of people, an act that took eight days of intense interrogation to reveal.

According to former DG ISPR Lt. General Asif Ghafoor, a state's foremost responsibility is to secure its youth, with education being a top priority. Weak state authority and poor governance are the root causes of radicalisation. The state must address these issues to counter the emerging female involvement in terrorism.[23] Also, patriarchal inequality plays a significant role in society's downfall. The belief that

boys are more important than girls or that girls require male protection due to safety concerns can lead to repressive and submissive behaviour among women, in turn leading to women's potential involvement in terrorism. Moreover, the changing roles of women in terrorism and the unpreparedness of political and military leaders to understand these transformations are other provocative factors for women. The 4Rs Plus One, i.e., revenge, redemption, relationship, respect, and rape theory, further explains why women participate in terrorist groups, underlining the role of government actions in their recruitment.[24]

In Nigeria, the abduction of schoolgirls by Boko Haram highlights the failure to address the root causes of the insurgency. Poverty and lack of education in the country's North East make it easier for Boko Haram to recruit followers. Allegations of corruption within the Nigerian military and government have hindered the fight against terrorism. President Buhari has also cited the pandemic as a factor allowing insurgents to gain more support.[25] These instances underscore the complex relationship between state actions and societal norms and the motivations driving women's involvement in terrorism.

Religion and Nationalism

Religion and nationalism are prominent motivations behind female involvement in extremist activities. Group membership is often the catalyst, fostering a collective identity and shared objectives that take precedence over individual beliefs. This dynamic leads to de-individualisation, where individuals shift their focus to group values and become more willing to carry out suicide attacks in service of the group's cause.

In some cases, young individuals who travel to the Middle East for religious rituals find themselves coerced into performing tasks, and/or are pressured in the name of religion.[26] Certain individuals are drawn to extremism through their interpretation of Islam and the

concept of Jihad, viewing self-sacrifice for a cause as a more meaningful alternative to a purposeless existence. It is crucial to recognise that such interpretations do not represent the true teachings of any religion, including Islam, as extremist groups deliberately manipulate these interpretations to influence susceptible minds.

In Balochistan, ethno-nationalism has fuelled the increased use of female militants as suicide bombers, driven by a combination of environmental, organisational, and individual factors. Notably, the BLA (Bashir Zaib Baloch faction) has employed female suicide bombers. For instance, Sumaiya Qalandarani Baloch was identified as the second female suicide bomber for this faction, with others like Shari Baloch and Noor Jahan also being trained for suicide bombings. Sumaiya Baloch, a female suicide bomber, previously worked as a journalist for the BLA's media wing for five years. She was associated with Rehan Baloch and Aslam Baloch and came from Tootak in Khuzdar, a place where several of her relatives were 'forcibly disappeared.'[27]

In a significant development, a woman carried out a suicide attack in the Indian Illegally Occupied Jammu and Kashmir (IIOJK). Although her bomb exploded prematurely, it marked a noteworthy occurrence. A spokesperson claiming to represent the proscribed Jaish-e-Mohammad militant group took responsibility for the incident. The act, however, does not come under the definition of terrorism because IIOJK is a disputed territory—as per the United Nations Security Council (UNSC) resolutions—under illegal occupation of an aggressor state. The individuals under occupation resort to violence because they believe that their basic rights and freedoms have been denied. They view these rights as essential and are willing to use various means, including violence, to secure them. In light of this, females in IIOJK never resort to terrorism. If they use violent means, it is for a just cause.[28]

Ideology

Some women are attracted to extremist or terrorist groups due to their deeply held ideological or political beliefs. They become radicalised by the ideologies these groups propagate and believe that violent actions are necessary to achieve their goals. An illustrative example of this phenomenon can be seen in the involvement of women in various Maoist insurgencies in Nepal, particularly within the ranks of the Communist Party of Nepal (Maoist).

The Maoists have claimed that approximately one-third of the 'People's Liberation Army' is comprised of women. Over a span of eight years, the Maoist revolution extended its influence from two districts in Nepal to encompass almost two-thirds of the country. Women cadres play diverse roles within this movement, serving as propaganda activists, members of agricultural production teams, and even guerrilla fighters. Comrade Parvati, an alias used by a prominent leader who heads the women's department of the Central Committee, highlights the rise of women in significant positions within the movement, such as battalion vice commanders and political commissars.

In 2003, a Nepali human rights organisation known as Informal Sector Service Centre (INSEC) reported that women constituted at least 159 of the 1,308 individuals killed by security forces. This statistic underscores the profound impact and sacrifices made by women within the Maoist movement. The so-called 'People's War' was initiated by the Communist Party of Nepal-Maoist (CPN-Maoist) in 1996, to abolish the monarchy and establish a communist republic. The ensuing clashes between the Maoists and security forces resulted in the deaths of over 10,000 individuals. 'Comrade Prachanda', the chairman of the CPN-Maoist, acknowledged that the party was taken aback by the unexpected response of women who joined the armed struggle.

A prominent female Maoist leader, Hsila Yami, has emphasised the emancipatory potential of the movement for women. She highlighted the benefits that women, particularly from Tibeto-Burman and non-Aryan backgrounds, especially those from lower castes, stand to gain from the 'People's War'. Yami, who is the wife of the second-highest-ranking Maoist in Nepal, Baburam Bhattarai, stressed the importance of women's involvement in radical activities. She underlined the significance of women in a subsistence agro-economy, where half of the households engage in seasonal migration. Women form the majority of the rural community, particularly in de facto female-headed households. Yami concluded that an agrarian revolution cannot materialise without mobilising women and involving them in activities that support the movement, even donning guerrilla attire. This reflects the crucial role women play in the ideological and revolutionary landscape of Maoist insurgency in Nepal.[29]

Family

The pressure to engage in suicide terrorism can often originate from peer or familial influence. Research indicates that pre-existing friendship bonds play a significant role in the formal integration of terrorists, with 68 per cent of them having close friends or acquaintances within the extremist group. Moreover, familial bonds also play a crucial role in the recruitment of terrorists. Approximately 75 per cent of terrorists have pre-existing familial ties to individuals involved in terrorist organisations or join these groups with friends or relatives. Such kinship links have been identified as influential in recruiting women as well. For example, the Egyptian religious militant group Repentance and Holy Flight showed that female terrorists were often relatives or wives of male members.[30]

The role of kinship bonds can be observed in the case of the Hamburg Cell, responsible for the 9/11 bombings. The strong in-group bonds and radicalisation of ideologies within this cell were facilitated

by intensive interactions among friends and peers, leading to the absence of extra-group bonds. Both men and women can be influenced by such peer and familial connections.[31]

A more recent trend is the mobilisation of entire family units as suicide bombers[32], partly attributed to the Islamic State's appeal for increased female participation in terrorist attacks. While Southeast Asia has been relatively slow in deploying women as suicide bombers, there have been recorded instances of women's involvement in suicide bombing campaigns in places like Sri Lanka and Pakistan. One significant turning point was the 2018 suicide attack in Surabaya, which initiated the trend of family suicide bombings in Southeast Asia. It garnered attention from the media and academia, shedding light on the exploitation of women and children in terrorist attacks. More recently, the widows of deceased terrorists have been recruited to become suicide bombers in the Philippines. For example, in August 2020, the widows of two deceased terrorists carried out a twin suicide attack near Paradise Food Plaza in Jolo, and further arrests were made in a counterterrorism raid on 24 February 2021.[33] Another case involved Ayesha Jannat Mohona, who attempted to pass herself off as Bangladeshi while being linked to Neo-Jama'at Mujahideen Bangladesh (Neo-JMB). She had converted to Islam from Hinduism in 2009 and played a role in recruiting members, both men and women.[34]

The rise of female squads and the involvement of women in militancy have been notable developments. Counter-terrorism efforts in Bangladesh have reported the arrests of at least 100 female members of militant outfits, with 11 female militants losing their lives.[35] Furthermore, in March 2022, Pakistan's Counterterrorism Department (CTD) arrested three individuals, including a woman involved in the 2015 attack on the Pakistan Air Force base in Badaber. In April, Shari Baloch, a mother of two, conducted a fatal suicide attack at the University of Karachi's Confucius Institute, resulting in the tragic loss of four lives, including three Chinese nationals. In the following

month, Noor Jahan Baloch was arrested in Balochistan's Turbat region, allegedly linked to the BLA's Majeed Brigade and planning a suicide attack. In June 2023, the BLA employed another female suicide bomber in an attack on paramilitary troops in Balochistan. Furthermore, in 2023, the Tehrik-i-Taliban Pakistan (TTP) released two magazines highlighting the pivotal supporting role women play for their male relatives actively engaged in jihad.[36]

Women Trafficking

Human trafficking is a factor often overlooked when examining the motivations behind female involvement in terrorism. This issue serves as the root cause of many wrongdoings by women and plays a significant role in their vulnerability to exploitation by terrorist groups. In certain cases, young girls and children are trafficked when they travel to the Middle East for religious duties.[37] They are often lured under false pretences and not allowed to leave until they complete the assigned task. This phenomenon is more prevalent in underdeveloped regions, where girls are exchanged for money that helps their families survive.

For terrorist organisations, human trafficking serves multiple purposes. It generates revenue, inflicts terror, and attracts new fighters. Trafficking tactics are used to deceive and forcibly recruit both adults and minors into these groups, and to keep them in exploitative situations. However, it is crucial to recognise that recruits themselves can be victims of trafficking. To address this situation appropriately, it is necessary to consider when the legal definition of human trafficking applies to foreign recruits of groups like ISIS and why authorities often fail to acknowledge this phenomenon.

The case of Shamima Begum provides insight into these complex issues. Shamima was only 15 when she left East London to join ISIS in Syria. She was recruited online by a known female ISIS recruiter and was swiftly married off to an adult Dutch fighter upon

arrival in Raqqa. She experienced a harrowing journey as a child bride, giving birth to children who tragically died.[38]

Detecting trafficking in recruitment or unlawful association with extremist groups hinges on understanding when individuals may be trafficked. International law defines trafficking through three elements for adult recruits: 1) an 'act' like recruitment or transportation, 2) the specific 'intent' to exploit, and 3) the use of certain 'means.'[39] These means can include deception or the abuse of power or vulnerability. However, trafficking can also occur through an exploitative process or when an exploitative situation results or is sustained without a preceding exploitative process. For example, individuals may be falsely promised jobs that lead to involuntary recruitment or may be genuinely deceived about the conditions in extremist-controlled territories. Changed circumstances can also turn voluntary travel into involuntary captivity.

