



COMPENDIUM SHORT ARTICLES 2024

MARITIME CENTRE
OF EXCELLENCE



VISION

MCE is to be 'National Hub of Maritime Thinking'.

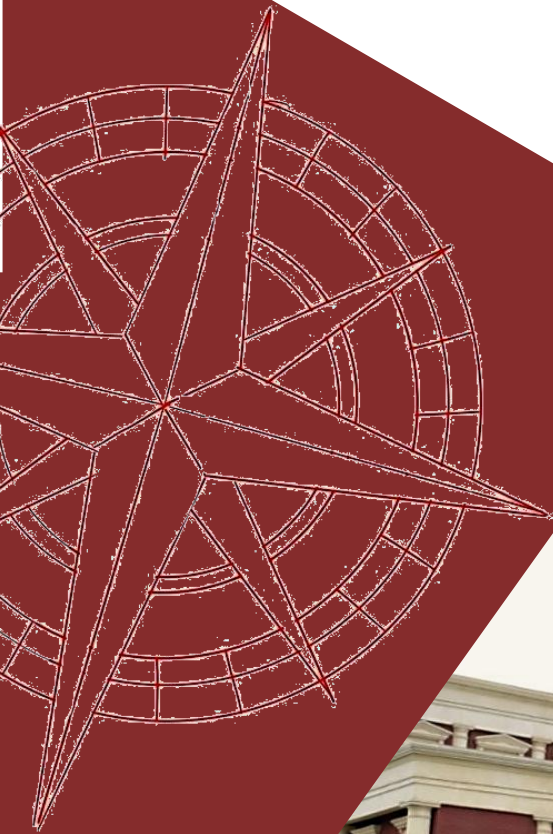
MISSION

To conduct multi-disciplinary research focusing on Maritime Security and Blue Economy duly rendering input to Naval Headquarters for promoting maritime sector in-country and abroad while preparing naval leadership for contemporary maritime challenges.

OBJECTIVES

- Act as intellectual and research fountainhead
- Construct and project national maritime narrative
- Establish and strengthen academic partnerships
- Support PN efforts to strengthen maritime sector
- Contribute in developing and validating PN's operational concepts and defining future Navy
- Groom naval leaders to meet future challenges

MARITIME CENTRE OF EXCELLENCE (MCE)



MCE was established at Pakistan Navy War College (PNWC) Lahore on 12 December 2019.



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Maritime Domain and Naval Strategy

01



Modern Warfare and Military Technology

24



Contemporary Conflicts and Hybrid Warfare

84



Geo-politics and Global Power Dynamics

109



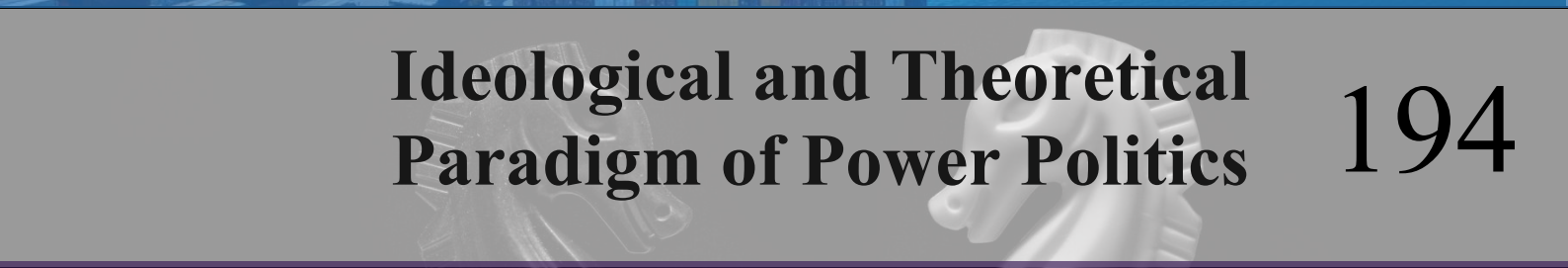
Environmental Issues and Climate Change

153



Interplay of Economy, Energy and Maritime Domain

170



Ideological and Theoretical Paradigm of Power Politics

194



Miscellaneous

216

Maritime Domain and Naval Strategy

S No	Article Title	Author	Source	Date	Page No
1	Iran's Growing Assertive Posture and Its Role in Maritime Domain	Ahmad Ibrahim	Modern Diplomacy	09 Apr 2024	01
2	Israel – Palestine Conflict and Its Maritime Spillover	Ahmad Ibrahim	Stratheia	15 Apr 2024	03
3	From Border Defense to Integrated Commands: India's Military Doctrine Evolution	Javaria Shaikh	Strafasia	09 Jun 2024	04
4	India's Concept of Integrated Theater Command: Implications for Pakistan	Fizzah Shuja	Strafasia	11 Jul 2024	06
5	Hacking Ministries – Case of Maritime Sector	Cdr (R) M Azam Khan	Minute Mirror	23 Aug 2024	08
6	Revitalizing Pakistan's Maritime Sector: A Proposal to Downsize Ministry	Hamna Ghias	Global Defense Insight	31 Aug 2024	10
7	Pakistan Navy Day: Remembering Valor at Sea	Gul Hameed	Global Defense Insight	08 Sep 2024	11
8	Time to Recalibrate State's Institutional Engineering	Fizzah Shuja	South Asia Times	02 Oct 2024	13
9	From Colonial Legacies to Contemporary Strategic Evolution of IOR	Fizzah Shuja	Eurasia Review	24 Oct 2024	15
10	MARSEW 2024: Strategic Maritime Challenges in Indian Ocean	Safia Mansoor	Minute Mirror	26 Nov 2024	17
11	Defying the Rule of Law: Challenges in Implementing UNCLOS	Javaria Shaikh	Minute Mirror	30 Nov 2024	18
12	Anchoring Seafarers' Rights: An Indispensable Step for Pakistan's Maritime Future	Fizzah Shuja	Eurasia Review	15 Dec 2024	20
13	Piracy as Non-Traditional Security Challenge in IOR: Countermeasures by Pakistan	Ahmad Ibrahim	Modern Diplomacy	23 Dec 2024	22

Iran's Growing Assertive Posture And Its Role In Maritime Domain

Ahmad Ibrahim

Modern world order is currently undertaking a paradigm shift. U.S. led unipolar hegemonic order is gradually eroding and a new multi-polar world is emerging. Unlike Cold War, in which Soviet Union and United States competed for global dominance, the new Cold War primarily based on China – U.S. power struggle is centered in Indo-Pacific region. Beside Washington and Beijing, several regional players, including Iran which is traditionally considered a Middle Eastern Power, are increasingly expanding their role in emerging geopolitical order.

Zbigniew Brzezinski, a former U.S. National Security Advisor, in his influential work “The Grand Chessboard: American Primacy and its Geostrategic Imperatives (1997)”, has characterized Iran as a pivotal state. According to Brzezinski, pivotal state stems significance from its geographical position. Situated at the crossroad of Central Asia, Middle East and South Asia, Iran influence spans across the entire region, thus reflecting its status as a pivotal state in regional strategic calculus.

Iran's military posture has gradually evolved with respect to Tehran's political ambitions. Since the mid-1980s, Iran has been following a defensive military strategy characterized by two main components: the development of ballistic missiles for deterrence, and employment of asymmetric tactics for defense. However, since the "Arab Spring" uprisings in 2011, Iran has periodically integrated offensive elements in its doctrine. Iran's current forward defense doctrine is aimed at countering potential threats proactively beyond its borders by employing asymmetric military means. By developing missile systems, supporting militant organizations, and adopting hybrid warfare as tool of regional power projection, Iran has gradually transitioned from a defensive threat-centric posture to an offensive target-centric posture.

On military scale, Iran has developed asymmetric capabilities to overcome deficiencies in its military prowess. Beside vast arsenal of ballistic and cruise missiles, Iran operates variety of unmanned systems, including kamikaze drones, which have proven their combat efficiency in Russia-Ukraine war and even in Red Sea Crisis. These systems, particularly when employed in large number, provide Iran necessary targeting capability to saturate defensive systems of technological superior adversaries and therefore also provide deterrence to great extent.

Similarly, by successfully exploiting the power vacuum in conflict-ridden Middle East, Iran has established footholds in entire region. Iranian Revolutionary Guard Corps (IRGC) has successfully unified various militant organizations under its aegis. This politico-military coalition, often dubbed as “Axis of Resistance”, is directed to project Tehran's interests, and thus reflects the offensive component of Iran's transforming doctrinal posture.

The most profound impact of Iran's growing offensive posture can be observed in maritime domain. Iran has successfully consolidated its position at key maritime choke points including Strait of Hormuz in Persian Gulf and Bab-el-Mandeb in Red Sea. Using asymmetric capabilities like swarming tactic utilizing small fast attack-crafts, mines, drones, and anti-ship missiles, Iranian security forces and Iran-backed militias have exhibited the potential to disrupt maritime traffic passing through these regions. Thus, despite being a regional power with no credible power projection capability, Iran has acquired potential to impart global ramifications by exploiting the geographical vulnerability of Persian Gulf as well as Red Sea through asymmetric means.



The Gulf of Oman provides maritime connectivity between Persian Gulf and Northern Arabian Sea, and eventually with Indian Ocean. The oil rich region generates approximately one-third of global oil production and possess more than half of world's crude oil reserves. Covering an area more than 87,000 square-mile, the gulf is only 30 miles wide at its narrowest point in Strait of Hormuz. The strait is one of the most important maritime choke point through which estimated 17 million barrels of oil transits into Indian Ocean. Any crisis in Persian Gulf can disrupt the maritime routes and can have far-reaching consequences for global energy markets and world economy.

Similarly, Red Sea Transit route accounts for 12 percent of global maritime trade and being the only connectivity channel between Indian Ocean and Mediterranean Sea, holds paramount geopolitical importance. Iran-backed Houthi militia now represents Tehran's bastion in Red Sea. As of March 15, 2024, 67 incidents involving attacks on maritime vessels by Houthis have been recorded. Houthis are using short-range ballistic missiles, cruise missiles, suicide drones, unmanned surface vessels (USVs), and even conducting boat and helicopter raids against merchant vessels in Red Sea and Gulf of Aden. Shipping vessels are now opting for the longer route around the Cape of Good Hope to reach Mediterranean Sea and Atlantic Ocean. This shift is anticipated to reduce shipping operational efficiency by around 25 percent. By the first half of February 2024, 586 container vessels had been rerouted, while container tonnage crossing the Suez Canal fell by 82 percent. According to OSINT sources, as of 11 March 2024, coalition naval forces have intercepted/destroyed 28 missiles, 147 aerial drones, 19 unmanned-surface vessels, and other military systems. However, interception of Houthi's cheap rudimentary weapon systems by expensive air-defence missile system is economically unsustainable in longer run.

Many analysts argue that the transition of Iran towards a more aggressive posture might indicate vulnerability rather than strength. Iran faces a dilemma as it seeks regional dominance while managing complex relationships with neighboring countries. Iran's military assertiveness, while intended to showcase strong resolve and increasingly capable military prowess, poses risk of significant strategic miscalculations.

In brief, three major implications of Iran's assertive posture can be highlighted. First, Iran's increased assertiveness has intensified security dilemma between Iran and its adversaries. Iran's proliferation of offensive capabilities, including ballistic missiles, cruise missiles, and drones, is an indication of regional arms race which can compromise regional balance of power and subsequently disrupt strategic stability. This can yield risks of conflict eruption and inadvertent escalation of military crisis into large scale war.

Second, the disruption of key maritime routes across Persian Gulf and Red Sea can undermine global shipping subsequently leading to global energy and economic crisis. This can compel global powers to increase their naval presence in the region to safeguard their maritime interest. The increase militarization of maritime choke points will further complicate regional geopolitical landscape.

Third, IRGC continuous support for proxy militias and insurgent groups in foreign countries can exacerbate conflicts and undermines efforts to achieve political stability. Such groups are irrational actors and therefore cannot be deterred through traditional means. The possession of offensive long-range guided systems, including ballistic/cruise missiles and drones, in hands of non-state actors grants them more operational flexibility and superior fire power, thus complicating defensive countermeasures. By equipping militant organizations with such military systems, Iran has increased the volatility of regional security landscape.

In a nutshell, Iran has emerged as important player in regional power politics. With growing offensive posture in the Persian Gulf, Red Sea, and the broader region, Iran has exhibited capability to impart its influence at regional as well as global level. As the competition of power in Indo-Pacific will intensify, the role of Iran in regional strategic calculus will increase correspondingly. Instead of employing coercive policies, there is need to undertake confidence building measures (CBMs) and craft regulatory mechanism between regional and international actors to sustain strategic stability and avoid conflict eruption which can have far-reaching consequences at regional as well as global level.



Israel Palestine Conflict And Its Maritime Spill Over

Ahmad Ibrahim

Recent Israel-Palestine conflict is physical manifestation of modern day human crisis and represents failure of collective conscience of international community. Israel's bombardment of besieged Gaza, spanning more than five months, has killed more than 32,000 Palestinians – majority women and children - and has injured approximately 75,000. Almost 35 percent of urban infrastructure has been destroyed and more than 1.7 million people have been displaced. According to United Nations, entire population of Gaza, about 2.3 million in total, is facing acute food insecurity. But despite open display of grave human rights violations, no credible measures have been materialized to permanently halt Israel's aggression. Cease fire talks are yet to deliver any concrete results. Recently passed United Nations Security Council Resolution 2728, calling for immediate ceasefire in Gaza, has also been sidelined by Israel and no mutually agreed framework has been established to ensure conflict termination.

Considering the political vulnerabilities of Middle East, it was feared that Israel-Palestine conflict could transform into a major crisis with far-reaching consequences. Despite border skirmishes and targeted airstrikes by Israel Air Force (IAF) in neighboring Lebanon and Syria, the conflict has not escalated into full-scale war. However, the spillover effect of Israel-Palestine conflict has been profoundly evident in the maritime domain, particularly in Red Sea, and has caused ramifications at global scale.

Located between Suez Canal and Bab-el-Mandab, Red Sea is transit route to roughly 12 percent of total global trade and ensures connectivity between Indian Ocean and Mediterranean Sea. Red Sea provides shorter route, approximately 4,000 miles less, compared to the Cape of Good Hope at the southern tip of Africa. This shorter route significantly saves time, fuel consumption and operational costs for shipping companies, thus granting Red Sea paramount geopolitical importance.

Iran-backed Houthi militia, which controls Western Yemen, has been targeting merchant vessels transiting Red Sea in response of Israel's aggression in Gaza. The Bab el-Mandeb Strait is only 26 kms wide at its narrowest point, making it vulnerable to shore-based attacks. Houthi militia has successfully exploited this vulnerability and has used shore-based missiles, drones, and even helicopter raids to target merchant vessels and warships.

Initially Houthi rebels claimed that they are only targeting Israeli merchant vessels in an act of solidarity with Palestine. But after United States and United Kingdom airstrikes in Yemen, the group expanded the target list to include American and British origin vessels. However, factors like situational ambiguity, fog of crisis, and uncertainty to identify and classify ships passing through Red Sea, have made all types of vessels passing through Red Sea vulnerable to advertent or inadvertent targeting by Houthi militia.

As of 15 March 2024, 67 incidents involving attacks on maritime vessels by Houthis have been recorded. In general, such attacks have caused minimal damage. But on 02 March 2024, a British owned bulk-carrier cargo ship, named MV Rubymar, sank after getting struck by Houthis' anti-ship ballistic missile. The sinking of ship, loaded with 41,000 tons of ammonium nitrate fertilizer, not only showcased the risk of sinking of large shipping vessels, but has also exposed the dangers of catastrophic environmental damage. Seven of the top ten shipping companies have already suspended their operations in Red Sea. Majority of shipping vessels have rerouted to Cape of Good Hope around Africa to reach Atlantic Ocean. The adaptation of this longer route extends the transit time up to three weeks and can undermine shipping operation efficiency by 25 percent. Such diversion of shipping vessels has put additional strain on global supply chain, badly impacting global economy.





From Border Defence To Integrated Commands: India'S Military Doctrine Evolution And Its Impacts On Pakistan

Javaria Shaikh

India's military doctrine has undergone significant evolution over the years, transitioning from a focus on border defense to a more nuanced strategy centered on integrated commands. This evolutionary process can generally be attributable to various geopolitical and strategic challenges in the region, reflecting changes in its threat perceptions and assessments. This shift has not only been influenced by changing security dynamics but also have significant implications for regional geopolitics, particularly in the context of India-Pakistan relations as well as security calculus.

In late 20th century India considered predominant security challenges from Pakistan. During this period, the threat of a conventional conflict with Pakistan, characterized by the potential for short notice, short duration and rapid escalation with possible asymmetric tactics involved, shaped India's military thinking. The Sundarji Doctrine was developed in response to India's experiences in the 1962 Sino-Indian War, the 1965 Indo-Pakistani War, and the 1971 Indo- Pak War.

This doctrine emphasised on the need for a proactive and an offensive posture to deter and defeat Pakistan in a limited war scenario. The Doctrine called for holding limited territorial objectives and launching deep strikes into enemy territory to apply pressure and secure favourable outcomes.

In 21st Century, India's threat perception evolved due to the growing influence of non-state actors, terrorism, and the spectre of nuclear escalation. The Kargil War in 1999 highlighted the limitations of India's mobilization and offensive capabilities under Sundarji Doctrine. Mainly, in 2001, Operation Parakram's massive troop mobilization proved ineffective under Sundar Ji Doctrine, leading to a shift towards the Cold Start Doctrine (CSD) in 2004, which was focused on reduced warning time in mobilization.

The Cold Start Doctrine was conceived to address mobility challenges by advocating for rapid mobilization and offensive operations to deter aggression from Pakistan while avoiding the nuclear threshold to get triggered. The CSD emphasized integrated agile forces, greater firepower, air power dominance, and enhanced reconnaissance and surveillance capabilities.

However, the execution of the CSD faced challenges after the Mumbai attacks of 2008 in the form of limited deterrence and military preparedness. Also Mumbai Attacks highlighted the need for more comprehensive military doctrine to address the emerging threats. Post-2008, the Indian military engaged in substantial exercises to overhaul its offensive capabilities and prepare for executing the CSD. Post 2010, India's threat perceptions underwent further changes due to shifting regional dynamics, including China's growing assertiveness and the evolving nature of hybrid threats. Consequently, in 2018, India adopted a new Land Warfare Doctrine (LWD), which marked a departure from the Cold Start Doctrine's emphasis on swift, limited offensive operations.

Unlike Sundarji and Cold Start Doctrine with focus was on border defence, the Land Warfare Doctrine focuses on integrated commands. LWD emphasises on the integration of the Army, Navy, and Air Force in a unified approach to warfare, emphasizing joint-manship and the ability to respond effectively to a spectrum of threats. It emphasizes the need for proactive and offensive strategies while also highlighting the importance of defensive operations and protection of national interests. The Land Warfare Doctrine reflected a broader understanding of security challenges, emphasizing the need for a comprehensive and integrated approach to warfare.

In recent years, India has embarked on a comprehensive military restructuring efforts aimed at modernizing its armed forces, enhancing organizational effectiveness, and addressing evolving security challenges. This military/force restructuring is also a part of India's Land Warfare Doctrine to make it successful and not the failure like the previous doctrines. These restructuring initiatives encompass changes in force structure, command and control mechanisms, training methodologies, procurement strategies, and operational concepts. Main aspect of recent military restructuring efforts includes Integrated Theatre Commands. The concept of integrated theatre commands (ITCs) was proposed by the Shekatkar Committee in 2016 to address concerns about the lack of jointness within the Indian military and to bring together different branches of military under a unified command structure. The committee recommended the establishment of three ITCs: Southern, Western, and Northern. To expedite the operationalization of ITCs, the Inter-Services Organizations (Command, Control and Discipline) Bill 2023 was passed by the Lok Sabha on August 4, 2023. This bill enables the commanders of each ITC to discipline personnel from all three services under their command, signalling the government's commitment to this initiative.

The plan aims to consolidate the current 17 commands of the Indian military into three commands, promoting "tri-services synergy", foster interoperability and efficient resource utilization, as emphasized by former Indian Army Chief General Manoj Mukund Naravane. Each theatre command will integrate elements from the army, navy, and air force under a single commander, reporting directly to the chief of defence staff for effective command and control. This transition toward ITCs seeks to address existing gaps in the Indian military due to a lack of jointness among services. By integrating forces into Theatre Commands, India aims to improve jointness, streamline decision making process and to enhance its overall military capabilities. How this shift in Indian military is particularly significant in the context of the evolving nature of warfare, where seamless coordination between different branches of military is essential. The ITCs will follow the principle of One Border One Force, with two land-based commands and one focused on maritime boundaries. The first phase involves establishing two ITCs with headquarters in Jaipur and Lucknow to counter threats from Pakistan and China. In the second phase, a marine theatre command (MTC) headquartered in Karwar will be established to safeguard Indian interests in the Asia-Pacific and Indian Ocean regions. These Theatre Commands will be supported by other functional agencies including Air Defence, Space, Cyber and Special Forces.

The shift in India's military doctrines in the form of LWD and its military modernization drive may upsurge India's standing in the region. Pakistan's economy is not equipped to engage in an arms race with India, leading to increased conventional asymmetries favouring India. This shift in the balance of power could create a security dilemma for Pakistan, compelling it to enhance its military capabilities to maintain a credible deterrence against India. Moreover, India's pursuit of a more aggressive military doctrine may destabilize the fragile strategic environment in South Asia. India's military modernization efforts can also potentially lead to a limited war scenario in the region.

To respond to India's military modernization, Pakistan needs to invest significantly in its indigenous arms industry to maintain strategic equilibrium in conventional deterrence. This would involve acquiring modern weapons, such as long-range air defence systems, spy satellites, and advanced artillery guns, to counter Indian threats. Particularly, from Maritime Theatre Command (MTC) significant strategic challenges are being posed to maritime security of Pakistan, which requires nuanced and adaptive response. Pakistan should primarily focus on enhancing its own maritime capabilities, fostering regional collaborations, engaging in diplomatic initiatives, and diversifying its economic activities to navigate complex maritime landscape shaped by emergence of MTC. The doctrinal shifts and formation of Integrated Theatre Commands by India signify strategic shift that reflects the changing geopolitical landscape and security challenges for Pakistan. ITC's are aimed to form a more versatile and dynamic Indian Military which will directly impact and reshape the strategic dynamics of the region. Therefore, Pakistan needs a significant and collective national level approach to deal with such developments.



India's Concept Of Integrated Theater Command: Implications For Pakistan

Syeda Fizzah Shuja

The Indian military's gradual transition to Integrated Theatre Command (ITC) signifies New Delhi's assertive ambitions. India strives to bolster its regional influence, and rapidly expand its military prowess which can compromise the delicate balance of power in the region. Considering intensifying power politics in South Asia, such transformations in military structure can have direct ramifications on security dynamics of Pakistan. Moreover, the heightened security sensitivity of the region is pronounced by territorial disputes between three nuclear armed neighbours.

In 2018, former Indian Army Chief General Bipin Rawat acknowledged the complex strategic challenge as two-front dilemma. This recognition underlined India's perception of China-Pakistan dual front conundrum as a collaborative threat involving coordinated military actions from both northern and western borders.

New Delhi's threat perception recognizes potential strategic actions by China, like seizing opportunities during Indo-Pak arms engagement, or vice versa. Pakistan's increasing reliance on Chinese arms including advanced military hardware such as modern main battle tanks (MBTs), fighter jets and submarines, besides deepening geopolitical connections through initiatives like CPEC, is also viewed as a threat by New Delhi. There is deepening believe within Indian leadership that a two frontal threat can materialize at short notice, therefore armed forces should be organized to specifically deal with two different types of threats at the same time. China and Pakistan have a vibrant collaboration in defence sector.. Since 2015, China has accounted for approximately 75 percent of Pakistani total arms imports. Moreover, China has helped Pakistan develop its defence industry which is now producing modern military equipment for Pakistan

armed forces apart from exports to friendly countries. Heavy military hardware of Chinese origin, including Haider (VT-4) and Al-Khalid main battle tanks are produced indigenously at Heavy Industries Taxila (HIT). Similarly, Pakistan Aeronautical Complex (PAC) is jointly producing JF-17 Thunder fighter aircraft in-collaboration with China. JF-17 currently constitutes the backbone of Pakistan Air Force (PAF) and has been successfully exported to friendly countries.

In naval domain, China has been a reliable and sustained source for modernizing Pakistan Navy (PN). PN is currently aiming to achieve strength of 50 warships in near future. In past, PN has acquired four F-22P Zulfikar class frigates and Z-9C ASW helicopters from China. Recently, Pakistan has commissioned four Type-54 A/P frigates from China, and is in process of developing eight Hangoor class submarines. Similarly, PN has also purchased CH-4B unmanned serial systems from China. The induction of these assets has helped Pakistan to strengthen its naval capabilities and safeguard its sea frontiers. In sum, Pak-China deep co-operation in defense is perceived as a major threat by India.

India's impetus behind the theaterization of commands primarily originates from lessons gained during the Kargil war (1999) and Operation Parakaram (2001-2002). These events profoundly influenced India's decision to pursue a limited-war strategy, the Cold Start Doctrine. This strategy aimed to deploy integrated battle groups along India's western border to quickly achieve limited spatial gains against Pakistan. India's illicit annexation of Kashmir after abolishment of Article 370 and 35A revived frictions against China resulting in China-India military crisis. However, the China-India military stand-off in Ladakh (2020-21) has complicated India's strategic calculation, and has compelled India to actively work on military theaterization to counter threat of two-front war.

The Indo-U.S. strategic partnership, under the cover of foundational agreements like COMCASA, LEMOA, and BECA, and even Quad, has significantly enhanced its military capabilities and aspirations for regional dominance. Such agreements are enhancing India's military capabilities and also enabling the understanding and know-how Indian military leadership regarding crafting and implementing newer concepts – like theaterization.

India is reorganizing and reshaping its force employment strategy in accordance with Sino-Pak threat environments. The multifaceted strategy of theaterize commands, reflects an offensive posture on the western front against Pakistan and defensive posture for northern region against China.

The establishment of theatre commands is being hailed as the most crucial military reform India has witnessed to date as it aims to enhance joint military efforts, streamline decision-making processes, and overall strengthen its capabilities. The concept entails the principles of 'Unity of Command' and 'Synergy of Efforts.' It seeks to integrate the capabilities of the army, air force and navy for the optimal utilization of resources during wars and operations.

New Delhi's decision to institute integrated theatre commands includes establishment of the Port Blair-based Andaman and Nicobar Command and Strategic Forces Command within next three-year. Chief of Defense Staff (CDS) Gen Anil Chauhan proposed a broad structure, fusing 17 single-service operational and functional commands into three theatre commands. India plans to setup two land based Theatre Commands with geographic nomenclature and one Maritime Theatre Command.

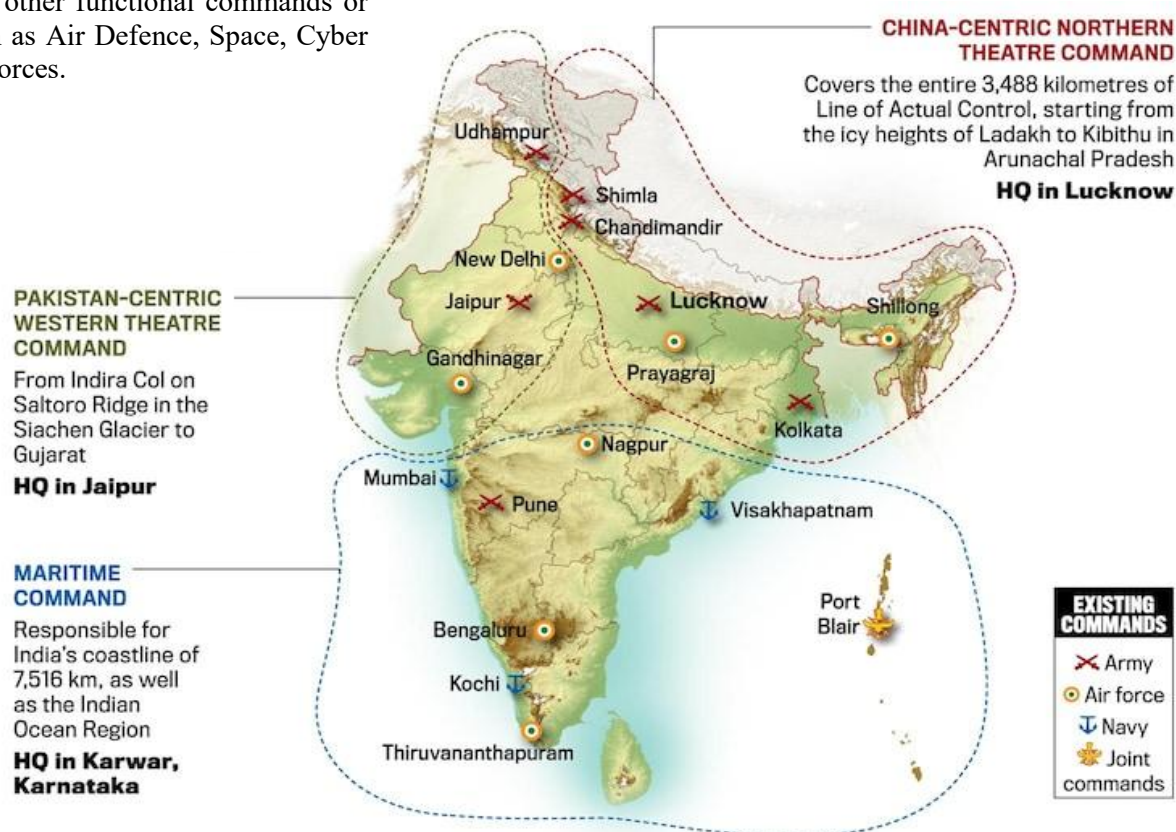
These theatre commands will defend India's western front (headquartered in Jaipur) against Pakistan, its eastern front (headquartered in Lucknow) against China, and oversee maritime activities in the Indian Ocean (headquartered in Karwar). Theatre commanders, equivalent to the Chiefs of Army, Navy and Air force, will report to Department of Military Affairs (DMA) led by Chief of Defence Staff (CDS) who is a principal military advisor and exercise direct command and control over operations. Additionally, the Theatre Commands will be supported by other functional commands or agencies such as Air Defence, Space, Cyber and Special Forces.

However, its formal orientation in Indian Military is facing challenges mainly due to the lack of clarity regarding its overall structure, and the operational command and control hierarchy.

Amidst mounting internal and external security challenges, Pakistan confronts political and economic instability. Although New Delhi now views China as primary threat, but in practice Pakistan is still a major variable in New Delhi's strategic calculations. Prior to India-China standoff in Ladakh, India had 12 x divisions facing China on the Ladakh front and 25 divisions facing Pakistan along Western front. However, the ratio has changed to 16 and 21 respectively after mobilization of 4 x divisions from Pakistan border to Ladakh border with China. Such variations in deployments indicate the limitations of Indian military as far as simultaneous countering of two-front war is concerned.

Drawing from the strategic insights of "The Art of War" by Sun Tzu, in the interconnected nature of military dynamics, fortifying one flank may expose vulnerabilities in another. India seems to be potentially over-extending its military reach in light of the two-front war dilemma. The dispersion of forces by India gives rise to concerns regarding potential communication gap and limitations in resources. Sustaining commands to counter the heterogeneous military formations along the northern and western borders makes it challenging for India, particularly in the context of aligning with the ever-changing nature of threats in the foreseeable future.

Additionally, a critical concern is the country's ammunition stockpile, which falls short of the requirements for sustained conflict. Former Army Chief General Bipin Rawat's acknowledgment in late 2019 revealed that India's ammunition reserves were geared for only a 10-day war, insufficient for the demands of a conflict against China, which would necessitate ammunition reserves for 30 days of intense warfare. India's inclination towards theaterization has the potential to destabilize the security balance in South Asia. While theaterization may strengthen India's defense capabilities, it simultaneously aggravates existing geopolitical frictions in the region particularly with Pakistan. It will intensify Pakistan security dilemma, and triggers arms race which can compromise regional stability and escalate into advertent or inadvertent conflict.



Hacking Ministries- Case of Maritime Sector

Cdr (R) M Azam Khan

There could hardly be another opinion that slashing the size of the federal government has become a compelling need. Reports have been taking rounds that five ministries are likely to face the axe. These include the Ministries of Information Technology (IT), Industry and Production, Health, Kashmir Affairs, and States and Frontier Regions (SAFRON). There are 33 federal ministries embracing some 40 divisions. Even if associated perks and privileges of bureaucracy are disregarded, this number is enormous burden on nation with masses toiling under the excruciating pain of inflation and energy bills. It barely makes sense to have such outsized manpower intensive ministries in today's tech driven world, especially following the abolition of concurrent list. Lending further credence to this argument is the low performance of some of these ministries. Only one example may suffice. The Ministry of Maritime Affairs, the apex state institute administering maritime matters in Pakistan, announced with great fanfare 'Year 2020' as 'Year of Blue Economy'. Almost four years on, hardly anything worthwhile is there before public eyes.

At the closing ceremony of the annual Maritime Security Workshop held at Pakistan navy War College, Lahore in December 2021, the then federal minister for maritime affairs was invited as the chief guest. In his address, the minister shed light on various initiatives and projects being successfully spearheaded under the ambit of said Ministry. Interestingly just days before Pakistan had lost bid for a membership seat in the 32nd assembly of International Maritime Organization (IMO). It did not matter to the minister that his ministry had earlier confidently boasted to grab the slot given its performance during Covid. India meanwhile retained its membership of IMO securing 133 votes.

More than 90 percent of the intercontinental commerce today travels via sea. The global economy leans heavily upon smooth and uninterrupted movement of commercial shipping travelling on the maritime highways of global commons. There are millions of people who are directly employed by this industry. Yet no single overarching document on national shipping policy exists in our case. Only, Pakistan National Shipping Corporation Regulations, Merchant Marine Policy 2001 and amendment in the Merchant Marine Policy 2019 combine to form the existing shipping policy. The most important document that drives and underpins development strategy of national maritime sector, the National Maritime Policy, was released in 2002. It has long outlived its utility. The policy does not meet nor address the requirements of contemporary maritime world. Seismic shifts have since taken place in the blue planet and regional maritime security. Yet successive policy drafts prepared by various national maritime institutes in Pakistan in collaboration and input from Pakistan navy have been gathering dust in Cabinet Division. India, on the other hand, is taking giant leaps in maritime sector including blue economy, a term that refers to economic activities linked to oceans and seas. According to World Bank, the blue economy is characterized as the, "sustainable utilization of ocean resources with the aim of enhancing economies, livelihoods, and the health of ocean ecosystems."



India's blue economy vision 2025 document synthesizes the knowledge and insights of academia and policy community to give a strategic direction to India's pursuits in the sector. In the interim budget for 2024-25, New Delhi has increased allocation for blue revolution from Rs 2,025 crore previous year to Rs 2,352 crore. The country has launched Sagar Mala project to modernize Indian sea ports and infrastructure. The project alongside includes improving connectivity with coastal regions. The Economic Advisory to the Prime Minister, government of India has meanwhile published a draft policy framework for India's blue economy. The policy aims to seek public consultation for effective progress in the field. In the G-20 summit held in India in March this year, the country's presidency achieved an important milestone in global discourse on blue economy. Indian initiative was unanimously adopted by G20 members.

Although rules for seabed mining for exploitation of minerals are still in the formulation stage by ISA (International Sea bed Authority) both, India and China are rapidly advancing to compete in this arena. A few years back China broke the world record by sending manned submersible to a depth of 6000 metres. Beijing has already secured rights from ISA to exploit seabed minerals in parts of the Indian Ocean. Indian Ocean has reportedly the highest concentration of polymetallic nodules which are used to power smart phones, in batteries, solar panels etc. India's National Institute of Oceanography has already identified 30 million tonnes of polymetallic nodules along with large quantity of cobalt in specific areas of the Indian Ocean. If realized, it will certainly provide huge boost to India's economy and energy sector. Contrast all this to the performance of Ministry of Maritime Affairs in Pakistan. The country's maritime sector generates a picture of gloom.

The progressing global contest beyond geopolitics centres on sea based resources. Indian Ocean is today at the heart of cross cutting geopolitics. The region is simmering with threats, challenges as well as opportunities. Seabed resources herein are up for grabs. The world attention is rapidly moving away from land towards sea. Large populations and demographic bulge in South Asia is a compelling factor for countries to explore new avenues. The water scarcity, reduction in arable land, fast melting glaciers, climate change induced disasters and intra regional migrations etc. makes it imperative to break the shackles of status quo and rethink anew the economic security of the country.

