

Pakistan National Security: Threats from Emerging Technological Devices and Future Prospects

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Abstract

National security has been described as the ability of a country to protect itself from internal and external threats and cater for the protection of its sovereignty and people. It can be an ability to defend country and nation to meet the needs necessary for its self-preservation and self-improvement including its people, economy, and institutions. It is a nation's possession of control of its sovereignty and destiny. Thus, national security is not only something that merely protects people; it also involves providing safety, security, and freedom. After end of the Cold War and at the beginning of 21st Century, the concept of warfare has changed due to advancement in technology. The new environment has replaced the primitive pattern of warfare with advanced electronic devices which are dangerous and unpredictable. So, the new electronic instruments put countries in defensive position because modern devices are very effective and offensive to counter adversaries' moves. In this situation, Pakistan is facing serious security challenges from Non-State Actors (NSA) and adversaries moves to destabilize country. Pakistan is facing alarming threats from emerging technologies, especially from India - as a strategic competitor. For this reason, advances in technologies, such as - computing, biotechnology, artificial intelligence, and manufacturing, warrant extra attention to anticipate the trajectories of emerging technologies, as well as to understand their implications for national security. Nonetheless, time has arrived that Pakistan must have a comprehensive national security policy to defend the country from strategic competitor in various emerging technological fields. It is necessary to focus on technologies which are critical to the country's economic and military future, including enabling technologies. For this purpose, security establishment must take appropriate actions to compete adversary with effective measures, because Pakistan is perceived not to be an indispensable player, and desire radical actions for the socio-economic strength of the country.

Keywords: *National Security, Emerging Technologies, Cyber Attacks, Electronic Devices, Internal and External Threats, Advancement in Science and Technology.*

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INTRODUCTION

National security is a system that ensures country's security in terms of individual, society and state, against external and internal threats in all aspects of life and activity. A country's national security in the political and strategic arena lies in safeguarding its independence, sovereignty and territorial integrity. It is also to prevent belligerence against country, and to ensure the conditions for peace and country's survival. In this regard, country can use its all accessible sources i.e. conventional and nuclear, in the time of need to resist military attack, in case the serious position have been drained and have proven useless.¹

Moreover, it is a nation's possession to control its sovereignty and destiny. It does not merely protect people, but also involves the provision of their safety, security, and freedom. United States military strategist Edward Nicolae Luttwak defines "national security as an ability to protect country from internal and external threats that have the capacity to destabilize the country which needs a collective national response to defeat the adversaries."² So, national security is a potential of country to defend its sovereignty, territory, peoples, economy, institutions, human security, cyber-security through the political stability, socio-economic prosperity, along with hard power (Military) and diplomacy.

In the literature of war and security, the term "national security" is normally observed as a shield against foreign aggression, or it can be perceived as military defence in response to military threats.³ It is also obviously close notion that nation's security comprises mostly than the attaining and claim of military powers. Thus, national security normally associated with the national morals as a national reward in a sense of devotion to ethics like human dignity, freedom, quest of peace and affluence.⁴ Paul D. Williams, the renowned scholar from Elliott School of International Affairs United States, claimed that "security is consequently a strongest political instrument in appealing courtesy for important items in the struggle for government attention,"⁵ Samuel Makinda defines "security as the protection of the norms, rules, and tenets of

1 Davis S. Yost, "Russia's Non-Strategic Nuclear Forces," *International Affairs* 77, no. 03 (July 2001): 531-551.

2 Edward N. Luttwak, *The Rise of China vs. The Logic of Strategy* (Cambridge: Harvard University Press, 2012), see also, Lyle Goldstein, "China's Putative Threat to US National Security," *CATO Institute*, July 22, 2020, <https://www.cato.org/publications/chinas-putative-threat-us-national-security>

3 Ibid.

4 Arnold Wolfers, "National Security" As an Ambiguous Symbol," *Political Science Quarterly* 67, no. 04 (Dec 1952): 481-502.

5 Paul D. Williams, The Military's Role in Stimulating Science and Technology: The Turning Point," *Foreign Policy Research Institute*, May 28, 2010, <https://www.fpri.org/article/2010/05/the-militarys-role-in-stimulating->

society". He further discusses that all the institutes, doctrines and structures related with society, comprising its people are to be secure from "military and non-military threats."⁶

Moreover, national security has been defined as the capability of a state to provide the safety and security to its people. Makinda's description of security can directly apply into the state protection and it is within the domain of national security. Furthermore, international security altered from the need of the state and several other issues, mainly globalization, is at the top of the state priorities. Thus, there are requirements that no national security apparatus has the ability to deal itself and appeal for the cooperation of states.

These are the values that lead to seek protection and self-determination, political institutions, economic progress, and fundamental human rights. The basic objective of national security is to protect country's sovereignty and democratic values which can be turned into stable terms of national interests. In the post-Cold War era and at the onset of 21st century, the concept of warfare has changed due to advancement in technology. The new environment has replaced the primitive pattern of warfare with the advanced electronic devices which are dangerous and unpredictable. The electronic instruments or firepower put the countries in defensive position because modern devices are very effective and offensive to counter adversaries' moves. Moreover, technology has changed the world over the years and nations also have changed their pattern of competition from traditional manners to modern technology which has come under attention.