The case of ISIS child recruits highlights the complexity of this issue. Shamima Begum's recruitment at the age of 15 and her experiences as a child bride illustrate how children can be trafficked as well. Her treatment and the legal decisions regarding her case have raised questions about recognising the trafficking of child recruits within extremist groups.[40]

In regions like Nepal, where insurgency and trafficking intersect, the vulnerability of girls is a grave concern. Young boys may find employment across the border, but the options for girls are limited, putting them at risk of trafficking and sexual exploitation. In Nepal, approximately 5,000 girls are trafficked to India each year.[41]

Coercion

Coercion is a potent factor driving the actions of many terrorist and non-terrorist organisations, manifesting in various ways. Women often find themselves subjected to force and pressure from both internal and external sources, leaving them with limited choices and a sense of compulsion.

Internally, women are often pressured to engage in activities they are reluctant to undertake. Their inner conflict compels them to comply with these demands, even as their hearts cry out for autonomy. Externally, terrorist organisations employ coercive tactics, particularly in recruiting women as sex slaves, irrespective of their desires. This coercive recruitment is a prevalent aspect of these groups' operations, as exemplified by Boko Haram.[42]

Boko Haram, the Islamic State, Al-Qaeda, Al-Shabab, and similar organisations employ sexual violence as a means of terrorising populations into submission. It serves to displace civilians strategically, instil unit cohesion among fighters, and generate revenue through trafficking. The suppression of women's rights not only subjects them to subjugation but also allows extremists to control reproduction and exploit female labour.[43]

In Nepal, young girls like Sharmila Gatri and Sangeeta Chettri fled their villages in response to forceful recruitment attempts by Maoist rebels. They sought refuge in Kathmandu but ended up working in an environment marked by sexual exploitation. Maoist recruitments in the Lamjung district showed a preference for sending daughters rather than sons when the rebels called for one family member to join. This illustrates how coercion and gender-based violence play a role in recruitment processes.[44]

Similarly, the LTTE, while initially appearing to have voluntary female recruits, also had reports revealing coercive recruitment methods. Some women were mobilised and recruited under duress, often at the behest of family members or due to gender-based violence. This recruitment process mirrors the approaches of Jihadi Salafi groups in Afghanistan, Iran, etc., which exploit women in various ways, expanding the scope of women's involvement. A similar case is examined in Africa where girls who have hardly crossed puberty are kidnapped and forced to take part in terrorist activities.[45]

Coercion is a pervasive element in the involvement of women in terrorist activities, both as a result of internal pressures and external exploitation. Therefore, understanding the coercive tactics employed by these organisations is crucial in addressing and preventing the involvement of women in such activities.

Environment

Environmental factors significantly influence the motivations and behaviours of individuals in conflict-affected regions. One notable example is the Palestinian territories, where Fatah Tanzim, a militant organisation, has incorporated women into various roles, including battlefield intelligence gathering. Although women like Leila Khalid were involved in terrorist actions in the 1970s, it was not until 2002 that women achieved equal status with men in terrorist activities.[46]

The emergence of women engaging in suicide bombings in the Palestinian territories can be attributed to the prevailing anti-Israeli environment in these areas. Environmental pressures, coupled with hostility toward Israeli occupation, have driven women to participate in suicide bombings. Palestinian clerics have had to issue fatwas to rationalise these unexpected events that were not part of their initial plans. These women, motivated by their self-declared aspirations to become martyrs, volunteered independently and carried out suicide bombings. However, not all terrorist organisations, such as Hamas, are open to the inclusion of women in their ranks.

These environmental factors contributing to female involvement in terrorism are not exclusive to the Palestinian territories. Similar dynamics can be observed in the conflict-prone environment, historical context, socio-political and economic conditions and ongoing insurgencies in countries like Pakistan, India, and Afghanistan which have compelled women to participate in extremist activities for various causes. For example, the role of female militants in insurgencies in India's North-Eastern states, such as Assam and

Manipur, offers a lens into the regional dynamics of female involvement in terrorism.

Weak Counter-Terrorism Strategies

The increasing threat of violent extremism by women demands a fresh approach to counter it effectively. For too long, women in extremist movements have been viewed as lacking agency, often treated as mere accessories, manipulated into embracing extremist ideologies or assigned peripheral roles. This approach has consequences; female terrorists are not treated as seriously as their male counterparts, impacting security. For example, radicalised American women commit similar crimes with nearly the same success rates as men but are less likely to be arrested and convicted of terrorism-related offences.

In recent years, ISIS has recruited an unprecedented number of women, primarily through tailored, age-appropriate narratives appealing to Muslim teenagers and young adults worldwide. Similar to QAnon, ISIS targeted well-intentioned young women with messages of helping orphans victimised by the Syrian conflict. This approach had a direct impact on events such as the 2015 San Bernardino shooting, where Tashfeen Malik played a significant role in radicalising her husband.[47]

Western women have also been influential online recruiters, particularly luring girls from their home countries. Teenage girls, being cautious when communicating with unknown men online, are less guarded when connecting with older women who share their interests and concerns. Hoda Muthana from Alabama and Aqsa Mahmood from Scotland effectively recruited girls from the United States and the United Kingdom, respectively.[48]

The rise of extremist ideologies among women, the success of female-to-female recruitment, and the changed dynamics of identity and belonging in the ideological ecosystem underscore the looming threat that demands immediate attention. Countering this threat

requires a deep understanding of the psychology of belonging, agency, and identity, as well as tailor-made programs employing former female recruiters. Unfortunately, policymakers have been slow to recognise this threat, treating radical women as a curiosity and failing to create science-driven, gender-sensitive counterterrorism solutions.

It is essential to acknowledge the historical involvement of women in terrorism, from early figures like Vera Zasulich to their participation in European terrorist groups in the 1960s and 1970s. Yet, women have been marginalised in the fight against terrorism. Female terrorists have been overlooked as both recruits and victims, with 10-20 per cent of Westerners joining ISIS being women. In 2017, women accounted for 11 per cent of suicide attacks and constituted 26 per cent of those arrested on terrorism charges in Europe,[49] in which after the Paris attacks, women were reported to be 20 per cent from France alone. The oversight of France's intelligence in recognising women's roles in terrorism is evident from the huge ratio of women joining ISIS and ISIL.[50]

Omitting women from terrorism prevention efforts squanders their potential contributions as extremism mitigators. Women can detect early signs of radicalisation, provide crucial insights, and influence countering-terrorism efforts in schools, religious institutions, social environments, and local government. Neglecting the role that women can play in combating extremism compromises national security, leaving states less secure. Moreover, Pakistan government’s inadvertent neglect of gender, particularly women, in its counterterrorism approach has created a societal vacuum, leading to gender-based terrorism issues in the country. This gender-blindness in counterterrorism policy has allowed such issues to flourish.[51]

Conclusion

The surge in women's involvement in terrorism and militancy reflects a multifaceted dynamic influenced by various factors. A closer examination of the intricate web of motivations, dynamics, and challenges reveals that women are not mere observers but active participants in the complex world of terrorism, each with their unique stories and roles. Notably, areas in South Asia marked by conflicts and insurgencies witness a higher prevalence of female terrorists, suggesting a correlation between geopolitical turmoil and increased female involvement.

Understanding the recruitment and radicalisation of women into extremist ideologies is crucial for devising effective strategies to prevent and counter their participation in terrorism. This phenomenon is not new, yet the persistent negligence by states and their agencies emphasises the urgent need for an effective application of the counter-terrorism model that encompasses all the phases including radicalisation, extremism, terrorism and prevention. Additionally, adopting a comprehensive, gender-sensitive approach in counterterrorism efforts is paramount. Traditional perspectives on extremism and radicalisation fall short as women's roles continue to evolve, urging policymakers, law enforcement agencies, and civil society organisations worldwide to adapt strategies that consider the nuanced realities.

A holistic prevention-extremism framework for females is imperative. This framework should involve intelligence and security, counter-radicalisation and prevention, economic development and social inclusion, rehabilitation and reintegration, and regional and international cooperation. The urgency of such measures is underscored by the potential loss of another generation to extremism, particularly in the context of Pakistan.

It is however noted that non-Islamist terrorist organisations and left-wing groups distinguish themselves by empowering women

with elevated statuses, including leaders, masterminds, recruiters, and even hijackers. Conversely, roles assigned to women in so-called Islamist terrorist organisations or right-wing groups are often constrained, relegating them to positions such as sex slaves or sympathisers. This constraint is justified through distorted interpretations of Islamic ideology or Prophetic traditions. Notably, there is a discernible shift in this trend, particularly in South Asia, and Pakistan, where terrorists are increasingly recruiting women for roles such as suicide bombers, recruiters, and propagandists. Importantly, each case is propelled by distinct motivations.

It is also observed that familial bonds play a pivotal role in terrorist recruitment, with approximately 75 per cent having pre-existing familial ties. These kinship links wield influence in recruiting women, as seen in the Egyptian religious militant group Repentance and Holy Flight, where female terrorists often had familial ties to male members. Similarly, the inclination of women towards terrorism is depicted as a by-product of societal constructs. This underscores the assertion that societal structures, norms, and expectations significantly shape women's choices. Addressing broader social issues, spanning cultural, economic, and political factors, is imperative in effective counterterrorism efforts.

Another interesting revelation dispels the misconception that women do not operate as lone wolves and brings to light diverse motivations, ranging from personal reasons and revenge to family ties. Although examples are currently limited in South Asia, the potential for increased numbers of looms, particularly amid the rising insurgencies and extremism in Pakistan.

In all interviews that were conducted and literature that was consulted, the involvement of some states was one of the major factors. However, it is noted that state involvement takes a dual-pronged approach. On the one hand, there is direct recruitment of females for specific acts of terrorism, while on the other hand, state

negligence in providing basic education, safety, protection, and justice, and maintaining a male-centric counter-terrorism agenda serves as an indirect provocation for women to turn to terrorism.

Furthermore, religion and nationalism also emerge as significant drivers for women. Those joining extremist activities due to religious interpretations and ethno-nationalism, observed in Balochistan with the BLA emphasise the need to address these ideological dimensions in counterterrorism efforts. Lastly, it is fair to state that women's involvement in terrorism transcends regional and organisational boundaries. Conflict-prone environments, historical contexts, and socio-political conditions contribute to their participation, exemplified by instances in the Palestinian territories and conflict regions in Pakistan, India, and Afghanistan.

In conclusion, unravelling the complexities of women's involvement in terrorism requires a nuanced and comprehensive approach. Adaptive strategies such as robust gendered P/CVE strategies must be embraced urgently to address the root causes, safeguard women against exploitation, and prevent the loss of future generations to extremism. It is imperative for Pakistan, as well as the regional and global community to foster a more secure and inclusive world.