Sadly however, one does not find much desire or interest in relevant corridors of the country to look beyond rusty domestic politics or pay attention to mega developments taking place in maritime surroundings of Pakistan. It is in the Indian Ocean one finds competing security and economic narratives. CPEC, I2U2 and IMEC are few examples of connectivity and counter connectivity efforts. Earlier this month, the United States redirected another aircraft carrier strike group into the Indian Ocean (USS Abraham Lincoln) from Pacific to defend Israel. The nuclear propelled aircraft carrier houses F-35 stealth fighters besides cutting edge weaponry. Without shred of doubt, a conflict between Iran and Israel will fully involve the United States. In Pakistan, some thoughts need to be spared for maritime sector and developing maritime security landscape in the Indian Ocean. It would be in the fitness of things if Ministry of Maritime Affairs is rolled back and merged as division with Ministry of Defence. Apart from that, Foreign office must profoundly examine all that is happening in the Indian Ocean both, from geopolitical as well as economic perspectives. A new shipping and maritime policy must be published sooner than later.



Revitalizing Pakistan's Maritime Sector: A Proposal to Downsize Ministry

Hamna Ghias Sheikh

In an era where Pakistan's economic strains are palpable and its fiscal limits are being pushed to the brink, the question must be asked: how can the country streamline its government and economic structure to regain stability and efficiency? One glaring area for reform is the downsizing of ministries. Currently, Cabinet consists of 33 ministries and their associated divisions. Recently, Prime Minister Shahbaz Sharif has signaled to abolish five key ministries, including Information Technology, Kashmir Affairs, the Ministry of Safeguard, the Ministry of Industries and Production, and the Ministry of Health Services, in order to restructure the operations of the government.

In addition to the proposed cuts, there are other ministries that also strain the economy due to their limited functionality. One such example is the Ministry of Maritime Affairs (MoMA), which has become emblematic of inefficiency in a time when every resource counts. The Ministry of Maritime Affairs, despite its grand mandate, has become a relic of bureaucratic excess. Its purported role in enhancing Pakistan's maritime sector, including the much-vaunted blue economy, an area with immense potential for economic growth, has yielded little tangible progress. The vision for a thriving blue economy has remained largely unrealized.

The blue economy promises to leverage ocean resources for sustainable development and economic benefits, yet Pakistan's coastal resources remain underexploited. The Ministry of Maritime Affairs has been unable to capitalize on this opportunity, failing to advance significant initiatives and crucial legislation to strengthen the maritime sector. Despite the amendment to Merchant Shipping Act 2001 in 2022, no such significant strides took place in terms of modernizing Pakistan's maritime regulations and aligning with International Standards. However, its success has been tempered due to lack of implementation and enforcement, bureaucratic inefficiencies, insufficient infrastructure, and resistance from industry stakeholders.



Various countries have turned their maritime resources into economic powerhouses; one such example is of India, Bangladesh, and Thailand, which have made notable developments in their maritime sectors through strategic investments and reforms. Their efforts of port modernization and economic planning deeply modernized their maritime sector. In contrast, Pakistan's efforts under MoMA have amounted to little more than stalled policies and unmet promises. This backdrop of inefficacy is not unique to Pakistan. History shows us that governments can benefit enormously from restructuring and streamlining their bureaucratic frameworks. In recent years, India has undertaken efforts to streamline its government through downsizing of ministries. In 2021, Indian government merged some ministries and departments to cut administrative cost. For example, Ministry of Food Processing Industries was merged with Ministry of Consumer Affairs, Food and Public Distribution.

The government's current proposal to downsize ministries is a crucial step toward addressing these inefficiencies. By dissolving ministries that are not less than a white elephant and redistributing or putting them under a particular ambit, Pakistan can eliminate redundant administrative costs and bureaucratic delays. This move would not only reduce the financial burden on the state but also enhance the effectiveness of maritime policies by placing them as proposed in the defense ministry. In essence, dissolving such ministries as the Ministry of Maritime Affairs should not be viewed as abandoning Pakistan's maritime potential but rather as a strategic realignment to foster a more agile and effective government. Redirecting the resources and responsibilities of MoMA into other ministries that can better drive economic growth and development will not only streamline government functions but also reinvigorate Pakistan's maritime sector.

As Pakistan faces the daunting task of economic recovery, it must seize the opportunity to enact bold reforms. Streamlining ministries is a necessary step towards addressing economic challenges and more efficient government capable of meeting the nation's most pressing needs. In this way, Pakistan can lay the groundwork for a stable and prosperous future, drawing on lessons from successful reforms around the world. Above all, a decision of downsizing ministries will be a viable approach for economic revival in Pakistan. As it will not only reduce fiscal strain but also redirect the resources towards economic growth.



Pakistan Navy Day: Remembering Valor at Sea

Gul Hameed

Since independence, Pakistan has faced a perpetually aggressive and hostile Indian stance. Pakistan, as a peace-loving nation, has endeavored to promote peace in the region but has also shown meritorious feats of valor in the battleground during wars. Indo-Pak war of 1965 went down in history as a witness to the courage and surprising maneuverability the armed forces of Pakistan showed in the face of the enemy.

During the war, Pakistan's armed forces answered the Indian offensive with a massive retaliation on all battlefronts. The Pakistan Navy fought shoulder to shoulder with its sister services helping them gain ground on the Indian forces. Among many other acts of bravery, Operation Dwarka holds great significance in our national history as it played an important role in the victory Pakistan earned against a formidable enemy.

The account of PNS Ghazi deterring the Indian fleet even won compliments from an Indian Vice Admiral Mihir Roy. The Indian Admiral wrote in his book "War in the Indian Ocean", "[With] Jamnagar attacked and Dwarka shelled and the Indian fleet still preparing to sail was an affront to the sailors in white who could not understand what was holding the fleet back." As the war broke out, all units of the Pakistan Navy were instructed to adopt a defensive position and be ready to launch an offensive if needed.

They were tasked to maintain normalcy in the harbors, ensuring the safety of the merchant navy and guarding the Sea Lines of Communications (SLOCs). However, the repeated attacks by the Indian Air Force necessitated offensive action. In the course of the war, the Pakistan Navy was tasked to attack and maim the Indian radar system in Dwarka, an Indian naval station 300 km south of Karachi. A small assortment of warships could not have been a match to a sizeable enemy; however, the courage combined with planning resulted in success. A flotilla consisting of seven warships (one cruiser, four destroyers, one frigate, and one submarine) was tasked to attack the Indian naval station in Dwarka. In those testing times, Operation Dwarka showed the professional capabilities of the Pakistan Navy despite difficulties and logistic imbalance.

The Indian Navy was caught off-guard by this unperceivable audacious naval offensive from the Pakistan Navy. Indian Naval Command did not expect an enemy by far smaller in size to launch such a daring offensive on one of its important radar stations. Structured around the flagship INS Vikrant, the only aircraft carrier in the region, the Indian Navy could project airpower at long ranges in the Indian Ocean.

But still IN failed to timely detect and counter the Pakistan Navy's flotilla. This astonishing maneuverability and professional acumen can best be described in the words of Sun Zu, a great military strategist and philosopher. He writes in his famous book 'The Art of War', "Let your plans be dark and impenetrable as night, and when you move, fall like a thunderbolt." Operation Dwarka aimed to hunt heavy enemy units out of Bombay to be attacked by a submarine and to destroy the radar system that provided valuable information to the enemy. While the PN flotilla was six miles away from Dwarka, it launched a massive artillery attack and surprisingly destroyed the target in four minutes. On the other side, PNS Ghazi turned the tables against India. Its aggressive patrol across the North Arabian Sea discouraged the Indian fleet so much that it was unable to patrol in the Indian Ocean. This unparalleled performance in the face of a formidable enemy won PNS Ghazi multiple awards and citations from the then-president. Cast in stone the audacious account of PNS Ghazi and the unflinching courage it showed in the face of uncertainty will never fade away from the memory of the nation and will continue to inspire generations of naval officers. It continuously reminds them that although the numerical superiority of an army holds its importance, superior professional efficiency, high morale, and effective planning have many times outweighed numerical strength.

Pakistan Navy commemorates 8th September as the day of victory and honors its valiant soldiers who fought for the motherland. However, the historical importance of Operation Dwarka extends beyond its being a victory. It has other aspects, too. The operation marked the beginning of naval rivalry between Pakistan and India and has been a driving force behind further naval developments on both sides. It also serves as a reminder that we have an aggressive enemy against us and we must always be prepared to respond to any future offensive. Moreover, the Indian Ocean Region is highly volatile with regards to security and rapidly changing geopolitical situations demand persistent readiness and professional competence.

Pakistan Navy has continued to enhance its operational capabilities and professional excellence to date and has emerged as an important regional force. Besides remarkable performance during wartime, the Pakistan Navy has contributed greatly towards building regional peace and fighting non-traditional threats existing in the region. Through participating in various international peace efforts, and taking various initiatives, Pakistan Navy has earned a respectable status as a peace-loving and responsible navy. Pakistan Navy has Commanded CTF-150 and CTF-151 for multiple times and taken initiatives such as establishing the Joint Maritime Information Coordination Centre and holding the multilateral naval exercise AMAN along with several others. It all shows Pakistan's stance towards its international obligations and the positive use of its naval force to promote peace and stability in the region.



Time to Recalibrate State's Institutional Engineering?

Syeda Fizzah Shuja

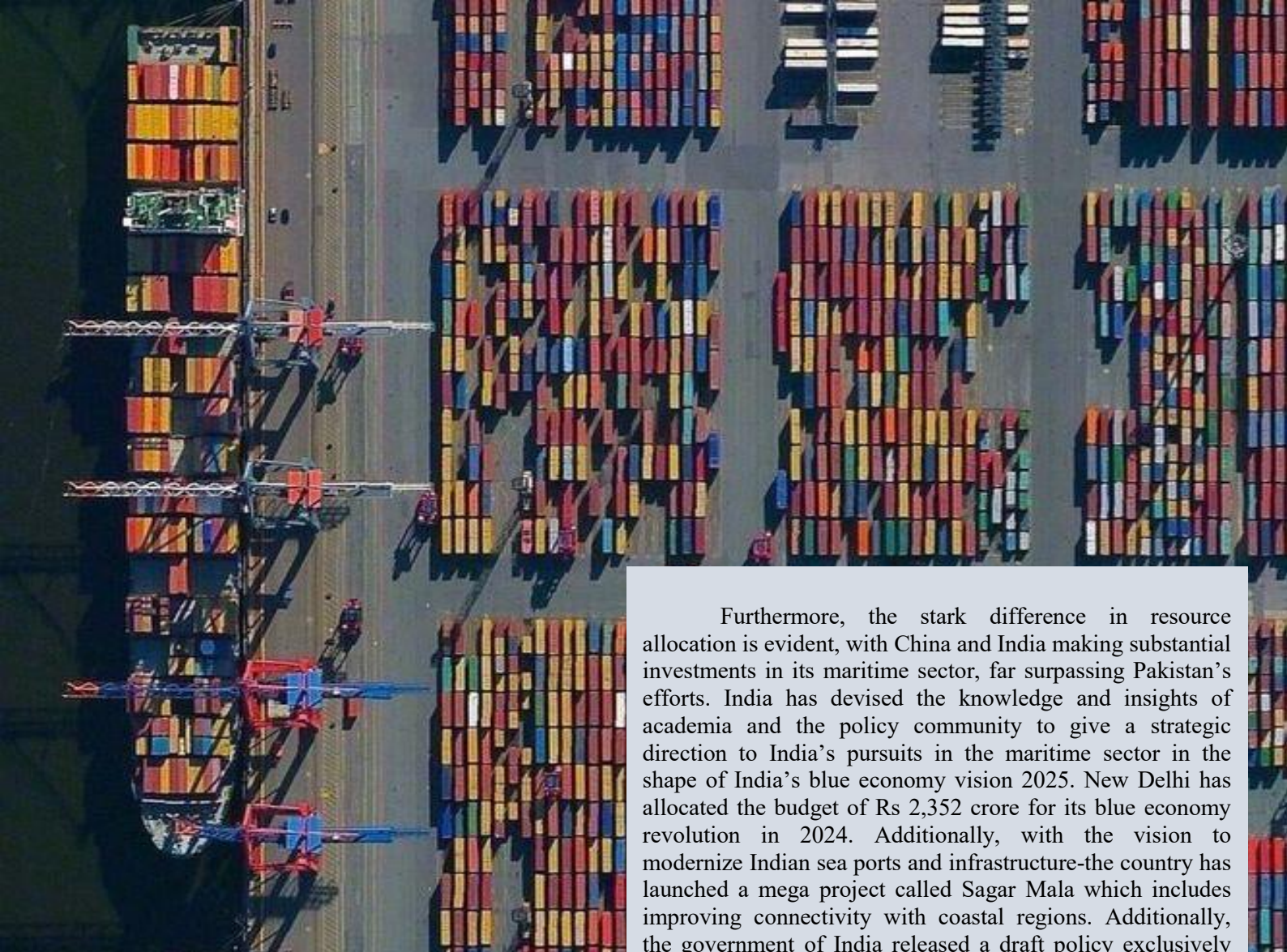
Is it time to recalibrate State's Institutional Engineering in Pakistan's governance blueprint? In a country grappling with economic turbulence, the concept of State's Institutional Engineering has never been more relevant. Imagine a landscape where the government is not just reacting to crises but strategically reshaping its institutions to drive growth. The government of Pakistan is pursuing a comprehensive restructuring plan to address the nation's economic crisis. It also aims to maintain a critical standing for the International Monetary Fund (IMF) bailout plan. This push to recalibrate State's Institutional Engineering involves radical downsizing of the public sector and regulatory bodies. The plan includes the elimination or merging of several ministries. Although the government is implementing these measures for fiscal austerity, experts need to closely examine their impact on governance and service delivery.

The proposal to abolish five ministries, including IT, Industry, Health, and Kashmir Affairs, represents a viable shift from the current approach. At the same time, analysts must critically examine the mission and goals of the Ministry of Maritime Affairs (MoMA). This evaluation should consider its performance to date. Although the government established MoMA with ambitious objectives, the institution has rarely produced any tangible outcomes so far. To recalibrate State's Institutional Engineering, the government could consider a strategic merger with the Ministry of Defence. This approach could help balance operations and reduce the economic burden.

Pakistan's institutional infrastructure encapsulates 33 federal ministries which are embracing some 40 divisions. Even without considering the perks and privileges associated with bureaucracy, this number remains a heavy burden on a nation struggling under high energy bills and inflation. Ultimately, it's crucial to weigh the pros and cons carefully. Policymakers need to determine whether merging these ministries will truly benefit national security and the economy. In 2017, the Ministry of Ports and Shipping was merged into the Ministry of Maritime Affairs (MoMA) to unlock the nation's maritime potential. Its mandate included regulating maritime trade, developing coastal infrastructure, and fostering the blue economy. This consolidation also absorbed many of the functions of its parent ministry.

Additionally, the ministry was tasked with cultivating the shipping and shipbuilding industries. It also had to ensure the sustainable exploitation of marine resources. Moreover, the Ministry of Maritime Affairs, the primary government institute overseeing Pakistan's maritime matters, declared 2020 as the 'Year of Blue Economy'. Unfortunately, there is hardly anything worthwhile in the public eye in almost four years.





MoMA has failed to deliver on its core responsibilities compared to its lofty mandate. It has not capitalized on Pakistan's coastline potential for trade, fisheries, and energy since its inception. A lack of strategic foresight and ineffective policy implementation have hindered the development of the maritime sector. This has resulted in depleted opportunities and sub-optimal resource allocation.

Clearly, multiple factors influenced the institution's operational shortcomings, which included bureaucratic inefficiencies, a lack of coordination with other relevant agencies, and a disregard for economic imperatives, under-performing its relative potential. Consequently, MoMA's existence has become a liability rather than an asset, compelling a critical re-evaluation of its role and functions.

Comparatively, other South Asian maritime nations like India and China reveal significant differences in institutional structure and resource allocation process to optimally regulate maritime development. While MoMA is juggling up into a broad range of maritime responsibilities, the specialized ministries in India and China showcase a more focused approach which ultimately enhances their efficiency. This mandate of MoMA has hindered its capacity to effectively address critical maritime challenges.

Furthermore, the stark difference in resource allocation is evident, with China and India making substantial investments in its maritime sector, far surpassing Pakistan's efforts. India has devised the knowledge and insights of academia and the policy community to give a strategic direction to India's pursuits in the maritime sector in the shape of India's blue economy vision 2025. New Delhi has allocated the budget of Rs 2,352 crore for its blue economy revolution in 2024. Additionally, with the vision to modernize Indian sea ports and infrastructure-the country has launched a mega project called Sagar Mala which includes improving connectivity with coastal regions. Additionally, the government of India released a draft policy exclusively for India's blue economy which invites public insights and consultation for effective excellence in the field. The centralized structure of MoMA, unlike India's decentralized model, may also contribute to inefficiencies and delays in decision-making.

In this regard, the government's impending austerity measures could prove to be a critical opportunity to address and mitigate the inefficiencies plaguing the Ministry of Maritime Affairs. If implemented effectively, this institutional downsizing can yield significant economic benefits for Pakistan. By reducing bureaucracy and eliminating overlapping functions, the government can potentially reduce expenditures and redirect resources to priority areas such as infrastructure development and social welfare programs. Moreover, downsizing can bring fiscal discipline and enhance the government's credibility in the eyes of international financial institutions.

In essence, to enhance efficiency and effectiveness, the Ministry of Maritime Affairs (MoMA) should be realigned as a division under the Ministry of Defense. This consolidation would optimize resource allocation, expedite decision-making processes, and ensure a more coordinated approach to maritime challenges. Such a strategic shift is crucial to unlocking the full potential of Pakistan's blue economy and driving national development.

From Colonial Legacies To Contemporary Strategic Evolution Of Indian Ocean Region

Syeda Fizzah Shuja

The Indian ocean spreads all the way south to Antarctica, covering almost 27 percent of the maritime space of the world and 14 percent of the total globe. It is described as a water-body between Africa, the Antarctic Ocean, Asia, and Australia. For centuries, the Indian Ocean Region has been a great spectator of the fall and rise of civilizations, various empires including the Phoenicians, the Arabs, the Chinese, and the Portuguese—as an eternal quest for spices, textiles and precious stones. The Indian Ocean Region (IOR) has a long history of cultural exchange, dating back over 4,000 years before the Vikings' arrival in North America. The region has been a hub of trade activity, both coastal and transoceanic, since around 5000 BC. By the start of the common era (CE), ancient port cities like Berenike and Hormos on the Red Sea had established significant trade connections with India, facilitating the exchange of goods and ideas across the region.

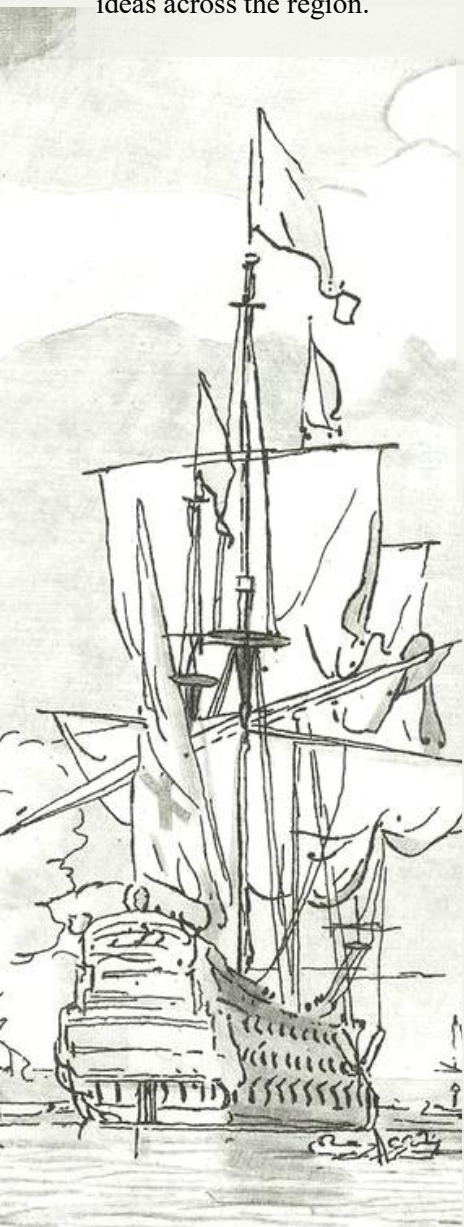
The ancient Sassanian Empire's patronage (224-651) propelled Persian traders to dominance in the Gulf and Western Indian Ocean, their mercantile prowess rivaled only by the seafaring Arabs. The Arabs' extensive reach spanned India, East Africa, and the East Indies, a testament to their maritime expertise. However, the Sassanian dynasty's downfall at the hands of Muslim Arabs between 637-651 marked a turning point. The Arabs' commercial ascendancy peaked in the 9th century, with Ceylon and Calicut emerging as crucial entrepôts, bridging the eastern and western oceanic trade routes.

Vasco de Gama, was a Portuguese navigator whose voyage to India between 1497-99 and 1502-03 opened up a sea route from Western Europe to the East, by way of Cape of Good Hope. This pioneering feat heralded a new epoch in world history, as the Portuguese navigator was elevated to the esteemed rank of Admiral in 1502. The arrival of the Portuguese in the Indian Ocean marked the dawn of a new era, as they established themselves as the first Europeans to set foot in this realm.

Their intentions were clear: to assert economic dominance over the coveted Asian trade, with a particular penchant for pepper and spices. Fuelled by an animosity towards the Muslims, the Portuguese embarked on a strategic conquest, claiming key ports such as Colombo, Socotra, Goa, Melaka, Hormuz, and Diu between 1505 and 1535. This calculated expansion enabled them to wield control over the Indian Ocean's trade, imposing licenses, customs duties, and stringent regulations on merchandise. The Portuguese grip was unyielding, dictating the flow of commerce and stifling the aspirations of rival nations. The Portuguese monopoly was a goldmine, flooding their coffers with wealth as they exploited Europe's craving for Asian spices. It also allowed them to simultaneously sideline Muslim traders who had thus far been dominating regional trade. The markets dealing with these commodities namely Aden, Jeddah, Basra, Cairo, Alexandria, Aleppo, Sofala, Hormuz, Diu and Melaka, consequently fell into decline. By early 17th century, however the Portuguese hold in the IOR was in shreds, dwindling rapidly as they lost major ports including Cochin and Colombo.

As the 16th century drew to a close, the Dutch astutely capitalized on the burgeoning opportunities in the Indian Ocean, inaugurating their mercantile endeavors in this lucrative region. In 1604, they forged a strategic alliance with the Zamorin, the venerable Emperor of Malabar, united in their quest to expel the entrenched Portuguese presence. Recognizing the formidable Portuguese stronghold at pivotal locations, the Dutch devised a sagacious plan to establish a foothold in Java, whence they would launch a concerted effort to infiltrate and dismantle the Portuguese dominion.

The Dutch mercantile agenda was singularly focused on the coveted spice trade, encompassing cinnamon, cloves, pepper, and nutmeg. The establishment of the Dutch East India Company in 1602 was a deliberate measure to regulate intra-Dutch competition, mitigating the uneven distribution of profits garnered from the lucrative Indian spice trade. State encouragement prompted merchants to consolidate their resources, culminating in the grant of a trade monopoly in the Indian Ocean to the Dutch East India Company. Following their conquest of Malacca in 1641, the Dutch allied themselves with the formidable King of Ceylon, collaborating to vanquish the Portuguese. The culmination of this campaign was the protracted siege of Colombo by the Dutch fleet, ultimately resulting in its capitulation in 1654. The French, thwarted in their attempts to gain a foothold in Ceylon in 1670 against the indomitable Dutch, redirected their ambitions towards the fertile shores of Madagascar and Mauritius. The French fleet saw its best days under Admira de Suffren in 1782-84. During this epoch, the French forged a strategic alliance with the redoubtable Hyder Ali, supporting his Carnatic Campaigns – a series of epic struggles that convulsed the 18th century, as the British, French, Marhatas, and Mysore vied for dominance over the coveted coastal strip. Subsequently, French also managed to capture Trincomalee port in Sri Lanka.



As the 18th century dawned, the once-mighty Mughal Empire began to exhibit fissures, its grandeur slowly succumbing to the ravages of time. The decline of Mughal Empire and the rise of British in India, amongst other fates is attributable to the former's obsession landward concerns. Their obsession with terrestrial conquests led them to neglect the vast expanse of Indian shores, forsaking the strategic advantages afforded by their extensive coastline. This shortsightedness, aptly described as 'sea blindness', afflicted not only the ruling elite but also large swaths of the population, leaving them oblivious to the maritime future. This vacuum enabled outside powers with strong commercial interests and potent navies to exploit the subcontinental riches and thus establish a foothold in India.

The English and French commenced their Indian Ocean trading activities in the wake of Dutch. Following the Dutch example, they set their own East India Companies in 1600 and 1664 respectively. The Dutch East India Company, like Portuguese desired control of spice and pepper trade. Dutch were initially more successful than British East India Company. The two had dissimilarity as well. While the Dutch East India Company concentrated on in-country and inter Asian Trade, the British East India focused on trade to Europe.

Using the seapower effectively, the British gradually built up their land power, through Madras in 1749 and Bengal in 1756. The Napoleonic wars in Europe helped the British take over Ceylon, Java, Malacca and the Cape from Dutch and French possessions, especially Mauritius, from the French. The ports of Madras, Bombay and Calcutta were established by British in mid to late 17th Century to wean the transoceanic trade away from traditional port cities. Despite careful application of coercion to attract Asian traders, it still took a good seventy odd years to Bombay to become more formidable than its neighbouring port Surat. By 1800, another commodity tea had entered the trade market in a big way. British exported opium (cultivated in Bihar, East India) to China in return for tea. This trade and its revenge grew sharply with a rise in tea consumption throughout the European Market.

After setting up factories in port cities, the British proceeded to set these further inland near the production centres. It sent the clear message that the British were in it for the long haul. The advent of steamships and opening of the Suez Canal (1869) were two major developments that transformed trading patterns in the region by shortening the time and distances involved. Moving on the trail of timeline, 20th century witnessed the birth of two new yet currently regional stakeholders of Indian Ocean – Pakistan and India. In contemporary world shaped by China – U.S. power struggle, the pursuit of control over the Indian Ocean and its crucial trade routes has significantly elevated its strategic significance. China's Belt and Road Initiative (BRI) is a physical demonstration how Beijing is building up infrastructure and gradually expanding its presence in its surrounding regions, particularly Indian Ocean Region (IOR). To protect its economic interests in Indian Ocean, China is gradually increasing its naval capabilities and outreach.



In essence, as the tides of the time continue to shift, the region's importance remains constant, beckoning new stakeholders to its shores.



MARSEW 2024- Strategic Maritime Challenges In Indian Ocean

Safia Mansoor

Scholars around the world are calling Pakistan a “pivot state” of twenty-first century. The country is at the center stage of superpower rivalry. It is here that the interests of powers and their allies will likely collide, according to analysts. To this end, Pakistan’s economic rise, says scholars, must be stopped by powers inimical to it. Economic clout means a country getting out of the stranglehold of International Financial Institutions. This will enable a relatively independent foreign policy.

Economic growth also translates into improved internal stability and prosperity. With its nuclear prowess, India already feels threatened by Pakistan. Economic emancipation would unshackle Pakistan from what in modern parlance is called “lawfare”. This would be detrimental to the strategic interests of external powers opposed to Pakistan. Bottom line-CPEC and Gwadar port on the Makran coast must not be allowed to become functional or a success story. The maritime security environment must therefore be militarized, nuclearized and naval surveillance footprints increased in the maritime domain of the Indian Ocean to monitor nay disallow CPEC to take off. The battle lines are said to be drawn on the soil of Pakistan and in the maritime area of interest to the country.

Pakistan is a strategically important maritime state in the region of the Indian Ocean. The country is hugely dependent upon the sea for its economic prosperity as well as economic security. Bestowed with 1001 km coastline, over 240,000 sq. km Exclusive Economic Zone along with 50,000 sq. km additional continental shelf, Pakistan’s trade is almost exclusively sea-based. The mega flagship project of China’s BRI, the CPEC-China Pakistan Economic Corridor, with Gwadar port as its nucleus depicts the enormous importance of the sea for Pakistan, at least in present times if not previously.

Being a littoral state is a blessing and an opportunity for Pakistan to tap its maritime potential, but it comes along with enormous challenges. The Indian Ocean is rapidly becoming a global flashpoint for power struggle and conflict. A number of regional and extra-regional states are jostling for power and influence. China desires a foothold to connect to Africa, the Persian Gulf, and other regions. The United States and India are wary of China’s inroads in the Indian Ocean. Middle East is in a state of meltdown owing to spillover effect of Gaza conflict manifested from turmoil in Red Sea.

The Indian Ocean is a reservoir of known natural resources especially, fossil fuels. Being semi-enclosed, a number of choke points or narrow waterways particularly the Strait of Hormuz and Malacca provide it with a unique identity. But Sino-US geopolitical and geo-strategic competition, Sino-Indian rivalry, Pakistan-India enduring animosity, US-India strategic partnership, and the presence of various regional and extra-regional states have made the Indian Ocean a hub of Great Game. The evolving strategic environment has created countless challenges for Pakistan Navy, particularly the convergence of interests between the US and India and their bid to contain China. Additionally, strategic maritime cooperation between USN-IN and the evolving maritime construct of Quad states — U.S., Japan, Australia, and India, has repercussions for the interests of both, Pakistan as well as China. This is so since the sea based economic interests of the two countries are aligned.

Pakistan Navy is playing a crucial role in the ongoing covert and overt battle and power play in the Indian Ocean region. PN has raised a Special Task Force to protect Gwadar port and maritime-related infrastructure of CPEC. In 2013, a Joint Maritime Information Coordination Center (JMICC) was established with a view to synergize internal information sharing and improve Maritime Domain Awareness (MDA). This has facilitated generating better and swift responses to threats or challenges, as and when required, by Pakistan Navy and other maritime agencies of Pakistan.

The institution of the Maritime Security Workshop (MARSEW) in 2017 was an impressive effort by Pakistan Navy aimed at increasing understanding of the strategic, geopolitical and maritime security environment in the Indian Ocean region. It also purported to disseminate knowledge on maritime affairs and to reduce maritime blindness at higher levels of decision making in Pakistan. MARSEW-2024 is seventh in the series to be held from 26 Nov to 5 Dec, 2024. It seeks to highlight Pakistan’s maritime potential and concurrently raise awareness regarding blue economy among policy-makers, academicians, entrepreneurs, and media personnel. The key goal remains to harness Pakistan’s colossal maritime resources and curb sea blindness in the country.

Defying The Rule of Law: Challenges In Implementing UNCLOS

Javaria Shaikh

The rule of law in International Relations is foundational for maintaining a stable, cooperative global order. Among the key frameworks upholding this principle is the United Nations Convention on the Law of the Sea (UNCLOS) which is a landmark treaty providing the legal architecture for maritime governance. Yet, despite its universal ratification, UNCLOS faces significant challenges, particularly from powerful states that selectively adhere to its provisions while disregarding others.

China's expansive claims in the South China Sea, have drawn international attention as a blatant violation of UNCLOS. However, it is not the only case highlighting the flaws in UNCLOS. The United States, a vocal critic of China's actions, itself refuses to ratify UNCLOS while conducting Freedom of Navigation Operations (FONOPs) that challenge other nations' claims. Russia and Canada, too, have been implicated in disputes that strain UNCLOS's principles. This article explores how the actions of these major powers expose the systemic vulnerabilities of international maritime law, emphasizing the need for reforms to ensure global accountability.

Adopted in 1982 and in force since 1994, UNCLOS provides a comprehensive framework for managing the world's oceans. It delineates maritime zones, establishes mechanisms for dispute resolution, and codifies principles governing navigation, resource exploitation, and environmental conservation. With provisions such as Territorial Seas and Exclusive Economic Zones (EEZs), UNCLOS balances the sovereignty of coastal states with the global community's right to shared maritime spaces.

Despite its ambitious scope, UNCLOS relies heavily on the voluntary compliance of states. Institutions like the International Tribunal for the Law of the Sea (ITLOS) and the Permanent Court of Arbitration (PCA) offer legal recourse but lack enforcement power, leaving compliance dependent on state goodwill. This structural limitation has allowed powerful states to bypass or outright defy its rulings.

The South China Sea epitomizes the challenge of enforcing UNCLOS. China, a signatory to the treaty, has allegedly disregarded its provisions by claiming nearly the entire region through its "nine-dash line." This claim infringes upon the EEZs of neighboring countries like the Philippines, Vietnam, and Malaysia. China has bolstered its position through militarization, constructing artificial islands and deploying military assets.

In 2016, the PCA ruling affirmed the Philippines rights within its EEZ and invalidated the "historical rights" argument of China. However, China rejected the ruling based on its historical claims and stated that this verdict is detrimental to vital Chinese interests, regional stability, and international legal order. This case has highlighted issues in implementation of UNCLOS.



United States, on one hand, criticizes China's actions, whereas, its own approach to UNCLOS reveals contradictions. Despite being one of the strongest proponents of a rules based maritime order, US has not ratified UNCLOS based on concerns over sovereignty. Nevertheless, it conducts Freedom of Navigation Operations (FONOPs) to challenge what it deems excessive maritime claims, particularly in the South China Sea, which is itself the biggest violation of UNCLOS. As these operations, while framed as upholding international law, often provoke tensions and are viewed by some as undermining the spirit of UNCLOS. By refusing to join the treaty, the US weakens its moral authority to hold other nations accountable, highlighting a broader issue of selective adherence to international norms.

Beyond the South China Sea, other major powers also flout UNCLOS principles. In the Arctic, Russia has laid expansive claims to the continental shelf, supported by strategic military deployments. These actions challenge UNCLOS provisions and threaten the delicate balance of rights in the region.

Similarly, Canada has faced criticism for its Arctic claims and navigation restrictions in the Northwest Passage, which some argue violate the principle of freedom of navigation enshrined in UNCLOS. These disputes illustrate that the disregard for maritime law is not confined to Asia but is a global phenomenon.



The actions of China, US, Russia, and Canada expose systemic flaws in UNCLOS. Its reliance on voluntary compliance and the absence of enforcement mechanisms renders it vulnerable to power politics. Dispute resolution mechanisms under UNCLOS like the PCA and ITLOS provide legal clarity but lack the authority to compel compliance. Moreover, powerful states often circumvent international law by questioning the legitimacy of tribunals or leveraging their geopolitical influence. This undermines the credibility of UNCLOS and erodes trust in the rule based order it seeks to uphold. Addressing the crisis of international maritime law requires bold reforms to enhance UNCLOS's efficacy and ensure accountability. Several measures could strengthen its implementation, like

Major powers like the US must ratify UNCLOS to bolster its legitimacy and set a precedent for adherence. One approach is also to strengthen the enforcement mechanisms of international legal institutions. This could involve establishing binding sanctions for non-compliance with UNCLOS rulings, creating a dedicated enforcement body, or empowering multilateral organizations to intervene in cases of blatant violations. On a broader scale, the international community must address the imbalance of power in global governance. This requires leveraging diplomatic and economic tools to deter violations by major powers. For instance, economic sanctions or trade restrictions could be used to pressure non-compliant states into adhering to international norms.

Finally, UNCLOS itself must evolve to address emerging challenges. Issues such as climate change, Arctic navigation routes, and deep-sea resource extraction require updated provisions to ensure its relevance in a changing world. Strengthening accountability mechanisms and incorporating environmental protection measures could also bolster its effectiveness. The defiance of UNCLOS by powerful states underscores a broader crisis in international law: the tension between legal principles and geopolitical realities. While the treaty remains a cornerstone of maritime governance, its effectiveness depends on the collective commitment of all states to uphold its principles. To preserve the oceans as a shared heritage and safeguard the rule of law, the global community must invest in strengthening international legal frameworks. Only through collective effort can we address the systemic challenges undermining UNCLOS and ensure a fair, rules-based order for future generations.