NATIONAL SECURITY OF SMALL STATES

The perception of security is challenging and it is difficult to come to any conclusion about security with regards to its perception and meaning. The notion is equally disputed for its theoretical consideration. There are countless security associated theories which have been approved by several theorists, and each theory contrasts to understand the theoretical facets of security. So, the foreign policy of small and weak states has been defense, not offence. The primary objective of small states can never be struggle of power but the preservation of survival through the minimum power or deterrence. The basic hidden perception of small states have been to shun, diminish or delay conflicts and, then, use tactic to confront larger

science-and-technology-the-turning-point/

6 Samuel Makinda, "Sovereignty and Global Security, *Security Dialogue*," *International Affairs* 29, no. 3 (1998): 281-292.

force once a conflict has developed.⁷ In this situation, the definition of security for small states is not a big task rather than embraced by the great powers. It is basically modest and conservative; security means the safeguard and protection of the fundamental beliefs of nation which can be freedom and territorial integrity. As Walter Lippman writes: “a nation is safe to the extent to which it is not under any threat of having to sacrifice its core values, if the nation desires to escape from war, and is able, if challenged, to maintain them by success in such a war.”⁸ In the words of Wolfers, “security rises and falls with the capacity of a nation to prevent an aggression or to defeat it.”⁹

The term security now needs to be defined in the post-Cold War era as ‘small states’, means different things to different people. Many small states in Europe and Asia claimed that national security is the final outcome of the complete process of progress. They have taken power from political leadership on the basis of that the latter are failing to bring fast socio-economic development, and thus jeopardizing the security of the state.¹⁰ From this perception of Pakistan security vanguard and policymakers, India has superiority in conventional as well as in strategic arms, and Islamabad perceived that threats to its security is inevitable from the east. So, the security of the country depends only on its nuclear weapons and conventional armaments vis-a-vis to India and there is no doubt that only Pakistan has the ability to prevent foreign aggression and can counter its sphere of influence in the region.

As James N. Rosenau mentioned in the “Scientific Study of Foreign Policy,” for small states - foreign policy and diplomacy, both are primary instruments for their defence. Small states cannot pursue an ‘active strategy’ for the protection of territorial integrity because it will be expansive assertion for national identity and existence of the states. They have desire to increase accumulate power in order to promote national security.¹¹

However, Hans J. Morgenthau has given prescription that security through power is not enough for survival; states need utmost economic power to sustain in the world

7 Miriam Fendius Elman, “The Foreign Policies of Small States: Challenging Neorealism in Its Own Backyard,” *British Journal of Political Science* 25, no. 02 (April 1995): 171-217.

8 Walter Lippmann, *US Foreign Policy: Shield of the Republic* (Little Brown, 1943), 05.

9 Arnold Wolfers, “National Security As an Ambiguous Symbol,” *Political Science Quarterly* 67, no. 04 (Dec 1952): 481-502.

10 Alfred Stepan, *The Military in Politics: Changing Patterns in Brazil* (Princeton, NJ: Princeton University Press, 1971), 55.

11 James N. Rosenau, *The Scientific Study of Foreign Policy* (London: Nichols Publishing Company, 1980), 85-95.

because economically dependent country cannot be politically independent.¹² So, states are constantly involved in an effort to enhance their abilities. In this regard, the realists are the main supporters to security related matters. They consider that the global system is anarchical due to lack of central authority and the state is the main actor at international level. Moreover, realists believe that 'security' is the conditions that proved to use of power or the use of force which can affect individuals, states and societies. Furthermore, states' particular policies which states can approve in order to prepare prevent or engage in war. The realists claim that the referent of security is the country which is the main source of security. So, the country and military-centric model of security is only focused on the issues that are particularly concerned with the country's sovereignty, territorial integrity and freedom of a country. It is also a fact that small states are much more concerned by internal and external security threats.

Although all the small states are not helpless in the international system but some time the degree of threat seems greater in their case. However, some small states have capacity due to geographical feature of state in the world, and they can influence interests of the greater states, due to their political and economic stability. But several developing countries, are facing variety of internal and external security challenges. There are many small states in diverse areas of the world that are the victim of severe internal challenges such as socio-economic, environment, terrorism and extremism.¹³

PAKISTAN'S NATIONAL SECURITY

Since the inception of Pakistan, its national security landscape has been irreversibly dangerous, under stress, and susceptible to continue in conflict with its arch rival, India. The country is facing multi-dimensional threats in the conventional, sub-conventional (including rebellion and terrorism) and nuclear spheres. Along with its land frontiers, Pakistan faces disputed boundaries and is determined to contest India's territorial claims on Kashmir. India has to keep the issue alive because New Delhi has not developed any framework to resolve territorial disputes and country's relations are at a lowest point. At the micro-level, India seems to have been more provocative towards Islamabad. It is a reality that Pakistan's national security has been challenged by India's aggression more than thrice (1948, 1965,

12 For detailed study, see Hans J. Morgenthau, Politics Among Nations: *The Struggle for Power and Peace* (New York: Alfred A. Knopf, 1951), 65-75.