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SINO-US COMPETITION IN GLOBAL INFORMATION INFRASTRUCTURE, CRITICAL TECHNOLOGIES AND ITS IMPLICATIONS

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Abstract

The competition over technologies is becoming central to the rivalry between China and the United States (US). The US achieved superpower status as a result of its unmatched political influence, economic strength, and military technological leadership. But China has recently made great strides in building its information infrastructure, which is essential for both the nation's military might and economic growth. China currently has the second-largest economy in the world. This paper examines how China is emerging as a competitor to the US in major critical technologies such as cyberspace, 5G, Artificial Intelligence (AI), quantum computers, and space. The US is taking preventative actions against China in order to protect its superiority and both countries are working to establish independent capabilities in these technologies which have major implications. Power transition theory and neorealism provide an explanation for the Sino-US drive for technological superiority and how it is influencing the global power structure. Techno-nationalism stemming from competition for semiconductors and microchips, techno-politics through technology-driven political interests and alliances, economic gains, market control, automation of weapons, and challenges to governance of these technologies and cyber-security are some of the implications of this ongoing

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competition. This article proposes a global agreement on governance and regulation of these technologies.

Keywords: *China, US, strategic competition, global information infrastructure, critical technologies, semiconductors, cyber security*

Introduction

In the era of innovations, the development and spread of cutting-edge information-based technologies in unprecedented ways has made great power competition more complicated and consequential. Following the disintegration of the Soviet Union, the United States gained the status of superpower due to its unmatched technological leadership, economic might, military supremacy, and political influence. The US upheld its dominance and safeguarded the liberal order it had established with its fellow western powers based on democracy, human rights, freedom of speech, capitalism, and open trade. To preserve this order, the US also did not hesitate to implement regime change policies in many places. This also led the US to involve in various military and armed conflicts. Until China became the second-largest economy, there was no other country to challenge the US hegemony.

Following Sino-US diplomatic relations in 1978, the US made significant investments in China, making them major trading and business partners in the coming decades. Ever since joining the World Trade Organization (WTO) and obtaining Foreign Direct Investment (FDI), China has remained a significant actor and partner in the promotion of US-led global order. China maintained a pragmatic and rational approach toward relations with other countries. The primary reason for the US apprehension about China was rooted in China's emergence as the biggest manufacturer in the world in 2010 and 2011,[1] which also gave an unchallenged legitimacy to a one-party governance system of 'socialism with Chinese characteristics' under the leadership of Communist Party of China (CPC).

Initially, the driver for China's focus on developing its information infrastructure was its fear of the US regime-change policy after the 2010–2011 Arab Spring, in which US–led digital platforms and information campaigns played a crucial part in the movement against autocratic rulers. In addition to China's economic boom, there were also other factors which pitched it as a rising challenge to the US primacy such as its incremental claims and assertiveness in the South China Sea, and the announcement of the Belt and Road Initiative (BRI) in 2013, i.e., a mega infrastructural, industrial, digital, and trade corridor connecting Asia with the rest of the world. To counter China, the US broadened its Asia rebalancing strategy to Indo-Pacific Strategy.

It was China's extraordinary economic rise and distinct political system that prompted the US to designate it as a strategic rival to its global power in the National Security Strategy (NSS) 2017. In terms of commerce, the two countries' imbalance was reported to be $53 billion in 1997 and increased to $367.4 billion in 2022. The US increased its propaganda against China in 2019 by focusing on its political system, which was seen in its criticism of the 2019 protests in Hong Kong, human rights in the autonomous regions of Xinjiang and Tibet and China being the origin of the COVID-19 pandemic. Additionally, the US increased its arms trade with Taiwan, which agitated China. Thus, the US implemented a comprehensive containment strategy against China.

The integration of information technology in all sectors of the modern world makes it a major tool to influence economic, military, and political domains, globally. The domination, control, and destabilisation of other countries can be achieved through information rather than by material means alone. The major reason for the US to classify China as the most "comprehensive and serious challenge" to US security in its NSS 2022 has been its rapid advancement in scientific and innovative capabilities, especially in

information infrastructure and critical technologies.[2] As per the document, China is the only rival that possesses the capability to alter the global order and the intention to do so, along with growing economic, diplomatic, military, and technological might. To maintain its technological superiority, the US Senate earlier in 2021 passed the United States Innovation and Competition Act 2021. This law recognised China as a rising science and technology power.[3] The US not only announced new strategies to regain its leadership in technology but also raised preventive and protectionist policies against high-tech cooperation with China.[4]

There are a wide range of cutting-edge technologies in which China is increasing its capabilities. However, this paper attempts to measure China's emerging competence vis-à-vis the US in cyberspace, 5G, Artificial Intelligence (AI), quantum computers, and space which bear the potential to seriously undermine US dominance and have significant implications. This paper uses the qualitative method for the research and focuses on Global Information Infrastructure (GII) as a broader term for the new domain of power that is the strategic use of information manifested in critical technologies. The problem under focus in this study is the tendency of both China and the US to develop independent capabilities in critical technologies aimed at achieving superiority. To address why Sino-US competition is escalating in critical technologies, and how this factor is significant in altering the global power dynamics, the explanations provided reflect the underpinnings of offensive realism and power transition theory.

China now leads in strategically important industries, according to Information Technology and Information Foundation (ITIF) Hamilton Index 2023. It is "producing more than any other nation in absolute terms and more than all but a few others in relative terms."[5] According to Robert Atkinson, the president of ITIF, the US and Soviet Union were mainly competitive in military strength during the Cold War, while present day competition between China and the

US is in economic strength based on technological leadership.[6] The impact of critical technologies is more comprehensive to alter global power dynamics. The countries which lead in global information infrastructure, critical technologies, and employing successful strategies for adoption of these technologies will have comparative advantage in both economic and military power.

Global Information Infrastructure and its Significance for Global Power Dominance

Among all sorts of technologies, the Global Information Infrastructure (GII) is a comprehensive term used for technologies related to the strategic use of information with a wider range of its integration in the industrial innovation and its conversion to critical technologies and weapons.[7] Therefore, the strategic competition is compounding in this domain between China and the US with far-reaching consequences in the 4th industrial revolution period for global power dynamics and a shift in economic centres. Considering that GII is a system of applications, activities, data storage, data surveillance, and relationships as well as hardware and software, whichever country leads its production and control will have sway in the global power struggle. Now its advancement has led to critical technologies such space, cyberspace, Artificial Intelligence (AI), Quantum Computers, and 5G technology. The global chains of Information and Communication Technology (ICT) and its applications have become increasingly intertwined with the global trade, financial and commercial activities, defence and interests of the countries worldwide.

The US still maintains a competitive edge in the world due to its leadership in technology and innovation. Due to its robust institutional foundations, financial options, and dynamic innovation ecosystem, the US topped the 2018 Global Competitive Index and is among the top three countries in the Global Talent Competitiveness Index 2023 of the World Economic Forum.[8] It was the technological

superiority and innovation that increased competitiveness of the US vis-à-vis other countries and led to its global domination.

China since its economic modernisation has remained dependent on Western technology. It embarked on the initiative for independent innovation in science and technology in the 2006 plan and 'Thousand Talents Plan in 2008' to develop research programmes in China by using the scientific knowledge acquired from the developed world.[9] Indigenous innovation became more important for China in the new era of digitalisation under the fourth and upcoming fifth industrial revolutions which are largely dependent on microchips and semiconductors.[10] The most important initiative was in its 14th Five Year Plan (FYP) in 2015, 'Made in China 2025', aimed at reducing dependence on foreign technology. Under this strategy, China focused on the production of 10 high-tech technologies including sophisticated Robots, AI, Electric Vehicles (EVs), as well as other new energy vehicles, and the next generation of ICT, which have the power to further stimulate China's economic growth.[11] This initiative is enabling China to shift its industry from low-end manufacturing to high-end manufacturing. China's Research and Development (R&D) spending also increased to 7 per cent with the focus on leading the 'Next Industrial Revolution'. The Internet Plus initiative is aimed to digitalise major sectors of the economy by integration of industrialisation and information for smart and intelligent manufacturing aimed at improving quality, competitiveness, and productivity.[12] Despite the high contribution of the agriculture sector to China's GDP, the economic production from telecommunications, software, and information technology totalled $587.4 billion in 2020, according to the Chinese Ministry of Statistics,[13] making China a peer to the US.

Sino-US Competition in Theoretical Perspective

One of the elements surfacing in Sino-US strategic rivalry is the quest for power. In the given global structure, from a neorealist perspective, countries either attempt to rebalance 'power' in their favour or to overtake the contender. The two theories of offensive and defensive realism have some relevance to the current strategic rivalry, particularly in the context of gaining superiority in key technologies. Kenneth Waltz's defensive realism is accurate in that, as it explains the actions of both established and developing powers. Nonetheless, the phenomenon cannot be sufficiently explained by defensive realism. Given that defensive realism places a strong emphasis on the balance of power, a particular degree of strength is thought to be sufficient to feel comfortable. However, China is growing its autonomous skills in critical technologies, which the US fears may eventually overtake it. The US, which is leading in many technologies, is taking action to stop China.

John Mearsheimer's offensive realism can serve as a prism to view the trends in the race of critical technologies that the powerful states are using to gain domination. These technologies have the potential to change power distribution in ways not seen before. These technologies can not only increase the material capabilities but their interconnected abilities through information technology can have far-reaching consequences on distribution of power through its impact on the economic growth, military capabilities, global supply chains and also on controlling ideas, knowledge, and narratives. Although AFK Organski's 1958 power transition theory is also used to predict wars when a rising and dissatisfied power tries to overtake or reach parity with the dominant power, the theory can also explain Sino-US competition. As this paper will explain in detail, the preventive measures of the US against China resulted in boosting China's independent capabilities in these technologies which have many implications.

Since the US views China as an unsatisfied power with aspirations to reshape the world order in its favour, it sees China as having merely profited from the current economic order without contributing to its creation.