Anchoring Seafarers' Rights: An Indispensable Step For Pakistan's Maritime Future

Syeda Fizzah Shuja

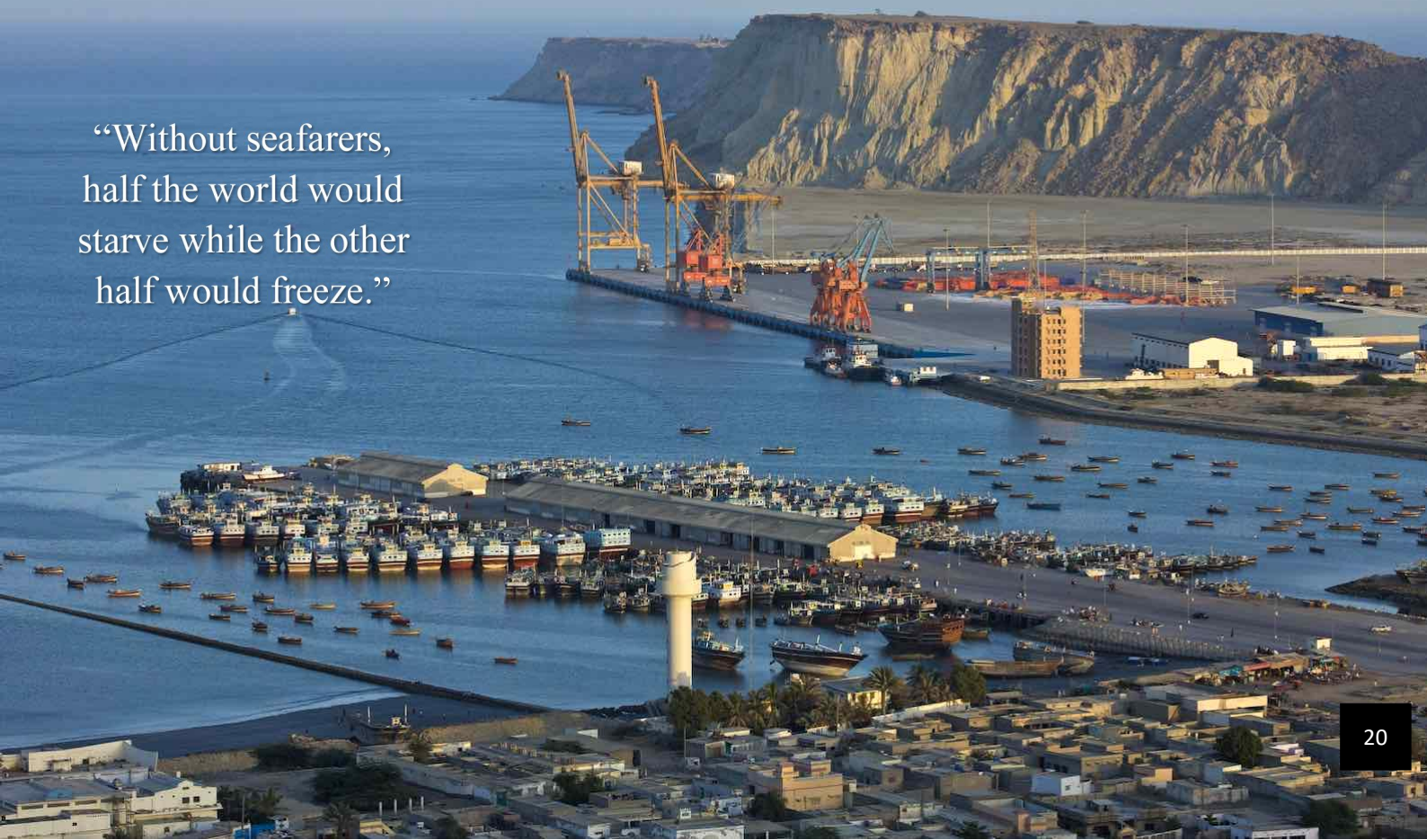
Pakistan's exclusive geostrategic location has the potential to conduct its coronation in the world of Blue Economy. The country has an approximately 990 km long coastline and possesses authority over the Exclusive Economic Zone that covers about 240,000 sq km. In addition to this, the continental shelf area of about 50,000 sq. km makes Pakistan a pertinent territory in the Indian Ocean Region-IOR. The maritime trade act as a base of the national economy as 95% of trade. However, a root sector known as seafarers or maritime laborers is considered the main driving force behind the whole mechanism and is still facing a lack of consideration.

The human resource of production is named labor. Unluckily, there is low-grade headway in the aggregate welfare of seafarers, which is the summation of organizational, social, managerial, and physical needs. To protect the rights of maritime labor, the articulation of the Maritime Labour Convention (2006) brought a paradigm shift for global labor rights implementation in the world of naval legislation. This convention codifies the maritime labor standards as a junction point of all the previous 68 ILO (Normative) laws. And covers a wide range of socio-economic matters related to living and working conditions of labor in various aspects such as medical and healthcare, recreational facilities, food, and clothing.

The MLC is the fourth pillar of the International Regulatory Regime for quality marine shipment. This convention works as a unified body of 16 correlated articles, regulations, and a duplex code, and its flexible nature makes it adaptable globally. It prescribes an extensive system of compliance and enforcement based on the flag state assessment and the certification of convention requirements with port state inspection. Seafarer bills of rights demonstrate the aspects such as; definition and scope of applications-Article II, fundamental rights and principles-Article III, seafarer employment and social rights-Article IV, and other articles addressing the rights and duties of ship owners and seafarer organizations, for instance; entry into force-Article VIII.

Pakistan entered the MLC bubble on August 20, 2013, intending to provide supreme importance to the seafarer rights and create a competitive zone for flagship owners of ratifying states. In March 2020, The Government of Pakistan reviewed 39 ILO instruments, amended Merchant Marine Policy (2001), and decided to ratify four new ILO conventions-including MLC. This initiative attracted private investors for the incentives like a long-term finance facility, contraction of gross cargo tax, and first berthing rights to flag carriers. According to the BIMCO seafarer workforce report 2021, Pakistan possesses a fleet of 57 ships, seven oil tankers, five bulk carriers, and about 12.168(m) working seafarers.

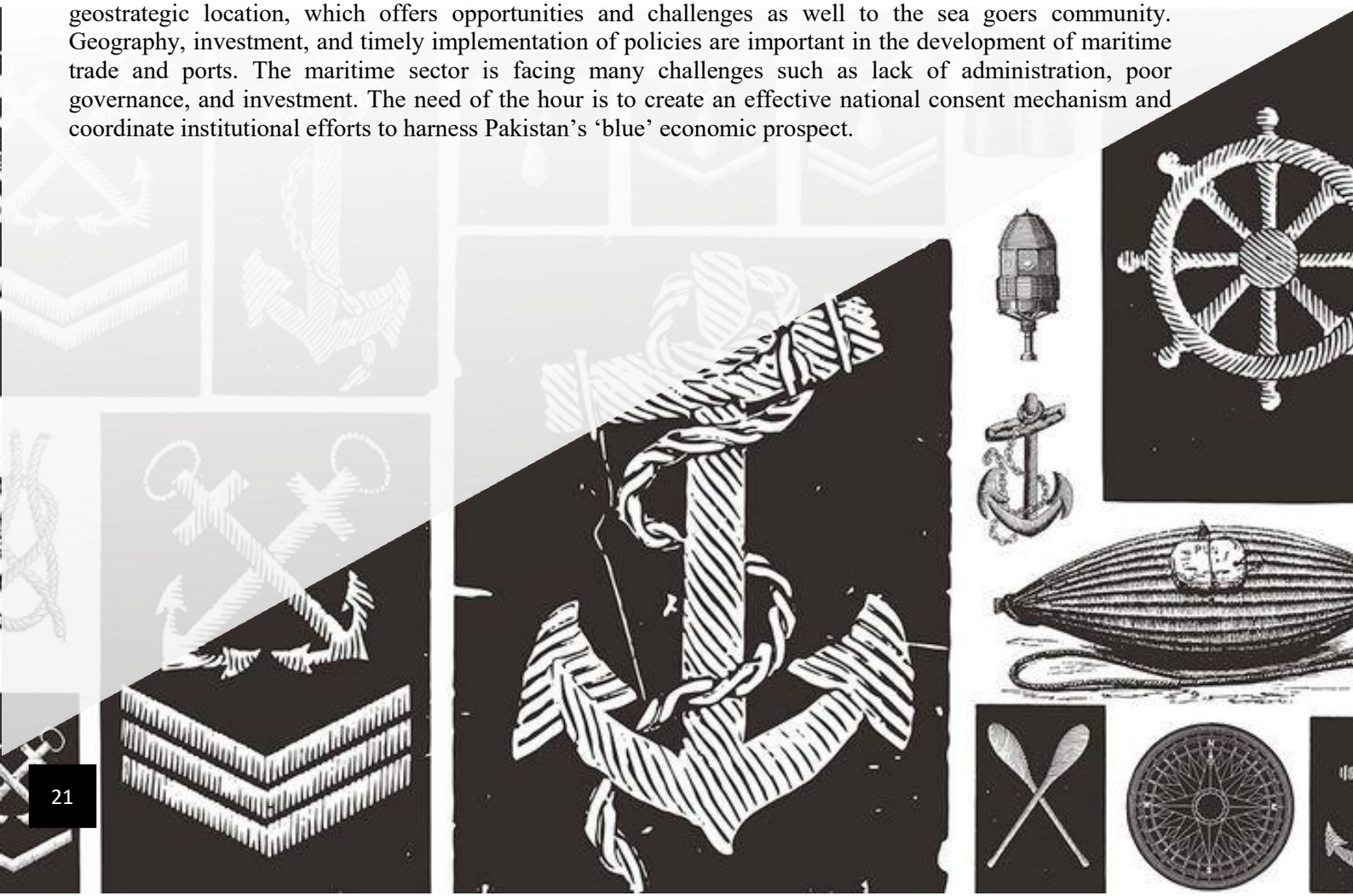
“Without seafarers,
half the world would
starve while the other
half would freeze.”



Presently, the maritime industry of Pakistan is undergoing multifarious challenges that are needed to be countered rapidly on the political, social, economic, and technological levels. In my opinion;

1. Article IV (MLC) advocates the rights of employees and seafarers' social rights; approximately only 8% of Pakistani lives in coastal whereas comparatively 35%-65% population acquires coastal areas worldwide. The population density requires good employment opportunities and well-developed infrastructure. It incorporates Mandatory law for ports, shipping, carriage, and freight insurance, shipbuilding, ship repair, travel, scientific research and study, consultancy services and investment, sustainable living, and development. According to International Maritime Organization, the estimated shortfall of seafarers is about 84,000 personals. Pakistan can contribute a fair number of its trained seafarers benefiting the country with a good amount of revenue. For this, the state needs to fill the gap by creating new captivating opportunities to attract maritime seafarers. Government should develop intergovernmental and inter-ministerial job opportunities for sea workers.
2. Education is the fundamental right of every citizen. Pakistan is lagging in the arena of maritime education (MLC Article III). The Government of Pakistan should introduce blue economy degree programs at the higher education level. Establish a network of researchers, industry stakeholders, government staff, and media outlets to create and disseminate awareness and knowledge about the scope and potential of blue resources. The mainstream of knowledge by researchers can be beneficial for information campaigns and broader understanding and insights in this field. Moreover, the lack of education in the sea labor communities has kept them away from modern technologies and systems.
3. Instigation of technological equipment or welcoming the digital revolution can be the other key factor to overcome the problems related to the maritime sector. Technological advancements help record Seafarers' data and documentation, sign-in, and sign-off activities.
4. Many Pakistani local ships are losing competitiveness due to no administrative support. In addition to this, reportedly most registered ships have dual registration in Pakistan and Iran which is assembling a national security threat. The government of Pakistan needs to devise a survey to better understand the hidden nature and concealed resources of the blue economy. Institutionalisation is crucial for the smooth running of the maritime system.

I'd like to summarize it by demonstrating that MLC 2006 was the first convention to introduce a unified legal system for seafarer rights from the dual perspective of labor law and international maritime law. In response to the current challenges plaguing the marine industry, the new MLC 2006 Convention aims to address the laws, boost compliance and strengthen enforcement operations. Pakistan has a striking geostrategic location, which offers opportunities and challenges as well to the sea goers community. Geography, investment, and timely implementation of policies are important in the development of maritime trade and ports. The maritime sector is facing many challenges such as lack of administration, poor governance, and investment. The need of the hour is to create an effective national consent mechanism and coordinate institutional efforts to harness Pakistan's 'blue' economic prospect.



Piracy As Non-Traditional Security Threat In Indian Ocean Region:

Countermeasures By Pakistan

Ahmad Ibrahim

With an extensive coastline stretching 1046 km along the Arabian Sea and geographical proximity with strategically important Persian Gulf, Pakistan holds paramount importance in maritime domain. Pakistan total maritime area is 290,000 sq-km comprising of 240,000 sq-km of Exclusive Economic Zone (EEZ) and 50,000 sq-km of extended continental shelf. Pakistan's primary area of interest is North Arabian Sea, while extended area of interest covers broader Western Indian Ocean. Pakistan relies on maritime trade for almost 95 percent of its exports and imports. In sum, Pakistan is overwhelmingly dependent on maritime domain for its sustenance and progression.

The maritime boundaries are difficult to monitor making them vulnerable to cross-border illicit activities. Many important maritime choke points in the Indian Ocean region are located in proximity of politically unstable regions. This has resulted in spread of low-intensity and non-traditional threats, like piracy, human smuggling, arms trafficking, narcotics, and maritime terrorism. These non-traditional threats are inter-linked and are more prominent in Red Sea and Horn of Africa. Piracy in the Indian Ocean, particularly near Horn of Africa, has been a non-traditional security threat to regional maritime trade. Pirates, operating from the Somali coastline, often target commercial vessels, using small, fast boats to board and hijack larger ships and take crew as hostage for ransom. Frequent pirates attack compromise the safety of shipping, crew members, and cargo transportation, compelling shipping companies to undertake security measures or even shift to longer routes which results in higher expenditure. This badly affects the regulated flow of maritime transit from Indian Ocean to Mediterranean Sea via Red Sea.

To counter piracy, collaborative measures have been taken by nations to secure global sea transit. In this regard, Combined Task Force 151 (CTF-151) has been functional which specifically focuses on counter-piracy operations in the Gulf of Aden and off the coast of Somalia. CTF-151 aims to deter, disrupt, and suppress piracy in the region, contributing to the safety of maritime traffic and the protection of critical shipping lanes. Till date, CTF-151 has been led by Bahrain, Brazil, Denmark, Japan, Jordan, Kuwait, Pakistan, the Philippines, New Zealand, Republic of Korea, Singapore, Thailand, Turkey, the UK, and the U.S. The successful deployment of naval task forces and increased security measures by the shipping industry contributed to this positive trend. Pakistan Navy has commanded CTF-151 ten times. (29 Nov 2010, 27 Sep 2011, 13 Dec 2012, 06 Jun 2013, 27 Feb 2014, 26 Feb 2015, 21 Dec 2015, 27 Oct 2016, 09 Dec 2020, 14 Apr 2022), and is expected to command CTF-151 in future too. Beside multi-lateral CTF-151, in parallel, PN also undertakes Regional Maritime Security Patrols (RMSP) to ensure maritime security and counter non-traditional threats including piracy, trafficking, and terrorism etc. With growing requirement and enhancement in capability, PN has recently expanded area of operation for RMSP. Unlike, past, when only RMSP-North and RMSP-South were conducted, PN is now undertaking RMSP-North, RMSP-South West and RMSP-South East. This expansion will allow PN to play even bigger role in curbing non-traditional security threats – including piracy in IOR.



To better full-fill its security obligations, PN has undertaken necessary force modernization program. The recent commissioning of four Off-Shore Patrol Vessels (OPVs) named PNS Yarmook, PNS Tabuk, PNS Hunain, and PNS Yamama, is most eminent step in this regard. These mid-size OPVs have low operational costs, and can comfortably operate in open-seas. These OPVs can carry helicopter and UAVs and are equipped with variety of weapon systems – both lethal as well as non-lethal, to better adopt according to flexible mission requirements. Previously, PN front line surface combatants, i.e. frigates were used for high-end as well as low-end duties. But with commissioning of mid-tier assets, like aforementioned four OPVs, the top-tier frigates will now be more focused towards traditional security roles. Interestingly, these OPVs are also designed to support anti-ship cruise missiles. This indicates that in case of hostilities, these OPVs can be equipped with guided weapons, essentially transforming these ships into corvettes and making them suitable for traditional as well as non-traditional security duties.

Interestingly, these OPVs are also designed to support anti-ship cruise missiles. This indicates that in case of hostilities, these OPVs can be equipped with guided weapons, essentially transforming these ships into corvettes and making them suitable for traditional as well as non-traditional security duties. Currently, however, these OPVs have low operational costs and are now being deployed for patrolling and policies duties in IOR.

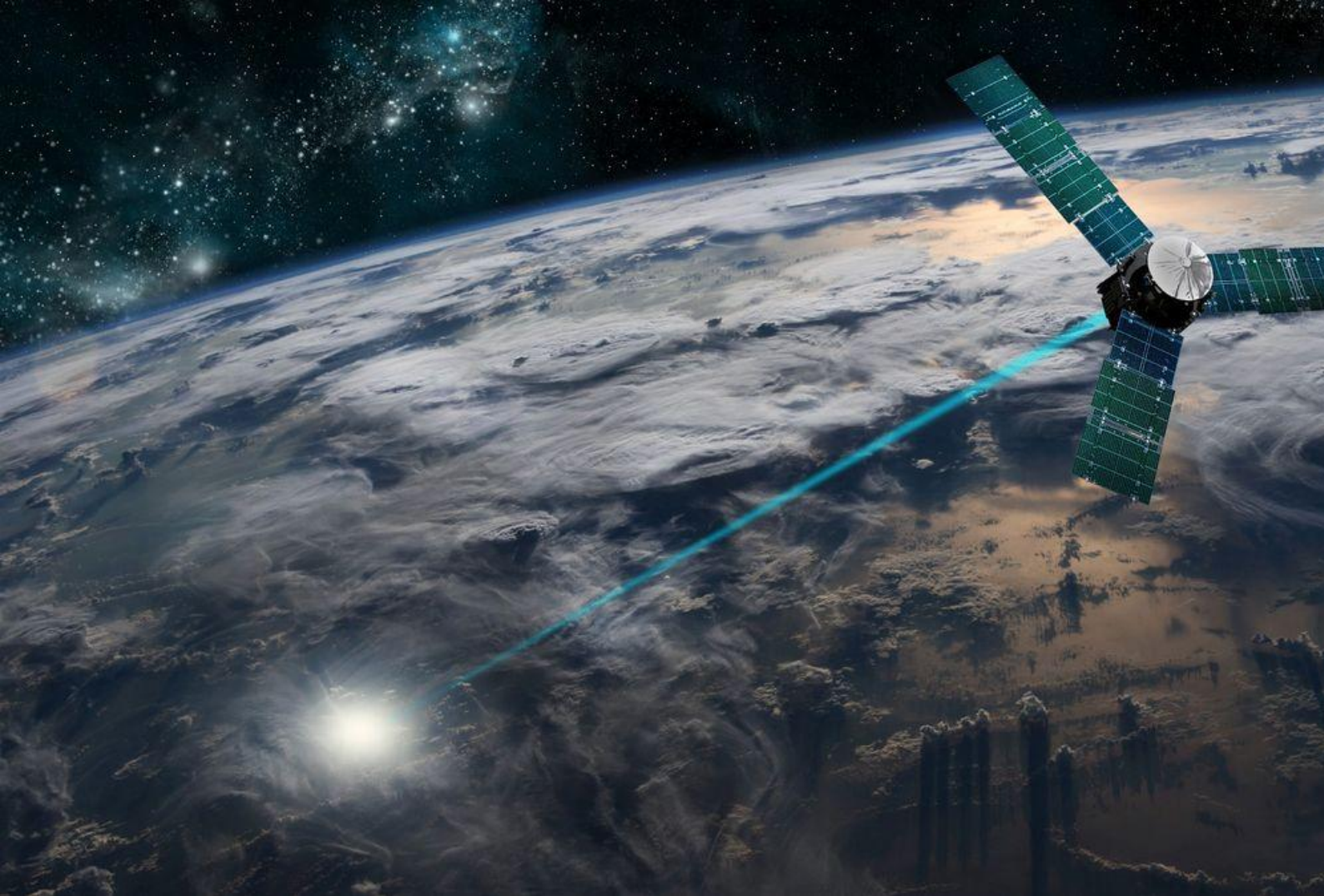
The increased presence of PN in IOR will help to secure regional sea-lines of communication from non-traditional threats, including piracy, and will also contribute in consolidating mutual collaboration with regional as well as extra-regional naval powers.

Globally, number of pirates attack world-wide gradually reduced from 445 incidents to 115 incidents in time period of 2010-2022. However in 2023, according to IMB annual report, 120 incidents of maritime piracy and armed robbery against ships were reported. In 2024, 103 piracy and armed robbery related incidents have been reported world-wide including only eight incidents in Indian Ocean. Since 01 January 2023, the designation of the Indian Ocean High Risk Area (HRA) put in place by the shipping industry has been rescinded, due to the improved piracy situation in the region. While the primary focus of piracy has historically been in the Gulf of Aden and off the coast of Somalia, the proximity of these piracy-prone areas to Pakistan's maritime routes in the Arabian Sea makes the threat relevant to the country. Surprisingly, highest incidents have been observed in the Singapore straits. A dedicated task force for counter-piracy operations in Singapore straits can help curbing this emerging threat. Pakistan can share its experience as well as learning with Singapore, Malaysia and other regional players to counter rise of piracy. Although threat of piracy is often downplayed and it does not receive as much coverage as other maritime threats, but its ramifications can extend beyond security concerns, affecting the economy by depriving the government of revenue and disrupting maritime economy. Since oceans are global common, therefore continued collaborative efforts are required by all stake-holders to ensure good order at sea.



Modern Warfare and Military Technology

S No	Article Title	Author	Source	Date	Page No
1	Mapping Emerging Trends in Space Warfare	Safia Mansoor	Pakistan Politico	22 Jun 2024	25
2	India's AI Militarization: Security Repercussions for Pakistan	Safia Mansoor	RIAC	24 Jun 2024	28
3	High Energy Laser Weapons: A Boon for Pakistan?	Safia Mansoor	Pakistan Politico	15 Jul 2024	31
4	The Ethical Quagmire of Weaponizing Animals and Birds in Modern Warfare	Fizzah Shuja	Strafasia	31 Jul 2024	33
5	Japan's Naval Modernization and Gradual Transition to Assertive Posture	Ahmad Ibrahim	Strafasia	21 Sep 2024	36
6	Exploding Pagers: Supply Chain Vulnerabilities and Solutions	Ahmad Ibrahim	Global Defense Insight	06 Nov 2024	38
7	Evolving Battlegrounds: A Comparative Analysis of 20 th and 21 st Century Warfare	Safia Mansoor	Paradigm Shift	11 Nov 2024	40
8	Cyber Kinetic Warfare: Exploding Pagers and Strategic Lessons for Pakistan	Safia Mansoor	Middle East Monitor	14 Nov 2024	45
9	Limitations of Indian Aircraft Carriers: A Critical Overview	Ahmad Ibrahim	RIAC	18 Nov 2024	47
10	ATACMS and Its Transformative Impact on Russia-Ukraine War	Ahmad Ibrahim	Strafasia	23 Nov 2024	50
11	The Proliferation of Anti-Satellite (ASAT) Weapons: An Overview	Ahmad Ibrahim	Modern Diplomacy	26 Nov 2024	52
12	Beneath the Surface: The Strategic Implications of Seabed Warfare	Fizzah Shuja	Daily Sabah	03 Dec 2024	54
13	Network Centric Warfare: A Revolution in Naval Domain	Ahmad Ibrahim	Modern Diplomacy	06 Dec 2024	56
14	The Industrial Revolution and Its Transformative Impact on Warfare	Ahmad Ibrahim	Global Defense Insight	09 Dec 2024	57
15	Analyzing Elon Musk's Assessment of Manned and Unmanned Aircrafts	Ahmad Ibrahim	Global Defense Insight	11 Dec 2024	58
16	Deterrence Through Saturation: Analyzing Russia's Oreshnik Ballistic Missile	Ahmad Ibrahim	Strafasia	12 Dec 2024	60
17	Employment of FPV Drones in Russia-Ukraine War: Lessons and Future Outlook	Ahmad Ibrahim	Modern Diplomacy	14 Dec 2024	62
18	United States' Project Maven and Rise of AI-Assisted Warfare	Ahmad Ibrahim	Global Defense Insight	15 Dec 2024	64
19	Speed One of Decisive Elements of Warfare	Ahmad Ibrahim	Modern Diplomacy	17 Dec 2024	66
20	Understanding Electronic Warfare	Ahmad Ibrahim	Global Defense Insight	17 Dec 2024	68
21	The Emergence of Weaponized Unmanned Underwater Vehicles	Ahmad Ibrahim	Modern Diplomacy	20 Dec 2024	70
22	Air-Independent Propulsion (AIP) Submarines: Bridging the Gap Between SSKs and SSNs	Ahmad Ibrahim	Global Defense Insight	26 Dec 2024	72
23	Stealth Submarines: The Next Evolution of Submarine Design	Ahmad Ibrahim	Global Defense Insight	27 Dec 2024	74
24	Zumwalt Stealth Destroyers: From Failure to Deterrent	Ahmad Ibrahim	Global Defense Insight	28 Dec 2024	76
25	The Iconic Weapons of Russia-Ukraine War: An Overview	Ahmad Ibrahim	Global Defense Insight	30 Dec 2024	78
26	An Overview of Contemporary Naval Vessels' Categorization	Ahmad Ibrahim	Modern Diplomacy	31 Dec 2024	80



Emerging Trends in Space Warfare

Safia Mansoor

On October 4, 1957, the Soviet Union launched the first-ever artificial satellite, Sputnik, igniting a scramble for space superiority known as the first space age. With swift technological leaps in satellites, rockets, and human spaceflights, the U.S. and the USSR became the key spacefaring nations, launching 93% of total satellites into space from 1957 until 1990. Among these satellites, 70% were launched for military purposes, metamorphosing space into an extra-terrestrial theater of the Cold War. The end of the Cold War, however, engendered a new era of space competition termed as the second space age. It was marked by the proliferation of space capabilities to a number of states and an enhanced involvement of the private sector in space exploration. The meteoric advancements in space technology have carved the space for more frenetic competitions in outer space, making it what a United Nations' report calls a "congested, contested, and competitive" domain. Currently, almost 80 states have their own satellites who regard space systems and services as quintessential to military power projection and improving operational capabilities. The ever-escalating military competitions in outer space, owing to its colossal strategic significance, have ushered new trends in space warfare.

One of the key trends in satellite warfare, a subset of space warfare, includes satellite miniaturization whereby states are incessantly investing in a cluster of small satellites also known as satellite swarms. Small satellites, besides offering the economic dividend of lower cost and shorter development time, provide multitudinous military benefits. These satellites offer multifarious services, such as positioning, navigation, and timing; communication and remote-sensing, as well as rendezvous and proximity operations. The constellation of small satellites is a source of deterrence by denial as an adversary may not be able to carry out an attack if it cannot degrade the targeting capability.

Another key trend evident in the ongoing space warfare is the proliferation and increase in counterspace weapons. There is a varied spectrum of these weapons grounded on technological sophistication, resources required for their development and deployment, and the effects they create.

These weapons are categorized as kinetic physical, non-kinetic physical, cyber, and electronic. Any weapon from the aforementioned categories can act as an anti-satellite (ASAT) weapon to target satellites as well as their ground stations. The 2024 Secure World Foundation report titled “Global Counter Space Capabilities” highlights the counterspace capabilities of 12 states . According to the said report, the U.S. has taken the lead while Russia and China are keeping abreast in counterspace capabilities, especially when it comes to space domain awareness and electronic warfare. The counterspace capabilities of these 12 states in various domains are illustrated in the figure below:

2024 Global Assessment

	US	Russia	China	India	Aus.	France	Iran	Israel	Japan	North Korea	South Korea	UK
LEO Co-Orbital	■	▲	■	●	●	●	●	●	●	●	●	●
MEO/GEO Co-Orbital	■	■	■	●	●	●	●	●	●	●	●	●
LEO Direct Ascent	■	■	▲	■	●	●	●	●	●	●	●	●
MEO/GEO Direct Ascent	■	■	■	●	●	●	●	●	●	●	●	●
Directed Energy	■	■	■	●	●	■	●	●	●	●	●	●
Electronic Warfare	▲	▲	▲	■	■	■	■	▲	■	■	●	●
Space Situational Awareness	▲	▲	▲	■	■	■	■	■	■	■	■	■
Legend: none ● some ■ significant ▲												

Source: “ 2024 Global Counter Space Capabilities Report: An Open Source Assessment”

As of now, no country has deployed ASAT weapons in warfare; however, states like the U.S., Russia, China, and India have destroyed their respective satellites to brag about their ASAT capability. To complicate the matter, on the one hand, Russia is reportedly pursuing a lethal ASAT weapon that can create weapon effects through nuclear explosions, including electromagnetic pulse that can destroy and disable satellites while, on the other hand, the U.S. is carrying out responsible counterspace campaigning. This refers to the campaigning done on a day-to-day basis and during a protracted competition to counter malign activities in space. It happens to be one of the key fundamentals of the Competitive Endurance Theory introduced by U.S. Chief of Space Operations, General Saltzman, in March 2023. With an increasing reliance of states on outer space, the ability to endanger satellites of other states remains a key concern.

The transforming milieu of space warfare is also characterized by gray zone threats as states are honing their space capabilities for gray zone competition. The three fundamental types of gray zone threats in space are: a) cyber attacks against space systems; b) targeting commercial space assets during conflictual scenarios; and c) carrying out proximity operations. All the aforementioned provocative actions are irregular in nature and fall short of direct use of military force. The real world examples of such irregular warfare are found in the Ukraine war when Russian hackers carried out cyber attacks against Viasat, a U.S. satellite firm. This attack was carried out an hour prior to Ukraine’s invasion, not only hampering command and control systems but also communications of the Ukrainian military, which were dependent on the satellite services of Viasat. Additionally, amidst the Ukraine war, Russia jammed broadband Internet signals emanating from SpaceX’s Starlink constellation. Besides Russia, China’s space gray zone tactics, notably, rendezvous and proximity Operations (RPO) in geostationary orbit, such as those performed by its Shijian-17 satellite and other Chinese spacecraft in 2018, are testament to the ever-enhancing space capabilities of states in gray zones.



States have also been developing directed energy weapons (DEW), entailing highly focused, concentrated electromagnetic energy as opposed to physical projectile, for hitting a target. Such weapons include systems that use high energy lasers (HELs) and high-power microwaves (HPMs), alongside energy beams, that can act as counterspace weapons. The notable examples include Russian satellite blinding lasers, Kalina, and China's satellite mountable solid state laser, China's HPM weapon, relativistic klystron amplifier, that can destroy and jam satellites. Moreover, another key trend related to jamming satellites, which is garnering high attention, is the Space Electronic Warfare (EW), which involves the use of radiofrequency energy to jam or interfere with communication either from or to satellites without inflicting physical damage to it. Electronic attacks may be jamming — an electronic attack that meddles with radiofrequency communication either by emitting noise within a satellite antenna's field of view, and more specifically, within the same frequency band, or targeted receiver.

Another type of electronic attack may be spoofing in which an attacker's device generates pseudo signals, to attack downlink or uplink data of satellites. U.S. Operational Counter Communication System, Russian Tirada- 2 system, and China's GNSS jamming capabilities are some of the noteworthy examples in this regard. Therefore, one can reasonably argue that the ever-enhancing strategic significance of space has raised the specter of space warfare. Being considered as a source of strategic advantage as well as a key instrument of military strategy, space capabilities are being given due attention. Therefore, states are buttressing their military capabilities in space through the exploration of each possible technological aspect, as evidenced by these new trends. All this has certainly transformed the strategic landscape in space.

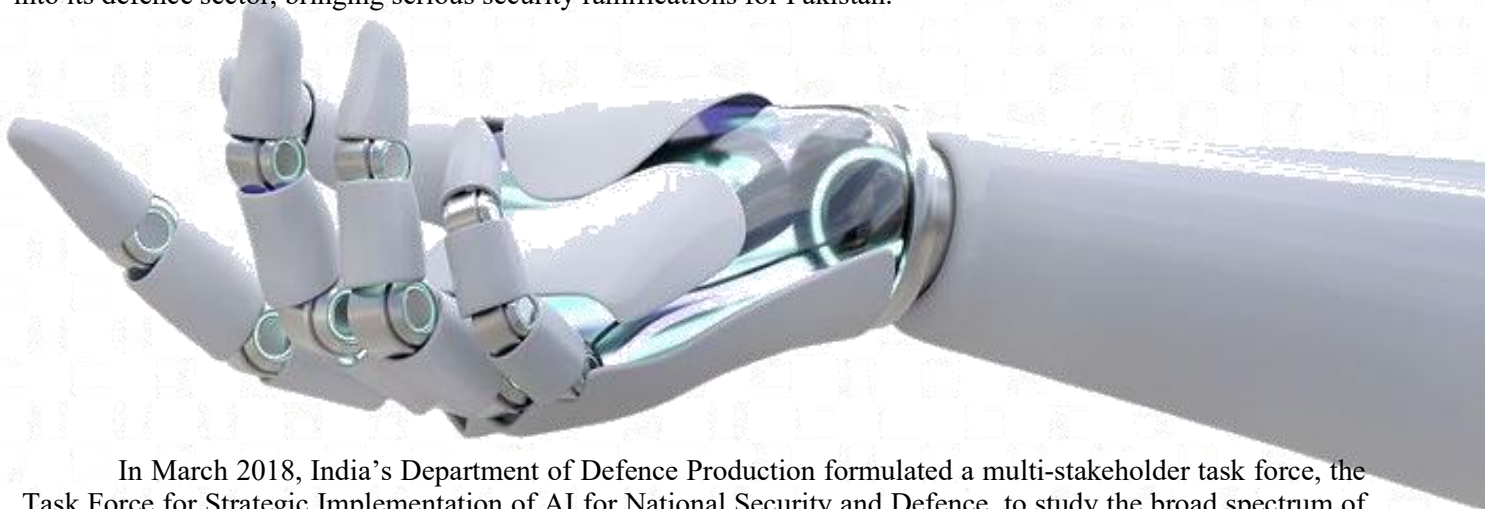


India's Ai Militarization: Security Repercussions For Pakistan

Safia Mansoor

***“Technology, through automation and artificial intelligence, is definitely one of the most disruptive sources”
(Alain Dehaze).***

Landmark technological advancements in artificial intelligence (AI) in the current era have been incessantly modifying the strategic landscape and dynamics of warfare. India's quest to infuse AI into their warfighting systems is grounded on reaping its colossal potential benefits such as increased precision, improved decision-making, and enhanced situational awareness. India is proactively integrating this pivotal technology into its defence sector, bringing serious security ramifications for Pakistan.



In March 2018, India's Department of Defence Production formulated a multi-stakeholder task force, the Task Force for Strategic Implementation of AI for National Security and Defence, to study the broad spectrum of issues pertaining to AI strategic ramifications. One of the salient recommendations of this task force was to combine India's defence strategy with its AI defence strategy. Predicated on the proposal of the aforementioned Task Force, India also established the Defence Artificial Intelligence Council (DAIC), as well as the Defence AI Project Agency (DAIPA). DAIC is entrusted with providing a strategic direction for the incorporation of AI defence technologies and industry-government collaboration. As far as DAIPA is concerned, the country has allocated USD 13.2 million dollars (equivalent to INR 100 crores) to the agency for the implementation of AI-based processes in armed forces. Besides delivering 30 maritime AI projects in 2022, DAIPA anticipates to produce 25 AI defence products by 2024.

Another key institution nurturing India's Research and Development in AI is the Centre for Artificial Intelligence and Robotics (CAIR). CAIR aims to further develop AI, communication and information security, command and control, and robotics. The Centre is credited for testing a wide range of drones such as Daksh — remotely controlled unmanned ground vehicles used to defuse explosives — coupled with Robosen and Sentry Bots for threat localization, and Ballbots for short range visual reconnaissance. Moreover, CAIR has developed and tested Rustom range unmanned air vehicles to carry out surveillance and reconnaissance. CAIR is also working on a developing a Multi-Agent Robotics Framework (MARF) to carry out mapping, exploration, search and rescue, and most importantly surveillance missions.

From a doctrinal perspective, the 2017 Joint Doctrine of Indian Armed Forces (JDIAF) had a profound impact on India and its mission to implement new technologies, by shifting the military approach to AI towards a tri-service integration framework. Overall, the doctrine stresses to maintain equilibrium between new and old technology, as defence-related tech not only acts as a strategic resource, but also as a force multiplier. India's 2018 Land Warfare Doctrine reflects this by emphasizing the need to modernize the Indian army to ensure combat preparedness in a techno-centric environment, that has now been marked by the emergence of revolutionary military-tech such as AI and drones.



AI integration in the Indian army is evident from its employment in intrusion detection systems, unmanned mine detecting vehicles, remote weapon stations, language translation systems, and facial recognition. Moreover, the Indian Armed Forces have deployed 140 smart surveillance systems equipped with AI on India's borders with China and Pakistan, entailing radar and UAV feed, sensors, and high-resolution cameras that in turn decrease the need for manual surveillance. The technological imperative caused by intelligent warfare has also compelled the Indian navy to enhance its war capabilities. The 2015-2030 Indian Naval Indigenisation Plan reflects this by supporting the modernization of military assets with high-end technology, signifying India's intent to harness AI for amplifying its naval prowess. Additionally, India's navy has developed the AI Core Group with the aim to support capacity building; train naval officers, seamen, and sailors in machine learning (ML) and artificial intelligence (AI). Furthermore, the Indian Navy will incorporate various AI features in modelling and simulation (M&S), augmented intelligence, propulsion and power systems, logistics, sensor technologies, and oceanography.