13 Bhimnath Baral, "Security Challenges of Small States," *Journal of Political Science* 17, (February 2017): 1-17.

1971 and 1999) and remained under the fear of external threat and bound to adopt a possibly offensive strategy for the protection of territorial integrity and sovereignty.

In this regard, the conventional military build-up against Islamabad by India has triggered concerns for the security establishment in Pakistan. In addition, the growth of Indian military strength has been escorted by a new aggressiveness. Seen in the backdrop of regular infiltrations by India along LOC border areas, It is viewed by security establishment as challenging for Pakistan without acquisition of modern technology and weapons to respond. More precisely, in the post-Cold War era, the new geo-political developments in South Asian region and globe have magnified the challenges to Pakistan's national security, which have caused a great degree of turmoil. It is perceived that Pakistan's national security has become complicated—not due to the threat of conventional war from India, but because of the unpredictable characteristics of modern warfare.

Pakistan's national security situation has become complex due to the proliferation of a diverse range of violent actions by the non-state actors and adversary actions. The purpose of this action is to destabilize national security through the new modes of psychological warfare to achieve nefarious objectives. So, the post-Cold War era has watched an astonishing “down shifting” of the nature of threats to the nation-states political stability. In short period of time, the trends in global politics have moved forward in the age in which worldwide nuclear war is perceived to be the leading threat, through a transitional era and it appeared that regional nuclear powers has become the main source of instability in the world.¹⁴ Moreover, in the new emerging scenario, the definition of the security has changed into new multi-dimensionality such as military, socio-political, economic, technological upheaval, and many other venues. So, in the new era, the meaning of security has diversified because “modern scientific devices or technology” has gradually accepted the transcontinental or non-state actors as a prime basis of violence.¹⁵

Historically, India becomes a threat to Pakistan and the reason concerned mainly arises from its hegemonic status in the region and its ideology “Hindutva” which is incompatible with the Muslim, Buddhist and Confucius civilization. It is perceived that these ideologies

14 Steven E. Miller, “A Nuclear World Transformed: The Rise of Multilateral Disorder,” *Daedalus* 149, no. 02, (Spring 2020): 17-36.

15 Camino Kavanagh, “New Tech, New Threats, and New Governance Challenges: An Opportunity to Craft Smarter Responses?,” *Carnegie Endowment for International Peace*, August 28, 2019, <https://carnegieendowment.org/2019/08/28/new-tech-new-threats-and-new-governance-challenges-opportunity-to-craft-smarter-responses-pub-79736>

have been an obstacle for the expansion of Hinduism and for their ambitious designs in the region. In reality, the ideology of Hindutva is completely different from the Samuel P. Huntington's clash of civilizations thesis which is because of the new orientation proposing a link between 'knowledge' and 'violence.' He discussed that prior to the closing days of the Cold War, social structure of society was separated by cultural differences and the most important distinctions among peoples would not be ideological, political, or economic but it would be cultural and patterns of cohesion would be found within the cultural boundaries.¹⁶ Thus, Huntington recommended a new hypothesis for the global politics which is different than the state-centric realist assumption, and the system controlled by neo-realist, which was dominated by civilizational-cultural factors. He also predicted that there would be competition between seven or eight 'civilizations' of which the fight with 'Islam,' and Hinduism will get the lion's share of confrontation.¹⁷ So, cultural clashes, as Vaclav Havel has perceived, "are growing and seems hazardous in the contemporary world than at any time in history."¹⁸

Moreover, several other factors inflate the Indian threat narrative in Pakistan. They include the heavy military industrial complexes, attempting to justify a large defence expenditure, as well as concerned military industrial sectors, who supply defence equipment and services.¹⁹ Right wing politicians including Narendra Modi (leader of the BJP), attempting to distract from domestic issues and using Pakistan card to gain benefits. In this regard, leaders have the purpose, means, and options which significantly distort national security descriptions.²⁰ South Asian states are concerned with India's infringement, both in the field of economic and military. It is deemed to expand the Indian threat and encourage China to increase its regional involvement. Thus, the materialization and progress of the preceding concepts about security proved that modern technology has the potential and capacity to perturb national security of a state to quite an extent.