Power transition becomes even more complex in the new age as it cannot be only altered in material terms. Due to the abilities of these technologies in power diffusion, countries need to increase strength in both these technologies and their associated policies. As explained by Joseph S Nye, Jr, the elements of power transitions are different in the world of the 21st century because of the "burgeoning revolution of information technology." The composition in the form of economic, military, and transnational linkages has different impact on power distribution at the global level. "Power diffusion may be a greater threat than power transfer in an information-based world."[14] Therefore, the increasing prowess in information technology and its infrastructure can change the power equation between China and the US, not only through their own capabilities but also by expanding influence globally for achieving their respective interests. They will not only compete for acquiring these technologies but also to adopt policies for their strategic use to maximise power. On this preposition, James Andrew Lewis, Director of the Strategic Technologies Programme at the Centre for Strategic and International Studies (CSIS) points out that "fostering national power requires creating an environment that promotes innovation in both technology and strategy and allows its adoption."[15] China is clearly not just creating critical technologies but also having a strategy, given its centralised one-party system, policy continuity, desire of rejuvenation by 2049, and a reformative outlook on the world order. This is another reason why the US has decided to take preventative action. The announcement of a $250 billion package under the United States Innovation and

Competition Act 2021 was the first significant action taken by the US to restructure federal science, innovation, technology, and research in the country and to produce incredibly small computer chips in an effort to challenge China's rising dominance in high technology.[16]

The growing trade deficit with China has also been the reason for the US decoupling with the former. Nevertheless, China's rapid success in technologies is central to this measure. As decoupling would be a slow process, a new strategy of de-risking has been implemented in which the US curbs China's access to key strategic innovation partnerships and investments with China. The US banned sale and imports of five types of "made in China" communication equipment from five companies including Huawei and ZTE (a leading 5G company in China) as well as sanctions on the export of microchips and semiconductors.[17] In addition, the US also barred Chinese students from research and study in the advanced science and technology research centres and universities.[18] Following the recurring US sanctions, China launched an internal chip industry with state funds amounting to $40 billion in 2023.[19] The US still tops the Global Innovation Index (GII) in 2022, however, China for the first time in 2023 topped in 24 Science and Technology (S&T) clusters among the top 100 surpassing the US with 21 clusters.[20] Given China's population size, industrial capacity, R&D spending and successful strategic policies, it has much larger potential to excel in critical technologies.

China as Competitor to the US in Critical Technologies

To understand the relevance of Sino-US strategic competition to global power dynamics, it is important to measure China's potential in critical technologies. The rapidly evolving technologies such as space technology, cyberspace, AI, information infrastructure 5G technology, and quantum computers are essential for change in

power redistribution because of their broader scope of applications in economy, military and political domains as explained earlier.

Space Technology

In recent years China has demonstrated major breakthroughs in space technologies. It is rapidly increasing its capabilities in space exploration and independent internet or information capabilities by launching advanced satellites. China set a national record by launching dozens of satellite missions to outer space in 2023 alone.[21] According to a report, in 2020 China sent more satellites into space than the US and Russia.[22] China's Zhurong rover successfully landed on Mars on 15 May 2021, which makes it a peer to the US and Russia. China did in a single experiment what took the US space agency National Aeronautics and Space Administration (NASA) decades, as put by planetary scientist Roberto Orosei.[23] Its touch on Mars also marks China's participation in planetary exploration. The Chinese Manned Space Agency (CMSA) launched a low orbit space station Tiangong at a distance of 217 and 280 miles over the planet in 2021 with its first module Shezhou 12 to send images of earth. This space station will enable China to conduct experiments in the exploration of space.[24] Tiangong expanded to second and third modules Wentian and Mengtian in 2022 and 2023, respectively. Efforts by China are in line with its policy of becoming a world-leading country in space equipment and technology by 2045.[25]

Additionally, in June 2020, China built its own international satellite navigation system, known as 'BeiDou'. This satellite serves as a substitute for the Global Positioning System (GPS), which is owned by the US government. Experts believe that in case of a crisis, this will aid China's military systems in remaining operational. Chinese spacecraft made its first-ever return to Earth in December 2020 carrying moon rock samples. The US is still leading in overall space capabilities, but China is rapidly achieving parallels with the US, said Scott Pace, Director of the Space Policy Institute, Elliott School of International

Affairs.[26] China is ahead in its mission to develop a Digital Silk Road to rewire the global network which shows its quest to achieve maximum political leverage.[27] In this regard, BeiDou will aid in providing navigation data to its domestic market and will also lead it to the global market.[28]

Cyberspace

Cyberspace as a 'network of interaction between human users and information systems' is an important medium to transmit and store data through signalling between processors and devices.[29] Cyberspace is increasingly becoming the fifth domain of warfare between rivals after the four domains of traditional warfare such as land, air, maritime, and space.[30] This domain influences policy areas including elections, trade, defence, and transparency when it comes to the bilateral relationship between the US and China.

With rapid expansion in the digital industry, the world is moving towards the next generation of the internet. Currently, IPv4 internet is prevailing, and innovation is taking place to move to another internet protocol which is IPv6, most likely in the next decade. The Chinese and the US military have already expressed the "desire to move to IPv6 to support the modernisation of their large networks."[31] The Mandiant Report exposed China's extensive economic espionage programme, and Edward Snowden revealed the US PRISM Project in 2013, making cyber-enabled espionage activities the next big problem.[32] It is concerning that these operations result in hundreds of billions of dollars in annual costs for the US due to cyber theft. Despite facing new challenges, the US is still leading the world in terms of offensive as well as defensive cyber capabilities.[33] In order to safeguard its interests and raise its capabilities to the level of the US, China is building its own independent information infrastructure. In 2014, China launched the De-IOE programme, to uninstall software made by American suppliers such as IBM, Oracle, and EMC from its e-commerce companies and banks.

5G Technology

High-speed Fifth Generation (5G) wireless internet is revolutionising mobile telecommunication and real-time data transfer abilities. Coupling with other reinforcing technologies, 5G is emerging as a driver of the global infosphere. In the near future, around 6 billion people will be interacting through 5G capabilities distributed in everyday appliances such as the Internet of Things (IoT) at an average rate of once every 18 seconds.[34] Keeping in view the amount of data produced daily, 2.5 quintillion bytes (2.5 quintillion is 2.5 x 1018),[35] 5G will enhance data-collecting capabilities by enabling universal internet connectivity of things and devices. 5G will be instrumental in enhancing China's dominance in the science of AI and other means such as deep learning mechanisms, data science techniques, and the fields of machine learning.

China is achieving excellence in 5G technology. Former Google CEO Eric Schmidt and Harvard University Professor Graham Allison admitted that China is far ahead in 5G technology than the US. China will own a 5G future if the US does not make it a national priority, Schmidt and Allison urged Biden Administration in a Wall Street Journal article.[36] China's target has been to hit 5G coverage to 90 per cent by increasing numbers of base stations in 2023.[37] By September of 2023, China claimed to have the world's largest 5G network reaching the target of around 3.19 million 5G base stations. This policy is in line with increasing 5G in China's industrial production and management. The data from the Ministry of Industry and Information Technology of China shows that "the market scale of the industrial internet industry has exceeded 1.2 trillion yuan ($167 billion) in the country, with more than 8,000 5G-plus industrial internet projects and over 89 million connected industrial devices."[38] 5G has been integrated into 70 per cent of China's economic sector within three years.[39]

Additionally, 5G has another significant potential role for tracking data. Since China has developed its satellite BeiDou combined

with a 5G telecommunication system, it can enable its government to monitor, store, track, and evaluate the cell phone data of the users.[40] The geolocation system through the BeiDou satellite is extended to China's BRI partner countries. Hence, 5G will be critical for industrial and market transformation through geo-targeted advertisements. China will not only be able to control the networks on which the data is transported, but its 5G will also enable it to access that critical data.[41] This is the domain in which these technologies have interconnected abilities which further increases China's strategic and economic leverages.

Quantum Computers

Quantum computers are advanced forms of computers based on quantum physics with larger data storage capacity and greater computational power than classical computers.[42] Since quantum computers can solve highly complex computations that cannot be solved by the world's supercomputers, this invention is another critical technology. The breakthrough in the quantum computer was first announced by scientists at Google in the US in 2019.[43] They developed the Sycamore computer which solved a numeric computation in 200 seconds that would have taken 10,000 years to solve by the world's most powerful supercomputer. After the invention by Google, the International Business Machines Corporation (IBM) also announced a classical bit-based technology that could solve the same problem in 2.5 days. Soon after that a team of Chinese physicists at the University of Science and Technology at Hefei also announced a photon computer with the ability to solve the mathematical computation called the 'boson sampling problem' in 200 seconds, an operation that would have taken a classical supercomputer 2.5 billion years to solve.[44]

In August 2022, the world's largest search engine, Baidu Inc. of China, announced the development of a 36-qubit quantum chip in addition to its first quantum computer with a 10-qubit processor, named Qianshi. Joining the global competition, China aspired to

launch this technology to outside users in real-world applications. Similarly, the US tech-giant IBM and Alphabet Inc's Google also plan to launch more advanced forms of quantum computers by 2030.[45] In 2023, Chinese scientists developed Jiuzhang 3.0 quantum computer prototype that puts China again in a leading position in the field of quantum computer research and development.[46]

Quantum computers can have multiple uses including macroeconomic and global financial markets for complex computations. Quantum computers can also be used in astronomy to enable scientists to understand the large universe. Most importantly, these advanced computers can be instrumental to the safety of critical data, but at the same time, they can endanger the IT security of other systems. For now, an encryption system is applied to safeguard the 'browsing, email, and banking data'. Quantum computers can break encryptions which depend on the complex algorithms for which classical computers can take years.[47]

Due to the unique properties of this invention, particularly its requirement for data security and also cyber vulnerability, China has joined the race with the US and the European Union (EU) by investing heavily in this field, leading them to develop independent capabilities yet in another field of critical technology. It is anticipated that a $16.4 billion investment would be made by global governments in quantum development by 2027.[48] Keeping in view the importance of this technology, the competition in the domain seems very intense. China would strive to overtake the US in this technology to safeguard its national security interests. According to experts, advancement in this field can even determine future global dominance among powers.

Artificial Intelligence (AI)

Artificial Intelligence (AI) with its super intelligent and advanced functions has broad applications including strategic information, economy, in various services, and in the military.[49] China is rapidly maximising its potential in AI. Around $150 billion are

allocated by China to develop the 'innovation centre for AI' by 2030.[50] According to the *Harvard Business Review*, China is becoming a leader not only in AI publications and patents but also in AI-powered businesses of applications, i.e., recognition of speech and image.[51] During the presidency of Donald Trump, around $1 billion was dedicated by the US to AI and quantum computing.[52] This was not enough to ensure the US primacy in this domain. A report by the National Security Commission on Artificial Intelligence in March 2021 warned the US of its lack of preparedness to compete in and defend the era of AI. It further warned that China can soon surpass the US in AI supremacy which will have serious military and economic consequences for the US. Since then, President Joe Biden has accelerated efforts in these domains,[53] leading to the creation of the National Artificial Intelligence Research Resource Task Force in June 2021 for AI innovations.[54]

In 2021, China's spending on AI innovation was $10.38 billion, which increased to $14.45 billion in 2023 and it is expected that China's market value of AI will go up to $26 billion in 2026.[55]More breakthrough inventions in AI are underway. Despite China's big spending on AI, it is facing challenges in emerging as a leader in AI by 2030. The US is using its advantage in key technologies, especially microchips, required for AI advancement. The US is preventing China access to advanced microchips through sanctions. Despite challenges, ChatGPT prompted China to create its own ChatGPT-like tools in response to the US launching of ChatGPT on 30 November 2022. China's Baidu developed its own AI chat bot in March 2023 named Ernie Bot 4.0.[56] The US's desire to prevent China from becoming the leader in AI demonstrates the technology's enormous potential for power redistribution on global scale.