Interestingly, the Indian Air Force joined the AI race way before the army and navy, with the establishment of the AI Centre of Excellence on 10 July, 2022. The aim of this centre is to merge AI with its aerial warfighting capabilities. India's armed forces have capitalized on military-technological breakthroughs in the domain of intelligence, surveillance, and reconnaissance (ISR). In result, it has enormously decreased time for collecting intelligence, data, and identifying assets. In the future, India aims to expedite weapon-to-target mapping.

Pakistan, however, has fallen behind India with lacking AI investment, especially in the military domain. However, Pakistan inaugurated the Presidential Initiative for Artificial Intelligence and Computing (PIAIC) in 2018, aiming to merge AI in business, research, and education. Military-wise, Pakistan's air force has taken the lead in AI development by launching the Centre for Artificial Intelligence and Computing (CENTAIC) in 2020; it focuses on promoting predictive analysis, machine learning, big data, NLP (natural language processor), and deep learning. Moreover, it will facilitate the development of long endurance drones and 5th generation fighter jets under Project Azm of the Indian Air Force. In April 2023, the National Task Force on AI was established, devising a ten year roadmap to incorporate AI in the health sector, development, education, governance, and business.

Security Ramifications

India's AI militarization has substantial ramifications for Pakistan, primarily in terms of security. On the conventional side, AI-backed systems can tremendously enhance logistic-system efficiency by cutting down costs, leading to India's armed forces becoming more practical and efficient. AI systems would increase India's cyber-war capabilities which includes defensive capabilities (secure communication links, protected military assets) and offensive capabilities (the ability to attack adversary military assets). Moreover, intelligent unmanned systems with the capability to provide incremental static regeneration (ISR) can serve a dual purpose: on the one hand, they can facilitate in identifying potential targets when used for analysing and interpreting data. On the other hand, they can substantially reduce the threat to employed military personnel patrolling in conflict zone.

The strategic environment of South Asia is already volatile and India's ever-enhancing use of AI for military purposes erodes the strategic stability in the region and undermines deterrence policies between India and Pakistan. New START (New Strategic Arms Treaty) defines strategic stability as crisis stability — a lack of incentive to carry out the first strike — and as arms race stability, or the absence of motives to enlarge nuclear capabilities. AI enabled ISR capabilities allow the state to find, track, and target a wide range of its adversary's military assets, enhancing the probability of an attack on strategic assets. The pre-emptive first strike capability reinforced by AI military technologies, alongside the perception of having that capability, could disrupt crisis stability.

It could endow India with the confidence to successfully carry out a decapitating counterforce strike against Pakistan. Deterrence perceptions become even more complex if India uses offensive counterforce capabilities in conjunction with its Ballistic Missile Defence Systems — India's Advanced Air Defence (AAD) and Prithvi Air Defence (PAD) — during a possible second-strike attempt by Pakistan. AI-enabled precise targeting capabilities and swift data processing increases chances of escalation during a crisis as it can tremendously enhance prospects of hasty decisions that are grounded on limited information and may beget misinterpretation. Moreover, such technological advancements could potentially decrease the mutual vulnerabilities between both states that are indispensable for maintaining strategic stability.

Pakistan Response

With regards to arms race stability, the military asymmetry between India and Pakistan resultant of growing counter-force capabilities buttressed by AI is having a spill-over effect on Pakistan. Pakistan now feels compelled to invest in analogous AI military applications to maintain the balance of power with India, thereby generally aggravating an arms race between two adversaries and particularly with AI. Given India's unremitting pursuit of AI-based warfighting capabilities, Pakistan will also seek an institutional mechanism for assimilating AI technologies in its military domain. This calls for the development of a Pakistan 'Strategic AI Council' that can provide strategic direction for the development of AI weapons. Under the auspices of this proposed council, new and existing AI-related institutions can either indigenously develop or procure AI defence equipment. Furthermore, AI incorporation at the tri-service level will be an instrumental step in furthering the military capabilities of the country. Collectively, it would curb the growing AI-related military disparity between India and Pakistan and concurrently upgrade Pakistan's combat preparedness for possible AI-driven warfare.



High Energy Laser Weapons: A Boon for Pakistan?

Safia Mansoor

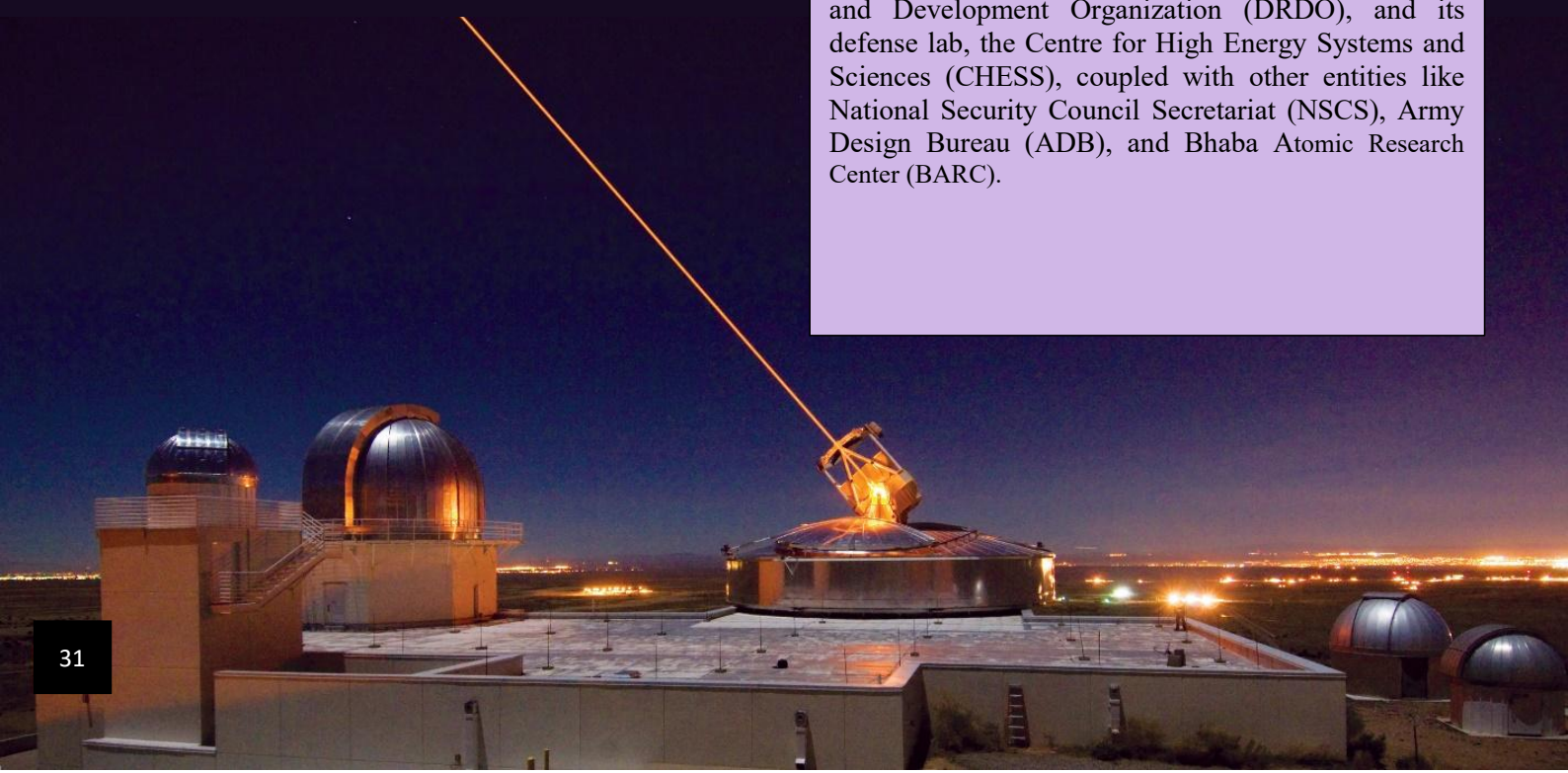
In 1960, Theodore Maiman, an American physicist and engineer, invented the Light Amplification by Stimulated Emission of Radiation or Laser that promptly garnered the attention of science fiction authors and military strategists as a prospective cutting-edge weapon of choice. Soon after its discovery, laser came into the limelight as an analogous real version of a primary offensive weapon of the Martians - 'Heat Ray'- mentioned in the science fiction book "War of the Worlds," written by H.G. Wells. Militaries started exploring the defense utility of lasers, with the Pentagon including them in its utopian 'Star Wars' or Strategic Defense Initiative. However, the efficacy of lasers as a military technology has surged to new heights as militaries across the world are pursuing their advanced versions with monumentally higher output that are known as High Energy Lasers (HELs).

In the military domain, lasers having power outputs of more than 1 kilowatt are termed as HELs. More specifically, HELs created for tactical-level applications have a power range of 10-100 kilowatts while for strategic-level employment, laser power surges to multi-megawatts. HELs have three categories: chemical lasers, free-electron lasers, and solid-state lasers. Among these categories, chemical lasers are regarded as the most sophisticated whereas free-electron lasers are still at a nascent stage.

Solid state-lasers, notably fiber lasers, are widely deployed by the armed forces as HEL weapon systems. With a target engagement time between 2 and 4 seconds, HELs have the potential to ignite crucial elements of a target's surface, causing at least momentary distraction. Further, it could perforate the surfaces of targets, to include tires, hulls of ships, or wings of aircraft, thwarting their core capabilities. This ignites explosions by vaporizing or heating the targeted threat, compromising its control system or optics through the permanent or temporary obstruction of its sensors.

Strategic competition for HEL weapons has led key states, such as the U.S., Russia, and China, to focus on bolstering their laser capabilities. As for the U.S., various laser-based defense projects, such as the anti-drone Directed Energy Maneuver Short Range Air Defense (DE M-SHORAD), ship-based anti-drone Laser Weapon System Demonstrator (LWSD), and Optical Dazzling Interdictor, Navy (ODIN) laser weapons, signify its efforts in scaling up its laser technology in the military domain. Moreover, the U.S. has also deployed Palletized- High Energy Laser (P-HEL) in an undisclosed location overseas. Russian investment in HEL technology is evidenced by the development of anti-drone and anti-satellite laser weapons, such as Peresvet, Zadira, Kalina, and Sokol Eshelon. China has also been taking momentous steps in manufacturing laser weaponry that may target drones, fighter jets, and even missiles. It has also overcome a key technical challenge of heat emission by developing laser cooling technology that, in turn, facilitates the uninterrupted emission of laser beam.

The spillover effect of a quest for laser weapons is evident in South Asia. India has been making headway in the development of directed energy weapons, involving concerted effort across various organizations, such as the Defense Research and Development Organization (DRDO), and its defense lab, the Centre for High Energy Systems and Sciences (CHESS), coupled with other entities like National Security Council Secretariat (NSCS), Army Design Bureau (ADB), and Bhaba Atomic Research Center (BARC).





In this regard, a significant feat credited to CHESS is the development and deployment of laser-based anti-drone system with a 2km jamming range, 4km radar detection range, and 1-2.5 km laser-based hard kill range. In the realm of laser defense program, another key development is India's grandiose project 'Directionally Unrestricted Ray-Gun Array (DURGA-2). In 2021, U.S. defense media stated that DRDO's premier laser laboratory, Laser Science and Technology Centre (LSTC), is pursuing offensive and defensive laser systems.

The Indian government has allocated \$100 million to LSTC to spearhead the DURGA project that is supposed to embed HELs in air, sea, and land-based platforms. This paramount military technology will accrue compelling strategic advantages by dispensing 100% hard kill probability against missiles, and debilitating electronic and radar systems of adversaries. Hitherto, it successfully developed a laser with a 25 Kilowatt power output that could hit ballistic missiles at a distance of 5km during its terminal phase. LSTC is incessantly trying to further laser generation techniques, entailing chemical, fiber, and solid-state lasers while concurrently seeking to increase laser weapons' ranges to 100km; nonetheless, adequate power supply for HELs remains a key impediment.

Given the myriad dividends of HEL weapons, Pakistan may consider harnessing this technology due to four key reasons: a) operational flexibility- HEL weapons yield operational flexibility, owing to short target engagement time; b) cost-efficiency- the operational cost of laser weapons is less than that of traditional kinetic weapons; c) defense capability- HEL weapons can increase Pakistan's defense capabilities through their integration with land, sea, and air-based platforms; and d) deterrence – HEL weapon technology may counterbalance India's growing laser technology, helping deter aggression given its potent defensive capabilities, notably against missiles.

HEL weapons would be an epochal augmentation to Pakistan's ability to carry out defensive operations due to their varied applications. By dispensing on-board active defense, laser-based defense systems have the potential to obliterate incoming aircraft and missiles. Additionally, they increase the survivability of platforms that are subsonic, non-stealthy, and susceptible to being targeted. Active defense endows a striking capability against an enemy's center of gravity at the onset of an air campaign, thereby diminishing the need for the Suppression of Enemy Air Defense (SEAD). Laser systems, when integrated with ground-based platforms, can counter indirect fire threats, such as mortars, artillery, and rockets, increasing the maneuverability and survivability of ground forces. Sea-based laser systems are an indispensable shield against cruise as well as ballistic missiles. As for air-based laser weapons, they could provide active defense against targets, notably ballistic missiles, even in their initial phases. Furthermore, HEL technology is instrumental in providing widely spread and cost-effective terminal point defense against enemy's theater ballistic missiles.

Also, in the era of drone warfare, Pakistan may harness drone-zapping laser weapon technology to counter the challenge of drone swarming during possible conflictual scenarios. Such technology is both effective and cheaper. That being said, despite various benefits that HELs provide, challenges, such as the difficulty in managing wavelength power, technical issues of keeping laser stable on mobile platforms, and sensitivity to atmospheric conditions need to be navigated. Such challenges can be overcome through scientific and technological advancements and training of armed personnel. Amidst the ever-changing modes of warfare, Pakistan should develop HEL weapons to enhance its defense capabilities. As militaries all across the world are developing this cost-effective option to counter various threats, notably from UAV systems and proliferating missile technologies, Pakistan must capitalize on this technology to navigate regional geopolitical challenges and enhance its defense capabilities. However, to leverage HEL technology, adequate investment in R&D and integration of lasers with platforms are of utmost significance.

The Ethical Quagmire of Weaponizing Animals and Birds in Modern Warfare

Syeda Fizzah Shuja

Historically, animals and birds have played pivotal role in varying capacities for conduct of warfare. Horses and camels have been used as cavalry for rapid mobility – outflanking and outrunning enemy in battlefield. Elephants have been used as formidable war animals, particularly in South Asian and African battlefields. The size and strength of elephants played crucial role for demoralizing and causing chaos among enemy ranks. Donkeys and mules have been widely employed for carrying supplies and weapons. Dogs have been extensively used for their keen senses in roles ranging from sentries to detection. Birds, primarily pigeons and eagles, have also been globally employed for delivering messages. The time-tested efficiency of animals and birds in combat not only represent their natural military potential but also symbolizes the bond shared between animals and humanity. In sum, the animal kingdom has been conscripted into human conflict and historic battles cannot be imagined without acknowledging its crucial role.

Industrialization and technological developments have significantly reduced the dependency of military forces on animals and birds. Instead of horses and camels, armored and motorized vehicles are now used as standard mode of mobility. Wireless communication has replaced pigeons, and tanks dominate the land-warfare instead of elephants. Despite all these innovations, animals and birds are still being crudely used for several military applications in-order to bypass or deceive enemy's sensors and defenses.

In World Wars, when radios and telephonic communication had become standard mode of communication in military, pigeons were still used to deliver encrypted messages. In fact, pigeons demonstrated remarkable reliability in communication, with a 95% success rate in WW-I and continued use in WW-II. During cold war, birds proved their versatility when ravens and owls – equipped with cameras and microphones – were used for espionage and other covert missions by the American and Soviet spies. The battlefield of the 21st century is dominated by high-tech combat systems. While the traditional reliance on animals for communication and espionage has proven relatively effective, the modern era has re-introduced a new and innovative, yet controversial, uses for animals in warfare. While human operated drones and semi-autonomous systems dominate headlines, the allure of animal spies persists. Stories like the Pentagon's reported brain implants for sharks, CIA's Acoustic Kitty Project, Egypt's use of chemical-treated dogs in the Yom Kippur War, and the "spy squirrels" detained in Iraq highlight a fascinating, but ethically murky, trend. Horses and mules are still used for logistics in tough mountainous terrain by modern military forces.

Perhaps the most remarkable examples are found in aquatic warfare, where dolphins have emerged as valuable assets. With their exceptional echolocation and memory, dolphins have been harnessed by the U.S. to detect underwater submarines. Their capabilities surpass those of machines, particularly in mine detection. The use of dolphins for harbor protection against hostile special forces was even employed by Russia and Ukraine in their 2014 conflict highlighting the ongoing relevance of animal spies in modern warfare. Similarly, birds with their natural camouflage and ability to navigate complex terrain, offer unparalleled aerial reconnaissance potential.





Instances like the 2011 discovery of a griffon vulture equipped with Israeli tracking devices in Saudi Arabia and the 2012 recovery of a European bee-eater bearing an Israeli leg band in Turkey highlight the growing interest in avian espionage. The employment of animals and birds in modern warfare appears to provide crude yet innovative applications. However, by exploiting animals' innate talents for military advantage, we inevitably invite a moral reckoning, compelling us to scrutinize the ethical consequences of our actions. As the line between duty and compassion blurs, we must critically examine the moral and legal consequences of exploiting animals for military purposes.

The disturbing trend of using animals as war machines by terrorist organizations poses a security threat as well as ethical and legal challenge. Unlike professional military forces, terrorist factions are neither governed by well-defined set of rules nor bound to any legislative framework. Insurgent groups have consistently demonstrated their willingness to exploit animals for their destructive purposes, often leveraging their unique capabilities to evade detection and inflict harm. In recent years, terrorist organizations have utilized pigeons as a low-tech method of communication, evading electronic surveillance and exploiting the birds' ability to fly undetected. Moreover, there is a risk that terrorists could infect animals with contagious diseases or pathogens, releasing them in densely populated areas to disrupt public health systems and spread fear.

The utilization of animals as weapons by Violent Non-State Actors (VNSAs) is a longstanding tactic, with a history dating back to the 1980s. The Nicaraguan Contras' deployment of "Bat Bombs," and insurgents in Iraq's use of explosive-laden donkeys in 2005 demonstrate the crude adoption of this strategy. These organic improvised explosive devices (IEDs) were designed to inflict harm and instill fear, showcasing the tactical innovation of VNSAs. The persistence of this tactic is evident in ISIS's employment of "Bird Bombs" in 2014 and Houthi rebels' use of bird-disguised drones in 2019, highlighting the evolution of this strategy. The adaptation of animal-borne IEDs to drone technology demonstrates VNSAs' ability to innovate and exploit vulnerabilities. The exploitation of animals as war machines not only perpetuates a cycle of violence but also raises profound ethical concerns. The use of animals in warfare can shape public perception of the military and potentially erode public trust. Moreover, it raises questions about the values a society holds when it is willing to sacrifice the welfare of other living beings for military objectives. The suffering inflicted on innocent animals, the potential for widespread harm, and the erosion of humanity's moral fabric all demands our attention.

In the midst of war, the unspoken bond between humans and animals carries the heavy burden of sacrifice, prompting us to question where duty ends and compassion begins. Despite the significance of this issue, there is currently no dedicated legislation governing the use of animals in warfare. While the Geneva Conventions regulate the conduct of armed conflict and seek to minimize unnecessary suffering and harm to all parties involved, including animals, the use of animals as war machines poses a unique legislative challenge. Specifically, balancing military requirements with ethical and moral obligations demands careful consideration of the ethical and legal implications, as stipulated in Geneva Article 51(2) of Additional Protocol. This protocol prohibits targeting animals unless they constitute military objectives. Striking a balance between operational effectiveness and moral responsibility is crucial in this context.

In the near future, we can anticipate a significant convergence of animals and technology, revolutionizing various industries. The emergence of insect cyborgs, equipped with advanced cameras and sensors, will transform urban monitoring and search and rescue operations. The development of neural interface systems for animals will enable brain-computer interfaces for military applications, while bio-hybrid robots will harness living tissues to power insect-inspired robots. Gene editing technologies like CRISPR will enhance the physical and cognitive abilities of military dogs, and fish mimicry robots will revolutionize underwater exploration and marine research.

As this fusion of biotechnology and engineering advances, we can expect innovative applications across diverse fields, transforming the landscape of human-animal-machine interactions and raising important ethical and strategic considerations. Where biotechnology and animal capabilities could redefine warfare, we must confront the profound ethical implications. The silent suffering of these coerced creatures demands a re-evaluation of our moral boundaries. It is imperative to establish stringent regulations to prevent their exploitation, ensuring our pursuit of security does not compromise our humanity. The future of warfare should embrace innovative solutions that respect the integrity of all living beings, balancing security with ethical and legal responsibilities.”



Japan's Naval Modernization And Gradual Transition To Assertive Posture

Ahmad Ibrahim

Japanese Maritime Self-Defense Force (JMSDF), as the name implies, is traditionally designed for defending Japan's main islands and regional territories. Through-out Cold War, Japan has focused towards North and West primarily due to its territorial disputes with Soviet Union on Kuril Islands. JMSDF, despite active collaboration with United States Navy (USN) in Pacific Theatre, sustained defensive posture in accordance with national interests. But in recent decades, the rapid rise of China as a major power has transformed the regional power dynamics. Beside abrasive historical relations between Beijing and Tokyo, the interactions between both nations are also characterized by territorial disputes in maritime domain. Territorial dispute between China and Japan exists in the East China Sea involving a cluster of five small, uninhabited islands known as the Senkaku in Japan and the Diaoyu in China. The sovereignty over these islands has been a source of contention among China, Japan, and even Taiwan for decades. In recent years, naval and air forces from both China and Japan have frequently encountered each other as both nations vie to assert control and demonstrate their respective claims over these disputed islands.

JMSDF surface fleet is one of the largest in the world and primarily known for its large destroyer fleet. JMSDF currently operates four landing helicopter docks (LHDs), three major amphibious warships (LSTs), eight aegis-equipped heavy destroyers, 28 multi-mission destroyers, and numerous patrol and support vessels. JMSDF underwater arm, equipped with fleet of 22 diesel electric submarines (SSKs), is also predominately defensive in nature.

Being diesel electric, these submarines have shorter range and limited endurance thus suitable to ascertain sea-denial operations. JMSDF's Fleet Air Force currently operates large fleet of fixed wing and rotary wing aircrafts. With 68 units operational, the primary Maritime Patrol Aircraft (MPA) is turbo-prop P-3C Orion. The ship-borne ASW duties are performed by SH-60J/K ASW helicopters which are also operated from land bases. Since recently, the surface, aerial, and underwater fleets of JMSDF lacked any long range offensive munitions and were configured predominately for defensive duties.

Japanese late prime minister, Abe Shinzo, has played key role in shifting the Japan's posture from a purely pacifist state to a state with dynamic retaliatory posture. With China's naval expansion in sight, Japan's naval modernization programs are now directed towards South and focused on attaining necessary counterattack capability in tandem with strengthening the defensive potential. This is also evident in rapidly increasing annual defense budget from past several years. Japan's Cabinet has approved \$56 billion defense budget for fiscal year 2024 – the largest amount ever since WW-II.

Japan's progressive build-up of naval capabilities emerges as an indication of strategic alignment for countering China with the United States, India, and Australia in the form of Quad. Through joint exercises, like Malabar, strategic dialogues, and the forging of new alliances, Japan seeks to synergize its naval capabilities with Quad partners, fostering interoperability and a coordinated response to diverse maritime challenges.



Japan's Ministry of Defense White Paper (2023) has outlined two key priorities for modernization of its armed forces. First, maximizing efficiency of existing equipment and acquiring munitions in sufficient numbers; second, augment key domains of future defense potential particularly stand-off defense capabilities that can be employed for counterstrike role. Japan seeks to reinforce deterrence by developing multilayered defensive as well as multi-platform stand-off counterstrike potential.

The pivot of Japan's force modernization is based on acquisition of F-35 Lightning-II stealth aircrafts. With total order of 157 airframes, Japan is currently the largest customer of F-35 in world. Interestingly, out of 157 airframes, 42 are F-35B – a short take off and vertical land version (STOVL), which Japan will deploy on its two Izumo class landing helicopter docks (LHDs). Both Izumo class LHDs are being retrofitted to embark F-35B Lightning-II stealth aircrafts. Once fully modified, both vessels will essentially turn into light aircraft carriers armed with the most advanced carrier borne fighter aircraft in the world. In comparison with United States' carrier-borne naval aviation, JMSDF capability will be of modest scale. But the incorporation of carrier-borne stealth fighter aircrafts will add new dimension in offensive and defensive capability of JMSDF.

After scarping plans for installing Aegis-Ashore Ballistic Missile Systems, Japan is now in process of building two aegis-equipped heavy missile-defense destroyers now referred as Aegis System Equipped Vessels (ASEVs). Displacing more than 12,000 tons, these heavy warships will be equipped with offensive and defensive missiles of varying ranges and will develop multi-layer missile defense envelop over Japan. The deployment of both ASEVs could free Japan's other aegis-equipped destroyers from ballistic missile defense patrols in the Sea of Japan. This will eventually allow Japan to configure and employ its remaining destroyer fleet for other broader spectrum of operations, particularly around the Ryuku Islands. In comparison with land based fixed aegis-ashore site, these missile defense warships will be mobile and could be deployed to different places according to threat requirements. Both ASEVs are expected to join JMSDF by end of 2028.

In parallel, JMSDF is in process of replacing older generation destroyers with Mogami class frigates. These frigates are designed to be stealthier, and highly automated with primary role of conducting anti-submarine warfare (ASW) duties. Initially twelve Mogami class frigates will be built with eventual planned total of 22 frigates. Currently six ships of this class are operational and have enhanced ASW capabilities of JMSDF surface fleet by many folds.

In underwater domain, JMSDF will be gradually acquiring Taigei class submarines to replace older boats. Recently developed Taigei class submarines incorporate electric propulsion system (lithium-ion batteries) which allows longer endurance and significantly reduces acoustic signature. Due to these features, these subs are regarded as next generation class in category of conventional powered submarines. The stealth features and ability to fire UGM-84L Harpoon block-II SLCM from torpedo tubes enable these subs to strike enemy surface assets. In total, JMSDF will be inducting six such submarines. In sum, the near future surface fleet of JMSDF will comprise of two light aircraft carriers, two landing helicopter dock, two ASEVs, eight aegis-equipped heavy destroyers, six multi-mission destroyers, 22 stealth ASW frigates with numerous patrol and support vessels.

Japan's naval modernization reflects a significant shift in its defence strategy, marking a gradual transition to a more assertive posture. This evolution is driven by the changing dynamics of East Asia, particularly the growing influence of China. The comparison of contemporary and near future vessels of JMSDF suggests that the numerical strength of JMSDF will not see considerable increment in size. However, the force will be highly modernized with significantly enhanced offensive capabilities. This fleet will be able to project power at multiple tiers as well as undertake traditional defensive duties at the same time. By enhancing its naval capabilities and adopting a more assertive posture, Japan is not only safeguarding its own sovereignty but also playing a crucial role in maintaining the balance of power in the Indo-Pacific.



Exploding Pagers: Supply Chain **Vulnerabilities And Solutions**

Ahmad Ibrahim

The co-ordinated attack involving simultaneous explosion of thousands of pagers and walkie-talkie systems operated by Hezbollah in Lebanon have ushered a new chapter in modern warfare. The waves of attack, which occurred on 17 and 18 September 2024, killed 42 individuals and injured more than 3000. Ever since, more attacks involving ‘bobby trapped’ communication devices have taken place, albeit at smaller scale. So far, both Israel and its adversaries have employed series of innovative tactics and novel military technologies against each other with remarkable effects. But the pager’s attack, essentially an amalgam of supply-chain tampering and cyber sabotage, is an extraordinary development and is expected to cause ramifications far beyond the scope of current conflict.

Pagers, although a relatively dated technology when compared to modern cell phones, are still operated widely by intelligence agencies and emergency services. Pagers and cell phones differ fundamentally in their design, functionality, and purpose. Pagers, also known as beepers, are one-way or two-way communication devices primarily used to send short text messages or numeric alerts and have more battery life. Unlike cell phones, which are more advanced and multifunctional devices, pagers rely on radio frequencies to deliver messages rather than cellular networks. This makes pagers less dependent on interconnected infrastructure like the internet or cellular towers. Their simple design, limited communication range, and independence from major telecommunication networks make them resilient in environments where mobile signals are weak or where digital surveillance is vulnerable to cyber-attacks.

Beside government organizations, criminal networks, and militia groups also often prefer pagers over cell phones for several reasons. First, pagers are generally more difficult to track or intercept than cell phones. Cell phones constantly transmit data, such as location, call logs, and internet activity, to service providers, creating a digital footprint that can be traced through triangulation or GPS tracking. Pagers, on the other hand, only receive signals and can remain passive most of the time, emitting no traceable signal until a message is received. This reduced traceability makes pagers a preferred tool for groups operating under the radar. Second, pagers provide a higher level of security and anonymity because they do not require SIM cards or personal identification, unlike cell phones, which often require registration with a network provider. Additionally, the simple text-based communication of pagers minimizes the chance of sophisticated cyber surveillance or hacking, as there's no access to apps, internet, or email services that can be exploited for intelligence gathering. For these reasons, pagers offer a low-tech, low-visibility option, ideal for hostile operations where communication security is paramount.

The AR924 model pagers, which were tempered with explosives, carried trademark of a Taiwan’s company called Gold Apollo. The company has distanced itself from the attack citing the pagers in question were manufactured by Budapest based company known as B.A.C under a licensing deal. Such deals are common practice in international markets and both civilian as well as military grade systems are produced using this partnership approach.



Tampering the military supply chain is not a new phenomenon. During 1982 Falkland War, United Kingdom intercepted supply of guided-missiles destined for Argentina and made them inoperable against British naval vessels. Similarly, tempering any electronic device, like cell-phone, with explosive is not a new practice either. Israel has used such weaponized devices in past for target killing. However, the recent incidents involving explosions in pagers and walkie-talkies so eminent is the scale at which attacks have been conducted. It has raised alarms about supply chain security of commercial electronic products also. Publically used items, like communication devices, can be potentially converted into weapons by covert agencies or hostile factions. Such tactics will not only complicate the security apparatus but also blur the distinction between civilian and military applications. In sum, risk of weaponizing commercial items will be making increasingly challenging to anticipate and prevent covert operations that exploit commercial networks.



The potential involvement of Taiwanese and Hungarian companies highlights the complex legal landscape surrounding cross-border supply chains. Multi-National Companies (MNCs) in particular can become vulnerable to international security conflicts. The tempering of MNCs' products for kinetic effects can undermine the credibility of their names and thus damage MNCs' business networks. This scenario emphasizes the need for consistent cross-border regulatory frameworks and mutually-agreed international standards that enforce effective monitoring and compliance across the entire supply chain.

The security of supply chain is further complicated by the often-ambiguous boundary between government-directed interventions and unauthorized tampering by malicious actors. For example, governments may lawfully intercept or modify products for security reasons, such as tracking or disabling certain functionalities. Such tempering may appear unethical, but still may fall within legal domain and thus can be kept in check. However, hostile actors including covert agencies and terrorist organizations can exploit similar vulnerabilities for malicious purposes, inserting explosives, surveillance tools, or malicious code into commercial goods. Such actions mark a troubling dimension in modern society, where supply chains themselves become battlegrounds. This trend is intensified by the popularization of Internet of Things (IoT) devices, which add layers of complexity to already complex networks of suppliers and distributors. IoT's expansive reach across sectors—from telecommunications to healthcare—offers a wide range of potential targets for those seeking to compromise national security through commercial networks.

Keeping above in view, there is growing imperative of rigorous due diligence and compliance by companies to iron out this new form of risk and secure supply chains. Regulatory bodies and international organizations increasingly expect businesses to enforce end-use monitoring and verify that their products do not end up with sanctioned entities. Failure to comply can lead to severe consequences, including legal actions. The G7's Industry guidance on Russian sanctions evasion and the U.S. Senate's Trade Integrity Project (TIP) offer frameworks for identifying and countering risks associated with cross-border commerce. Businesses, particularly in high-risk sectors like telecommunications and semiconductors, should implement these standards to prevent legal, reputational, and security risks. Additionally, Companies must establish robust internal controls and swift response protocols to counter third-party misconduct. Internal measures like employee education, regular compliance reviews, and timely investigation of potential misconduct help safeguard organizations from liability related to third-party's potential hostile intervention.

The pagers' explosions should serve as wake-up call for international community, governments, MNCs, security forces as well as public regarding vulnerabilities of global supply chain. With state and non-state actors alike exploiting commercial channels to further their agendas, companies operating in this complex landscape must adopt comprehensive risk management strategies. By enforcing stringent due diligence, enhancing cyber-security protocols, preparing rapid response mechanisms, and judiciously handling government requests, businesses can build resilience into their supply chains, protecting against the multifaceted threats of today's interconnected global market.

Evolving Battlegrounds: A Comparative Analysis of 20th and 21st Century

Warfare **Safia Mansoor**

International Relations entails interactions of independent political communities which include elements of resistance, opposition, and conflict of interest or purpose. Warfare has remained the cardinal phenomenon since time immemorial with its frequency and intensity contingent to change, owing to shifting power dynamics among state actors. There is no single definition of war as different IR scholars defined it per their comprehension of the quintessential aspects of war. Carl Von Clausewitz has defined war as an act of violence to force the adversary to fulfill the will of the state forcing it. He has also defined war as a continuation of policy by other means. Horace Meyer Kallen in his work “Of War and Peace” has defined war as an armed contest between two or more than two sovereign entities using organized military forces to achieve particular ends. 21st Century warfare is a completely new arena and to understand it, one must go over the contours of the past.

Every era has its own theoretical and practical contours of warfare. The trends and fundamental aspects remain ever-changing concerning the changing nature of the international system and politics. It is imperative to note that war’s nature remains eternal, however, the character of warfare changes with the changing system and technological advancements. 20th-century warfare dynamics include inter-state conflict, total wars, superpower confrontation (US-USSR), and independence-related conflicts. The second half of the 20th century mainly characterized fourth-generation warfare whereas the end of the 20th century led to more non-civil conflicts. Confrontation’s lid were taken off by it that were considered perilous during the superpower showdown. Moreover, it unleashed competitions and rivalries that were previously banked by the standoff of the East and West. Against this backdrop, this research aims to holistically analyze key dynamics of 20th and 21st-century warfare. Theoretical aspects coupled with the case studies of both centuries have been provided in order to draw a comparison and determine the shift in the changing patterns of warfare.

Warfare in the 20th Century (Total war)

The first half of the 20th century is mainly characterized by “Total War.” It mainly implies such military conflicts in which contenders primarily aim at achieving complete victory by willingness to sacrifice resources and lives. In this type of war, there remains no distinction between fighting civilians and combatants. It aims to destroy the resources of contenders and make them unable to wage war. Total war also entails blockades, blocking the enemy’s water access, and destroying major infrastructure. Moreover, any type of weapon can be used in it. The modern concept of total war dates back to Carl von Clausewitz’s writings which asserted that wars cannot fought by practicing laws. His work “On War” opposed the 18th century’s conflicts and limited objectives. He also gave importance to the crushing forces of adversaries in the battle.

Fourth Generation Warfare

The second half of the 20th century is characterized by fourth-generation warfare. William S. Lind, a US military analyst, coined the term “Fourth Generation Warfare” which implies such type of warfare/conflict that undermines the monopoly of the state. In this type of warfare, chief protagonists are not the states rather it involves non-state actors who challenge the state’s writ. In terms of ontology, it is regarded as asymmetric conflict which can be differentiated from traditional warfare in terms of choice, tactics, as well as means of conducting wars. Economic, social, as well as psychological stratagems are used by violent non-state actors to create disorder in their respective states.

Colonial Warfare

Another important dimension of 20th century warfare includes warfare against colonial powers which is termed as colonial warfare or warfare of independence. It is a blanket term to delineate such kind of combat which emanates when foreign powers colonize a particular overseas territory. It also includes wars that were fought in the 20th century between European armies in Asia, Africa, and the Middle East.





Guerilla Warfare

It falls under the domain of irregular warfare in which combatants' small groups such as armed civilians, irregulars, and paramilitary personnel use various military tactics such as sabotage, ambushes, hit-and-run tactics, mobility, petty warfare, and raids to fight less mobile and larger traditional military. Guerilla tactics include avoidance of direct head-on confrontations with armies of adversaries and advocate engagement in limited skirmishes. The goal of this is to exhaust adversaries and make them withdraw.