Nations can ensure their survival through nuclear weapons, because it can potentially deter enemy from attacking country or its vital interests. Or nations can defend themselves

16 Samuel P. Huntington, "The Clash of Civilizations?," *Foreign Affairs* 72, no. 03 (Summer 1993): 22-49.

17 Ibid.

18 Václav Havel, "The Power of the Powerless," *The Hannah Arendt Center for Politics and Humanities*, Dec 23, 2012, <https://hac.bard.edu/amor-mundi/the-power-of-the-powerless-vaclav-havel-2011-12-23>

19 Richard A. Bitzinger, "The State of Defense Innovation in India: Can It Catch Up with Global Leaders?" *IGCC: S. Rajaratnam School of International Studies*, January 2014, https://escholarship.org/content/qt5c7911bp/qt5c7911bp_noSplash_fc5f4258bcd7efc6f92960e46ef4c320.pdf?t=nkzupj

20 Rodger A. Payne, "Thinking the Unthinkable About National Security Narratives," *Security Dialogue* 3, no. 3 (Summer 2014): 05.

by the modern means of proxy wars through the sophisticated advanced technology other than economic, political actions, propaganda, which is enough to destabilize country without involving in direct military action. In this situation, the security vanguard perceived that India is a potential threat to regional peace and security.²¹ The irrevocability of India 'rising' to achieve hegemonic status and its foreign policy, and diplomatic response along with its continued military, political and economic growth, India is gradually increasing. It is seen as a threat to regional peace and security.

INDIA'S REGIONAL ANTAGONISM

India has taken speedy steps in foreign policy and diplomacy, and has achieved the task of change in society, which has no relationship in their history. India's consequent upgrade in military expenditure, as well as its determination to developing its military instruments, is viewed as a serious threat to the security of Pakistan and this has nothing to do with China. This anxiety was obvious in 2006 Quadrennial Defence Review, which was written about India. It mentioned that the country is an emerging power and having the 'greatest potential to compete militarily' with any country of South Asia. It has the ability to develop military technology 'which with the passage could counter traditional military gains' of China and Pakistan, according to the review.²²

It was also underlined in the 2016-2017 Nuclear Posture Review Report (NPRR) of the United States that India's 'qualitative and quantitative transformation' of its nuclear weapons, along with its comparative deficiency, in protection of arsenal, is an important aspect which is increasing regional and global anxiety. It was proved when on March 9, 2022, India has accidentally fired a missile and it fell in the remote area of Pakistan. India claimed that the incident happened because of a "technical malfunction" during the regular preservation process but Pakistan cautioned the event could have "unpleasant implications."²³ Regarding India's regional aspirations, it is the claim of political observers that India eventually desired to enforce a "Monroe Doctrine," all the way in South and Southwest Asia.

21 Iftikhar H. Malik "Pakistan's National Security and Regional Issues: Politics of Mutualities with the Muslim World," *Asian Survey* 34, no. 12 (December 1994): 1077-1092.

22 Neil Renik, "Rising China: A Threat to International Security?," *E-International Relations*, April 13, 2012, <https://www.e-ir.info/2012/04/13/rising-china-a-threat-to-international-security/>

23 Arpan Rai, "Pakistan warns India of unpleasant consequences after mysterious supersonic projectile enters its airspace," *The Independent*, March, 11, 2022, <https://www.independent.co.uk/asia/south-asia/india-pakistan-supersonic-missile-airspace-b2033590.html>

The political observers and strategists of foreign policy and diplomacy argued that India's growing military power and influence could be the threat to regional security. It creates an alarming threat to strategic permanence, and assessments were often drawn by the on-going border friction of association, among India and Pakistan. It has also been proven by the proclamations of offensive realists that attaining hegemonic position within the regional and international domination is a state's decisive objective.²⁴ As far as India is concerned often their security guardian are full of doubts apart from increasing parity between India and China is irrelevant because New Delhi never claims that they have competition with China rather they are more concerned with Pakistan.

Hertz and Burke insist that the security problem is an unavoidable syndrome which is the response of the global radical landscape, whereby the state's non-offensive security arrangements can be the cause of reflection of other state antagonism.²⁵ This situation can move to increase military strength, as a result of total damage of security and fostering anxiety for all states. Moreover, it is also a reality that the growth of India's economy and military strength is likely to threaten the security of other countries in the region. When labelling the growth of mainland forces, Napoleon eminently said, 'the policies of all powers are inherent in their geography.'²⁶ There is no suspicion concerning its increasing power which has true regional ambitions and neighbouring countries specifies the incredibility of India's Monroe Doctrine in the near future with the support of the United States, because US is perceived to be a key ally of India in restraining China's global influence.²⁷

However, the fundamental interests and primary purposes of national security have transformed from time to time. Pakistan's national strategy is relatively complex due to external and internal security threats which are perceived to be enormously practical. It is the belief that Pakistan's core national security interests could be threatened if an adversary country, Non-State Actors or group of countries who dominate around the country's regions, which the area normally recommended to historically under the 'Great Game' or the world's heartland. The country remains under the security threats and still struggling against undeclared wars. The country has sought to prevent Indian geo-strategic and geo-

24 Glenn H Snyder, "Mearsheimer's World-Offensive Realism and the Struggle for Security: A Review Essay," *International Security* 27, no. 1 (2002): 149-173.

25 Anthony Burke, "Security," in *An Introduction to International Relations Australian Perspectives*, ed. Richard Devetak, Anthony Burke and Jim George, (New York: Cambridge University Press), 147-148.

26 "Napoleon on Politics and Power," *Napoleon Guide*, https://www.napoleonguide.com/quote_power.htm

27 James R. Holmes & Toshi Yoshihara, "India's Monroe Doctrine and Asia's Maritime Future," *Strategic Analysis* 31, no. 06, (November 2008): 1001-1007.

technological advantage, which they believe to dominate on the neighbours, and this perception, thereby, fundamentally alters the regional balance of power.