Besides China and the US, some other powers including Germany and Russia, are also racing for increasing spending on AI development.[57] It brings along great potential as well as unpredictable

threats. According to Russian President Vladimir Putin, "Whoever leads in this area will lead the world."[58] These tendencies reflect both competition and techno-nationalist efforts, especially among countries that are politically and ideologically at odds with China and Russia.

Implications

Rising Techno-Nationalism and the Race for Semiconductors

The rapid advancement in technology and its vitality in increasing national power are giving rise to techno-nationalism. The way the scientific superiority of a nation, especially in the hi-tech domain, is linked to its prosperity, and national security, can be termed 'techno-nationalism'.[59] As a response to intensifying technological competition and keeping in view the technological leadership for national security, many countries around the world announced budgets and set goals to achieve national capabilities instead of dependence on other powers. The EU and the US set targets for securing maximum production of semiconductors by 2030.[60] In the spirit of national capacity and in response to the US curbs on exports of microchips, in 2023 alone China imported microchip production tools worth $40 billion to boost its indigenous production.[61]

Techno-nationalism is more prominent between China and the US. It is not only the strategic rivalry; the ideological differences are fostering 'competitive techno-nationalist policies' between them.[62] Both countries have varied standards for the regulation and governance of these technologies. Techno-nationalism shows a normative divide. Democratic and state-centred governments can employ technologically-enabled methods to empower drastically diverse norms on data privacy, censorship, surveillance, digital currency, transparency, and intellectual property. Internally, China maintains its independent information and communication system. Its

technology diffusion to the world can give it leverage for controlling information outside of its country. This has been considered a threat by the US. This is one of the reasons for the US to prevent China's leadership in these technologies. The techno-nationalist diverse ideologies can destabilise the international order in unprecedented ways.[63] As quantum computers and specialised chips further power AI applications, comparative competitiveness and comparative advantage in these technologies will be central to the US and China's competition.[64] The special characteristics of quantum computers and AI will make them indispensable for other technologies in the coming years. And so, the production of these technologies in large quantities will also require a larger supply of microchips and semiconductors. This scenario determines the future competition for rare-earth resources and semiconductor production which is causing strategic decoupling in key supply chains between China and the US.[65] This will prompt diversions or protections of markets and services, the key components, raw material and technical knowledge. The EU and Japan are also concerned and willing to raise protections against China.

This tendency of techno-nationalism will keep on interfering in the trade of high-tech infrastructure among countries leading to alliances and distribution of power. The US is pushing its close allies for anti-China tech alliances. The alliances will also be defined by interests of countries and their ideological inclinations. This development poses challenges and also opportunities to other countries for economic, strategic and diplomatic benefits. Some countries with advanced infrastructure for production of these technologies will play neutral between the two countries. Malaysia is one such example which is taking advantage of the Sino-US tech competition.[66] Malaysia is becoming a new hotspot for high-tech firms because of its well-established infrastructure for the production of microchip and semiconductors.

Private Sector and Control over IT Governing Standards

In the debate over the governing standards of emerging technologies, there is also the aspect of the private sector which is heavily involved in developing and controlling advanced technologies. In the US, mostly private sector big enterprises control advanced technologies. The private sector ownership of many high-tech companies and also their globalised chain of production and utilisation can scarcely give leverage to the governments to make policies and regulations. Alibaba, Alphabet (Google), Amazon, Apple, ByteDance, Meta (Facebook), Microsoft, and Tencent are some of the examples of big private high-tech companies with potential leverage in shaping the governing standards of the emerging technologies.[67] This is especially true when technologies are created solely for financial gains and their development paths are completely determined by market forces. These companies contribute to the revenues of the host countries. In case the US and China impose restrictions on these private firms due to their techno-nationalist tendencies, it will also result in the financial losses and reduction in further investments.

High-tech enterprises work in the market ecosystem of the US, China, and other countries. Mostly these enterprises in the US work independently. Even though Chinese State-Owned Enterprises (SOEs) are heavily involved in the infrastructural projects of BRI, the private companies have a greater share of GDP at around 60 per cent. Moreover, China's private companies contribute to innovation in the range of 70 per cent, urban employment at 80 per cent, and new jobs at around 90 per cent. Similarly, private wealth is also responsible in China for 70 per cent of investments and 90 per cent of exports.[68] The global 5G revolution is being led by Huawei, which is eager to export its innovation. Despite the remarkable success of China's private technology sector, Chinese government enjoys a certain level of governance control over these companies. There is a stark difference

in the government systems of the US and China. China maintains a centralised system. Therefore, the regularisation of its private sector is also different. However, as compared to China, the US may have less control over the policies of its private high-tech vis-a-vis its responses to China. This may give the US less leverage to undertake protective measures by prohibiting China-led technology in its economic ecosystem. The consequences of this potential misuse of these technologies can be globalised due to the integration of economies and growing connectivity.[69] This is the reason that governing standards of these technologies prompted US sanctions against China's 5G.

Cyber Security Concerns

The mutually reinforcing capabilities of the critical technologies, their proliferation across all fields, their infosphere in which data is transferred or received, and different governing standards of data privacy have potential consequences for cybersecurity. Cyber threat is not limited to one sector or a single country. It is now more overarching due to the dependence on the cyber infosphere worldwide. The information access through Chinese 5G because of its intelligence value is seen from a national security perspective in the US. The interconnectedness of information-based technologies, communication, and data privacy remains vulnerable to breaches and cyberattacks.[70]

Some of the critical technologies as explained in this paper can give leverage to one country over another in cyber protection. For instance, quantum computers may be used to protect as well as attack other computers for data theft. Data encryption relies on the ability of computers to generate random secret numbers. Cyberattacks can take place in case of the random numbers of classical computers. While quantum computers can generate such random numbers, which may not be vulnerable to cyber-attacks, quantum computation bears the potential to threaten the operations of the cryptographic protocol.

According to estimates, a quantum computer will be in existence by 2035 with the ability to crack the crucial RSA2048 cryptographic scheme which is so far considered as a reliable encryption for the safety of data.[71] The block-chain technologies including the five major crypto currencies, "Bitcoin, Ethereum, Litecoin, Monero, and ZCash are considered to be vulnerable to attacks from upcoming quantum technologies."[72] There is a private key for storage of crypto currencies which can be accessed by hackers.

The conflicting governing standards for these technologies and their role in increasing the country's overall capabilities will also have consequences for regulating the proliferation of these technologies. Big power politics and division can undermine the effectiveness of many multilateral organisations. Dividing the world into two camps of techno-political spheres of influence can also have consequences for future dialogue-related global risks for cybersecurity. The non-state actors can benefit from this polarisation and threaten cyber safety in the world.

From Geopolitical to Techno-Political Rivalry

The development and use of information-based critical technologies underpinned by ideological, nationalist, and political motives can create a techno-political sphere of influence. The term 'techno-political' can be used for the politics in the digital age. It implies the policies of countries in response to the technology-led influences on the country's overall power configuration, political system and social norms and relations across borders. Given the broader impact of critical technologies, countries will not only be involved in geopolitical contentions but the technologically-advanced countries will be subject to techno-political disputes. As these technologies are now central to economic, security, and narrative-building, setting their governing standards for the use of these technologies is aimed at a greater advantage over the contender. Since China and the US follow different political systems and values,

they will steer different political objectives to shape the global politics in favour of their respective objectives. Both the operation of these technologies and commerce in these technologies will shape political influence. This techno-political competition is rising between China and the US.[73]As mentioned earlier, both countries are developing independent capabilities in critical technologies. The impact and influence of these technologies will also vary with their different governing standards. China and the US, both have their fears and concerns about each other. The way the US is threatened by China's data surveillance or espionage through its 5G capability, China is also concerned about the US information war and its liberal agenda. Countries like Germany and the EU are also concerned about data privacy due to large-scale Chinese ingress in technology investments.

Apart from cybersecurity concerns of economic losses or breaching of military and defence-related data, there are also fears of political manipulations, election results and leveraging these technologies for geopolitical gains. Transferring these technologies to allies and like-minded partners can create contending groups and alliances. Moreover, western countries are also concerned about increasing authoritarian tendencies. Additionally, European counties are concerned about how the data surveillance capabilities will have implications for the democracies. According to them, "Chinese high-tech businesses not only support authoritarian and oppressive regimes, but they also encourage the spread of anti-liberal ideas about government and society."[74] So far, the world has been dominated by the US-led infosphere. However, China as an emerging leader in the production of these critical technologies will also be enabled to control information, big data, eventually creating political influence. This will create divided governing standards of critical technologies. Mainly the defence policies of countries are made in response to geopolitical conditions. Contemporary big power politics will be more about the techno-political interplay.

China's Technology-Enabled Economic Gains

The power of technology is more encompassing than military superiority. In the past, military superiority would give the country a central place. In the contemporary world, the development, production, sale, and application of critical technologies can increase all kinds of capabilities. Technology will continue to grow, and it will become a concern for national and economic security. The world's economy is now digitalised and the networking of all commercial activities is dependent on IT. The demand for these technologies is increasing. The production houses of these technologies have a never-ending scope for making wealth. Both the hardware and software and its application industries are the biggest beneficiaries. Furthermore, according to research conducted by the World Bank, by 2030 China will economically further pull ahead of the technologically developed countries because its economy will be further strengthened through innovations in areas of comparative advantage.[75] The scale and potential of China's enlarging digital economy is the result leveraging the empowerment of expanding 5G in the industrial and financial sectors of China.[76]

AI alone is now considered a new frontier in China-US competition for comparative economic gains. China focused on AI in the last decade and now this high-tech is supporting China's economy. China is the leading country in research, development, and economy linked to AI. According to Stanford University, China is among the top two countries in AI vibrancy in the world. One-third of all scholarly publications and citations in the discipline were produced in China, which also drew $17 billion in private-sector investment. The analysis by McKinsey projects indicate that AI may add over $600 billion to China's GDP by 2030, with $335 billion of that amount coming from autonomous vehicles alone. This is due to the way that China has connected AI-driven consumer apps like Alibaba, ByteDance and Taobao. The integration of AI with Taobao, the largest e-commerce

app in China, can give it one billion customers[77] by smart searching or suggestions with increased efficiency for transactions. The e-commerce platform or the extensive availability of products on social apps has further increased China's advantage in digital economy.

Race for Autonomous Arms in Military Domain

The automation of arms is more relevant to the domain of robots and AI functions. Autonomous weapons, automated armed vehicles, and super intelligent decision-making against the adversary during wartime; robots, automated precision drones, and espionage capabilities, are only a few perceived functions of AI in its military application.