The groups involved in guerrilla warfare are dependent on political and logistical support from either foreign backers or the local population, who are not directly involved in that conflict but sympathize with the efforts of the group. In the 20th century, guerrilla warfare growth was mainly spurred on by theoretical work on respective topics such as "On Guerrilla Warfare" by Mao Zedong and "Guerilla Warfare" by Che Guevara. Moreover, successful revolutions carried out by Russia, Cuba, and China also show the importance of this type of warfare in the 20th century.

Naval and Aerial Warfare

20th-century warfare also included warfare on seas, also known as naval warfare. The emergence of modern battleships in the 20th century such as steel-armored ships like HMS Dreadnought coupled with torpedo boats, and destroyers revolutionized the warfare at sea. Another type of warfare that was entirely 20th-century's creation is aerial or air warfare. The platforms to carry out military operations were helicopters, airplanes, and propelled aloft manned crafts to target the ground, water, and other aircraft.

Case Study of 20th Century Conflict: World War I

World War began in 1914 after Austria's Archduke Franz Ferdinand's assassination which plunged all the Europe towards the deadly war. In that war, the Allied Powers (US, Great Britain, France, Japan, Italy, Russia, and Romania) fought against the Central Powers (Ottoman Empire, Austria-Hungary, Bulgaria, and Germany). Trench warfare's horrors and new military technologies led the state in World War I to face unprecedented levels of destruction and carnage. Allied powers remained victorious, however, death casualties of civilians and soldiers were more than 16 million individuals.

WWI fulfills the criteria of total war due to four reasons:

1. High-level mobilization of military personnel, troops, resources, and weapons
2. Blurred roles of civilians and military personnel
3. Complete rejection and opposition to comprise peace and result in other than the enemy's destruction
4. Complete control of society. In WWI, civilians were mobilized by nations for war through various means such as military propaganda, forced conscription, and rationing which indicates total war aspects

WWI also witnessed the materialization of naval warfare such as the 1916 Battle of Jutland was fought between the old Royal Navy and Imperial Germany's Kaiserliche Marine. Moreover, seaplanes of Russia flying from converted carriers' fleets blocked the maritime supply routes of Turkey. Additionally, air patrols of Allied powers countered the U-boat activity of Germans in the coastal waters of Britain and also carried out a torpedo attack on their ship. Air warfare was another aspect of WWI. Initially, aircraft were unarmed and hence used for reconnaissance purposes but later they were used in direct air-to-air combat in which both warring parties tried to gain air superiority and inflict damage to the maximum extent. The other two purposes of the aircraft were strategic bombing and gaining tactical ground support.

Warfare in the 21st Century

Community-based or Civil War

It's not possible to dismiss the inter-state wars in the 21st century, but fundamental warfare contingencies in today's world constitute a complex phenomenon that is delineated as a "burgeoning number of the increasingly disorderly spaces" spread globally. These spaces can be functional, economic, social, regulatory, legal, and geographic. Such wars occur mostly among the various communities which in turn are characterized by concrete and prominent factors i.e., language, religion, ethnicity, or self-selected and self-defined criteria. Contrary to the 20th century's major wars, these wars are not mainly backed by some political ideology, but to control resources such as territory, and social, economic, and political power and therefore termed as civil or internal.

There are three distinct characteristics of such wars

- 1) It involves failing/failed states or such regimes falling between autocracy and democracy termed anocracies.
- 2) Such wars are not characterized by classic or traditional military confrontations. Dominant participants are not formal military forces rather are warlords, warring ethnic groups, informal paramilitary organizations, and competing militias. Contemporary community warfare is brutal, and crude and involves indiscriminate violence.
- 3) It is very hard to end such wars and the reasons are various: insincerity of parties and disappointment regarding agreements.

Civil wars are mainly localized which implies that these wars are contained geographically even though they transgress national borders.

Transnational Terrorism

Community warfare's other variant is transnational terrorism in which communities are delineated in global terms. It includes perpetrators and sites of violence signifying different nationalities and states. It is mainly perpetrated by Al-Qaeda as well as its ideologues/ affiliates. In such type of terrorism, which is also termed as Islamic fundamentalism, there is a self-defined community that is accountable to only God and not any other authority.

Fifth Generation Warfare

The present century is also characterized by the extension of insurgent and asymmetrical warfare which is known as "Fifth Generation Warfare" or "Hybrid Warfare." It is primarily based on information-based operation campaigns that unorganized groups and organizations conduct. It can be led by state or non-state actors to defeat and disrupt enemies for the achievement of wills.

This concept was used by Colonel Xiangsui and Liang in their book named "Unrestricted Warfare" in 1999. The corollary of this war is the hybrid warfare which is now debated as a separate warfare. Moreover, it also includes information warfare which is waged against adversaries using digital technological advancements such as various platforms of social media, digital data, the internet, and the darknet.

Hybrid Warfare

Hybrid warfare as a term first appeared in the book "British Counterinsurgency in Post-Imperial Era" penned by Thomas Mockaitis. F.G. Hoffman has defined this form of warfare as an amalgamation of guerilla, cyber, conventional as well unconventional, terrorism, informational, irregular, and regular combat that is carried out by both state and non-state actors. The key aim of this type of war is to destabilize, disintegrate, and demoralize the enemy. There are four main aspects of such type of warfare as per Frank. G. Hoffman is as follows:

1. Subversive and incendiary activities that aim at destabilizing and disrupting the particular state for the creation of a response dilemma.
2. Use of proxy war to destabilize the state.
3. Coercion is used by the aggressor for the substitution of the target's will. There are various forms of coercion such as physical coercion in which the targeted state is threatened with military forces and its use. Psychological coercion involves the isolation of the state diplomatically.
4. Victorious use of early phases whereby the aggressor uses forces (conventional) against any particular target to acquire objectives.

Cyberwarfare

Cyber warfare includes cyber-attacks against the state by either state or non-state actors to impose significant harm on the targeted enemy. Cyber warfare is the most important type of hybrid warfare as the emergence and reliance of terrorist outfits and organizations are dependent on advanced communication methods. The offensive capabilities of hostile entities are increasing due to various harsh cyber strategies. Cyber warfare also includes the use of cyber weapons, artificial intelligence, misinformation, disinformation, sabotaging communication technologies, and espionage.

Trade Wars

Another important aspect of contemporary warfare is trade wars which are defined as economic contestation between the states. Consequent to that is the imposition of protectionist policies such as trade barriers. There are various ways to impose trade barriers such as import quotas and tariffs. They are waged when the government feels that other states are involved in unfair trade practices and damaging its markets.

Sixth Generation Warfare

Russian Major General Vladimir Slipchenko is credited for coining the term “Sixth Generation Warfare” which implies the informatization of conventional warfare as well as the emergence of precision strike systems. Later, he began using the term “no-contact warfare” as an optimal manifestation of sixth-generational warfare and defined it as action entailing the capability to carry out no-contact-cum-distant operations alongside the increased role of C4ISR capabilities.

Case Study of 21st Century Conflict: India-Pakistan Hybrid Warfare

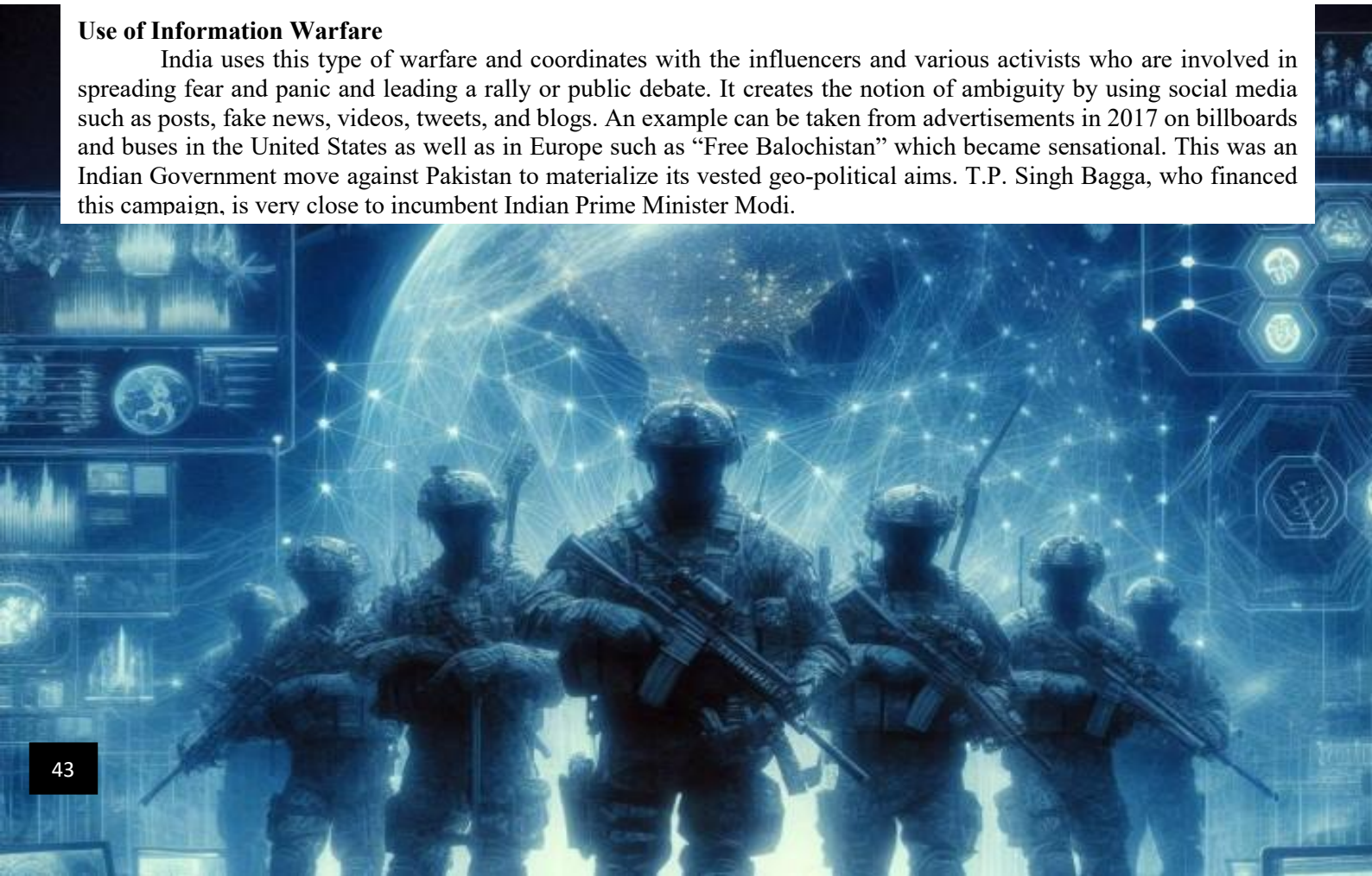
India and Pakistan have been considered archrivals since the partition of the Subcontinent and this hostility is only antagonized by the lingering Kashmir conflict. Indian strategy of hybrid warfare against Pakistan includes conducting war on four fronts:

Use of Proxy War

India's use of proxies against Pakistan can be examined through three aspects. First is agitation which can be understood through the Indian Doval Doctrine which means that India finances and backs agitator groups in Pakistan, mainly in the Balochistan province. The Doval Doctrine is a dogma strategized by Ajit Doval, former Indian Intelligence Bureau director as well as advisor for National security. His doctrine involves the use of secessionist and terrorist outfits in Pakistan to destabilize it. The second aspect is the use of reactionary forces which includes the use of violent groups such as Tehrik-e-Taliban Pakistan that stand against the state policy. The third aspect is the use of separatist forces such as the Balochistan Liberation Front which is a separatist militant organization.

Use of Information Warfare

India uses this type of warfare and coordinates with the influencers and various activists who are involved in spreading fear and panic and leading a rally or public debate. It creates the notion of ambiguity by using social media such as posts, fake news, videos, tweets, and blogs. An example can be taken from advertisements in 2017 on billboards and buses in the United States as well as in Europe such as “Free Balochistan” which became sensational. This was an Indian Government move against Pakistan to materialize its vested geo-political aims. T.P. Singh Bagga, who financed this campaign, is very close to incumbent Indian Prime Minister Modi.



Warfare on the Political Front

This type of warfare involves the fusion of diplomatic warfare, lawfare (also known as legal warfare), and various instruments of a political nature that aim at weakening the state. India is using political warfare against Pakistan by using its economic edge to diplomatically marginalize Pakistan. One of the key examples is abusing FATF to target Pakistan.

Warfare in Cyberspace

An example of this can be given from the post-Pulwama situation as it innumbrates the manifestation of cyberwarfare. The Pulwama attack happened in February 2019 across the National Highway of the Jammu Srinagar when a suicide bomber in a vehicle led the attack on Indian personnel of Central Reserve Police, leading to 40 fatalities and escalating tensions between India and Pakistan. As a result, India started carrying out clandestine cyber-attacks against Pakistan's military, government, and commercial assets. Moreover, the website of the Foreign Office of Pakistan was hacked and made out of service.

Analysis: Comparison of 20th and 21st Century Warfare

The warfare that dominated the 20th century shifted the global balance of power. This century saw the emergence of WWI and WWII which are regarded as total wars in which all military means were employed to win the war. The spread of these wars was so gigantic that they catapulted the entire world towards it. The 20th-century wars were mainly inter-state conflicts (between states alliances, and blocs) or fourth-generation wars (insurgencies or guerilla warfare). Moreover, the decolonization process during the 20th century led to conflicts between the colonial powers and colonizers.

Warfare in the 21st century is inextricably linked to their causal factors that include hotchpotch of the social, economic, political, environmental, and psychological elements. The combination of these elements is described by Philip Cerny as “neomedievalism.” The interaction of the aforementioned factors is the fundamental cause of the persistent durable disorder. Overlapping and competing jurisdiction of non-governmental, private groups, and state groups, burgeoning alienation between the fragmented hinterlands and entities responsible for communications and innovation coupled with the isolation of the marginalized groups and ever-enhancing inequalities along with the significance of ethnicity, identity politics, and fragmented loyalties have transformed the contemporary conflict dynamics.

With the end of the 20th Century, dynamics and trends changed which in turn changed warfare character in the 21st Century. These trends such as growing dissatisfaction among the masses, depleting resources, balance of power, and globalization, etc. shaped the dynamic of warfare making it more multidimensional, volatile, and turbulent. It implies that participants' diverse clusters at the state as well as at the non-state level are motivated by crucial and complex combinations of social, economic, political, and other motives concerning group dynamics, psychological trauma, individual alienation, and governmental performance.

Being facilitated by dark networks and disorderly spaces, civilian personnel are mostly targeted, and this remains protracted for a long duration. All these changing dynamics of 21st-century warfare necessitate pragmatic thinking as well as creativity at operational and policy levels. This also indicates that with the changing pattern of 21st-century warfare, a more holistic perspective of peace comes to the forefront which is regarded as positive peace demanding structural-level change to end conflict, rather than a surface-level agreement between the warring parties.



Cyber-Kinetic Warfare: Exploding Pagers And Strategic Lessons For Pakistan

Safia Mansoor

The pager explosions in Lebanon on 17-18 September were the real-life manifestation of Bruce Williams's movie *Live Free or Die Hard*, wherein the key antagonist employs cyber-attacks to wreak severe physical harm and deaths. Cyber-kinetic warfare, which was once a fictional construct, has now emerged as one of the most lethal means to inflict direct and indirect physical harm by sabotaging susceptible information systems and processes.

Cyber Physical Systems (CPS) remain the fundamental targets of cyber-kinetic attacks. These systems imply staunch integration-cum-coordination between physical and computational resources. CPS technologies are widely embedded in various industrial sectors such as automotive systems, environmental control, process control, distributed robotics, avionics, the defence industry and the energy sector, alongside critical infrastructure control, including water resources, electric power and, most notably, communication systems. Lebanon's pager explosions have reignited attention towards cyber-kinetic warfare that, in turn, offers multifaceted lessons for Pakistan.

Cyber-kinetic attacks are not a novel phenomenon, and various hackers, including disgruntled employees and teenagers, employed them in the early 21st century. Various laboratory experiments, such as the 2007 Department of Defense Aurora Generator test—a cyber-attack to annihilate the electric grid and the 2010 CarShark—a tool created to function as a bus analyser as well as packet injector on Controllable Area Networks, augur the use of cyber-kinetic as systematic advancement of cyber warfare. However, in true essence, Stuxnet remains the first ever cyber-kinetic weapon.

Under the clandestine Operation Olympic Games, Israel's Mossad, the Central Intelligence Agency and the National Security Agency developed a sophisticated digital weapon named Stuxnet that attacked Siemens Step7 software, crucial for handling industrial equipment, particularly centrifuges, to enrich uranium in Iran's Natanz facility. Consequently, it debilitated almost 1,000 centrifuges, causing temporary deferment in Iran's enrichment activities.

The most recent example of a non-cyber-kinetic attack is Israel's orchestration of pager attacks in Lebanon. Pagers are tiny communication devices that use radiofrequency to transmit messages. It is hard to monitor these devices given their non-reliability on physical hardware, making them comparatively secure to use by groups such as Hezbollah. Israel's Mossad agency weaponised pagers into mini bombs to be used against Hezbollah during the ongoing Israel-Palestine issue. On 17-18 September, 2024, Lebanon witnessed the explosion of hundreds of pagers all across the country that brutally injured 3,500 and killed 42 people.

The intelligence agency of Israel concealed one of the most lethal explosives, the PETN explosive, with an electronic circuit of a pager signifying an amalgamation of technical acumen and spycraft. As per sources, Israel implanted nearly three grams of PETN in pagers coupled with a detonator activated remotely via coded message. The shipment of pagers to Lebanon remained halted for three months in a nearby harbour, and during this time, they were infested with explosive material. Pagers were found to be ingrained with the brand name "Gold Apollo", a Taiwan-based tech company; however, it denied making them and asserted that BAC, a Hungary-based company, manufactured them under licence. Besides cyber-kinetic warfare, the process of infiltrating pagers also highlights the effective manipulation of the adversary's supply chain, known as supply chain interdiction, thereby sparking fear of supply chain warfare. It demonstrates how enemies can target supply chains to steal critical data, sabotage resources and interdict operations..



Lessons for Pakistan

The unprecedented use of cyber-kinetic attacks in modern warfare offers strategic lessons for nations, particularly Pakistan. The weaponisation of ostensibly innocuous pagers implies how inimical forces can abuse lacunas in supply chains. With the changing landscape of cyber threats characterised by enhanced lethality of zero-day vulnerabilities and advanced persistent threats (APTs), stringent supply chain security measures and vendor risk management have become immensely important.

Pager attacks also highlight the burgeoning use of cyber tactics to sabotage communication systems in military operations and espionage. All these aspects necessitate the prioritisation of security protocols, notably in military communications networks and critical infrastructure. To further national resilience and mitigate risks emanating from cyber-kinetic and supply chain warfare, Pakistan shall devise and execute robust cyber security measures, consistently carry out vulnerability assessments and use advanced tracking devices to monitor shipments. Proactive intelligence in synergy with the security institutions is needed to neutralise risks prior to their occurrence. Lastly, it should promote the indigenisation of the defence sector to reduce reliance on Western technologies.



Limitations of Indian Aircraft Carriers: A Critical Review

Ahmad Ibrahim



Aircraft carriers are physical manifestations of naval power projection. The prestige associated with carrier vessels symbolizes the status of any maritime nation as major naval power. The incorporation of air power at sea significantly augments the combat potential of any naval force. By nature, aircraft carriers are frontline combatants and are employed for sea-control missions during combat. In peace time, carriers are used as a coercive tool for naval diplomacy and provide a decisive psychological advantage through its visible and continuous presence at sea.

The Indian Navy (IN) has been operating aircraft carriers since 1961. Up to now, four carrier vessels have sailed under the Indian Navy flag. Currently two aircraft carriers, the INS Vikramaditya and the INS Vikrant, are part of the Indian naval fleet. With the exception of the recently commissioned and locally built INS Vikrant, all Indian aircraft carriers have been purchased from foreign sources as refurbished second-hand vessels.

India's first aircraft carrier, the INS Vikrant, was former HMS Hercules carrier of Royal Navy. It was purchased by India in 1961 from Great Britain and remained in service until January 31, 1997. In the Indo-Pak war of 1965, the INS Vikrant spent most of its time at harbor instead of taking an offensive position against Pakistan. In the 1971 war, the INS Vikrant sailed in open seas only after the sinking of PNS Ghazi submarine off the Visakhapatnam coast. The INS Viraat, the erstwhile HMS Hermes of the Royal Navy, was India's second aircraft carrier. Commissioned on May 12, 1987, this 28,700 ton displacement vessel participated in numerous peacetime missions but did not see any remarkable combat action throughout its service. The only notable operation conducted by this carrier was to support counter insurgency operations in Sri Lanka. The INS Viraat was phased out on March 06, 2012.

The INS Vikramaditya, the third and largest naval vessel of Indian Navy, is not a purpose-built aircraft carrier per say. The Admiral Gorshkov missile cruiser of the Russian Navy was converted into the INS Vikramaditya after extensive modifications. The deal was inked in 2004 with an initial cost of USD 0.97 billion. But considering the scale of structural tailoring required the deal suffered from numerous delays and cost overrun. The price ballooned to USD 2.35 billion, and after a decade-long delay, the INS Vikramaditya was eventually delivered to India on November 16, 2013. This ill-fated flagship of the Indian Navy has suffered numerous accidents and operational mishaps in its brief operational history.

In 2012, during sea-trials in Russia, the INS Vikramaditya lost propulsion due to engine failure. On 10 June 2016, a leakage of toxic gases during vessel's refitting killed two people onboard. Similarly, on April 16, 2019, when the carrier was entering harbor in Karwar, a fire broke out and killed an Indian naval officer. One more fire-related incident was reported in May 2022. Recently, on July 20, 2022, another fire-related accident took place during planned sea trial. Frequent safety issues and technical failures have undermined the operational capability of the INS Vikramaditya which has spent most of its time at the Karwar naval station instead of open seas.

The locally produced INS Vikrant is India's second aircraft carrier that is currently operational in the Indian naval fleet. It was commissioned on September 02, 2023, and is the largest warship ever produced by India. The INS Vikrant shares similar design as the INS Vikramaditya. Both are mid-size conventionally powered carriers with an angled flight-deck, displacing roughly 42,000 tons. The logic of this carrier design has numerous operational limitations which significantly degrades its power projection potential.

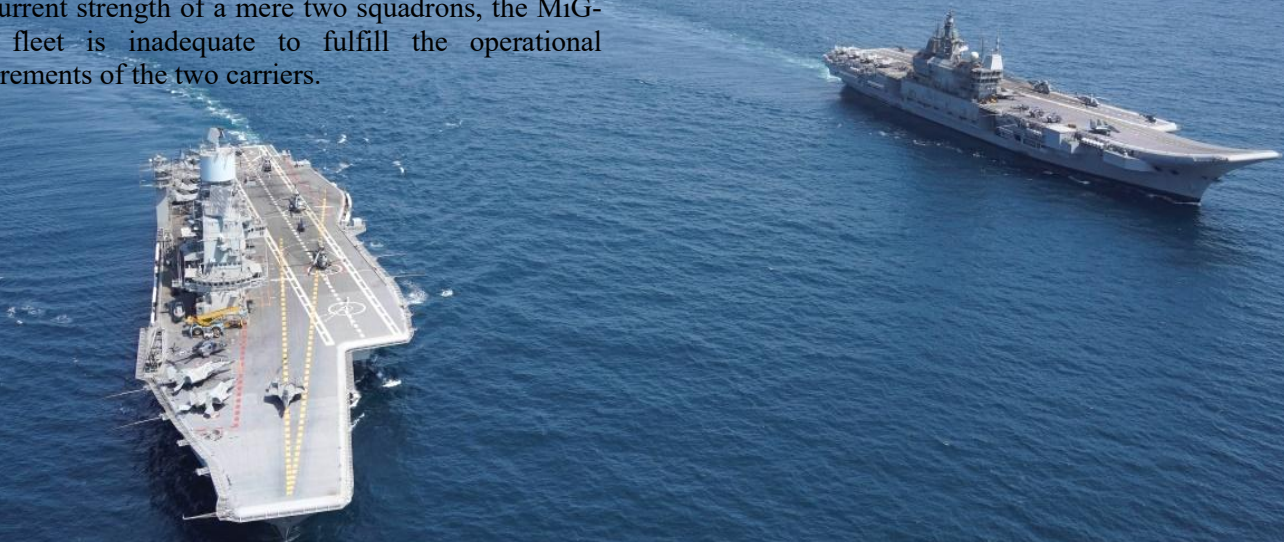
The capability of the aircraft carrier is often gauged by the propulsion system, deck surface area, launch mechanism, and total ship displacement. Conventionally powered aircraft carriers are suitable for local sea-control and lack the range and endurance of nuclear powered aircraft carriers for blue water power projection. The United States Navy's nuclear powered super carriers, equipped with CATOBAR (Catapult Assisted Take-Off Barrier Arrested Recovery), can carry 90 aircrafts of varying type. Unlike the CATOBAR launch system, which uses steam or an electromagnetic catapult to launch aircrafts at high speed, STOBAR (Short Take-Off Barrier Arrested Recovery) carriers utilize a ski-jump or angled flight deck. Only high thrust aircrafts are capable of taking-off from STOBAR carriers using afterburners. As a result, aircrafts cannot fly with maximum load capacity and have to compromise between weapon load-out and fuel carriage. Both Indian aircraft carriers use STOBAR launch mechanisms, supporting a meager number of 36 aircrafts at their maximum capacity and rely on replenishment at sea (RAS) for conducting long range sustained operations. These limitations undermine the carrier's ability to conduct sustained offensive operations, compelling the carrier to operate within engagement envelop of adversary subsequently threatening the survivability of the carrier.

The MiG-29K is the sole carrier borne fighter aircraft at IN's disposal. India acquired 45 MiG-29K aircrafts from Russia in two orders made in 2007 and 2010, and have been split into two squadrons, the White Tigers and the Black Panthers. In 2016, MiG-29K's became known for issues related to airframe, their RD-33 turbofan engines, and fly-by-wire controls. At that time, the availability rate of the aircraft was very poor usually ranging from 15.93 percent to 37.63 percent. Measures have been taken by the IN to improve the serviceability of aircraft, but the aircraft is still notorious for technical snags and operational limitations. Moreover, despite being a comparatively new acquisition, the MiG-29Ks have high crash rates. Five MiG-29K aircrafts have crashed since 2018. With the current strength of a mere two squadrons, the MiG-29K fleet is inadequate to fulfill the operational requirements of the two carriers.

With a limited number of aircrafts available, the carriers cannot undertake offensive and defensive operations simultaneously. With a questionable sustained sortie rate, Indian carriers cannot deliver a substantial punch against near-peer adversaries, particularly in high intensity and multi-front conflict zones.

Another major shortcoming of the STOBAR carriers is their inability to operate fixed wing carrier-capable Airborne Early Warning (AEW) aircrafts. The fixed-wing AEW aircrafts, like US Navy E-2 Hawkeye, are heavier and cannot take-off from the carrier deck using aircraft's engines power alone. These aircrafts utilize catapult for the carrier launch operations. When compared with rotary-wing AEW aircrafts, like the Indian Navy's Ka-31 AEW helicopter, fixed-wing AEW aircrafts have greater speed, range and endurance, and can climb at a higher altitude. This not only significantly improves the response time and operational area coverage, but also remarkably enhances the radar horizon of AEW aircraft. Additionally, fixed-wing AEW aircrafts, due to their bigger payload capacity, carries more powerful radars, therefore providing superior capability to detect and track greater number of targets simultaneously at longer ranges. Indian aircraft carriers, with Ka-31 AEW helicopters fleet, have noticeably limited situational awareness in comparison with CATOBAR carriers operated by the US Navy and French Navy. It is noteworthy that India's primary rival in Indian Ocean, the People's Liberation Army Navy (PLAN), is in the phase of raising similar capability using combination of CATOBAR system in the Fujian aircraft carrier and KJ-600 AEW aircraft.

To compensate for the deficiency of carrier-aircraft fleet, the Indian Navy is undertaking several measures, including the expansion and diversification of its aviation fleet. The deployment of MH-60 R Romeo ASW helicopters from its carriers will augment carrier anti-submarine warfare (ASW) defensive capabilities.





The IN is in the process of testing carrier-based unmanned aerial system (UAV) which will significantly improve the operational flexibility of Indian carries. Additionally, India is aiming to acquire 26 Dassalt Rafale-M aircrafts from France. However, the deal is yet to be signed and deliveries of these aircrafts will take time to materialize. Although the naval version of LCA Tejas has successfully conducted test sorties from both carriers, but the limited range, restricted payload capacity and poor thrust to weight ratio has led IN to reject Tejas for carrier operations. Instead, the IN has shifted its focus on future potential options like the Twin Engine Deck Based Fighter (TEDBF) and a naval version of Advanced Medium Combat Aircraft (N-AMCA) which will periodically replace the existing MiG-29K fleet.

In parallel, India is currently planning to domestically construct another aircraft carrier. Known as the INS Vishal, it will be second carrier built within India. Previously, it was planned that Indian Navy will eventually shift from mid-size carrier vessels to large flat-tops and the INS Vishal will ensure this transition. However, the carrier initially perceived to be in same category as Royal Navy's Queen Elizabeth class carrier, is now planned to be sister ship of the INS Vikrant with a similar design albeit with advanced sensors and defensive systems. The timeline from its approval to its commissioning is yet to be known. With the current know-how of the already built INS Vikrant, it is anticipated that the INS Vishal will not take a decade to acquire commissioning in the IN. But, given the dismal history of delaying military projects due to bureaucratic hurdles, financial constraints, and technical complications, hindrance in the construction of INS Vishal cannot be completely ruled out. So, depending on its acquisition timeline, it will be decided that either the IN will employ the INS Vishal as third carrier or as replacement of the INS Vikramaditya.

The Indian Navy has traditionally regarded aircraft carriers as a vital asset for achieving psychological and physical dominance at sea. Indian aircraft carriers symbolize the New Delhi's aspirations for greater maritime power, which is why India has plans to build five or six more carriers in the future. However, the structural and operational limitations faced by India's carrier fleet can impede their combat efficiency in high-intensity conflicts. Considering the growing complexity of India's threat perceptions in the maritime domain – particularly when power politics in Indo-Pacific is taken into account – there is growing need to overcome these limitations. Otherwise, with the inability to conduct offensive and defensive operations at a sustained rate in hostile waters, India's carrier fleet will remain self-defeating in practice.

ATACMS And Its Transformative Impact On Russia-Ukraine War

Ahmad Ibrahim

The conflict between Russia and Ukraine has raged on for more than 1000 days, and is marked by transforming battle lines, evolving military strategies, employment of new military technologies, and deepening geopolitical ramifications. One of the recent developments that could impart significant impact on the battlefield is the introduction of the long-awaited Army Tactical Missile System (ATACMS) into Ukraine's arsenal.

In past, United States has repeatedly denied Ukrainian requested for delivery of ATACMS due to risks of inadvertent escalation. But in an attempt to undermine Russian efforts to retake territories in Kursk Oblast currently occupied by Ukrainian forces, Washington has lifted the restriction from providence of ATACMS to Ukrainian forces. Additionally, the move can be regarded as a direct response to deployment of North Korean troops by Russia to combat Ukrainian forces. On political scale, it appears that Biden administration is seeking to consolidate Kyiv position in battleground before Trump administration arrives in White House with goal to quickly end the conflict. For some analysts, however, ATACMS supply at this stage of war is too little and too late in Washington's support to Ukraine.

The ATACMS is a short-range ballistic missile system designed for stand-off precision strike capabilities. It has a maximum range of almost 300 kilometers (about 186 miles), allowing it to hit targets deep behind enemy lines. ATACMS is launched from two different mobile platforms: wheeled HIMARS which can carry one missile, and tracked M-270 which can carry two missiles simultaneously. The high mobility of launch platform grants shoot-n-scoot capability which profoundly enhances survivability against counter-battery fire. With Circular Error Probability (CEP) of approximately nine meters, the precision of ATACMS make it more lethal weapon when compared with rocket artillery systems currently operated by Russia.

One of the primary ways ATACMS will influence the war is through Ukraine's enhanced strike capabilities. With its longer range, Ukraine can target Russian command posts, supply depots, and critical infrastructure well beyond the frontline. This capability provides a strategic advantage, allowing Ukraine to degrade Russian logistical support, disrupt command and control, and diminish Russia's ability to sustain its offensive operations. For instance, Russian troops rely heavily on a network of supply routes to transport ammunition, fuel, and other essential materials to the front lines. By striking at these logistical hubs, Ukraine can create significant gaps in Russian operational capabilities. It can also force the Russians to relocate critical assets further from the front line, complicating their operations and leading to possible overextension. Historically, Russian military doctrine has relied on employment of brute force based on overwhelming force and concentrated firepower. However, with the introduction of precision-strike capabilities like ATACMS in Ukrainian hands, the Russians will likely need to reconsider their troop deployments and command structures.

On November 19, Ukraine struck city of Karachev located 75 miles deep into Russian territory using ATACMS for the first time. The attack also opened doors for usage of other Western long-range weapons, like air-launched Storm-Shadow/Scalp cruise missiles, against targets deeply situated in Russian mainland. According to data compiled by Institute for Study of War (ISW), hundreds of Russian military targets are now within the range of ATACMS. Russia has already moved 90 percent of military aircrafts, particularly fighter-bombers equipped with glide bombs, away from strike envelop of ATACMS and Storm-Shadow missiles. However, at least 209 of 245 targets are land based and are not air-force bases. This suggests that besides pushing Russian Air Power further away from battlefronts, ATACMS now cover wide range of fixed military assets which are crucial for sustaining Russian war fighting efforts.

This could lead to a more conservative approach from Russia, slowing its offensive momentum and causing logistical and operational inefficiencies. Besides pulling deeper, Russia can also resort to multi-layer air-defense systems for intercepting ATACMS and protecting high-value military infrastructure. The efficiency of this approach is dubious as Russian defenses are already over-stretched and cannot reliably defend against proliferating threats of drones, decoys, electronic warfare, stand-off munitions, and saturation strikes. Moscow has warned that use of ATACMS has initiated a new phase of war and has vowed to act accordingly. But this warning is more a political rhetoric than an actual threat as Moscow has very limited option in its disposal to escalate the conflict. In theory, this escalation can be undertaken either on vertical scale or horizontal scale. On vertical scale, Russia got both conventional as well as nuclear options in its disposal. From conational perspective, Russia has already used high-end weapons, like hypersonic cruise missiles, tactical ballistic missiles, glide bombs, and thermobaric ordinance, against Ukraine. Therefore, Russia cannot introduce any new conventional weapon as a retaliatory response to ATACMS. However, just to achieve psychological dominance through power demonstration, Russia can use its older generation inter-continental ballistic missiles (ICBMs) equipped with conventional payload. Yes, from military value perspective, this move will be counter-productive as ICBMs are very expensive and lack precision of a cruise missile. With conventional payload, ICBMs won't be able to cause as much damage as is often perceived. But from psychological warfare perspective, Russia can demonstrate its will to introduce 'new weapons' in battle in response of any high-end Western weapon system used by Ukraine.

From nuclear perspective, the use of ATACMS can be linked up with risks of nuclear retaliation considering Russia's recent lowering of nuclear threshold for responding with nuclear weapons against major conventional attack. However, ATACMS, despite being a potent conventional weapon, does not pose any existential threat to Russia thereby undermining the prospects of nuclear retaliation. The battlefield is vague, and Ukrainian forces are too dispersed to justify use of even non-strategic nuclear weapons (NSNW) by Moscow. Additionally, the severity of political, diplomatic, economic, and military consequences of using any type of nuclear weapon will continue to compel Russia to avoid adding any nuclear dimension in this conflict.

On horizontal scale, Russia is also unlikely to open any new front as it's already running short on manpower, weapons, and supplies. Russia will continue its slow-track advance in Southern and Eastern battlefield. Any additional support will be directed towards Kursk for pushing Ukrainian forces out of Russian mainland. And this is where ATACMS are deployed and this is where Russia has been forced to pull its military resources out of ATACMS range. Therefore, it can be speculated that Russia will increase the strength of its own forces and North Korean troops, will avoid concentration of forces particularly heavy equipment, and will rely on swift and dispersed offensive tactics to retake the Kursk region by mid-January before Trump comes to power in Washington. The introduction of ATACMS into Ukraine's military arsenal stands to transform the dynamics of the Russia-Ukraine war significantly. Its long-range precision strike capabilities will enhance Ukraine's operational effectiveness and degrade Russia's military efficiency. As the war continues to evolve, the true impact of ATACMS will reveal itself over time. But it is highly likely that it will be escalatory in nature.