In the situation, the facts of Pakistan's geography, as Stephen Cohen pointed out that the security of Pakistan had the threats particularly its security establishment feared the aggression from India but have confidence that the national security had relatively been secured against India's conventional attack due to the presence of nuclear arsenals which were the potential guarantee of security.²⁸ Moreover, in the contemporary age, hostilities have become the prison of information technology, taken finishing goods (devices), cyber-attacks, and undermine the political legitimate institutions. The modern security landscape is specifically convenient to enemies who can take different advantages from possible asymmetric benefits - such as sources of data, demographic tendencies, and despotic influence on communication movement, making venue more cordial to dictatorial doctrine and commands.²⁹ The global community is also passing through the new experience which is the time of renewed based on computer rivalry and, simultaneously, decentralization of power within the federal structure, balance between state centre, particularly toward strong non-state actors, and super-empowered characters. Increasing resistance between India and Pakistan has arrived to describe this moment in their domestic and external affairs, which scholars are signalling, is a new venue of geo-political competition that may constantly change the regional order.

Due to perpetual threat from the eastern neighbour, Pakistan was compelled to adopt offensive defence posture. All civilian governments therefore accorded top priority to this threat deemed prejudicial to the interests of national security. This however came at the cost of leaving little for socio-economic development. Consequently, poverty has continued to increase in the country. The ruling elite barely realized that national security is largely dependent on economic growth which is one fundamental dimension of national interests. Without economic development, it certainly becomes quite difficult for any country to protect its vital interests. There is no gainsaying that economic growth provides the basis for flexibility in foreign policy and preserving sovereignty. In the absence of economic development it is rather difficult to maintain an independent foreign policy national cohesion.

28 Stephen P. Cohen, *The Idea of Pakistan* (Lahore Vanguard Books, 2006)

29 Camino Kavanagh, "New Tech, New Threats, and New Governance Challenges: An Opportunity to Craft Smarter Responses?," *Carnegie Endowment for International Peace*, August 28, 2019, <https://carnegieendowment.org/2019/08/28/new-tech-new-threats-and-new-governance-challenges-opportunity-to-craft-smarter-responses-pub-79736>

ADVANCED TECHNOLOGY AND REVOLUTION IN MODERN WARFARE

The era of conventional war is gone or completely dead, and in the same way, the age of traditional warfare has also vanished which normally requires - target areas, fronts, advances and victories. The conventional war is normally fought by conventional weapons, which have no more importance in the present world. It was war in which ferocity, massacre, and coping was the common miracles, not mainly geostrategic concerns, or conventional or nuclear threat, or armament, can be consider somehow the certain matter to prevent war or aggression. So, in the contemporary age of 21st century, sophisticated technology has the central importance in the modern strategic frameworks, because technological actions are necessary factors of change between the war and state's correlation. Ultimately, the waves of technological variation can extend in the whole society.³⁰ In this regard, the people have to see the universal sophisticated electrical instruments. Along with smartphone and the creation of the new devices by defence institutions which are commendable. Thus, modern advancement in technology has in a position to influence the modern way of war and vice versa. This situation has grave impact on the state and there is no doubt that technology has changed the nature of war, and reshaped the character of state and the contemporary world.

There is no doubt that the advancement of modern technology has changed the character of war and its operational approaches have changed the face of warfare. It happened just because of the sharp development in technology, which sets new rules of warfare and its styles. Like factual position within a wide-ranging historical measurement, and pattern of direction within the means and ends for piloting this stormy of future prospect.³¹ Thus, technological advancement is actually more delicate than the Clausewitz' notion of mean "war in the perspective of collective action but different in many angle," particularly socio-economic cultural and political characters.

Clausewitzian belief dominate that "war is the aggressive response of politics by other means." So, war objectives cannot be achieved by moral and physical strength, however, it determines on the advancement of military technology along with the modern factors, such as identity politics, culture and economic means with socio-political conditions. He also

30 Narcyz Roztochi, "The Role of Information and Communication Technologies in Socioeconomic Development: Towards a Multi-Dimensional Framework," *Journal of Information Technology for Development* 25, no. 02 (2019).

31 Emile Simpson, Clausewitz's Theory of War and Victory in Contemporary Conflict," *Parameters* 47, no. 04 (2017): 7-18.

argues “War never achieves its absolute because war is never an isolated act: war does not consist of a single short blow: and in war the result is never final.”³² In the situation, it will be useful to recall the Clausewitz’s judgment, “Very few of the new manifestations in war can be ascribed to new inventions or new departures in ideas. The result mainly will come from the “transformation of society and new social conditions.” Above all else, Clausewitz insists that war is an instrument of policy. It means that war should be waged not for the goal of victory, necessary though that usually is, but rather for the securing of an advantageous peace because there is more to war than warfare.”³³

Thus, it has proved that the model of conventional warfare has been exhausted and it has no traditional advantages against the adversary. It cannot wear down the adversary with the passage of time by demanding to utilize uneven quantity of means which can create the assumption of “implausibility of success or the deplorable damages” of enduring actions. It exploits the incompetence of forces in front of the multi-dimensional small or large fronts. Thus, it is to avert rebellious violent actions or to avoid from the attainment of allied territory, countering non-traditional warfare which involves heavy amounts of military resources. This extensive physical participation in the war is costly and wasteful as most of the forces deployed for the state of vigilance and not involved in performing professional job or predictable preparation. It drains the adversary’s time, wealth, and ability, becoming the reason of demise by a million wounds. Though the forces can turn as a tripwire for boom, they are perceived to be not willing for traditional warfare because their energies, exercises, training, and dynamisms are distracted to other un-professional missions.