For some experts, AI is just an extension of human intelligence supported by machines. But for others, the application of this technology in various domains of modern defence systems such as nuclear weapons would have consequences. AI's military applications, such as Intelligence, Surveillance, and Reconnaissance (ISR) operations, sensor data processing and interpretation, or geospatial imaging analysis, will reduce the role of humans in warfare and ultimately alter the nature of the conflict.[78]

As both China and the US have interest in advancing their defence capabilities by employing critical technologies, it will be hard to determine whether it would be China to develop superior AI arms or the US will come out as a victor in this AI arms race. However, it is a fact that the US and China are locked in competition for automation and AI hegemony. Approximately, a 45 per cent increase is noticed in the US investment in AI projects between 2016 to 2022.[79]About 685 active AI projects are on the agenda of the US Department of Defence (DOD) under the project Maven to integrate AI into military structures. The US has already used these AI algorithms to determine targets in military operations in Syria and Iraq.[80]

China wants to rival the US's military prowess by dominating the technologies related to the fourth industrial revolution.[81] China

also decided in 2020 to integrate AI into the military structures by 2025. It anticipates itself as a global leader in AI by 2030[82] and also seeks the integration of civil and military AI forces to make its armed forces more intelligentised, meaning to equip them with disruptive technologies of new era warfare.[83] The discovery of nuclear weapons technology was different from the development of these critical technologies. There were limitations on its production and expansion. However, these technologies are already well integrated into the systems on a large scale with continuous evolution creating security vulnerabilities in many unprecedented ways.

Conclusion

The competition among great powers is traditionally analysed in the domains of diplomatic, military, and hard power. However, global information infrastructure is a more comprehensive domain for great power competition in the new era. This study found that critical technologies are vital for acquisition of power because of their interlinked, interconnected abilities, wider applications and strategic use of information. The emerging technologies discussed in this paper are related to the rapid advancement in ICT. The innovations in the listed technologies are bringing changes in the global economy, politics, and security in unprecedented ways. The strategic use of information complemented by advanced technologies can strengthen the comparative advantage and relative gains of one country while weakening the other country. The struggle for oil and advanced nuclear weapons was central to power competition between powerful countries which is still true. Now the biggest domain for achieving greater power against a rival lies in increasing potential in critical technologies. These technologies can substantially shift the military and economic balance.

Since China announced its 'Made in China 2025' strategy in 2015 and increased R&D, it has achieved much ground to close the

gap with US in critical technologies. Keeping in view, China's growing potential in AI, quantum computers, space, cyberspace and 5G as studied in this paper, qualifies China as a global competitor to the US. It was technology and innovation that gave the US superpower status. Therefore, China's prowess in this domain has threatened the US position and has prompted it to contain China. Secondly, the developments in these domains also suggest that both countries are not seeking parity and instead strive to achieve superiority in these technologies because of the huge potential that they bear to give a powerful position to the country that would lead in these technologies. Since the US is the largest economy and the most powerful country, and China is the second largest and a qualified contender to the US primacy, the strategic competition between the two are linked to the global power dynamics because of their huge impact.

Growing techno-nationalism is leading the world to new dynamics in the global power structure and security landscape. The race for microchips, semiconductors, essential resources for these advanced chips, division on regulation of these technologies, as well as their impact on global supply chain and trade have a massive impact in redistribution of power and influence globally. China's efforts to excel in critical technologies and US's preventive measures will also lead to a new conflict. This struggle also hinders them from agreement on governance of critical technologies and rules for their proliferation. As studied, these phenomena, in view of offensive realism and power transition theory, is driving them for continuation of independently developing capabilities for their desire for power and domination. Techno-nationalism will also adversely impact scientific knowledge as a global public good.

As in power transition theory, creating parity or overtaking an established power can cause war. The way the US critically views China-led technologies and considers it a challenge to the western-led

normative order in the world is leading the conflict to ideological competition. The divide over governance of these technologies between the two largest producers of the same, and the nationalist tendencies and strategic rivalry between them for power acquisition also increases risk for cybersecurity and lack of cooperation in this domain against security risks posed by non-state actors or cyber terrorism. Since the domain of competition is much broader due to the wider scope of the applications of these technologies, countries will have more leverage for political gains through technology. As previously the contestation between countries was more driven by geopolitical interests, in the current scenario it will be more driven by politics of technologies. The country leading in technology will have more political influence globally with propensity of shift in power.

The technology enabled economic gains for China because the size of its population and production capacity is another indicator for the role of these technologies in changing the power equation in the world. China's growing prowess in space technology and the integration of AI in defence systems is also making China a serious contender in military might with the US.

These findings show that the domain of critical technologies have scope and potential for changing the power equation between China and the US. Even if achieving global hegemony is not desired by China, the intense competition in these technologies as proved by this research has prospects for conflict with far-reaching consequences for the global economic future, peace, and security. Therefore, there must be limitations through regulations and a global consensus on the proliferation and governance of these critical technologies in the same way that nuclear technology has been regulated.

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INDIA'S NUCLEAR 'NO FIRST USE' POLICY: IMPLICATIONS OF POTENTIAL REVOCATION

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Abstract

Since the inception of the Bharatiya Janata Party (BJP) government in 2014, India has been exploring options to maintain the formality of the No First Use (NFU) policy while continuously preparing for first use capacity. During Prime Minister Narendra Modi's third term, India may reconsider its NFU policy, which used to be the cornerstone of its nuclear doctrine. This likely intention of BJP and shift in nuclear strategy would have far reaching implications for the region and international community. The BJP's pursuit of a more aggressive nuclear posture is rooted in its ideology of a strong and assertive India. The policy shift in Indian nuclear doctrine would be shaped by its continuous efforts of upgrading its missile arsenal. The transition in the Indian nuclear posture towards developing more sophisticated nuclear weapons as the first strike would further question the credibility of the NFU doctrine. Doubts on the credibility of Indian nuclear policy would impact global non-proliferation efforts as it may be perceived as a departure from India's commitment to responsible nuclear stewardship. Indian aspiration for a pre-emptive counterforce strike would likely create deterrence instability in the region and may escalate tensions with Pakistan. If India were to abandon NFU, Pakistan may reassess its

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nuclear strategy, potentially leading to a nuclear arms race and security instability in the region.

Keywords: *No First Use (NFU), Credible Minimum Deterrence, nuclear doctrine, non-proliferation, counter-force strike.*

Introduction

Since the Cold War, the devastating potential of nuclear capability coupled with the international opposition to the employment of these weapons has forced nuclear powers to keep their nuclear policies ambiguous and partially undeclared. It remains uncertain how these nuclear weapons states will behave and what their actual deterrent postures will be. [1] Moreover, it is important to understand that these nuclear doctrines are not fixed and could change depending upon the nature of evolving threats and technological achievements, which are often well thought-out and symbolic of a country's long-term ambitions.

India's nuclear doctrine is an important variable determining nuclear stability in South Asia, especially because the doctrine has been generally considered to be based on the policy of restraint, i.e., 'No First Use' (NFU) status. India's declaratory policy of NFU seems to be in transition since 2014. This indication of change was first seen when the BJP promised in its election manifesto to "revise and update" India's nuclear doctrine to "make it relevant to challenges of current time." [2] Besides numerous think tanks and ex-government officials, the same was firmly reiterated by the former Indian Defence Minister Mr Rajnath Singh at Pokhran in August 2019, when he stated that the "Indian nuclear doctrine is linked to evolving circumstances."

The statement was an indicator that the Indian nuclear policy is vulnerable to change. It seems that India is building the foundation for an eventual abandonment of NFU or change in its declared nuclear doctrine. At the very least, it is striving to provide policymakers with options beyond NFU, focusing on greater flexibility, and the ability to deny early use and escalation dominance to Pakistan. Sporadic public

pronouncements by political and bureaucratic leaders in the recent past regarding the imperatives of doctrinal revision or shift have generated enormous anxieties in South Asian strategic discourse, giving rise to varied interpretations of India's likely pathways to nuclear use.

The remarks of Indian senior policymakers and approaches in New Delhi, as observed by various analysts, signify that India has now moved towards a nuclear position that Pakistan can no longer consider minimal. There are numerous explanations to consider that Credible Minimum Deterrence may be New Delhi's declaratory doctrine, but the deterrence signalling of operational nuclear posture differs from India's official nuclear doctrine against Pakistan and China. A sufficient ambiguity exists in the nuclear doctrine because the Indian government has used broader terms like 'massive retaliation' and 'unacceptable damage' without elaborating on how these may be executed.

Emerging debates regarding India's NFU policy suggest that the current Indian government of BJP is considering revisiting its nuclear doctrine of NFU to pre-emptive First Use. This ambiguity and mixed deterrence are creating rough grounds for the credibility and firmness of the Indian strategic posture, which will continue to weaken in an environment where the triangular nuclear rivalry between China, India, and Pakistan exacerbates the security trilemma.

Evolution of Indian Nuclear Doctrine

Indian aspirations for a nuclear program can be traced back to Partition. The first institution of this kind, Tata Institute of Fundamental Research (TIFR), was formed on 19 December 1945, with Dr Homi Jehangir Bhabha as its first Director. After its independence, the government of India passed the Atomic Energy Act, on 15 April 1948, leading to the establishment of the Indian Atomic Energy Commission (IAEC). At that time, Prime Minister Pandit Jawaharlal Nehru declared:[3]

"We must develop this atomic energy quite apart from war – indeed I think we must develop it for the purpose of using it for peaceful purposes. [...] Of course, if we are compelled as a nation to use it for other purposes, possibly no pious sentiments of any of us will stop the nation from using it that way."

India's earlier decision to develop the complete nuclear fuel cycle allowed it to easily acquire technical capability to build nuclear weapons. In November 1964, Prime Minister Lal Bahadur Shastri authorised theoretical work on the Subterranean Nuclear Explosion for Peaceful Purposes (SNEPP). India conducted its first nuclear test on 18 May 1974, described by the Indian government as a 'peaceful nuclear explosion'. India's aspiration to be a nuclear state lies in the latent desire for recognition as a world power.