The Proliferation Of Anti-Satellite (ASAT) Weapons: An Overview

Ahmad Ibrahim

Space, often regarded as the final frontier, is now a highly contested domain. Over the decades, its significance has grown exponentially, particularly in the context of modern military and civilian applications. Historically, space was viewed as a neutral domain, largely untouched by the conflicts on Earth's surface. However, as satellites became essential to global communications, navigation, and surveillance, their strategic importance increased correspondingly. Today, military operations heavily rely on satellites for secure communication, GPS-guided weaponry, and real-time battlefield intelligence. Besides establishing space-based systems for military application, major powers have also developed counter-space capabilities, transforming space into a competing ground for military dominance. The once-utopian vision of space as a domain for peaceful exploration has given way to a sobering reality: the militarization of space is no longer a distant possibility but an ongoing process.

Anti-Satellite weapons (ASAT) are difficult to define. In simple words, any weapon that can cause damage to operability of satellite using physical or non-physical means qualify as ASAT. However, many dual use technologies, like Active Debris Removal (ADR) system, designed to clear space debris, can also be used to remove operational satellites. Similarly, ballistic missile defense systems (BMDS) meant to intercept high-speed ballistic missiles at high altitude can also be used to intercept low-orbit satellites.

In brief, any Low-Earth Orbit (LEO) satellite fundamentally faces two types of anti-satellite (ASAT) threats. First: physical destruction of satellite due kinetic impact with any projectile. Such weapons are called kinetic energy ASATs (KE-ASATs) and can be ballistic missile, drone, or other satellite. KE-ASATs can destroy the satellites leaving behind a trail of debris that endangers other assets in orbit. Second: satellites' functionality can be disrupted, jammed, or even disabled using non-kinetic means like directed energy weapons (DEWs) to "dazzle" or permanently damage satellite sensors, rendering them inoperative; and cyber weapons to disrupt or hijack satellite systems without causing physical destruction.

In 1957, when Soviet Union successfully put the first ever satellite by mankind – called Sputnik-1 – into orbit, United States responded with initiating its anti-satellite ballistic missile projects designated as Bold Orion and High Virgo. Both these missiles used bomber aircraft as launch platform with Bold Orion using B47 Stratojet and High Virgo using B-58 Hustler. United States Navy (USN) also experimented with the idea of ASAT weapon launched from F-4 Phantom fighter aircraft. All these tests, however, failed to deliver requisite results and these projects were eventually cancelled.

Soviet Union responded with ASAT program of their own, termed as co-orbitals ASAT, which used on-board conventional warhead to destroy the satellite. Both United States and Soviet Union considered Electromagnetic Pulse (EMP) generated due to high altitude nuclear explosions as potential option for rendering hostile satellites useless. However, due to massive scale of damage, this option was deemed disproportionate and irrational. On 13 September 1985, United States Air Force (USAF) again demonstrated its ASAT capability by destroying Solwind P78-1 satellite using ASM-135 ASAT missile launched from modified F-15A Eagle fighter aircraft. Despite successful test, the project was not progressed any further. Similarly on 21 February 2008, USN successfully intercepted a damaged and descending USA-193 reconnaissance satellite using RIM-161 Standard Missile 3 launched from a warship. In first decade of 21st Century, China in 2007 and India in 2019 also joined the list of nations which have successfully demonstrated ASAT capability. These tests produced thousands of debris fragments, many of which continue to threaten LEO operations. Recently, in May 2022, Russia allegedly launched a weaponized satellite to target U.S. satellites. This move essentially introduced a new dimension in ASAT operations in which dedicated ASAT-satellite (ASAT-SAT) can be employed to target enemy's satellites.

One of the most alarming consequences of ASAT tests and other destructive activities in space is the creation of debris. Every piece of debris, no matter how small, travels at extraordinary speeds, capable of inflicting catastrophic damage upon collision with operational satellites. The proliferation of debris raises the risk of a "Kessler Syndrome," a scenario where the volume of debris in orbit becomes so high that collisions trigger a chain of further collisions, threatening all satellites with swarm of uncontrollable space debris. This grim prospect highlights the need for controlling proliferation of ASAT weapons, banning ASAT testing in space and collective collaboration to mitigate threat of debris generation in space. Keeping this in view, in 2022, United States became the first country to outlaw and cease testing of direct-ascent anti-satellite missiles.

Deterrence plays a pivotal role in maintaining stability in space. The logic is straightforward: if a nation demonstrates the capability to retaliate effectively against counter-space attacks, adversaries may think twice before initiating hostilities. This form of deterrence mirrors the principles of nuclear deterrence, where mutual vulnerability discourages first strikes. However, deterrence in space is complex. Therefore, nations are investing in resilience measures, such as rapid satellite replacement capabilities and decentralized systems.

Traditional satellite systems often relied on a few high-value assets. Modern approaches are shifting toward satellite constellations—networks comprising dozens, hundreds, or even thousands of smaller satellites. These constellations offer several advantages like redundancy, resilience, and affordability. The failure or destruction of one satellite has minimal impact on the overall system. Similarly, constellations are harder to disable entirely, as they require multiple simultaneous attacks. Additionally, smaller satellites are cheaper to produce and launch, making it economically viable to replace them quickly. For instance, SpaceX's Starlink network consists of thousands of small satellites in LEO, providing global internet coverage. Disabling such a network would require an unprecedented scale of attacks, making it a less attractive target.

As technology is progressing, new defensive strategies and countermeasures are also being developed to safeguard orbiting satellites from ASAT weapons. Satellites can be equipped with on-orbit maneuvering system to dodge potential threats. France, for example, is developing nano-satellite patrollers as well as satellite based lasers to allow orbital evasive maneuver and interception against approaching kinetic threat respectively. Similarly, Rapid Replacement Programs can be undertaken to keep satellite's active reserves to timely replace the destroyed or damaged satellites. The United States is investing in programs that aim to launch replacement satellites within hours of a disruption. But as the defensive capabilities will mature, the offensive potential of ASAT will also evolve correspondingly, triggering race between offensive and defensive technologies in space.

Despite efforts to mitigate risks, space remains an inherently vulnerable domain. The increasing number of satellites and the expansion of military reliance on space assets ensure that the stakes will only grow higher. In the absence of dedicated internationally recognized arms-control and disarmament body, the unchecked proliferation of dedicated ASAT and dual-use ASAT technologies will continue to pose challenge to strategic stability. The key to overcome this contested environment lies in a combination of resilience, deterrence, and international cooperation.



Beneath the Surface: The Strategic Implications of Seabed Warfare

Syeda Fizzah Shuja

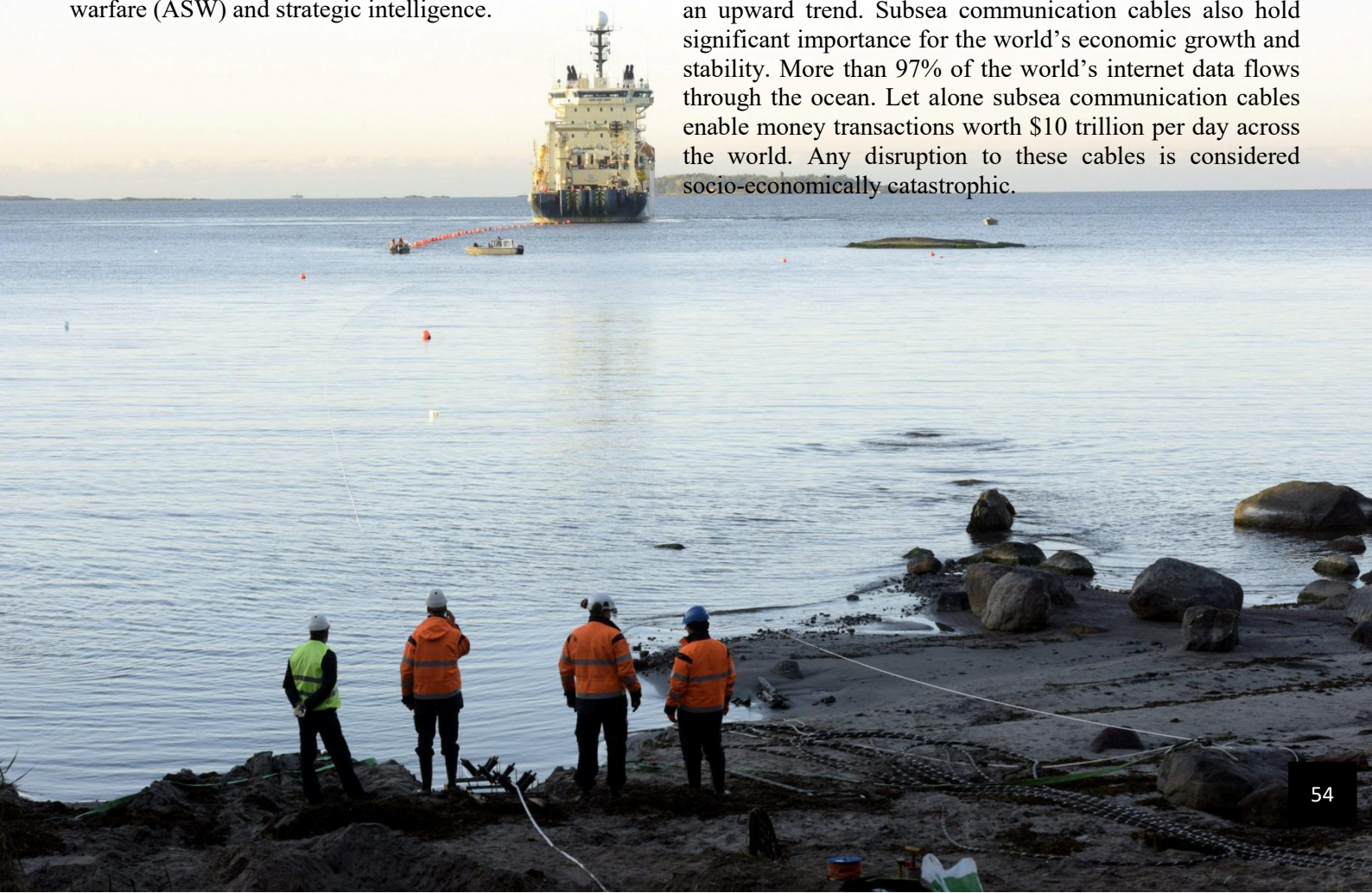
The seabed has increasingly emerged as a significant and contested domain in recent years, drawing global attention due to unprecedented events and developments. In 2022 alone, incidents such as the breaking of the Svalbard subsea communication cable, the explosion of the Nord Stream 1 & 2 subsea gas pipelines and the breakage of the SHEFA-2 communication cable underscored the vulnerability of underwater critical infrastructure (UCI). This trend persisted into 2023, with similar disruptions affecting subsea communication cables, such as the one connecting Taiwan. Even in 2024, Pakistan had only gone through four incidents of submarine cables, which cost the nation millions of rupees. These events have not only highlighted the fragile nature of UCIs, including oil and gas pipelines, power transmission cables and submarine communication systems, but they have also spurred significant political, military, and scholarly interest in what is now termed "seabed warfare."

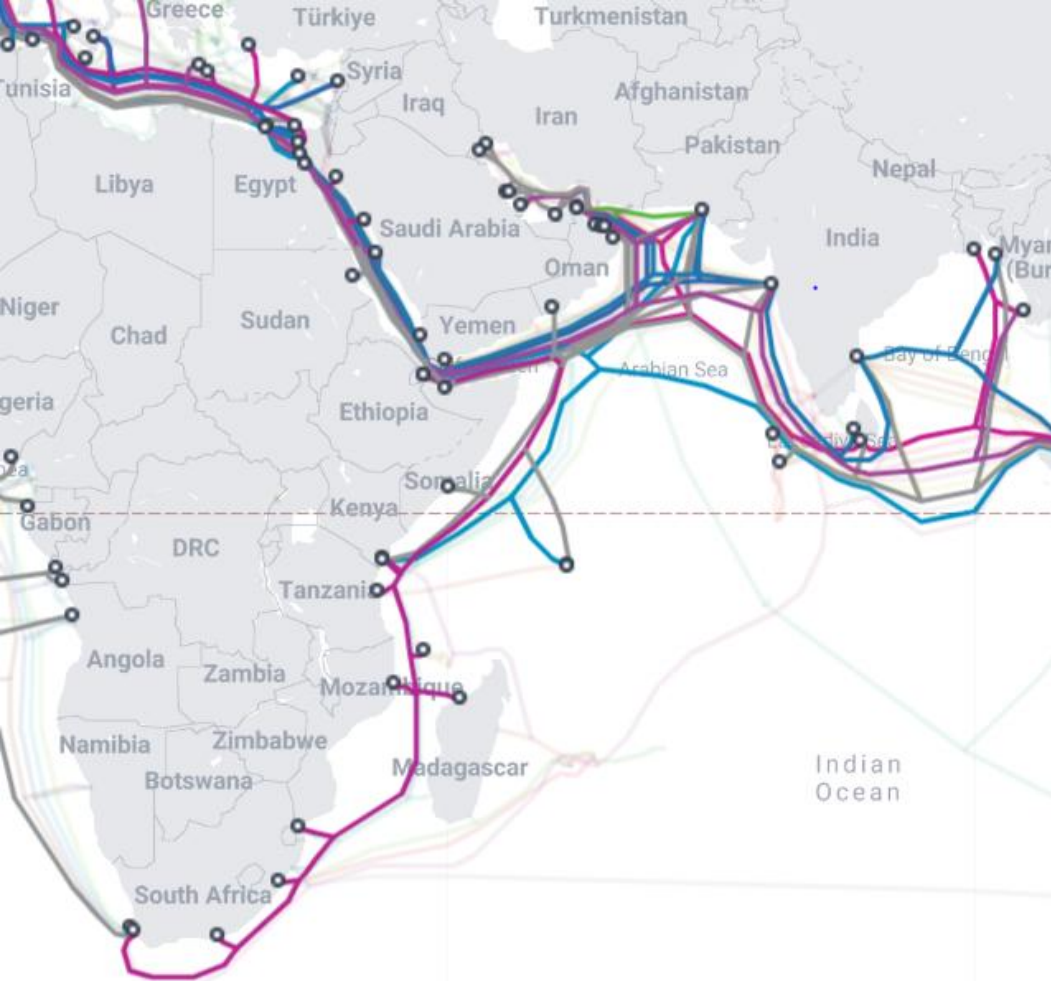
Historically, seabed warfare is not a new concept. Navies have long conducted operations on the seabed, particularly during the Cold War, when the U.S. and the Soviet Union developed extensive acoustic surveillance systems for anti-submarine warfare (ASW) and strategic intelligence.

Notably, the U.S. Navy's Operation IVY BELLS in the 1970s involved tapping Soviet subsea cables, yielding critical intelligence. Seabed warfare has evolved into a complex, multi-dimensional field, incorporating advanced technologies and strategies to protect and disrupt Underwater Critical Infrastructure (UCIs), reflecting its growing importance in defensive and offensive naval operations.

The last two decades have witnessed a major boom in the energy distribution sector through the seabed. Various oil and gas pipelines run on the seabed in different oceans, which ensures energy supply among other countries and regions; they hold vital economic importance. Nord Stream 1 and 2 gas pipelines transport Russian gas to Europe and run on the seabed of the Baltic Sea. Within Europe, there is also a network of underwater gas pipelines that transport Norwegian gas to the U.K., France, Belgium, Germany, Denmark and Poland. These gas pipelines run on the seabed of the North and Baltic Seas.

In the East, the subsea Ichthys Export Pipeline (Timor Sea) transports gas from the Ichthys field to mainland Australia. Yacheng 13-1 gas pipeline transports gas from the Yacheng gas field to mainland China, and the list goes on. Subsea oil pipelines are also being extensively used to transport oil from offshore terminals to land. According to surveys, the web of 2,381 operational oil and gas pipelines spread across 162 nations back in 2020. Similarly, offshore drilling for new energy resources on the seabed of different oceans around the world is also witnessing a boom. Keeping in view projects such as the Trans Caspian, subsea energy transportation is likely to have an upward trend. Subsea communication cables also hold significant importance for the world's economic growth and stability. More than 97% of the world's internet data flows through the ocean. Let alone subsea communication cables enable money transactions worth \$10 trillion per day across the world. Any disruption to these cables is considered socio-economically catastrophic.





Politically, growing subsea connectivity and dependency on energy and information are being considered lucrative foreign policy tools. Subsea pipelines and cables have gained unprecedented strategic importance. Safe operations of subsea pipelines and cables are crucial for socio-economic stability, but at the same time, their blockage and disruption can impose significant strategic effects. New international relations (IR) terms such as 'pipeline diplomacy' reflect the same political thought. For military strategists, seabed warfare capability to protect (defensive) and even disrupt (offensive) subsea pipelines and cables has become a priority area. Seabed warfare is inherently attractive for the hybrid military strategy; therefore, it has great potential to grow in "no war-no peace" and "low-intensity conflict" environments.

Based on an analysis of seabed operations in naval history, recent events and development strategies of different navies, the scope of emerging seabed warfare can be divided into benign, defensive and offensive operations. Benign operations will be mainly aimed at oceanographic research, search and rescue (SAR) and salvage operations. Defensive operations will focus on the protection of UCIs. Emerging concepts like Seabed-to-Space Situational Awareness (S3A), Distributed Remote Sensing (DRS), the Great Underwater Wall, etc., will define the framework of defensive seabed operations. Similarly, offensive operations will focus on the destruction or disruption of UCIs and the tapping of digital data flowing through subsea communication cables.

Technological advancements enabled seabed access more than ever. Modern hydro-mechanical systems, advanced electronics and artificial intelligence are enabling the maritime industry to produce ships, submarines and UUVs (uncrewed underwater vehicles) that would carry out activities on the seabed. So where research, exploration and productive machines can go, there will also be military vehicles accessing the seabed to turn it into a new battlefield. Seabed warfare is a technologically intensive field. Artificial intelligence is reckoned to be the backbone of all enablers of seabed warfare. Enablers of seabed warfare can be divided into three categories: launch platforms (submarines, ships, extra-large UUVs), execution vehicles (UUVs, ROVs, and AUVs) and remote sensors (underwater buoys, ocean data buoys, and air/satellite-based sensors). It is interesting to highlight that there is significant technological progress in each category. The Belgorod Class Submarine (Russian Navy) is designed to address this requirement for seabed operations. Though U.S. submarines have the capability to carry out similar operations at present, it has decided to develop the VA SSW (Modified Virginia Subsea and Seabed Warfare) submarine. The same trend is followed even by conventional submarines; the latest Swedish A-26 Class submarines have specific features such as rapid and straightforward bottoming and UUV launch and control capability for seabed warfare. The Italian NFS (Near Future Submarine) project and the German-Norwegian Type 212 CD have similar claims. UUV technology is considered the linchpin of seabed warfare.

A long list of special ships will be mainly used for benign and defensive seabed operations. UUVs are becoming more capable in terms of operating depths, endurance, power and propulsion day by day. UUVs are the world's leading defense companies' top priority. Data from remote sensors such as underwater hydrophone networks, ocean buoys and even satellites can be fused together for robust surveillance. As seabed warfare continues to evolve, driven by rapid technological advancements and strategic competition, it is becoming an increasingly sophisticated and high-stakes arena. The development of seabed warfare capabilities, such as the Russian Belgorod Class Submarine and the U.S. Virginia-class submarines, reflects the growing emphasis on controlling this new battlefield. Until clear international rules are established to govern seabed warfare, the potential for conflict in this domain remains significant, with implications for global security and stability. Moreover, in the context of Pakistan, a country with a strategic vicinity and growing dependence on undersea cables, it is imperative to assess its preparedness and resilience against emerging threats of seabed warfare.

Network-Centric Warfare: A Revolution In Naval Domain

Ahmad Ibrahim

Network-Centric Warfare (NCW) – term first coined by United States Navy (USN) Vice Admiral Author K Cebrowski – represents a paradigm shift in military operations, where information dominance and platforms' integration ensures robust decision-making process. In essence, NCW translates information superiority into combat power by effectively linking knowledgeable entities in the battlespace. With the ability to enhance situational awareness, operational efficiency, and allied coordination, NCW is poised to redefine military power projection and ensure strategic dominance in an increasingly contested threat environment.

In contemporary digital age, NCW has also revolutionized naval by marking a transition from traditional hierarchical structures to dynamic, interconnected systems distributed across surface, sub-surface, air, and land domains. By utilizing advanced communication networks, sensors, and data-sharing capabilities, NCW enables real-time situational awareness and robust decentralized decision-making process. This transformation enhances operational agility, allowing naval forces to respond swiftly to threats with precision and flexibility. The concept of distributed lethality, a cornerstone of NCW, spread offensive capabilities across a range of platforms, increasing fleet survivability and combat efficiency. Furthermore, NCW fosters interoperability among allied forces, ensuring seamless coordination during joint missions. Whether countering piracy, conducting humanitarian operations, or engaging in high-intensity conflicts, NCW empowers naval forces to operate cohesively in complex environments.

The origins of NCW can be traced to the shift from traditional naval communications—flashing lights, flags, and voice commands—to advanced digital systems. The introduction of radar and sonar during World War II laid the groundwork for interconnected warfare. These technologies revolutionized navigation, acquisition, and targeting, granting the capability to detect and engage threats beyond visual range. Post-war innovations, including satellite communications, electronic warfare (EW), and computer-based systems, set the stage for NCW.

The 1990s saw the emergence of digital networks, enabling real-time information sharing between land, sea, and aerial command & control (C&C) centers. These advancements showcased their proficiency for the first time in Gulf War (1991), where the USN employed integrated systems to achieve operational dominance. By Operation Iraqi Freedom (2003) NCW concepts were fully operationalized, with naval forces coordinating air, sea, and land operations through shared intelligence and precision targeting.

During this conflict, the USN demonstrated the full potential of NCW by integrating intelligence, surveillance, and reconnaissance (ISR) data from multiple platforms, including drones, satellites, and manned aircraft. Shared intelligence enabled precise Tomahawk missile strikes, and carrier-operations, through seamless coordination with ground forces, ensuring the successful implementation of Washington's shock and awe strategy.

NCW is structured on three fundamental principles: information superiority, self-synchronization, and speed of command. Information superiority deals with dominance in collecting, processing, and disseminating information to maintain an operational advantage. Self-synchronization is the ability of units to operate independently yet cohesively by sharing a common operational picture. And speed of command is all about rapid decision-making and response times enabled by real-time data sharing and analysis. These principles empower naval forces to outpace adversaries, ensuring mission success even in complex environments.

Beside structural principles, it's also important to discuss the technological enablers of NCW. In simple, there are two technological enablers. First: Integrated Combat Systems. Platform like the Aegis Combat System widely used by USN surface fleet and its key allies is physical manifestation of NCW. Aegis-equipped warships integrate radar, satellite data, and airborne sensors to create a unified air and missile defense network which ensures timely detection and neutralization of multi-spectrum threats. This real-time connectivity enhances the ability of naval task forces to respond with precision.

Second: unmanned systems. Unmanned Aerial Vehicles (UAVs), Unmanned Underwater Vehicles (UUVs), and even Unmanned Surface Vehicles (USVs), are central to NCW, providing reconnaissance and strike capabilities. UAVs, for instance, deliver real-time imagery of enemy movements, feeding actionable intelligence to commanders. These systems reduce risks to personnel and extend operational reach, making them indispensable in modern naval operations.

Third: satellite communications and air-borne early warning & control aircrafts (AEW&Cs). Satellite networks ensure global, secure communications over vast oceans. AEW&Cs, particularly fixed-wing aircraft-carrier borne aircrafts, provide long-time over-the-horizon (OTH) surveillance and reconnaissance capability which when combined with onboard C&C systems, grants the potential to paint complete picture of battlefield to achieve information superiority.

And finally: cyber-security. As NCW becomes increasingly reliant on interconnected systems, cyber defense is paramount. Adversaries may attempt to disrupt communications, manipulate data, or compromise critical systems. Resilient and redundant architectures are essential to maintaining operational integrity in contested environments. NCE offers significant advantages in modern warfare. NCW has revolutionized naval operations by enhancing flexibility and combat effectiveness. Decentralized decision-making enables commanders to act independently based on real-time shared intelligence, reducing response times. Distributed lethality spreads offensive capabilities across multiple platforms, enhancing survivability and combat power. Enhanced interoperability ensures seamless coordination among allied navies, crucial for joint operations like counter-piracy, humanitarian missions, or high-intensity conflicts.

Despite its advantages, NCW also presents few challenges. NCW is highly resource intensive and interoperability of various types of platforms is a complex and expensive undertaking. Moreover, cybersecurity risks expose interconnected systems to threats like data breaches and sabotage, demanding robust protective measures. Complex integration of diverse systems and platforms requires overcoming technical hurdles like interference and environmental factors. Overdependence on networks can leave forces vulnerable to disruptions, necessitating resilient systems and redundancy. Additionally, training requirements are critical, as personnel must manage sophisticated networks and make rapid decisions under pressure.

The future of NCW is intertwined with cutting-edge technologies like Artificial Intelligence (AI), machine learning, and quantum computing, which will amplify the capabilities of manned as well as unmanned systems. Offensive systems like loitering munitions, kamikaze drones, and similar technologies will enhance ISR, precision strikes, and force projection while minimizing risks to human operators. AI will revolutionize data analysis and threat detection, enabling predictive decision-making and real-time adaptation to dynamic scenarios. Quantum computing, though still in its infancy, offers the potential for unbreakable encryption and unparalleled data processing speeds, ensuring secure and swift communication in high-stakes operations. Additionally, space-based assets will play an integral role, providing essential communication, navigation, and surveillance support, albeit requiring enhanced protection against emerging anti-satellite threats. As navies worldwide invest in integrating these technologies, NCW will continue to evolve, augmenting its position as a cornerstone of modern naval strategy.

The Industrial Revolution and Its Transformative Impact on Warfare

Ahmad Ibrahim

The Industrial Revolution marked a pivotal moment in human history, characterized by an era of unprecedented technological advancements and significant geopolitical transformations. Sparked by the gradual accumulation of innovations, most notably the steam engine, this revolution pushed humanity into a new age of mechanization, replacing human muscle with machine power. This transition not only revolutionized industries but also significantly reshaped societies, economies, and the conduct of war. The advent of steam-powered machinery transformed production on an unimaginable scale. Industries could now produce goods at scale which was previously impossible. This industrial upheaval strongly reflected across governance and societal structures. The economic wealth generated by industries allowed nations to strengthen their economies, state institutions – including military, irrespective of the volume of their natural resources.



The Industrial Revolution also gave rise to the concept of Total War

Initially, the implications of the Industrial Revolution for warfare were uneven and limited by traditional constraints and resources' limitations. Military leaders like Napoleon Bonaparte demonstrated the potential of large, state-conscripted armies, but many 19th-century rulers preferred smaller, more loyal military forces. Military planners hesitated to accept new tactics and unproven technologies, constrained by deep-seated traditions, high costs of modernization, and risks of failure. However, as the 19th century progressed, industrial advancements began to reshape the art of war and by the mid-century the Industrial Revolution in warfare took place. Key conflicts such as the Crimean War (1853–1856) and the American Civil War (1861–1865) demonstrated the devastating potential of industrial technologies.

The industrialization of warfare was most apparent at sea. Industrial empires deployed steamships, which conferred significant advantages over traditional sailing vessels. Similarly, the effectiveness of paixan naval gun was demonstrated during the Battle of Sinope (1853), where the Russian Black Sea fleet decimated an Ottoman flotilla using explosive shells with delayed-reaction fuses. Instead of exploding on impact, the shells penetrated the hull and then exploded, causing massive damage. This conflict sparked an arms race in naval technologies, with innovations in shipbuilding and weapons becoming critical. By the American Civil War, the world's first ironclad warships, which were reinforced steam-powered vessels, had been introduced. The historic clash between the USS Monitor and the CSS Virginia at Hampton Roads showcased the transformative potential of these ships, as they battled to a standstill, proving the defensive efficacy of armor.

On land, technological advancements revolutionized the battlefield. Rifling, which introduced grooves to the barrels of muskets, dramatically increased the range and accuracy of firearms. The subsequent invention of breech-loading rifles allowed soldiers to reload faster and more safely, enabling rapid and accurate firing. These innovations made warfare deadlier, rendering traditional cavalry charges obsolete. Artillery also underwent a transformation. Breech-loading steel artillery became faster, lighter, and more mobile. The industrialization of armaments allowed for mass production, enabling armies to equip vast numbers of soldiers efficiently. Yet, military leaders were slow to adapt their tactics to these technological changes. The Crimean War and the American Civil War bore grim testimony to this reluctance. Out-dated frontal assaults against fortified positions equipped with gatling guns, resulted in staggering casualties.

The Industrial Revolution also gave rise to the concept of Total War, where the full resources of a nation—its industry, economy, and population—were mobilized for military purposes.

Railroads became a key component of this new approach, enabling rapid troop movements and the efficient supply of armies. The Prussian Army demonstrated the strategic value of rail transport during the Franco-Prussian War (1870–1871), deploying 400,000 troops by rail in mere weeks. Factories far from the front lines mass produced weapons and supplies, making civilian industrial workers integral to the war effort. This interdependence blurred the lines between civilian and military targets, making entire nations potential victims of war.

By the early 20th century, the convergence of industrial technologies set the stage for the First World War (1914–1918), the first conflict fought on a fully industrialized scale. Defensive technologies, such as trench systems, barbed wire, and machine guns, proved devastatingly effective. The introduction of new weapons like poison gas, tanks, and airplanes marked the beginning of modern warfare. The war demonstrated the critical role of industrial capacity in determining the outcome of conflicts. The Allies, augmented by the industrial might of the United States, were able to out-produce and outlast the Central Powers, highlighting the decisive advantage conferred by industrial superiority.

Similar trend was observed in Second World War. Industrial military production was a decisive factor in World War II, enabling nations with robust industries, like the United States and the Soviet Union, to sustain prolonged campaigns and out-produce their adversaries. The U.S. served as the "Arsenal of Democracy," manufacturing vast quantities of aircraft, tanks, and ships, supporting both its forces and its allies. The Soviet Union's relocation of factories eastward ensured rapid production of light as well as heavy weapons like the T-34 tank, crucial on the Eastern Front. In contrast, Germany's inefficient production and vulnerability to Allied bombing hindered its war effort, while Japan's limited resources and industrial capacity left it unable to compete with American output, especially in the Pacific. This industrial arms race not only supplied the tools of war but also became a strategic target, demonstrating the critical link between production capacity and military success.



Today, the legacy of industrial warfare persists, as seen in conflicts like the Russia-Ukraine War. Industrialized military production has allowed Ukraine to leverage unmanned combat systems, drones, and precision weaponry, many sourced from industrialized allies, to counter Russia's traditionally larger military. Similarly, Russia has employed mass-produced artillery, tanks, and missiles reminiscent of industrial-age warfare. The war also highlights the importance of industrial resilience, as Ukraine's and Russia's military strategies rely on maintaining supply chains for weapons, ammunition, and fuel, a direct legacy of industrialized warfare. In nutshell, The Industrial Revolution forever changed the nature of warfare, transforming it into a mechanized and industrialized endeavor with devastating consequences. Innovations in production, transportation, and weaponry revolutionized military strategies and tactics, enabling conflicts to be fought on an unprecedented scale.

Anayzing Elon Musk's Assessment of Manned and Unmanned Aircrafts

Ahmad Ibrahim

Elon Musk recently sparked a lively debate on the future of fighter jets and unmanned aerial systems (UAS) with several posts on his social media platform 'X'. This wasn't the first time Musk expressed his views on military aviation. Few years ago, during a discussion with Air Force Association's Air Warfare Symposium, he openly expressed his thoughts that era of fighter jet is ending and drone is future. His remarks were not well-received and were dismissed by aviation community. But now his current role as a co-leader of an advisory body to the U.S. government under Donald Trump gives his opinions more weightage. Musk's statements about builders of F-35 stealth fighter jets being idiots, and favoring of unmanned swarm systems has stirred heated arguments.

Musk argued that manned fighter jets like the F-35 are becoming obsolete in the face of advancing drone technologies. However, the technology for fully autonomous drone operations, especially in complex environments, is still in its infancy. Even if drones could theoretically replace manned jets, their operational limitations, such as endurance, payload capacity, and survivability, remains significant barriers. Musk's suggestion that drones could outperform manned fighters in all roles oversimplifies the operational realities of aerial combat. Quadcopters, for example, have numerous shortcomings as such systems lack the range, speed, and payload capacity needed for most combat aircraft missions. Fighter jets, such as the F-35, can carry up to eight tons of weapons and travel thousands of miles, capabilities unmatched by current unmanned systems. While drone swarms are being explored, they are far from being a practical replacement for the versatility of manned aircraft.

In one of his posts, Musk stated that fighter jets are inefficient for extending missile range or dropping bombs. He argued that reusable drones could accomplish these tasks without the burden of a human pilot. This perspective shows Musk's understanding of the basic role of fighter jets but overlooks critical factors like payload, speed, and endurance. Current fighter jets carry multiple tons of munitions and feature advanced avionics and sensors, enabling them to engage in a wide range of combat scenarios. Unmanned systems, though promising, currently lack the versatility and reliability of manned aircraft.





The U.S. Air Force's current strategy reflects the complexity of balancing manned and unmanned capabilities. The service, in collaboration with companies like General Atomics and Anduril is investing in loyal wingman drones designed to complement manned fighters like the F-35. These drones are expected to perform specific tasks, such as reconnaissance, air combat, land-strike or electronic warfare, while leaving the more complex missions to human pilots. This hybrid approach acknowledges the strengths and limitations of both manned and unmanned systems, ensuring operational flexibility.

Musk's assertion that drones could dominate future warfare relies heavily on assumptions about technological advancement. While it is true that unmanned systems are likely to play a more prominent role in future conflicts, their limitations must be addressed before they can reliably replace manned aircraft. Current drone technology struggles with challenges such as effective autonomy, communication security, and survivability in complex environments. For example, small and cheap drone jets lack the sensors and defenses needed to evade advanced missile systems. Even larger unmanned systems cannot match the range or firepower of manned jets. Additionally, without the advanced sensors and defensive systems found in manned jets, drones as stand-alone asset are more susceptible to interception. While their lower cost and potential for mass production are advantageous, drones simply cannot yet match the effectiveness of manned jets in contested airspace.

Another contentious point in Musk's posts was his criticism of the F-35 program. While the program has faced several challenges, the F-35 remains a cornerstone of U.S. airpower. Its advanced stealth features, sensor fusion, network centricity, and ability to perform multiple roles make it indispensable for modern air forces. Musk's critique, though partially valid, ignores the strategic necessity of maintaining a fleet of advanced manned aircraft. The Pentagon cannot afford to abandon the F-35 program while next-generation technologies are still in developmental phase. Musk also highlighted the growing importance of hypersonic weapons and drones in future warfare, a point that aligns with broader military trends. However, he underestimated the timeline required for these technologies to mature. Developing and mass-producing advanced systems, whether hypersonic missiles or autonomous drones, is expensive undertaking and takes decades. The U.S. military and its counterparts in China and other nations are investing heavily in these areas, but fully autonomous and combat-ready drones remain a long-term goal rather than an immediate reality.

Musk's bold statements, while thought-provoking, risk oversimplifying the complexities of modern air combat. His assertion that unmanned systems can replace manned jets entirely overlooks the challenges of survivability, autonomy, and integration. While drones are likely to play a more prominent role in future conflicts, they will complement rather than replace manned systems in the near term. The development of next-generation technologies, including autonomous drones and hypersonic weapons, will shape the future of warfare, but this transformation will take time. Ultimately, the success of unmanned systems will depend on their ability to address current limitations and prove their effectiveness in real-world scenarios. Until then, manned aircrafts like the fifth generation will remain the most advance component of modern air-forces around the globe.

Employment of FPV Drones in Russia-Ukraine War: Lessons And Future Outlook

Ahmad Ibrahim

Russia-Ukraine war can be characterized by the rapid and wide scale adaptation of newer military technology and tactics. Among the many new combat systems of this war, First-Person View (FPV) drones stand out as a transformative combat system. FPV drones are small high-speed drones which are piloted using a live feed from the drone's onboard camera, offering a "drone's-eye view," unlike traditional drones controlled from the pilot's ground perspective. FPV drones were used initially for battlefield intelligence, surveillance and reconnaissance (ISR). But with incorporation of explosive payload, FPV drones have now emerged as a threatening weapon system which can be employed at tactical scale with remarkable effects. FPV drones are now routinely used as kamikaze units to destroy military targets such as armored vehicles, artillery units, air-defense systems, logistical vehicles and even individual enemy troops. Beside offensive roles, FPVs and similar drones are also being as hit-to-kill interceptors for hitting and destroying hostile unmanned systems.

The sheer scale of drone production and deployment is unprecedented. Ukraine alone is reported to be manufacturing tens of thousands of drones per month. Combined with other manufacturers and foreign-sourced drones, Ukrainian forces are now deploying FPV drones on an industrial scale. Russia has also ramped up production. Russian forces, according to Moscow, are producing as many as 4,000 FPV drones per day, surpassing Ukraine in drone productivity. This rapid proliferation highlights the significance of drones in the current conflict and their important role as a force equalizer in asymmetric warfare.