TECHNOLOGY AND THE SECURITY LANDSCAPE

The implication of modern technology on the country’s security is grave, inclusive, and it can affect to military performance, intelligence, economic effectiveness, and can change the nature of political system. In fact, the technological revolution has changed the direction of threats and it has also transformed the nature of security landscape, the judgment, speed, and possible influence of modern technology is extraordinary. Many current threats have been initiated by the modern sophisticated technology - like developments in weapon potentials or change in the fundamental geopolitical power structure which has given new challenges to existing position, such as in the case of information operations, cyber-attacks, or self-created

32 Ibid.

33 George Dimitriu, “Clausewitz and the Politics of War: A Contemporary *Theory*,” *Journal of Strategic Studies* 43, no. 05 (2020): 645-685.

biological threats.³⁴ Therefore, sudden change in the assorted nature of technology is basically changing the nature of warfare and security of the country. So, the profound progress in the war instrument and its software balancing the power structure in the region and at the global level replaced by digitally-network, information technology and modern communication, has converted the socio-economic and security landscape, including the fabric and rhythm of daily life.

It is also a reality that modern technological devices have created new types of internal and external challenges to national security. It generated a strategic rivalry with the adversary, and amplified joint weakness of states as well as non-state actors' cheaper military hardware - more operational and hard-to-attribute tools. With this vision, the technology has effective and active role in outlining the national security landscape and management of technological revolution normally has been critical national security strength for the country. The progress and overview of weapons, such as technologically advanced small conventional and nuclear weapons, stealth technology, and modern missiles - changed the security atmosphere and in somehow, altered regional and global dimensions of relations.³⁵

As a matter of fact, the unique civilian technologies have substantial significance for national security, energy, the combustion engine, the aircraft, the global standing system and the computer internet network. In this position, speedy and insightful progress in hardware and software, matching with the global change, to digitally-networked information and dealings - has distorted the economic and security parameter. The nature of the tasks posed by blue water novel technologies has reduced the inheritance outfits for consideration. It has rendered national security dangers misaligned with the changing geopolitical realities.

Nevertheless, the present geo-political rivalry is reshaping its reaction for adversaries. In the same pattern the nature of military and economic competition is changing its face so severely that the past instruments are leaving no option. Offensive strategies seem to isolate traditional pattern and have adopted new technological innovation as a means of modern warfare, which is the new reality in the contemporary world. While kinetic battle will continue as an element of warfare, the coming generation of armaments has already

34 Gregory D Koblentz and Brian M Mazanec, "Viral Warfare: The Security Implications of Cyber and Biological Weapons," *Comparative Strategy* 32, no. 05 (2013): 418-434.

35 Steven E. Miller, Robert Legvold, and Lawrence Freedman, "Nuclear Weapons in a Changing Global Order: The Challenges of a Multipolar Nuclear World in a Shifting International Context," *American Academy of Arts & Sciences*, 2022, <https://www.amacad.org/publication/nuclear-weapons-changing-global-order/section/3>

prolonged to contain technological devices, technological surveillance, and access to modern information technology. Animosity will be replaced by the new technique of information strategies, such as embezzled modern technological know-how, cyber-attacks, and to damage the democratic institutions.³⁶

With this background, the contemporary security landscape is predominantly convenient to enemies who can take advantages from various asymmetric benefits - such as to seize sensitive data, demographic trends, and direct access over information movement - generating an atmosphere which can be comfortable to authoritarian establishment and extremist elements. In this regard, the present world is already experiencing an era of great power competition and, at the same time, power structure has replaced the state actors to strongest non-state actors, powerful business groups, and super-empowered individuals. Moreover, in this situation, increasing hostility between the new nuclear powers India and Pakistan, has redefined the present-day position of new era of geostrategic competition that may change the regional order.³⁷

EMERGING TECHNOLOGIES AND NATURE OF THREATS

The term “emerging technology” is normally used to describe an innovative technology which is certainly sophisticated and scientifically advanced as compared to other conventional devices, which are not as effective as the new technologies. This term is also recommended to technologies that are newly created, or these are expected to be available in the coming time to prevent the adversaries’ offensive moves. They are commonly kept for modern technologies which are producing, or are chances to create substantial socio-economic and political effects. In this regard, emerging digital technologies have generated new opportunities and also created new challenges for state and government - particularly related to armed forces or national security.³⁸ So, the growth of digital information technologies and mass-media has given birth to challenging issues related to modern technological devices - including digitalization and circulation, which is the essential part of psychological warfare.