India released its official nuclear doctrine in January 2003.[4] Its details, however, are not fully known. The summary which was made public indicates the official doctrine is heavily anchored on the 17 August 1999 draft version, though it also has some significant differences. The doctrine espouses a normative posture and calls the weapons the gravest threat to humanity, peace, and stability. It is based on three main pillars: 'Credible Minimum Deterrence' having sufficient, survivable and operationally prepared nuclear forces, with a robust command and control system and effective intelligence with early warning capabilities; 'No-First Use Posture', massive nuclear retaliation only against a nuclear (and chemical and biological) attack on the Indian territory or on the Indian forces anywhere; and 'political control over nuclear weapons use.'[5] Salient aspects of the doctrine are as follows:

- a peacetime posture aimed at convincing any potential aggressor that any; threat of use of nuclear weapons against India shall invoke measures to counter the threat;
- maintain a posture of No First Use;

- retaliation to first use against India will be massive to inflict unacceptable damage;
- In an event of major attack on India or Indian armed forces by biological/chemical weapons, India will retain the option of retaliating with nuclear weapons, anywhere;
- Highly effective conventional capability shall be maintained, along with the nuclear, to maintain a high threshold;
- maintain a credible second-strike capability.

An NFU pledge refers to any authoritative statement by a nuclear capable state to never be the first in using these weapons in a conflict, reserving them strictly to retaliate in the aftermath of a nuclear attack against its territory or military personnel. These pledges are a component of nuclear declaratory policies, however, there can be no diplomatic arrangement to verify or enforce a declaratory NFU pledge and such pledges alone do not affect capabilities. States with such pledges would technically still be able to use nuclear weapons first in a conflict and their adversaries have generally not trusted NFU assurances.[6] Cardinals of NFU generally include superiority in conventional forces over adversary, capacity to survive the adversary's first strike and retain sufficient capability to launch second strike in addition to provision of political and moral cover to keep enhancing one's conventional forces and weapon systems.

India adopted an NFU policy to project itself as a responsible nuclear state. However, policy statements of its political leadership on different occasions do not commensurate with the stated policy. India, by giving the nuclear doctrine in clear terms, has proven that nuclear weapons equilibrium is not only a question of technology and integration, but also perceptions and intent. Unspecified nuclear threat and target give India the leverage to keep 'Credible Minimum Deterrence' open-ended, with no limits on weapons stockpiles,

delivery means, and research and development. Whether the Indian nuclear doctrine of 2003 is still operational or is subject to change is doubtful since its declaration. At the time of its announcement, Prime Minister Atal Bihari Vajpayee's following contradictory statement made the NFU policy questionable right from its inception:

"If [Pakistan] thinks we are going to wait for it to launch the first bomb, it is wrong. If Pakistan wants to avoid a nuclear holocaust, it should accept our proposal for a mutual pact against nuclear aggression."

Since 2014, this trend has advanced in nuclear rhetoric. Empirical evidence and Indian policymakers' rounds of statements further undermine the credibility of the 2003 nuclear doctrine. There seems to be a growing convergence amongst Indian policymakers taking the view that India can explore a pre-emptive/preventive strike against Pakistan without changing its 2003 nuclear doctrine. Massive investments in space and cyber capabilities, operationalisation of the nuclear triad and testing of Anti-Satellite Weapons (ASAT) capabilities undermine the very declaratory aspect of NFU and allude towards acquisition of nuclear war fighting capabilities.

Contemporary Global and Regional Nuclear Environment

To put things into context in relation to India's nuclear doctrine vis-à-vis the overall global nuclear environment, there is a need to evaluate the prevalent contemporary doctrines as well as current nuclear dictates. Under the prevailing Global Nuclear Dictates, the international community is largely averse to a military conflict especially between nuclear states that have the potential to transcend into a full-fledged nuclear exchange. However, exceptions are in place, i.e., the United States dominates the global nuclear order, amply demonstrated by its unilateral withdrawal from the Joint Comprehensive Plan of Action (JCPOA) and its termination of the Intermediate Range Nuclear Forces (INF) Treaty with Russia. Similarly,

the signing of the Major Defence Partner Agreement between India and US has created much space for India to improve its strategic capability. It is seriously altering the balance of power in India's favour and has the potential to disrupt the strategic stability in South Asia. The Nuclear Suppliers Group (NSG), Zangger Committee, and other non-proliferation regimes have become a policy tool in the hands of the US and its allies to advance their interests. This may prove potentially destabilising for states not aligned with US interests. A positive shift in the world's view on Indian nuclear programs is largely attributed to the Indo-US nuclear deal and enhanced Indian global political-economic relevance. On the contrary, Pakistan's nuclear program is viewed with suspicion due to proliferation concerns.

India's endeavour under the garb of achieving strategic parity against China has complicated the Indo-Pak equation, generating an arms 'creep', if not an arms race, in South Asia. The Indo-Pak force differential, if it continues to grow, has the potential to stress the military strategy to respond, thereby strongly emphasising nuclear capability. India's growing nuclear capability supplemented by gigantic investment in conventional weaponry obliges Pakistan to adopt 'Full Spectrum Deterrence (FSD)' within the ambit of 'Credible Minimum Deterrence'. On account of geographical contiguity, economic implications, and intrinsic technological limitations, the ambitious Anti-Ballistic Missile (ABM) program of India may not acquire its desired dividends. Nonetheless, Indian war hysteria following the 2019 Pulwama episode exposes possible shifts in Indian doctrine leading to a 'conflict spiral'.

Indo-Pak Deterrence and Strategic Stability in South Asia

Strategic stability in South Asia is a complex phenomenon due to ideological divergences, unresolved territorial disputes, and geographic contiguity between the two traditional rivals. The Indo-US and Pak-China strategic partnerships have direct impacts on South

Asia's security environment. Though China is a factor in Indian military calculations, it is more about threat projection, as anti-China mantras garner acceptability in the West. India has both skilfully manipulated the US containment policy of China and has modernised and enhanced its conventional and strategic capability with a primary focus against Pakistan. The existing force differential has put Pakistan in a disadvantageous position. However, the introduction of nuclear weapons has brought a 'Stability-Instability paradox' to South Asia, liable to create more uncertainties and instabilities. The equation may impel both countries' leadership to formulate hasty decisions, which could irreparably jeopardise the entire strategic stability structure of South Asia.

India's nuclear aspirations overtly carry the threat to only two other nuclear nations in South Asia, i.e., Pakistan and China. Yet, given India's diplomatic and media influence in the region and the in-built flexibility of its nuclear policy, India retains an ability to label any state in South Asia as siding with China or Pakistan in any anti-state incident, and can use its nuclear potential to coerce the given nation. Nevertheless, the pursuit of an ambitious Indian nuclear program has greater implications on Pakistan, while China comprehensively dominates over India in every domain**.**

Indo-Pak Deterrence Objectives

Having deliberated on the threat potential of India's nuclear program, it is worth considering the deterrence objectives being employed towards the attainment of definite objectives both by Pakistan and India.[7] India wants to deter Pakistan from using Sub Conventional Warfare (SCW) during conventional war, deter Pakistan from threatening or initiating nuclear use, and persuade Pakistan to accept the status quo in Kashmir. On the flip side, Pakistan asserts that there is 'no space for war' under nuclear overhang. Similarly, it aims to deter India from conventional military threat. The strategic face-off

between Pakistan and India has varied from sub-conventional protracted conflict to a long-drawn-out stand-off, from war limited to Kashmir to conventional war. Therefore, it can be inferred that the initially covert and subsequently overt nuclear capabilities succeeded in averting a full-scale conventional war.

Upgradation of Indian Deterrence Regime

To curtail Pakistan's freedom of action in the sub-conventional domain, offset the mobilisation differential in the conventional domain, and limit Pakistan's nuclear targeting options, the biggest Indian challenge is to maintain relevance of its conventional superiority under the nuclear environment. To address these challenges India is battling the course in numerous domains.

The Indian military's 'doctrinal shift' entails serious implications for South Asian security. It assumes that it can undertake a surgical strike owing to its strategic alliance with the US, and its geo-economic relevance. However, it ignores the fact that Pakistan's conventional capability will make it costly for India in case of any misadventure. The response to any surgical strike would be well-calibrated which may push India to escalate the conflict to avoid embarrassment and, ultimately, a limited war has potential to escalate into a full-scale one.

India is pursing to capitalise on its potential in information operations, the cyber domain, Artificial Intelligence (AI), miniaturisation, military reconnaissance satellites, and precision-guided munition capabilities. In the military domain the use of these technologies is aimed to create an offensive military doctrine that could help in undermining Pakistan's deterrence.

Though India projects its ballistic missile program as defensive in nature, it is pursuing the development of 'active defence' measures, i.e., the introduction of theatre missile defence; an integral measure of offensive deterrence to conduct pre-emptive or preventive nuclear strikes with impunity of Pakistan's retaliatory nuclear strikes.[8]

In 2019, ASAT capability made India capable of compromising Pakistan's strategic intelligence, guidance, and communication satellites, which are essentially required to accurately engage Indian counterforce or counter-value targets.[9] The capability is being labelled as 'Space Deterrence', in order to counter Chinese Space superiority, as well as to gain dominance over Pakistan. This puts Pakistan's strategic force projection at risk of being detected in an earlier timeframe. The conventional force differential compels India to craft space for limited war or non-contact warfare with Pakistan. It also labels Pakistan's strategic capability as a 'bluff' to underplay the established deterrence in the region.

Pakistan's Nuclear Policy and Reinforcement of Deterrence Regime

Pakistan has not formally declared its nuclear doctrine. However, some aspects of nuclear doctrine can be gleaned from the statements of different government officials since overt nuclearisation in 1998. These include the embracing of 'Full Spectrum Deterrence' within the ambit of 'Credible Minimum Deterrence', following the 'First Use' policy for nuclear weapons, eschewing a strategic arms race with India, supporting non-discriminatory arms control regimes, and promoting stringent controls on the export of nuclear technology.

Given its relative conventional inferiority, reliance on comprehensive deterrence is exceedingly vital for Pakistan to achieve its deterrence objectives through maintaining full spectrum deterrence. This comprises a variety of strategic and low yield nuclear weapons on land, air, and sea, designed to comprehensively deter Indian aggression. Its future development is predicated on qualitative balancing of its conventional and strategic capabilities rather than a quantitative arms race pursuit and maintains ambiguity in thresholds and force quantum. Pakistan maintains a policy of a responsible nuclear weapons state, follows rational behaviour, and adopts all

possible means, channels, and mechanisms to stabilise deterrence and avoid war.

Evaluating Reasons of Indian Re-consideration of NFU

India's temptation to alter its NFU policy has accentuated uncertainty and instability in an already tense environment in South Asia.[10] While such a move may be appeasing for India's far-right electorate and the country's politico-military establishment, it distances India from its commitment with the international community on its stature as a responsible nuclear state. Notwithstanding the domestic political reasons, India's rethinking of its NFU policy is attributable to certain other factors as well.

The concept of NFU has largely remained untapped by the permanent members of the United Nations Security Council (P5 states), with the exception of China.[11] India's strategic community feels it to be an opportune time to capitalise on its bloated diplomatic and economic status, to progressively deviate from its declaratory NFU policy, and that such a deviation may potentially find acceptance amongst global powers.