The global commercial drone market, dominated by China, has played a pivotal role in the proliferation of FPV drones. Chinese manufacturers provide the components and technologies that underpin most commercial and military drones. During the early stages of the Ukraine war, Russia and Ukraine both relied heavily on Chinese components to build their drone fleets. Recent Chinese export restrictions on certain drone technologies have disproportionately affected Ukraine, which lacks the domestic industrial base to produce drones at scale.



Russia, by contrast, has been better able to adapt, leveraging its industrial capacity to manufacture drones from imported subcomponents. This disparity highlights the strategic importance of domestic drone production capabilities in modern warfare. FPV drones have fundamentally altered the tactical landscape of warfare. Unlike traditional artillery or guided munitions, FPV drones are highly maneuverable and capable of precise strikes on both stationary and moving targets. These drones can loiter and fly around the target to find the weak spot. This makes them particularly effective against armored vehicles, like armored vehicles and defensive fortifications. Ukraine has even started deploying FPVs through naval vessels, while Russia is experimenting deployment of FPVs from helicopters to counter sea-drones.

FPV drones also offer unprecedented efficiency. A single operator can deploy several drones daily, achieving multiple successful strikes. This contrasts sharply with traditional artillery, which often requires the expenditure of hundreds of rounds to achieve similar results. FPV low cost is another major advantage. An average FPV drone in Ukraine costs between \$200 and \$500, including labor. Even when accounting for a one-third failure rate, the cost of a successful strike remains significantly lower than traditional weapon systems. Guided artillery shells, for example, are often 10 to 50 times more expensive, while the operational costs of artillery pieces and their logistics chains add further expense.

The rise of FPV drones has exposed significant vulnerabilities in conventional military defenses. Armored vehicles, for instance, beside built-in armor have traditionally relied on explosive reactive armor (ERA) and similar add-on armor to counter rocket-propelled grenades (RPGs), anti-tank guided missile (ATGMs), and high explosive anti-tank (HEAT) as well as kinetic penetrators by enemy tanks. However, these measures have been turned ineffective against weaponized FPVs. The rapid change in tank-tactics in Russia-Ukraine war exemplifies the remarkable impact FPVs have caused. In traditional sense, modern tanks are specifically protected by thick armor and add-on armor at frontal section of hull and turret arc. That's because this is where tanks are likely to receive enemy fire. The sides of tank hull can also be protected by explosive reactive armor (ERA). The rare of tank as well as turret-top are usually thin-armored and exposed. When Ukraine started to drop grenades from quad-copters, Russia started to fix cope-cages on turret top for additional protection. But arrival of weaponized FPVs quickly turned this countermeasure obsolete. Ukrainian FPV pilots used to loiter around tank to find and engage the weak spot. The scale of damage was so high that Russians essentially welded metal plates all around armored vehicles to essentially turn them into turtle tanks. Although these turtle tanks somehow offered limited protection against FPVs. But on flip side, these tanks lost their situation awareness, mobility, and even firepower by significant margin, thus hampering their combat capability.

Electronic warfare and jamming systems remain the primary countermeasure against FPV drones. These systems can disrupt the communication links between the drone and its operator, rendering the drone ineffective. However, wide-area jamming is expensive and technically demanding, requiring substantial investments in infrastructure and equipment. Additionally, electronic jamming can be nullified by using physical medium for communication. Russians for example are using optical fiber as connecting medium between FPV and operator to counter radio-jamming. This creates a disproportionate burden on the defender compared to the attacker, particularly in conflicts involving state and non-state actors with limited budgets. In near future, the incorporation of Artificial Intelligence (AI) in FPV drones will allow them to operate with greater autonomy rendering jamming and other electronic countermeasures obsolete. As AI becomes more affordable and accessible, these capabilities are likely to become standard features in FPV drones. Autonomous drones would mark a paradigm shift in warfare, blurring the lines between drones and missiles. Unlike traditional missiles, which are expensive and limited in number, AI-enabled drones could be mass-produced at low cost, creating swarms of self-guided munitions capable of overwhelming even the most advanced defenses.

The widespread use of FPV drones has implications far beyond the battlefield. Strategically, their cost-effectiveness and efficiency challenge the traditional balance of power. Nations with smaller defense budgets can now field capabilities that were previously the domain of major powers, leveling the playing field in certain areas of conflict. Operationally, FPV drones are reshaping military doctrines. Traditional concepts of armored warfare, which emphasize heavy vehicles and concentrated formations, are increasingly vulnerable to drone attacks. As a result, many militaries are reevaluating their force structures and operational strategies. FPV drones are unlikely to remain confined to land-based conflicts. As technologies evolve, their use will likely expand to naval and aerial warfare. Swarms of AI-enabled drones could be deployed to overwhelm enemy ships, aircraft, or defensive systems, fundamentally altering the dynamics of future conflicts. Considering the overwhelming military advantages associated with FPVs, its pre-determined that FPVs will continue to explore new frontier with advancements in technology.

The war in Ukraine has demonstrated the transformative potential of FPV drones. From their tactical efficiency to their strategic implications, these inexpensive yet powerful systems are redefining the conduct of warfare. These drones are more than just tools of war; they are symbols of a broader technological revolution that is reshaping the battlefield. As production scales and technologies evolve, they will continue to challenge traditional military paradigms, forcing nations to rethink how they fight and how they defend. The lessons of Ukraine are clear: the future of warfare will be defined not by the size of an army or the strength of its arsenal, but by its ability to innovate and adapt. FPV drones are the harbingers of this new era, and their impact is only just beginning.

Deterrence Through Saturation: Analyzing Russia's Oreshnik Ballistic Missile

Ahmad Ibrahim

Russia-Ukraine war is characterized by combat employment of niche technologies ranging from first-person-view (FPV) drones at lower end and hypersonic missiles at higher end of conventional threshold. These advance military systems are redefining the dynamics of conventional deterrence and modern warfare. The conflict has rapidly escalated in recent weeks following Donald Trump's vow to terminate the conflict after handing over the charge in White House as President of United States. Both Russia and Ukraine are pushing to achieve dominance in combat grounds to secure leverage on negotiation table. The deployment of North Korean troops by Russia in Kursk region, use of U.S. made ATACMS and UK made Storm Shadow missiles against targets on Russian mainland, and recent strike of Russia's Oreshnik intermediate-range ballistic missile (IRBM) are key developments in this regard.

When Ukraine started to use ATACMS and Storm Shadow cruise missile against Russian military assets located within Russian territory, it was anticipated that Russia has no new and credible response in its arsenal as it has already used high-end weapons including Kinzhal air-launched hypersonic missile, Zircon hypersonic ship-launch cruise missile (SLCM), Iskandar-M short-range ballistic missile (SRBM), and numerous sub-sonic and supersonic cruise missiles with mixed results. Since the beginning of war, Russia has been using ballistic and cruise missiles to deep-strike Ukraine's military infrastructure. However, due to remarkable performance of Ukraine's air-defense systems, these strikes have rendered mixed results. However, considering vast stockpile of missiles and ability to develop improved systems indigenously, it was unlikely that Moscow will run out of options as far as missiles are concerned. The recent strike of Oreshnik missile proves this assessment.

On 22 November 2024, when Russia struck a Ukrainian weapon factory located in Dnipro with a volley of missiles including six Kh-101 cruise missiles, one Kinzhal missile, and a new unknown missile.

The factory, operated by PA Pivdenmash and formerly known as Yuzhmash, is a major hub for the production of rockets and space-related technologies, including satellites and engines. The video footage shared on social-media showcased salvo of six strikes further split into six additional munitions. This suggests that each Oreshnik missile can carry six multiple independently re-targetable vehicles (MIRV) which further deploy six sub-munitions each allowing for substantial area saturation. The targeted factory, a sprawling complex emblematic of Soviet-era industrial design, was hit with remarkable precision. Satellite navigation systems likely guided the warheads during their terminal phase, leading to high-impact strikes across the facility's vast area.





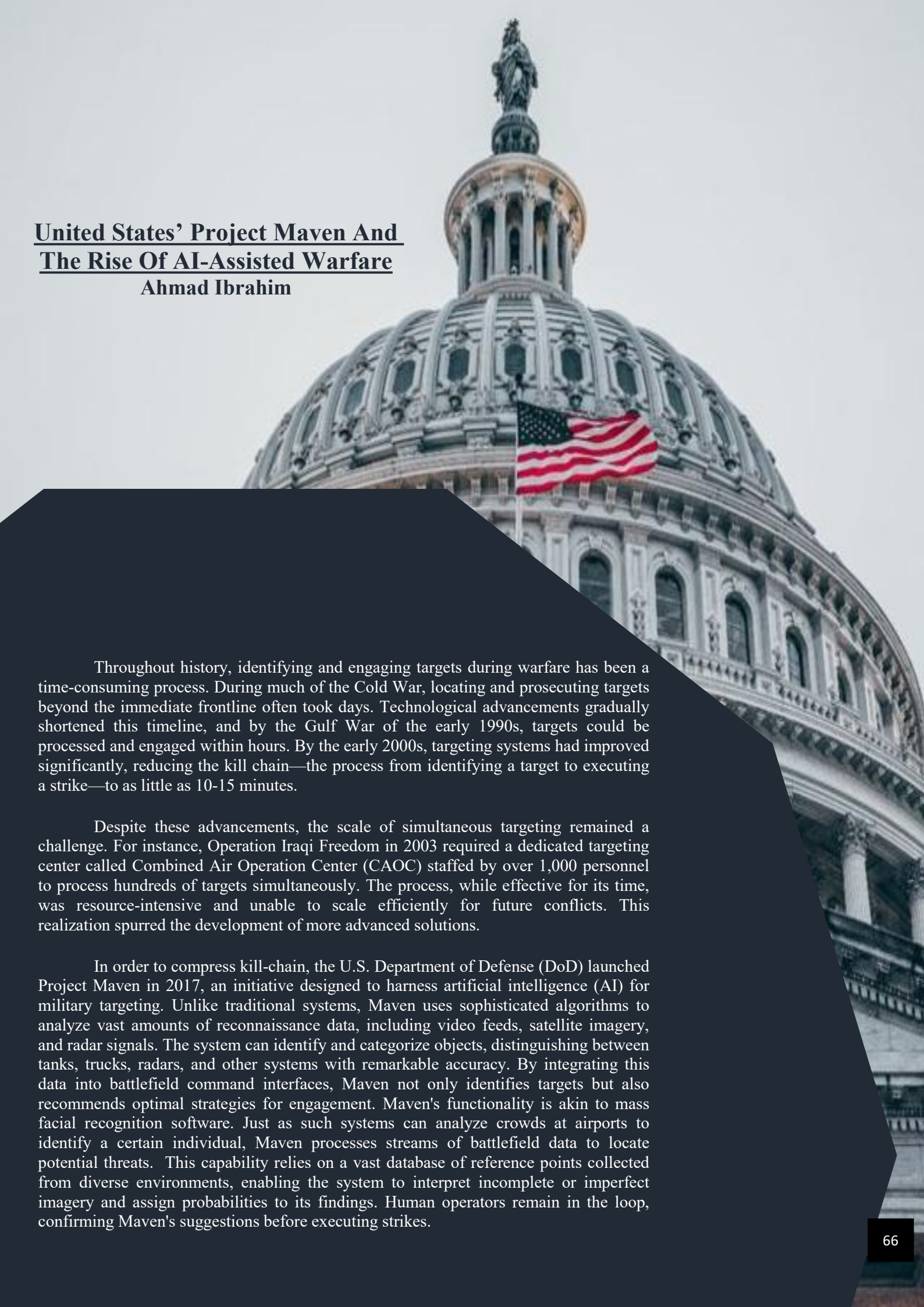
The missile is likely carried and launched from wheeled transporter-erector-launcher (TEL). The mobility of TEL significantly enhances its survivability by minimizing its vulnerability to pre-emptive strikes. The missile itself has been derived from RS-26 IRBM which was designed to carry nuclear payload and despite five tests didn't enter service.

Ukraine initially reported that Russia has used an Intercontinental Ballistic Missile (ICBM) equipped with conventional payload. United States refuted this assessment and stated that Russia has apparently used an IRBM. Later, Russian President Vladimir Putin announced that Russia has successfully battle-tested a new missile which can achieve ten times the speed of sound. The missile, as per initial assessment of wreckage, carried warheads with no explosives. This suggests that inert warheads relied purely on kinetic energy and at hypersonic velocity; their destructive yield was similar to conventional high-explosive warheads. To put into perspective, a kinetic warhead of approximately 200 kilograms traveling at Mach 10 speed generates energy equivalent to almost 20 tons of TNT upon impact. This kinetic force can cause significant damage to hardened structures like airbases, ports, and industrial complexes, making the Oreshnik a potent area-denial weapon.

Besides coercing Ukraine from employing further escalatory measures, Oreshnik also represents Russia's response to United States unilateral withdrawal from Intermediate-Range Nuclear Force (INF) Treaty in August 2019. By employing a mid-range guided ballistic missile equipped with area-effect sub-munitions payload, Russia seeks to counterbalance NATO's numerical and technological superiority. The hypersonic terminal speed of missile, ability to fly in lofted trajectory, and capacity to carry multiple warheads, can pose challenge to ballistic missile defense systems of NATO. Existing defense systems like the Patriot air-defense system will struggle to intercept the Oreshnik due to its speed and decoys, while more advanced systems like THAAD, which can engage missiles in their ascent phase, are not widely available. Countering such a system would necessitate extensive investments in interceptors, radars, and dedicated defense platforms, straining NATO's resources. The deployment of THAAD batteries in Europe can be anticipated as a countermeasure. To overstretch NATO's options, Russia is already dispersing its Oreshnik missiles. Recent deployment of Oreshnik missile in Belarus is a key example in this regard.

The Oreshnik missile also aligns with Russian military doctrine by prioritizing area saturation over precision targeting. This approach is based on a strategy that focuses on disrupting enemy's infrastructure and combat capabilities through overwhelming force. In theory, by saturating NATO's multi-layered air-defense, this missile can strike high-value military infrastructure, like air-bases, naval stations, and military command & control installations, located throughout Europe. Therefore, by threatening with overwhelming strike potential of this missile; Russia will be able to fill the crucial deterrence gap that exists between its nuclear and conventional thresholds. The missile's operational debut, however, raises several concerns. The success of the Oreshnik missile could inspire other nations to develop similar capabilities, exacerbating an already competitive arms race. The proliferation risks associated with the Oreshnik missile's technology could have far-reaching consequences, potentially enabling nations such as China, North Korea, and Iran to acquire similar capabilities. This would significantly alter global security dynamics, particularly in sensitive regions like the Middle East and Indo-Pacific.

Ultimately, the Oreshnik missile represents a major shift in military strategy and technology as far as employment of conventional payload at long ranges is concerned. Its combination of mobility, precision, and overwhelming kinetic force poses a direct challenge to NATO's existing defensive capabilities. Russia's deployment of the Oreshnik in Ukraine was more than a demonstration of strength—it was also a strategic statement signaling against NATO. With ability to deliver saturated strikes at hypersonic speeds, Oreshnik now represents a viable conventional deterrent against NATO's growing military prowess.



United States' Project Maven And The Rise Of AI-Assisted Warfare

Ahmad Ibrahim

Throughout history, identifying and engaging targets during warfare has been a time-consuming process. During much of the Cold War, locating and prosecuting targets beyond the immediate frontline often took days. Technological advancements gradually shortened this timeline, and by the Gulf War of the early 1990s, targets could be processed and engaged within hours. By the early 2000s, targeting systems had improved significantly, reducing the kill chain—the process from identifying a target to executing a strike—to as little as 10-15 minutes.

Despite these advancements, the scale of simultaneous targeting remained a challenge. For instance, Operation Iraqi Freedom in 2003 required a dedicated targeting center called Combined Air Operation Center (CAOC) staffed by over 1,000 personnel to process hundreds of targets simultaneously. The process, while effective for its time, was resource-intensive and unable to scale efficiently for future conflicts. This realization spurred the development of more advanced solutions.

In order to compress kill-chain, the U.S. Department of Defense (DoD) launched Project Maven in 2017, an initiative designed to harness artificial intelligence (AI) for military targeting. Unlike traditional systems, Maven uses sophisticated algorithms to analyze vast amounts of reconnaissance data, including video feeds, satellite imagery, and radar signals. The system can identify and categorize objects, distinguishing between tanks, trucks, radars, and other systems with remarkable accuracy. By integrating this data into battlefield command interfaces, Maven not only identifies targets but also recommends optimal strategies for engagement. Maven's functionality is akin to mass facial recognition software. Just as such systems can analyze crowds at airports to identify a certain individual, Maven processes streams of battlefield data to locate potential threats. This capability relies on a vast database of reference points collected from diverse environments, enabling the system to interpret incomplete or imperfect imagery and assign probabilities to its findings. Human operators remain in the loop, confirming Maven's suggestions before executing strikes.

The initial versions of Project Maven were tested in controlled environments, where it demonstrated the ability to significantly reduce the time needed to process and engage targets. As the technology matured, it was deployed in real-world operations, including identifying targets in Iraq, Syria and Yemen. During the Russia-Ukraine war, Maven played a pivotal role in processing satellite imagery and relaying intelligence to Ukrainian forces. One of Maven's most significant advancements is its integration with ground-moving target indicator (GMTI) satellites. These satellites use radar to detect movement, even through clouds or at night, and can track targets continuously. This capability allows Maven to overcome limitations of traditional optical systems, ensuring uninterrupted surveillance and identification.

Despite its impressive capabilities, Maven has its own limitations. A simplified version of Maven has displayed mixed results in Russia-Ukraine war. Environmental conditions, such as snow or dense foliage, can hinder its ability to accurately identify targets. In some cases, the system has mistaken vehicles for trees or struggled to differentiate between real and inflatable decoys. Human analysts still outperform Maven in certain scenarios, achieving higher accuracy rates in complex environments. For example, in desert terrain where landscape changes abruptly according to weather conditions, Maven's accuracy can drop significantly. Another challenge lies in prioritizing targets and recommending appropriate weapon systems. While Maven excels at identification, it is less effective at determining the optimal sequence of attacks or selecting the best weapons for specific targets. These shortcomings highlight the need for further refinement and training of the AI system.

The rapid pace of AI development suggests that the limitations of Maven are likely to diminish over time. With continuous improvements and increased data inputs, future iterations of Maven are expected to surpass current capabilities, potentially revolutionizing warfare even further. The implications of this technology are profound. AI systems like Maven could enable militaries to conduct operations at an unprecedented scale, identifying and prosecuting thousands of targets simultaneously. This capability would be especially critical in large-scale conflicts, where speed and volume of targeting could determine the outcome. For example, a single AI-assisted targeting unit could perform the workload of hundreds of traditional targeting personnel, freeing up human resources for other critical tasks.

The United States is not alone in its pursuit of AI-assisted warfare. China is also developing similar militarized AI technologies, utilizing its expertise in facial recognition and object detection. While the U.S. currently holds an edge in satellite capabilities and data processing, China's rapid advancements in AI, satellite systems, and its growing investment in military technology indicate that the competition will intensify in future. The race to integrate AI into military operations raises ethical and legal questions. As systems like Maven become more autonomous, there is growing concern about the potential for AI to make life-and-death decisions. For now, U.S. officials have stated that human operators will retain control over the decision to fire weapons. However, in the high-pressure environment of a large-scale war, there may be a push to further automate the kill chain to gain a competitive edge.

AI-assisted targeting represents a transformative shift in military strategy, offering unprecedented speed and efficiency. Systems like Project Maven are already reshaping the battlefield, enabling rapid identification and engagement of targets on a massive scale. While challenges remain, the trajectory of AI development suggests that these systems will become increasingly reliable and capable. However, this technological revolution also comes with risks. The potential for misuse, errors, and escalation underscores the need for responsible development and deployment of AI in warfare. As nations race to perfect their systems, the balance between innovation and caution will be critical. Ultimately, while AI may enhance military capabilities, the pursuit of peace remains the only true path to security and stability.



Speed: One Of Decisive Elements Of Warfare

Ahmad Ibrahim

Speed has always been a critical element in warfare. Sun Tzu dedicated an entire chapter of *The Art of War* to this concept, emphasizing its importance in achieving strategic advantage. However, for much of human history, the actual physical speed of war was limited by the capabilities of human and animal movement. Armies advanced no faster than the speed of their horses or marching soldiers. This changed exponentially in the 20th century, when technological advancements began to transform not only the pace of battle but the dynamics of warfare itself.

Historically, wars unfolded over years, with campaigns taking months or longer to prepare and execute. For instance, Alexander the Great's campaign through the Middle East and into India spanned from 334 to 323 BC. In contrast, today's advanced military technologies allow for the deployment of forces and execution of strikes across the globe within hours. The ability to mobilize swiftly has become a defining characteristic of modern warfare, altering how conflicts are fought and resolved. The 20th century witnessed a dramatic increase in the speed of war. At the dawn of the 1900s, humans moved at an average speed of around 6 km/h on foot, with faster transportation limited to the early automobile. By the mid-20th century, the introduction of aircraft brought speeds of hundreds of kilometers per hour. The 21st century has further escalated this trend, with hypersonic weapons capable of traveling at speeds exceeding 6,000 km/h. These advancements have revolutionized military strategy.

The concept of *blitzkrieg*—lightning war—highlighted the importance of speed in modern warfare. During World War II, Germany's rapid invasion of France, Belgium, and the Netherlands bypassed years of French preparations for trench warfare. Using a combination of aircraft, tanks, and mechanized infantry, Germany's forces moved with unprecedented speed and flexibility, achieving victory in weeks rather than months or years. This concept was refined and also adopted by the Soviet Union during the Cold War as their military doctrine relied heavily on rapid advances, with plans to overrun Western Europe in weeks using massive tank divisions, mobile artillery, mechanized infantry, and air support.

During the Gulf War in 1991, the U.S. successfully implemented its military strategy of 'shock & awe' which was based on breaking the will of the adversary using rapid and overwhelming use of force. By bringing about the collapse of Iraqi military within few days using rapid, precise and co-ordinated use of force, the U.S. demonstrated that modern warfare will be shaped by speed, precision, and synergy.

Similar situation was observed during U.S. Operation Iraqi Freedom in 2003 when the U.S. military's rapid deployment of forces and swift execution of operations overwhelmed adversaries before they could effectively respond. Units such as airborne infantry, paratroopers, and the U.S. Marines are specifically designed to react quickly to emerging threats.



As technology is advancing, more and more means are being developed to deliver firepower at long-ranges with precision in quick interval of time. Hypersonic weapons, traveling at speeds exceeding Mach 5, drastically reduce an adversary's reaction time, making them a game-changer in modern warfare. Unlike traditional Intercontinental Ballistic Missiles (ICBM) which carried nuclear payload at very long ranges but lacked precision and were useful for deterrence purposes only. The modern generation of hypersonic missiles, i.e., hypersonic glide vehicles (HGVs) and Hypersonic Cruise Missiles (HCMs) have precision and can be employed against variety of targets making them more flexible and practical than ICBMs. These missiles can be deployed from land, air, and sea, and are being developed by more than dozen nations around the globe. Few examples, like Russia's air-launched Khinzal, ship-launched Zircon missile, and now land-based Oreshnik missile have been used against Ukraine. Although the success rate of these missiles is still debated, but these missiles have demonstrated the inherent advantage of hypersonic missiles, i.e. these missiles can deliver lethal fire-power very quickly thus providing unprecedented strategic as well as psychological advantages.

In modern warfare, speed extends beyond physical movement to include decision-making and information distribution. Intelligence, surveillance, and reconnaissance (ISR) platforms, including space-based satellites, now play a pivotal role in providing real-time data to commanders, enabling faster and more informed decisions. Advanced systems such as drones, satellites, and high-speed reconnaissance aircraft ensure that militaries have up-to-date information on enemy movements and positions. Despite these advancements, speed alone does not guarantee victory. Prolonged conflicts still depend on robust supply chains to deliver essential resources such as ammunition, fuel, and food. Perhaps the most eminent example in this regard is Russia-Ukraine war. What started as a special military operation by Moscow with objective to quickly penetrate Ukrainian territory from multiple fronts to capture key cities - particularly Kyiv - in-order to replace the current regime with a pro-Russian one, turned into prolonged battle of attrition. Instead of a few day military campaign, Russia is entrap in major war for past three years. Without consistent resupply, rapid advances can become liabilities, leaving forces vulnerable and overextended.

Beside all the advantages associated with adaptation of modern technology in military, on flip side, it has created vulnerability too. For example, the increased complexity of decision-making in high-speed warfare is a major challenge. The rapid pace of modern conflict demands quick decisions, but the sophistication of military technologies and strategies makes this exceedingly difficult. Too many moving art in kill-chain and decision making process mean failure or delay of single part can undermine the entire process.

The increasing speed of warfare has profound implications for global security. Faster conflicts heighten the risk of miscalculation and escalation, as nations may feel compelled to act preemptively to avoid being caught off guard. This dynamic places a premium on deterrence and early warning systems, emphasizing the importance of maintaining readiness and adaptability. Moreover, the rising cost of advanced technologies necessitates a careful balance between quantity and quality. Modern militaries have fewer assets, such as tanks, aircraft, and ships, compared to their Cold War-era counterparts. While each asset is more capable, their reduced numbers make losses more consequential, potentially altering the course of a conflict.



Understanding Electronic Warfare: An Overview

Ahmad Ibrahim

Electronic Warfare (EW) represents the ability to use the electromagnetic spectrum (EMS)—signals such as radio, infrared, or radar—to sense, protect, and communicate. At the same time, EW can disrupt, deny and degrade the adversaries' ability to use these signals. The ultimate aim is to dominate the electromagnetic spectrum to gain superiority over adversaries. The origins of ESM can be traced back to pre-World War II efforts, such as Germany's Zeppelin missions in 1939 to detect British radar systems. Zeppelin represents first ever air-borne electronic intelligence (ELINT) effort by any military. These early attempts, however, failed to achieve requisite result. During the Battle of Britain, Germany's failure to recognize the role of British radar in coordinating fighter defenses proved to be a critical oversight, influencing the outcome of the war.

In general, EW encapsulates many domains. Electronic Attack (EA) includes a range of actions designed to reduce the effectiveness of enemy military assets using electronic means. This proactive strategy targets enemy radars, communication systems, and other electronic infrastructure. EA employs techniques such as jamming, deploying chaff and flares, and utilizing anti-radiation weapons. Electronic countermeasure (ECM) deals with degrading enemy's electronic sensory and communication capabilities. Electronic counter-countermeasure (ECCM) encompasses technologies that are designed to counter enemy's ECM capability. And finally, electronic support measure (ESM) involves passively monitoring and collecting electromagnetic signals to provide situational awareness of the battlespace. All these three categories work in conjunction to ensure operational dominance over adversary. ECM is perhaps the most well-known aspect of EW, often associated with "jamming." The goal is to disrupt enemy radars, sensors, or communication systems to undermine their ability to act effectively. A classic yet simple ECM tactic is the use of chaff, thin strips of aluminum released by aircraft, warship or any other military asset to create multiple false radar reflections. This confuses enemy radars as well as radar guided missiles to effectively identify and engage the real target.

Expandable Active Decoys (EADs) or simply radio decoys represent a more advanced form of ECM. These self-protection systems mimic the signatures of actual aircraft or ships, drawing enemy fire away from original assets. United States Air Force (USAF) and United States Navy (USN) have been using ALE-50 and ALE-55 series of EADs to protect its aircrafts from radar guided missiles. Both systems are combat-proven and were used extensively during Operation Iraqi Freedom (2003). While ALE-50 decoys simply offered a more lucrative target to incoming radar homing missile, ALE-55 also provided additional radar jamming capability to confuse approaching missiles. Currently, ALE-70, which is specifically designed for F-35 Lightning-II stealth aircraft, is in use and unlike past examples, is carried inside the airframe. As far as externally mounted decoys are concerned, Miniature Air-Launched Decoy (MALD) is a recent example that can emit signals to simulate the radar profile of a manned aircrafts. Its variant, called MALD-J, combine decoy capabilities with active jamming, offering dual-layer protection. MALD series of decoys can be carried by wide-range of aerial assets including manned as well as unmanned platforms.

Active jamming is another critical ECM technique. By transmitting signals that interfere with enemy radars, jammers create confusion about the location, distance, or number of targets. For instance, an aircraft can emit signals that mimic radar returns but with altered timing or frequency, making it appear at multiple locations simultaneously. Jamming can be of several types. The complexity and sophistication of these techniques have grown with advancements in radar systems, such as phased array radars, which are harder to jam due to their ability to change frequencies rapidly. The response to ECM lies in ECCM, designed to neutralize the effects of jamming and maintain operational capability. One effective ECCM strategy is employing systems that home in on the source of jamming signals, using them as a beacon to guide weapons directly to the jammer. Another approach involves rapidly changing radar frequencies, forcing jammers to spread their efforts thin across multiple frequencies, thereby weakening their effectiveness.





Modern radars, such as Active Electronically Scanned Arrays (AESA), are highly resistant to electronic jamming and thus excel in ECCM. These systems can dynamically shift frequencies and utilize advanced signal processing to differentiate between genuine and deceptive signals. Additionally, alternative sensors like Infrared Search and Track (IRST) systems complement radars by detecting and tracking heat signatures, offering a counter to stealth and jamming techniques.

ESM involves gathering intelligence by monitoring enemy electromagnetic emissions. ESM collection platforms can remain electronically silent while detecting and analyzing radar transmissions beyond the radar's detection range, due to the higher power of the transmitted electromagnetic pulse. For example, during the Cold War, reconnaissance aircraft frequently flew near adversary territories to collect electronic intelligence (ELINT). Modern ESM systems are integral to strategic planning. By understanding enemy capabilities and vulnerabilities, ESM enables proactive countermeasures and informed decision-making.

The proliferation of drones, ranging from advanced military UAVs to inexpensive consumer models, has introduced new challenges. Small, cost-effective drones can be weaponized, posing threats to high-value targets. EW systems have become essential in countering these threats by jamming drone communication links or GPS signals, effectively neutralizing them. While much of EW focuses on radar and radio waves, the electromagnetic spectrum offers additional avenues for exploitation. Infrared (IR) and visible light systems are increasingly being integrated into EW strategies. For instance, systems like the AN/ALQ-144 jammer protect aircraft from IR-guided missiles by emitting controlled pulses of infrared energy to confuse missile seekers. Similarly, laser-based systems can also disrupt the guidance of incoming threats. Flares, a traditional countermeasure against IR-guided missiles, continue to be a vital component of aircraft self-defense. These devices generate intense heat signatures to divert heat-seeking missiles away from their intended targets, much like chaff operates against radar-guided systems.

The Emergence of Weaponized Unmanned Underwater Vehicles

Ahmed Ibrahim

In the ever-evolving landscape of modern warfare, few technologies have captured the imagination and strategic focus of nations as much as drones. While their transformative effects are most visibly demonstrated in aerial combat, as seen in the Ukraine conflict, the surface and underwater domains are rapidly catching up. The weaponization of underwater drones is an emerging capability which is likely to redefine conduct of future naval warfare. These autonomous or remotely operated systems, equipped with explosives, introduce a new class of weapons distinct from traditional torpedoes and naval mines.

Unmanned platforms often referred to as drones, have undergone rapid evolution over the years. In the air, unmanned aerial vehicles (UAVs) have transitioned from tools for reconnaissance to formidable weapons of war, with the advent of one-way-attack (OWA) drones including first-person-view (FPV) kamikaze drones and loitering munitions. These systems, equipped with explosive payloads, have proven highly effective, particularly in the ongoing Ukraine war, where both Ukraine and Russia have employed them to devastating effect. Similarly, unmanned surface vessels (USVs) have been employed by Ukraine in naval operations, albeit on a smaller scale. But, perhaps the most intriguing and least understood development is the weaponization of unmanned underwater vehicles (UUVs), which if possess high grade of autonomy can also be termed as autonomous underwater vehicles (AUVs).

These underwater systems, equipped with explosives, are now projected as Ukraine's tool to dominate in Black Sea.

At first glance, weaponized underwater drones might resemble torpedoes in function, as both are designed to deliver explosive payloads to maritime targets. However, several critical differences set them apart. Torpedoes have a long history in naval warfare, evolving from rudimentary spar torpedoes of the 19th century to the advanced homing torpedoes of contemporary times. Modern torpedoes are highly sophisticated weapons, capable of high-speed travel, precise targeting, and advanced guidance systems. They are launched from submarines, ships, or aircraft and are designed to detect and pursue their targets with lethal accuracy.

In contrast, weaponized underwater drones are built to meet different requirements. These systems prioritize range and endurance over speed, allowing them to carry out strategic missions against pre-determined, static targets such as ports, oil rigs, or underwater infrastructure. Unlike torpedoes, which rely on active guidance systems to home in on moving targets, weaponized underwater drones may utilize simpler navigation systems, relying on pre-programmed coordinates or limited sensory inputs. This makes them less sophisticated but also significantly less expensive, opening up their use to a wider range of actors. Another distinguishing factor is the construction and operational flexibility of underwater drones. While torpedoes adhere to strict design standards to fit specific launch systems, underwater drones can be customized in terms of size, shape, and payload. This adaptability makes them ideal for diverse missions, from reconnaissance and surveillance to direct attacks.



To understand the significance of weaponized underwater drones, it is essential to trace the evolution of underwater systems. Torpedoes, as we recognize them today, emerged in the 19th century with the contributions of inventors like Robert Whitehead, who developed the first self-propelled torpedo. Over the decades, torpedoes have evolved into the primary underwater weapon system, and are used extensively in naval warfare.

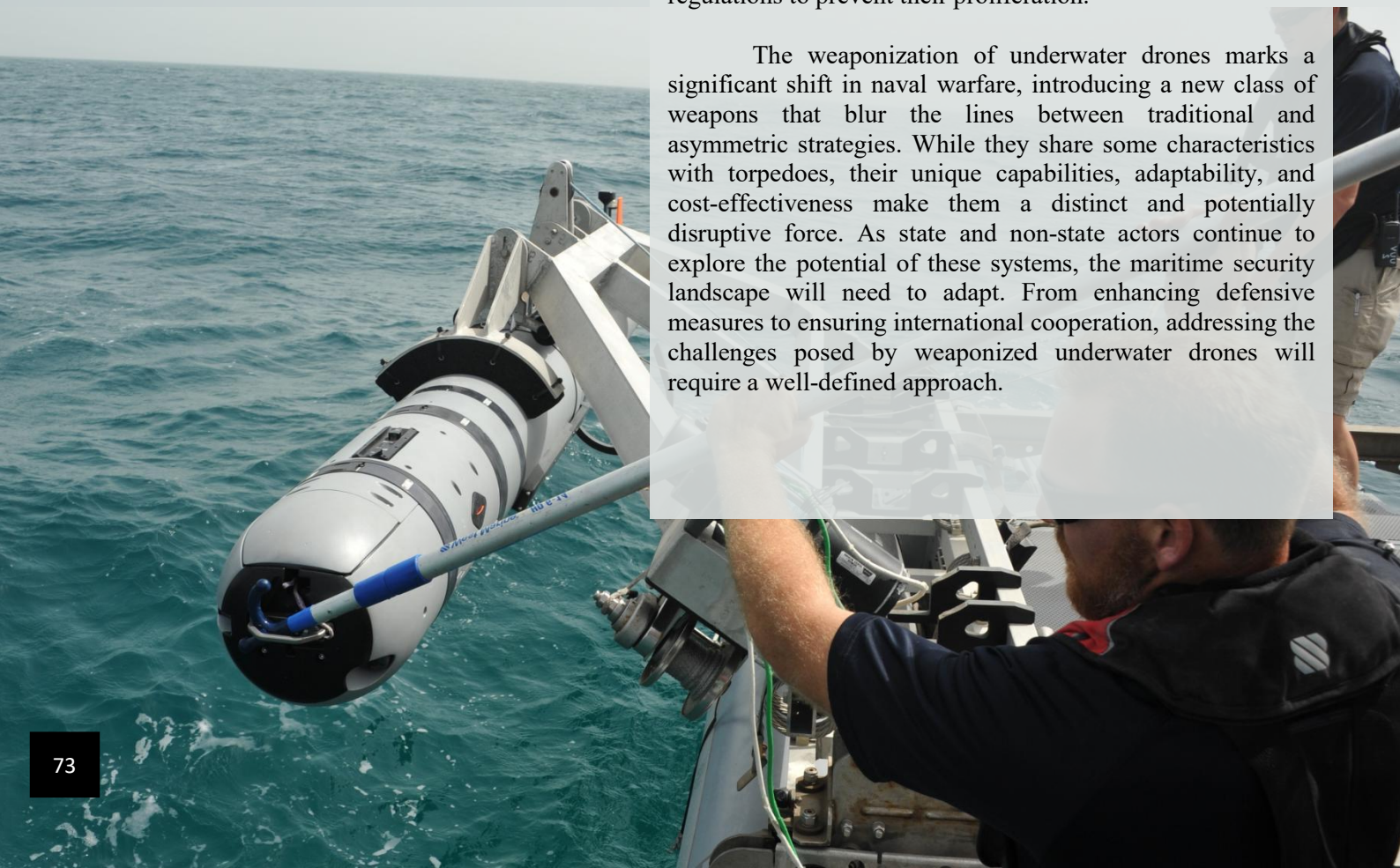
Unmanned underwater vehicles originated much later. During 1950s, United States developed the first UUV primarily as tool for underwater exploration and surveillance of Arctic Ocean. The first UUVs were relatively simple, tethered devices used for scientific research and underwater photography. Over time, advancements in autonomous technologies and propulsion systems enabled the development of untethered UUVs capable of conducting long-range missions. The weaponization of UUVs represents the next logical step in this evolution. By integrating explosives into these systems, militaries and non-state actors have created a new class of weapons that combine the stealth and persistence of underwater drones with the destructive power of traditional naval armaments.