In fact, the use of modern technology in different areas is undeniable in the field of war

36 Paul Stockton, “Defeating Coercive Information Operations in Future Crises,” *National Security Perspective*, 2021, <https://www.jhuapl.edu/Content/documents/DefeatingCoerciveIOs.pdf>

37 Stephen P. Cohen, “India, Pakistan and Kashmir,” *Journal of Strategic Studies* 3, no. 02 (2003): 1-36.

38 Peterson Ferreira da Silva, “Opportunities and Challenges of Emerging Technologies: The Importance of the Aerospace Industry for Brazil,” *Journal of the Americas* 2, no. 02 (2018): 150-159.

and security. It is to demoralize enemy forces through the means of modern technological devices - which are equally important for media, business, science, or education. So, the emerging technologies are fundamentally potential to change the security landscape. In fact, prompt and intense improvements in technological hardware and software, balancing by universally change in the digital networking and connections, have distorted the economic and security parameters, along with the fabric and rhythm of routine business. It is also true that new technology is challenging and has created many types of new risks to national security, created a strategic contest among the foes, and enlarged weaknesses in the customary techniques of defence and security.

Additionally, the radical and profound improvement in modern technology (hardware) and communication enhancement (software), combined with worldwide change in digital technology, communications and have the new look to the economic and security environment. The malevolent state and non-state actors equally run their rebellious role to generate difficulties for state matters. The landscape of the threats which has come by the sophisticated technologies is working as important instrument to protect the national security and to encourage novel vision in the changing geopolitical environment.³⁹

However, it is reality that technological advancement has changed the fabric of national, regional and international challenges. It has also benefited to strengthen the national security landscape, since the level of power and possible consequences of new technologies are unmatched. Thus, there are ten emerging technologies which have a long lasting impact, and those whoever have access to these technologies cannot be defeated. They will be directly going to hurt the concerned country through the information operations, cyber-attacks, or genetically-engineered biological threats.⁴⁰

In this situation, important technological progress are being made beyond a range of fields, including communications technology (ICT); artificial intelligence (AI), particularly in relations to computer education, and manufacturing – nanotechnology, space, biotechnology, and quantum computing. These developments are predictable, which are greatly disturbing and bring core transformative changes - to run the system of societies. These inventions are highlighted on the collective assembly, handling, and evaluating of massive

39 Dorothea L. Barton and William A. Kraus, "Implementing New Technology," *Harvard Business Review* 4, no. 02 (1985), <https://hbr.org/1985/11/implementing-new-technology>

40 Kevin Dickinson, "Ten emerging technologies that will change our World," *Big Think*, May 31, 2022, <https://bigthink.com/the-future/10-emerging-technologies-change-world/>

quantities of data - creating from the information technology to impact on unlimited ranges of research and growth. These developments assurance momentous socio-economic advantages boost effectiveness and improved production across a host of areas.⁴¹

Moreover, the current technological advancement in the field of machine teaching and learning can be accessible from the open-source platforms. These specific experts are available in the software houses and this type of skill labour normally can be hired from civilian sector. Because civilian technicians are much more reliable in terms of developing new instruments, but hesitant to work due to the potential security implications. Their approach has become largely democratized with reference to powerful technologies which are manageable in the technologically advanced markets - along with modern computer and internet connection with latest models.

However, a few modern technologies need particular experts and momentous resources, such as high speed quantum computers, or it can be hypersonic and synthetic biology. Thus, some of the inventions can pose great challenge or dangers because many technologies are available in the market with fake identities which can blowout misinformation. Fake recognition that are backings ubiquitous investigations about technologies or malware of incentives to prevent from cyber-attack have lessening fences to approach, and are not expensive to proliferate. In response of that the emerging challenging empowered the state actors by modern technologies in the new model which seems to be inexpensive but strongly effective, and there is no difficulty to attribute. So, geopolitical struggle is growing in response to modern know-how. The modern era has changed all dimensions of global politics and the nature of military and economic competition has shifted from geo-politics to geo-economic.

The present era is very effective as compared to the Cold War time because the contemporary time has changed instrument of warfare and fighting strategies. However, kinetic battles will continue to be an essential part of warfare. It is necessary to remember because the new generation of weapons has replaced the methods of warfare and included sensitive technological tools, technological surveillance, and information access.