India's NFU policy has been domestically questioned as a sign of weakness, particularly by right-wing nationalists. The argument goes that it ostensibly allows Pakistan to take initiative in the sub-conventional domain while restricting India's options militarily, placing India in a disadvantageous position. Therefore, in letting go of the NFU policy, India could deter and force Pakistan against its alleged use of proxies in India.

Unlike in 1998, India now has technological superiority and has invested in developing indigenous ballistic missile offensive deterrence and acquiring missile defence systems for defensive deterrence, which could, theoretically, be used to intercept any 'residual' strike that a first strike failed to destroy.[12] An overzealous ambition of occupying a place amongst global powers has

emboldened the Indian oligarchy to *volte-face* its NFU policy. There is little reason to believe that fears about China are behind India's shift in nuclear thinking about NFU.[13] However, under the existing and growing conventional military asymmetry, India continues to invest in long-range delivery capability to deter China with its nuclear capability and projects that it cannot be dominated by the latter.[14]

Implications for Regional Strategic Stability

India's perceived abandonment of the NFU policy would have lasting repercussions on regional strategic stability. Pakistan's opaque nuclear strategy on one side and India's massive retaliation posture on the other side have effectively restrained the two rivals. Since overt nuclearisation, the adversarial relationship between India and Pakistan has escalated several rungs, but neither has invoked the nuclear option. However, with a nuclear first-use policy coupled with counterforce strategy, every future crisis risks a potential strategic nuclear exchange between India and Pakistan with sufficient room for strategic miscalculation from either side.[15]

Pakistan has never been convinced of India's moralistic abhorrence for nuclear weapons and self-imposed NFU. Thus, India's NFU is a unilateral decision that can be revoked any time. However, due to the enduring distrust between Indian and Pakistan, India's shift from NFU to a first-use or its adoption of an ambiguous posture would exacerbate Pakistan's security concerns and undermine South Asia's deterrence-based stability. The growing Indo-US cooperation, and the ambiguity shrouding the narrative would further reduce space for any dialogue or worthwhile Confidence Building Measures (CBMs) between Pakistan and India.

Revocation of the NFU policy by India would create a condition of 'reciprocal fear of surprise attack' as both India and Pakistan will be worried that the other might launch first. Demand and race for fielding robust surveillance technology and systems would also grow. The

entire nuclear discourse would be dominated by the competition to win a nuclear war, rather than striving to deter it.

India, were it to abandon its NFU policy, would further stress deterrence stability in the region. It would put the existing strategic stability under serious stress by challenging all of its components: it would add to first-strike instability as each side fears a disarming first strike, accentuating the 'use or lose them' dilemma. This in turn will lead to crisis instability as both the belligerents might jump several rungs of the escalation ladder during a crisis situation, gravely implicating both Pakistan and India.

Implications for Pakistan

The Indo-US Civil Nuclear Deal will enhance India's fissile material stockpile, as the US supply of fuel for the civilian nuclear program will free up fuel from domestic sources to be used in increasing nuclear weapons inventory. Thus, India's nuclear program will be significantly strengthened due to access and availability of sophisticated high-end nuclear technologies and will further increase the military differential between India and Pakistan.

Nuclear weapons are the ultimate resort for Pakistan to deter war, manifested through an ambiguous nuclear threshold.[16] If India alters its nuclear policy to First Use, Pakistan's nuclear doctrine and arsenal will have to undergo proportionate changes to adapt to changing circumstances.

With India abandoning its NFU policy, Pakistan will have to enhance the survivability of its nuclear arsenal by increasing their mobility and discreetness. The sea-leg of the nuclear triad thus becomes indispensable for Pakistan to survive a first disarming attack and subsequently retaliate punitively.[17]

To respond to a first strike by India, Pakistan would have to adopt a capability of punitive retaliation. Operationalisation of such a response capability would require an excessive number of survivable

warheads and credible delivery means that can survive the first strike. Pakistan's existing economic compulsions provide no room for such an expansion in nuclear forces arsenal and doing so would also plunge Pakistan into an arms race trap. To counter Indian ballistic missiles, Pakistan would have to consider an advanced missile defence system. Notwithstanding the much-debated success of Ballistic Missile Defence (BMD), Pakistan neither has nor can afford to induct a BMD system. Therefore, an alternative in the form of Multiple Independently Targetable Re-entry Vehicles (MIRVs) would be operationalised at the earliest to counter India's defensive deterrence.

India's NFU policy has enabled both Pakistan and India to keep their nuclear arsenal in a de-mated or recessed deterrence posture rather than a ready deterrent posture which reduces the chances of accidental launch of nuclear weapons. A first strike policy by India would compel Pakistan to keep nuclear weapons and delivery systems in a mated form thus enhancing chances of strategic miscalculation.

Implications for India

Abandoning the NFU policy would globally damage India's projected image as a non-violent (Ahimsa), responsible nuclear state that follows a policy of restraint. Moreover, it may also shore up challenges for India attaining NSG membership. Deserting the NFU policy would require massive investment in nuclear weapons and delivery systems. If India does opt for first use, it would require a far bigger nuclear weapons inventory for counterforce targeting, as eliminating Pakistan's nuclear capabilities would require simultaneous employment of multiple warheads and delivery systems.

To manifest an offensive nuclear posture by adopting a counterforce targeting strategy, India would need highly effective Intelligence, Surveillance, and Reconnaissance (ISR) capabilities which would provide India the confidence of taking out its adversary's entire

arsenal in first strike. However, given the dispersed and mobile attributes of Pakistan's nuclear forces, this is nearly an impossible task.

Abandoning the NFU policy would lower Pakistan's nuclear threshold and thus the perceived space for conventional war. Strategically, this is contrary to India's aspirations to carve space for war in the conventional realm. Thus, it would be a self-defeating notion in itself, and is divergent to Indian deterrence objectives.[18]

India's NFU policy or its revocation is not only implicating Pakistan but may also have reverberations for China, with the potential to spark changes in Chinese NFU policy. An Indian change in NFU policy may trigger cascading effects that would erode the existing global nuclear stability and substantially increase the possibility of strategic miscalculation. An overt first-strike policy coupled with BMD would lower Pakistan's nuclear threshold. Concurrently, it may increase the likelihood of nuclear conflict in future conflict while 'use or lose' pressure on both sides would accentuate unintended escalations.

Way Forward for Pakistan

It is imprudent to believe that despite substantive changes in the strategic environment and India's enhanced global stature due to its economic and diplomatic relevance, India's nuclear doctrine would remain frozen since its last official pronouncement in January 2003. Being cognizant of the environment and statements from strata of strategic community as well as political leadership point us towards potential changes in nuclear doctrine, in the temporal and cognitive domain. NFU or First Use may be seen now as formalities in Indian nuclear doctrine. Therefore, Pakistan should not be complacent and should remain prepared for all possible scenarios.

Besides maintaining sufficient conventional capability to respond to multi-faceted threats, Pakistan must ensure a robust nuclear capability primarily to deter aggression and ultimately, if

needed, to inflict unacceptable damage to the adversary. 'Full Spectrum Deterrence' within the ambit of 'Credible Minimum Deterrence' should be progressively strengthened with selective force development, modernisation, and absorption of latest technology to reiterate its own resolve through capability enhancement. Furthermore, the will to use the nuclear option against Indian aggression must be explicitly exhibited to reinforce its own deterrence regime.

Pakistan may continue to retain an ambiguous nuclear posture as it best serves its deterrence regime. Keeping India uncertain about Pakistan's nuclear options through strategic communication by formal and informal channels (think tanks, ex-government officials, seminars, etc.) may be deployed to address arising challenges. In response to India's acquisition and operationalisation of triad capability, Pakistan needs to redefine its current Nuclear Alert levels apropos to the threat from India, by reinforcing nuclear triad. Within the ambit of Triad, designated assets may be kept ready at all times under well-defined circumstances to forestall a pre-emptive strike, for maintaining a matching capability at each rung, to deter misadventure by the adversary.

Pakistan must pursue qualitative improvement while avoiding a race for quantitative parity. It must maintain conventional deterrence to reduce pressure from strategic deterrence. It will also benefit from the adoption of selective advancement in force development strategy to maintain technological and qualitative edge in key fields including robust second-strike capability and acquisition of disruptive and smart technologies. There is a requirement of keeping a fine balance between force development and modernisation and negating the likelihood of falling prey to India's USA-USSR syndrome trap. A prudent whole-of-nation response, therefore, becomes imperative for ensuring security of the state while remaining economically viable. Nuclear capability singularly is not a panacea for all challenges,

therefore, warranting an unequivocal sync response by all Elements of National Power (EoNP) for deterrence to be effective. Furthermore, it will also allow our conventional and military strategy to operate more effectively and open response options with less stress on nuclear strategy. Pakistan must reinforce the perception that India's option of splendid first strike is ambitious as it would cause a serious reprisal by Pakistan. In such an eventuality, Pakistan might suffer significant damage, but India will also cease to exist.

Besides diversifying military and nuclear response options, Pakistan should focus on proactive diplomacy to refrain India from revoking NFU. Pakistan must pursue an upbeat foreign policy and undertake extensive Information Operations (IO) to project that preferential US behaviour towards India has created a strategic imbalance in South Asia and will lead to an unending arms race. Pakistan must highlight at all international forums and organisations the fallout of India's growing nuclear belligerence alongside its consequential effect, and project its own imperatives to safeguard sovereignty and national security.

Concerted efforts are required in consonance with China to be undertaken by exposing Indian nuclear proliferation history and the very cause of the creation of NSG, so as to block 'Only India's' NSG membership. Pakistan must highlight inconsistencies in Indian nuclear policy, linked to the irresponsible behaviour of the BJP-led Indian government, and lastly, Pakistan must maintain the status quo regarding The Comprehensive Test Ban Treaty (affects quality), Fissile Material Cutoff Treaty (affects quantity) and Missile Technology Control Regime (restricts missile development) being preferential against Pakistan in order to safeguard its own interests.

Conclusion

As India and Pakistan are both *de facto* nuclear powers, they must realise the deadly arena that they have entered. A small slip, a

misjudgement of events, a hasty decision based on erroneous information, or a display of temper could result in a situation where there would be no winners, only losers. Not only would cities vanish altogether, and millions die in a matter of seconds, but generations to come would suffer the consequences of a nuclear holocaust. The BJP is still sitting pretty on the Indian throne and its ideological extremism could be devastating.

The NFU policy has served as a barrier to nuclear expansion in the region and contributed to regional stability for over two decades. Its revocation would be a dangerous and irresponsible move. Nonetheless, NFU of nuclear weapons alone will not prevent a war that could lead to a nuclear exchange between the two nations. Therefore, each country must adopt a responsible nuclear posture and uphold an environment that is safe for coming generations.

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