On the other hand, prosaic civilian technologies have also had significant consequences for national security - including electricity, combustion engine, airplane, global positioning

41 Riel Miller and Wolfgang Michalski, *21st Century Technologies: Promises and perils of a Dynamic Future* (OECD Publication, USA, May 1998), 75.

system (GPS) and internet. In each instance, national security policy makers have to take stock of their approach and re-examine the existing theories and practices of warfare. It will determine the structure of organizations and strategies ought to be adapted in light of new tools. So, profound technological change includes recent breakthroughs in the subfield of artificial intelligence (AI) which is known as machine learning (ML). It has potentials to enable computers to interpret and understand the visual world, process and synthesize language, control autonomous vehicles, beat elite human players in sophisticated games, or automate tasks from the mundane to the creative, while exacerbating concerns of ubiquitous surveillance, technological unemployment, and geopolitical conflict.⁴²

INFLUENCE OF EMERGING TECHNOLOGIES

In the post-cold war era, technological advancement has taken leading position against the traditional warfare. It has also reshaped the basis of threats and the nature of security intimidation - on the incipient technology, which is unmatched. Many threats or challenges which are being faced by the state are originated by modern advanced technology like modernization in weapon potentials, or change in the on-going geopolitical landscape of power structure. It is also fact that the present hazards are severe in and of themselves, as the threats can appear in the shape of information operations, cyber-attacks, and genetically-engineered biological threats.⁴³ It is inexorable truth that the contemporary steps of advancement are speedy, than were in the past. As a result, technological developments signify a frequent moving object. Thus, the influence of modern technology on the national security is comprehensive, straddling the military and intelligence upheaval, socio-economic effectiveness, and the political future of democracy.

In the past, key developments in military technology were produced in the public sector scientific laboratories, or under the official cover - desired entrance in the strict-controlled physical assets or modern industrial instruments abilities, and were classified in nature or keep secret for the sake of state interest. These qualities distinct where and how the technological discoveries would be presented and applied. So, the current advancement in technology in

42 Stefan Brambilla Hall, "3 Technologies that will Shape the Future of the Metaversa – and the Human Experience," *World Economic Forum*, Feb 7, 2022, [https://www.weforum.org/agenda/2022/02/future-of-the-metaverse-vr-ar-and-brain-computer/#:~:text=These%20include%20virtual%20reality%20\(VR,platforms%20in%20their%20own%20right.](https://www.weforum.org/agenda/2022/02/future-of-the-metaverse-vr-ar-and-brain-computer/#:~:text=These%20include%20virtual%20reality%20(VR,platforms%20in%20their%20own%20right.)

43 Danie T. Kuehl, "Information Operations, Information Warfare, and Computer Network Attack Their Relationship to National Security in the Information Age," *International Law Studies* 76 (2002), <https://digital-commons.usnwc.edu/cgi/viewcontent.cgi?article=1400&context=ils>

different fields such as machine learning - is approachable. These scientific developments or innovations often happen in the area of software but not in hardware, and then there is no need of sophisticated manufacturing to replace or be introduced in the markets. These growths progressively take place outside the arena of official circle, with citizens at the helm in manufacturing new instruments, which normally vague framework on their impending security consequences.⁴⁴

Nevertheless, the threats facilitated by technological advancement in this new paradigm appear graceful, and seem less expensive, operational, effective and hard to attribute. Geopolitical rivalry is changing in reaction and the nature of military and economic competition is replacing so profoundly that it is difficult to understand. The war perceived to be gradually skewed with the new inventions in global geopolitical race. While kinetic combat will always remain a component of warfare, the next generation of weapons has expanded to include technological control, human rights-abusing technological surveillance, and information access. Increasingly, hostilities will take the shape of information operations, stolen intellectual property, cyber-attacks, and the undermining of democratic institutions. Thus, the new security landscape is especially convenient to a challenger who has taken advantages from certain asymmetric rewards - such as quantities of data, demographic trends, and autocratic control over information flow - creating an environment ever more hospitable to authoritarian ideology and regimes. The world is also experiencing a period of renewed great power competition and, simultaneously, devolution of power away from state actors toward powerful non-state groups, corporations, and super-empowered individuals. Escalating friction with US and India has come to define this moment in foreign policy - with scholars heralding a new era of geostrategic rivalry - that may permanently transform the global world order.

44 Brendan McCord and Zoey A. Y. Weinberg, "Emerging Technology & The Future of the National Security Council," *Center for International Security and Cooperation*, Dec 28, 2020, https://fsi-live.s3.us-west-1.amazonaws.com/s3fs-public/emerging_technology_and_the_future_of_the_nsc_-_final.pdf

CONCLUSION

Pakistan's national security strategy has changed at the end of the cold war, and reshaped by its internal and external priorities, and link to territorial issue with the neighbouring country. In a sense, the country's strategy for national security appears rigid, assorted, and complex. The basic reason of inflexibility of national security was strength of external threats and it remained the same which has severe effects on the country's national security environment, and its bilateral relationships. The country's security establishment realizes that its potential rivalry in the region is with India which is not missing any chance to destabilize the country's national security. However, Pakistan's security vanguards are prepared to use all possible measures including traditional and non-military measures for protection, and to defend its national security and integrity of the country.

New technologies are creating dynamic supremacy as a tool of statecraft, and a cause of conflict. These developments have potential socio-economic advantages, improved competence, and enriched production across several sectors. Nonetheless, relying on these modern technological advantages and with "transformational" capabilities of military forces - such as, secret technology, precision guided weapons, force-enhancement support from modern technologies (ground and space), and systems networking can provide better options to defend the country. Pakistan's military capabilities are clearly on an upward trajectory with a well-planned military doctrine.