The weaponization of underwater drones has far-reaching implications for maritime security. These systems are particularly suited for asymmetric warfare, allowing smaller or less technologically advanced nations to challenge

Currently, several nations and groups are at the forefront of this emerging technology. Russia's nuclear-powered Poseidon long range underwater drone can be equipped with nuclear payload – essentially introducing another dimension in sea-leg of nuclear triad. Besides building a new storage facility for these drones, Russia is also constructing new class of submarines to carry these drones. On conventional scale, Iran has been a pioneer in the development and deployment of weaponized underwater drones. Leveraging its expertise in asymmetric warfare, Iran has provided these systems to proxies such as the Houthis in Yemen, enabling them to target ships transiting the Red Sea. In the ongoing conflict with Russia, Ukraine has demonstrated the efficiency of various weaponized UUVs systems. These systems have been used to target Russian naval assets, showcasing their potential in high-risk maritime operations. Similarly, North Korea has tested a nuclear capable underwater drone called Haeil-5-23. Beside state actors, non-state actors can also exploit this technology by using dual-use and commercially available technology to develop such systems thus highlighting the proliferation risks associated with this technology.

Despite their potential, weaponized underwater drones face several challenges. Their reliance on autonomous systems makes them vulnerable to jamming and cyberattacks, while their limited speed and payload capacity restrict their effectiveness in certain scenarios. Additionally, the lack of standardized designs and manufacturing practices could limit their scalability. However, these challenges are unlikely to degrade their wide-scale adoption. As technology advances and costs decrease, weaponized underwater drones will become more accessible, enabling a wider range of actors to incorporate them into their arsenals. This trend highlights the need for robust countermeasures, including improved underwater surveillance, anti-drone systems, and international regulations to prevent their proliferation.

The weaponization of underwater drones marks a significant shift in naval warfare, introducing a new class of weapons that blur the lines between traditional and asymmetric strategies. While they share some characteristics with torpedoes, their unique capabilities, adaptability, and cost-effectiveness make them a distinct and potentially disruptive force. As state and non-state actors continue to explore the potential of these systems, the maritime security landscape will need to adapt. From enhancing defensive measures to ensuring international cooperation, addressing the challenges posed by weaponized underwater drones will require a well-defined approach.



Air-Independent Propulsion (AIP)

Submarines: Bridging the Gap

between Conventional and Nuclear

Powered Attack Submarines

Ahmad Ibrahim

Submarines are one of the most advanced and versatile asset of modern naval warfare. These vessels are uniquely designed to achieve stealth, endurance, offensive as well as capabilities that cannot be achieved by any other naval asset. Their ability to operate undetected in hostile waters makes them critical for various roles, including reconnaissance, sea denial, and power projection. Few decades ago, submarines were effective against surface ships. But now modern submarines can strike variety of surface and underwater targets. Thus, modern submarines also serve as platforms for launching missiles—both conventional and nuclear—thereby playing a vital role in strategic deterrence. Beside payload, advancements in propulsion technology have introduced new categories of submarines. Between diesel-electric conventional submarines (SSK) to nuclear powered submarines (SSN/SSBN), Air-Independent Propulsion equipped submarine (SSP), bridges the gap between conventional and nuclear-powered vessels and represents a transformative step in submarine technology

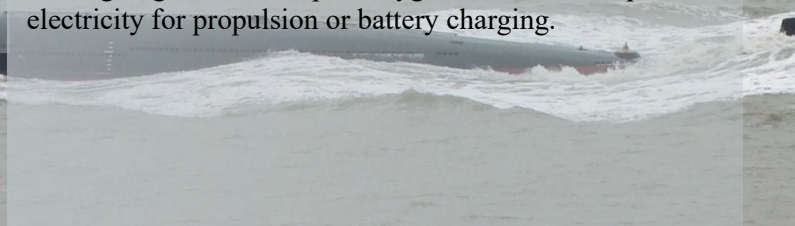
The early generation of submarines primarily operated on the surface and dived only for targeting operations. In the 1930s, German engineer Dr. Helmuth Walter developed a revolutionary submarine propulsion system using hydrogen peroxide (H_2O_2) to achieve high underwater speeds. His experimental V80 submarine reached 28.1 knots in 1940, far surpassing conventional submarines. Although wartime plans to scale up Walter's designs were limited, the innovative Type XXI "electro-boat," with advanced batteries and snorkel technology, greatly influenced postwar submarine development. After World War II, several nations explored Dr. Walter's hydrogen peroxide propulsion concepts. Britain experimented with Walter-inspired submarines like HMS Explorer, but safety concerns ended their use by the 1960s. The Soviet Union also developed Walter-influenced designs but focused on liquid oxygen-based systems, which were also decommissioned due to safety issues. Despite promising advancements, the emergence of nuclear-powered submarines in the 1950s (USS Nautilus in 1954) overshadowed AIP technology.

The revival of AIP technology began in the 1990s in an effort by non-nuclear navies seeking to enhance the capabilities of diesel-electric submarines. Sweden took the lead by retrofitting one of its submarines with a Stirling-engine-based AIP system, marking the advent of modern AIP technology. Unlike earlier iterations focused on speed, current AIP systems emphasize stealth, and endurance allowing submarines to avoid detection for extended periods.

AIP equipped submarines, often dubbed as SSPs, achieved limelight in 2005 when during a U.S. Navy exercise near San Diego, the Swedish AIP equipped Gotland-class submarine, "sank" the USS Ronald Reagan, a nuclear-powered aircraft carrier, multiple times in simulated attacks. Despite repeated attempts, U.S carrier group was unable to locate and counter the 1600 tons Gotland class submarine. This demonstrated the potential of AIP submarines as credible sea-denial asset to counter even the most advanced naval forces.

The introduction of Air-Independent Propulsion (AIP) has revolutionized non-nuclear submarines, significantly enhancing their stealth and endurance capabilities. AIP systems supplement traditional diesel-electric propulsion by providing an alternative energy source. Submarines equipped with AIP still rely on batteries and diesel engines. However, AIP systems generate electricity to power the electric motor without the need for atmospheric oxygen. This allows the submarine to operate underwater for weeks rather than days, significantly reducing the frequency of surfacing and enhancing stealth. It is important to note that AIP is not typically used to recharge batteries. Instead, it directly powers the electric motor, a more efficient use of its limited energy output. In scenarios requiring high-speed maneuvers, the submarine can draw on its battery reserves, which can be recharged later using diesel engines during surface operations. Thus, compared to traditional diesel-electric submarines, AIP equipped submarines over extended underwater endurance which reduces the vulnerability to radar and acoustic detection and thus contribute significantly in enhancing the survivability and stealth of submarine.

There are several types of AIP systems that have been used historically and are currently in operation worldwide. Open-cycle systems rely on hydrogen peroxide to generate oxygen for steam turbines, while closed-cycle diesel engines use liquid oxygen to sustain underwater operations. Closed-cycle steam turbines adapt nuclear technology, using ethanol and oxygen for heat generation. Stirling engines burn liquid oxygen and diesel to produce electricity for propulsion or battery charging.



While AIP systems offer extended underwater endurance, they face with few limitations too. They produce lower power output compared to diesel engines or batteries, thus limiting the speed of submarine. AIP submarines typically operate at slow speeds, often under 5 knots, reducing their effectiveness in high-speed scenarios. Additionally, AIP systems increase the cost and complexity of submarine design and maintenance, including the handling of specialized fuels like liquid oxygen. Their smaller size compared to nuclear-powered submarines also limits payload capacity and overall endurance. While AIP submarines are a significant improvement over conventional designs, they fall short of the capabilities offered by nuclear-powered vessels. Nuclear powered submarines (SSN) can operate underwater indefinitely, possess greater power due to nuclear propulsion which enable higher speed and powerful sub-systems, and can carry heavier weapon payload for long-range missions. Despite these advantages, AIP submarines are quieter and better suited for operations in shallow or congested waters, where nuclear submarines may be less effective. In sum, in terms of capability, AIP submarines fall in-between conventional non-AIP submarines and nuclear powered attack submarines (SSN).

Several countries have adopted AIP technology, with Sweden leading the way through its Gotland-class and the advanced A26-class submarines. These vessels use Stirling engines powered by liquid oxygen and diesel, offering compact and efficient energy generation. Germany's Type 212 and Type 214 class submarines are also utilizing fuel cell technology. Japan's Soryu-Class submarines, initially equipped with Stirling AIP, are now transitioning to lithium-ion batteries for improved performance. Pakistan Navy's Agota-90B Khalid class submarines are equipped with French company Naval Group's MESMA (Module d'Energie Sous-Marin Autonome) AIP system, making them the first conventional submarines in South Asia to feature AIP propulsion. China's current underproduction Type-39B/C class submarines also integrate AIP with conventional diesel-electric propulsion. Pakistan Navy's upcoming eight Hangoor class submarine, based on aforementioned China's Type-39B, will also be equipped with next generation AIP systems. Interestingly, Indian Navy, which has historically operated nuclear powered and non-AIP conventional submarines, is also looking to procure six AIP equipped submarines in the form of Project-75I. In parallel, India's defense companies, DRDO and L&T, are developing fuel-cell based AIP modules for retrofitting in existing Kalvari class submarines during mid-life-upgrade (MLU).

The proliferation of AIP submarines suggests this technology will evolve further in future. With emphasis on increasing efficiency, reducing costs, and enhancing stealth, innovations like lithium-ion batteries and new fuel cell technologies promise to further extend the capabilities of non-nuclear submarines. While AIP submarines cannot match the endurance and power of their nuclear counterparts, their extended underwater endurance and reduced detection risk make them invaluable assets for coastal defense and littoral operations. As technology evolves, AIP is likely to keep playing a critical role in shaping the future of underwater warfare.



Stealth Submarines: The Next Evolution of Submarine Design

Ahmed Ibrahim

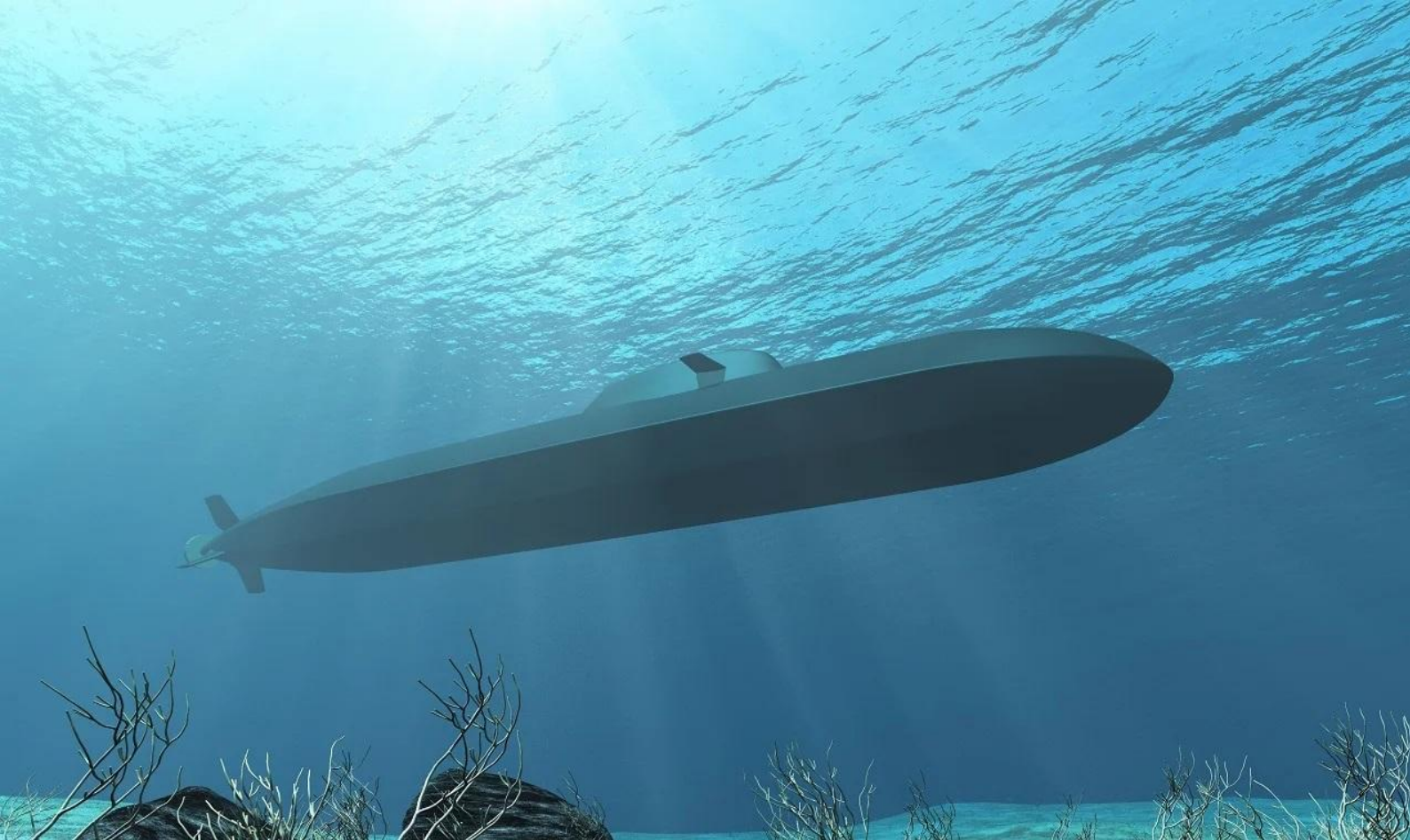
In recent years, submarines have increasingly adopted design elements that resemble stealth aircraft. While the core structure of submarines retains its traditional cylindrical pressure hull, their external appearance has shifted towards angular shapes. This design evolution is closely linked to advancements in sonar technology and increasing the survivability of submarine by-reducing underwater detection.

Sonar, an acronym for Sound Navigation and Ranging, has been a pivotal technology in submarine warfare since its inception during World War I. Initially used in its passive form as hydrophones, sonar evolved during World War II into a decisive tool for anti-submarine warfare, particularly in the Battle of the Atlantic. Sonars, based on their working principle, can be classified into two primary types: active and passive. Active sonar operates by emitting sound waves into the water. When these waves encounter an object such as a submarine, they bounce back as echoes, which can then be detected and analyzed. This was the predominant method during early conflicts, as it allowed surface ships to identify submarine locations. However, active sonar comes with a significant drawback—it compromises the presence of the emitter, potentially exposing its location to enemy. Passive sonar, on the other hand, relies on listening for sounds emitted by submarines, such as engine noise or propeller cavitation. This method became popular during the Cold War due to its stealth advantage. Unlike active sonar, passive sonar allows the hunter to remain undetected while listening for enemy submarines. Consequently, submarine design during this period focused heavily on minimizing noise to evade passive detection, resulting in increasingly quieter submarines.

On surface, radar systems, much like active sonar, detect objects by emitting waves and analyzing their reflections. Similarly, passive sensors, like IRIST (infra-red search and track) is used to catch the heat signature of aircrafts and do not emit signals of their own – much like passive sonar. In the 1970s, Lockheed's development of the F-117 Nighthawk stealth aircraft revolutionized aircraft design by deflecting radar waves away from the emitter. The aircraft's angular surfaces ensured that radar signals did not return to their source, effectively rendering the plane invisible on radar screens. Modern stealth fighter aircrafts, like F-35 Lightning-II, not only feature extremely reduced radar-cross section (RCS) but has minimum heat signature thus making them invisible to active as well as passive sensors. These design philosophies of aircrafts can be adopted in underwater vessels with somewhat similar effects.

The traditional cylindrical shape of submarines' hull is ideal for withstanding the immense pressures of deep underwater. However, this shape reflects sonar waves directly back to their source, making detection relatively easy for active sonar systems. Modern stealth submarines address this issue by incorporating an angular outer hull around the cylindrical pressure hull. These angles are designed to deflect incoming sonar waves away from their source, reducing the probability of detection.





One of the most prominent examples of this design innovation is the German Type 212CD submarine. Unlike its predecessors, the Type 212CD features an angular outer hull that minimizes its sonar signature. Sweden's A-26 Blekinge class submarine and China's Type-39C submarine also feature stealth layout. This approach reflects the principles of stealth aircraft design, adapting them to the underwater domain. However, designing a stealthy submarine is far more complex than designing a stealth aircraft due to the unique characteristics of the underwater environment.

Achieving stealth underwater is a challenging undertaking. Sonar waves, unlike radio waves, interact with various factors such as the water's salinity, temperature gradients, and density. These variables can alter the behavior of sonar waves, making it difficult to achieve consistent results. Moreover, the seabed and water surface act as reflective barriers, complicating deflection of sonar waves. When sonar waves encounter the angular hull of a stealth submarine, they may be deflected in multiple directions. However, some of these waves can still bounce off the seabed or surface, eventually finding their way back to the emitter. Other common measures to reduce acoustic signature include the use of sound-absorbing materials, such as rubber tiles, on their outer hulls and shrouded propeller to minimize cavitation.

While angular designs, shrouded propeller, and advanced materials improve a submarine's stealth capabilities, they also pose several challenges. The addition of an angular outer hull increases the submarine's size than traditional designs.

While angular designs, shrouded propeller, and advanced materials improve a submarine's stealth capabilities, they also pose several challenges. The addition of an angular outer hull increases the submarine's size than traditional designs. This increased size can lead to greater water resistance, affecting the submarine's speed and maneuverability. Shrouded propeller is heavier than traditional designs and thus increases the overall weight besides demanding more power input. Additionally, the added complexity of stealth designs can increase construction and maintenance costs. Despite these challenges, countries like Germany and Norway, which have invested in the Type 212CD program, believe the benefits of stealth outweigh the drawbacks. As active sonar becomes more prevalent in naval warfare, the ability to evade detection will become increasingly critical.

The adoption of stealth principles in submarine design is likely to expand in the coming years. As more countries recognize the strategic advantages of sonar invisibility, we can expect to see further innovations in this field. Emerging technologies, such as AI-driven optimization and advanced materials, will continue to push the boundaries of what is possible in submarine stealth. However, the widespread adoption of stealth designs may also catalyze advancements in sonar technology. Just as radar systems evolved to counter stealth aircraft, sonar systems may become more sophisticated in detecting stealth submarines. This ongoing interplay between stealth and detection technologies will shape the future of undersea warfare.

Zumwalt Stealth Destroyers: From Failure To Deterrent

Ahmad Ibrahim

The USS Zumwalt, a highly ambitious project by the US Navy, has been a subject of heated debate and controversy. Initially envisioned as the destroyer of the future, the Zumwalt-class destroyers were supposed to redefine naval warfare with cutting-edge technology, including stealth, automation, and mass firepower. However, the project quickly became an expensive undertaking, with cost of each ship reaching 8 billion USD. As a result, the Navy significantly scaled back the program, eventually building only three warships out of the planned 32. Despite its developmental and costing issues, the Zumwalt destroyers might soon turn the tide and redeem itself. This futuristic warship is set to become the first US Navy vessel equipped with hypersonic missiles, marking a significant technological leap.

The Zumwalt-class destroyers trace their origins to the Surface Combatant for the 21st Century (SC-21) program, launched in the 1990s. This program aimed to address the Navy's perceived shortfall in naval gunfire support for amphibious operations and coastal battles. The retirement of the Iowa-class battleships, known for their massive 16-inch guns, left a capability gap that was planned to be filled by SC-21 program.

Since beginning, the SC-21 program faced a philosophical divide within the US Navy. One camp argued that modern combat required a reliance on missiles and aircraft for shore support, while another camp maintained that naval guns offered a cost-effective and sustainable option for prolonged bombardments. This debate, dubbed the "big guns versus more missiles" argument, highlighted the uncertainty in predicting future conflict scenarios.

The SC-21 program proposed three ship concepts, ultimately selecting a design that focused on naval gunfire support. The chosen design featured a displacement of over 16,000 tons, two 155mm Advanced Gun System (AGS) with Long-Range Land Attack Projectiles (LRLAP), and 80-cell Mk-57 vertical launch systems (VLS) for missiles. The program, now known as DD(X), laid the foundation for the Zumwalt-class destroyers, blending advanced stealth, automation, and firepower into a futuristic stealth design.



The Zumwalt-class destroyers' most distinctive feature is their wave-piercing tumblehome hull design, which enhances stealth by significantly reducing the ship's radar cross-section (RCS). This design makes the Zumwalt appear on radar as a much smaller vessel, i.e. like a fishing boat. Additionally, the ship boasts cutting-edge automation, reducing crew requirements by up to 50% compared to conventional destroyers. The Advanced Gun System (AGS) was intended to be the Zumwalt's mainstay, supposedly offering unparalleled accuracy and range. The AGS could fire GPS-guided shells capable of hitting targets up to 83 nautical miles away. However, the program faced a major setback when the cost of these specialized shells ballooned to nearly \$1 million each, rendering them impractical. To make matters worse, the AGS was incompatible with standard naval ammunition in service with US Navy, thus leaving the Zumwalt's guns without any firepower.

Despite these technical troubles, the Zumwalt-class ships retain a robust missile capability through 80 VLS cells capable of launching variety of missiles, including Tomahawk cruise missiles, and surface to air SM-series missiles and Evolved Sea-Sparrow Missiles (ESSM). This "more missiles" approach aligns with the Navy's strategic shift toward precision-guided weaponry for high-stakes engagements. Initially, the Navy planned to build 32 Zumwalt-class destroyers. However, budget overruns and shifting priorities led to significant cutbacks, ultimately resulting in only three ships: USS Zumwalt (DDG-1000), USS Michael Monsoor (DDG-1001), and USS Lyndon B. Johnson (DDG-1002). The drastic reduction in numbers eliminated economies of scale, further escalating costs and limiting the program's practicality. The limited fleet size also raised questions about the Zumwalt's operational role. With its guns rendered ineffective and its extremely high production and maintenance costs, the Zumwalt-class destroyers became notorious as "ships without a mission."

Despite all troubles, ill-fated Zumwalt destroyers are all set to reclaim a new position in power-politics of Indo-Pacific as blue water strike platform instead of surface-fire support asset. USS Zumwalt has already received modification to carry Conventional Prompt Strike (CPS) hypersonic missiles. The cost-prohibitive 155mm AGS has been replaced by four Advanced Payload Modules each capable of carrying three CPS missile. Thus, beside 80 Mk-57 VLS silos, each Zumwalt destroyer will be able to launch 12 CPS hypersonic missiles. Similar modification of remaining two warships is expected in near future.

The integration of hypersonic missiles has turned Zumwalt destroyers as crucial asset for power balancing and deterring near-peer adversaries like China and Russia. Russia's Zircon hypersonic cruise missile from Gorshkov class frigates, and China's YJ-21 hypersonic missiles from Type-55 Renhai class destroyers, can be equalized by employing Zumwalt destroyers with CPS missiles. By leveraging their stealth and firepower, these ships could serve as formidable assets in future conflicts, particularly in highly contested naval environments. Moreover, US Navy will enjoy two key advantages related to launch platform and missile system. First, Zumwalt is highly survivable platform compared to Gorshkov class frigates and Renhai class destroyers due to its extremely low RCS and potent defensive suite. Second, CPS is hypersonic boost-glide missile with more range and outreach than Zircon and YJ-21. Only advantage in Russia and China disposal would be total number of missiles which can be deployed by warships since both Zircon and YJ-21, unlike CPS which require specialized APM, can be launched from standard VLS. This numeric advantage will be nullified by US Navy by using Virginia class nuclear-attack submarines for carrying CPS, thus restoring the balance in favor of U.S.

The Zumwalt-class destroyers program offers valuable lessons for future naval procurement. First, it highlights the risks of overreliance on unproven technologies and ambitious design goals. The advanced capabilities envisioned for the Zumwalt came at the cost of practicality and affordability, leading to significant failures. Second, the program illustrates the importance of adaptability in addressing changing strategic priorities. The Zumwalt's shifting focus—from naval gunfire support to missile warfare—proves the challenges of aligning long-term projects with evolving threats and operational needs.

And finally, the Zumwalt's program emphasizes the need for balance between innovation and cost-effectiveness. While cutting-edge technology is essential for maintaining a competitive edge, it must be pursued while keeping sustainability and scalability in focus. The Zumwalt program represents both the promise and pitfalls of modern naval innovation. Its stealth design, advanced automation, and superior fire-power make it a marvel of engineering, but its high costs and operational challenges have overshadowed its potential. However, with the integration of hypersonic missiles, the Zumwalt-class destroyers may yet prove their worth, emerging as key players in the US Navy's strategic arsenal to counterbalance hypersonic developments by Russia and China and serve as conventional deterrent in naval domain.



Exploring Iconic Weapons of Russia-Ukraine War

Ahmad Ibrahim

Historically, in every major war certain weapon systems, whether machine gun, tanks, missiles, or aircraft, have earned symbolic value. These iconic systems often shape narratives, enter public consciousness, and become synonymous with the battles in which they were used. Several factors contribute to a weapon system achieving iconic status. Media coverage, backed by political support, plays a paramount role in this regard. Additionally, battlefield effectiveness further develops a system's position in the narrative. The Russia-Ukraine war is no exception. As this ongoing conflict unfolds, numerous weapon systems have emerged as defining symbols of this war. These weapons have been used by Ukraine as well as Russia and each weapon system has gained popularity during a certain phase of war.

In the early days of Russia's full-scale invasion of Ukraine, the Javelin Anti-Tank Guided Missile (ATGM) quickly emerged as a potent symbol of resistance. This U.S.-manufactured anti-tank weapon captured headlines for its effectiveness against Russian armored vehicles. Although other anti-tank systems, such as the NLAW and domestically produced Stugna-P were also very effective. But it's the Javelin ATGM which became the centerpiece. It's symbolic significance extended beyond the battlefield, inspiring cultural references like the "Saint Javelin" campaign, which highlighted its role in Ukraine's defense narrative.

In the naval domain, the first weapon to gain limelight was Neptune anti-ship missile (AShM). The sinking of the Russian cruiser *Moskva* by Ukraine's Neptune missile was a pivotal moment in the war. Before this conflict, the Neptune was relatively unknown outside defense circles. However, its sudden success came to the spotlight, demonstrating how a homegrown weapon system could achieve remarkable victories. Although Ukraine has used foreign anti-ship missiles successfully, e.g. Harpoon AShM to sink Russian vessels, but Neptune's role in reshaping naval engagements in the Black Sea has secured its place in naval warfare history.

When dealing with unmanned systems, then Turkey's Bayraktar TB2 combat drones gained prominence early in the conflict, particularly during Ukraine's efforts to retake Snake Island. These drones provided striking visual evidence of their battlefield successes, sinking Russian vessels and targeting ground forces. As the Russian air-defenses and counter-strategies improved, TB02 loss rate increased correspondingly. But despite their high cost and diminishing battlefield relevance as the war evolved, the Bayraktar remains a potent symbol of modern drone warfare and its transformative impact on military strategy.

Among the most innovative weapons in this conflict are Ukraine's unmanned surface vessels (USVs), commonly referred to as kamikaze sea drones. First revealed in August 2022, initially these drones grabbed no credible attention. However, these drones have proven their worth by granting Ukrainian navy the capability to target Russian ships and facilities with remarkable precision. Although multiple sea drone attacks have been thwarted by Russia, but these drones have compelled Russia to cease its open-sea operations and limit itself in save waters of Sevastopol. Till date, two corvettes and two landing-ships have been sunk by these suicide drone boats. These systems represent a significant shift in naval warfare, where smaller, cheaper, unmanned platforms challenge traditional naval dominance.

On the Russian side, the Iranian-designed Shahed suicide drone has become a prominent feature of the conflict since August 2022. Deployed extensively by Russia for strikes against Ukrainian infrastructure, the Shahed drones have proven both effective and controversial. These cheap and rudimentary drones have been used in large numbers to saturate Ukrainian defenses and strike targets located deep inside Ukrainian territory. Although the efficiency of these suicide drones has gradually reduced due to strengthening Ukrainian anti-drone defenses, but with incorporation of more technologies and innovation, the improved versions of drones are likely to sustain their position as a futuristic weapon of warfare.



Beside kamikaze drones and loitering munitions, if there is any other weapon system that stands out as the defining symbol of this war, it is the FPV (First Person View) drone. Unlike traditional military drones, FPV drones are small, agile, and remotely piloted using goggles, offering unparalleled precision in targeting. Both Ukrainian and Russian forces have employed these drones extensively for reconnaissance and strike missions. Considering the overwhelming military advantages associated with FPVs, it's pre-determined that FPVs will continue to explore new frontiers with advancements in technology.

Recognized weapon of this conflict. Known for its precision and long-range capabilities, HIMARS became a focal point of discussions during the second year of war. The enhanced firepower it granted to Ukraine in targeting Russian supply lines and command centers uplifted its status as an iconic weapon. At a later stage, employment of 300km ranged ATACMS short-range ballistic missiles from HIMARS launchers re-firmed its status as a potent weapon which compelled Russia to withdraw its military assets from frontlines. Together with British-French air-launched Storm-Shadow cruise missile, ATACMS successfully engaged high-value Russian assets on Russian mainland. The use of both these long-range weapons essentially ignited a new phase of war, compelling Russia to resort to even high-end weapons.

The use of both these long-range weapons essentially ignited a new phase of war, compelling Russia to resort to even high-end weapons. Recently, Russia's Oreshnik ballistic missile has gained fame as a fearsome weapon. This hypersonic ballistic missile, equipped with multiple sub-munitions, has been used by Russia in response of Ukraine's ATACMS and Storm-Shadow cruise missiles against targets located on Russian mainland.



Oreshnik is also regarded as Russia's response to U.S. unilateral withdrawal from Intermediate-Range Nuclear Force (INF) Treaty in August 2019. This missile is a physical manifestation of Russian military doctrine of area-saturation. Oreshnik's importance will likely to consolidate in the future as this missile with capability to breach multi-layer missile systems, can potentially act as an equalizer against NATO's conventional superiority against Russia.

Despite their traditional importance in warfare, tanks, manned fighter aircraft, attack helicopters, self-propelled artillery, and air defense systems have not achieved the same iconic status in this conflict. Western-supplied tanks like the Leopard 2, M1A1 Abrams and Challenger 2, fighter aircrafts like F-16 Fighting Falcon and air-defense system like Patriot, have garnered attention, but their limited battlefield impact has prevented them from becoming symbols of the war.

Similarly, Russia's efforts to field new weapon systems have largely fallen short. Despite deploying state-of-the-art weapons like T-90M tanks, Ka-52 attack helicopters, Su-35 Flanker fighter aircrafts, S-400 air-defense system, Iskander missile system and Kinzhal hypersonic missile, systems have failed to deliver decisive battlefield results or achieve widespread recognition. The Shahed drone and Oreshnik missile stand out as Russia's most notable weapons in this war.

The Russia-Ukraine war has showcased a diverse array of new weapon systems, each contributing uniquely to the conflict's dynamics. The battlefield success of these innovative systems suggests that these weapon systems will evolve, mature and proliferate, and will likely change the course of future warfare.



An Overview Of Contemporary Naval Vessels' Categorization

Ahmed Ibrahim

Modern warships represent the cutting edge of naval engineering, designed to conduct variety of duties at sea. From massive cruisers to agile corvettes, these vessels form the backbone of naval power. Warships are generally classified based on size, capabilities, and mission profiles. These include aircraft carriers, cruisers, destroyers, frigates, corvettes, and submarines. To better gauge the naval capability of any nation, it is important to understand the broader spectrum of modern warship classifications.

Aircraft carriers can be categorized based on their size, displacement, aviation wing, and propulsion systems. Super-carriers, like United States Nimitz and Gerald R. Ford classes, are the largest with displacement approximately 100,000 tons. These carriers are nuclear powered, equipped with CATOBAR system, and can support carrier aviation wing of as many as 90 fixed-wing and rotary-wing aircrafts. Conventional powered ski-jump carriers, equipped with STOBAR system, are medium carriers and usually have displacement between 40,000 to 60,000 tons. China's Liaoning and Shandong, Russia's Admiral Kuznetsov, and India's INS Vikrant and INS Vikramaditya are known examples. British HMS Queen Elizabeth and Prince of Wales can also be included in this list. Few exceptions are there. French Charles De Gaulle is mid-sized carrier but is nuclear powered. Similarly China's newly launched Shandong carrier is conventionally powered but displaces more than 80,000 tons.



Beside aforementioned examples, various amphibious warships with flight decks, commonly dubbed as Landing Helicopter Dock (LHD), are operational with navies of Japan, Turkey, Brazil, Italy, and Spain. These vessels are not purpose-built carriers. But with necessary upgrades and by operating vertical/short take-off and landing (V/STOL) aircrafts like, F-35B, these vessels can be regarded as light carriers.

Submarines are also relatively easy to categorize based on their mission, propulsion systems, and on-board-weapons. Submarines can be nuclear powered or conventionally powered. Nuclear powered submarines are nuclear-powered attack submarine (SSN), nuclear ballistic missile submarine (SSBN), and nuclear guided (cruise) missile submarine (SSGN). With exception of SSBNs which are nuclear deterrent and custodian of sea-based nuclear strike capability, SSNs and SSGNs are offensive platforms and are used for striking enemy surface as well as under-surface targets at long-ranges. Conventional submarines can either be traditional hunter-killer submarines (SSK), or AIP equipped hunter-killer submarines (SSP). These submarines are potent sea-denial assets. Air-Independent Propulsion System (AIP) ensures submarine's superior endurance which subsequently translates into high survivability rate. Small submarines, called midget submarines, with displacement of few hundred tons are also operated by some navies. These submarines have shorter ranges and are used for lying mines and conducting special operations.

When dealing with surface combatants, the distinctions between cruisers, destroyers, frigates, and corvettes have become increasingly blurred. Before guided missile age, these warships were defined differently. But advances in technology have enabled these classes to adopt overlapping roles, such as anti-air warfare (AAW), anti-surface warfare (ASuW), and anti-submarine warfare (ASW). Size and displacement, once defining factors, now vary significantly even within the same class. Although no universally acknowledged criteria exists to classify different warships based on their size. But in concept, when size and firepower is taken into account, cruisers are the biggest, heaviest and most heavily armed warships - followed by destroyers, frigates, and corvettes.

Few decades ago, it was relatively easy to differentiate each category. For example in NATO, cruisers (9000+ tons displacement) were large, multi-role warships designed for extended missions and capable of operating independently or as command ships of a naval task force. Destroyers (5000-8000 tons displacement) served in blue waters for escorting carrier groups or acting as offensive platform. Frigates (2500-4500 tons displacement) specialized in anti-submarine warfare (ASW) and open-sea patrolling duties. And corvettes (below 2500 tons displacement) usually conducted coastal defense and near-shore patrol missions.

In Soviet Navy, multi-mission warships were not common. Cruisers, although equipped with AAW and ASW capability, were primarily designed to carry large long-range anti-ship missile for countering US Navy carrier groups. Similarly, different classes of destroyers, frigates, and corvettes were developed, to undertake specialized roles. In contemporary era, with advancement in technology, weapon and sensor systems have become modular in design, lighter in weight, and compact in size. Therefore, instead of developing warship for specialized role, multi-mission warships have become standard. Additionally, even small ships can now carry highly capable weapon systems which were previously beyond their physical capacity. Modern cruisers usually have full-displacement in excess of 10,000 tons each. The US Navy with Ticonderoga class cruisers and Russian Navy with Kirov class battlecruisers and Slava class cruisers are the only navies that continue to operate these formidable vessels. These cruisers are heavily armed with weapons and sensor suite and can perform various duties ranging from command & control to saturated missile attack. Cruisers mission profile covers all three dimensions of naval warfare, i.e., ASuW, ASW, and AAW. However, with advancement in technology, the role of cruiser is gradually being taken-over by destroyers. Currently no new cruiser class is in development anywhere in world.

Modern destroyers are among the most versatile warships, equipped with ASuW, ASW, and AAW systems. Capable of speeds exceeding 30 knots, modern destroyers are indispensable in fleet operations, where they serve as protectors and strike platforms. When gauged from displacement and weapon load-out perspective, destroyers range from 6000 tons at lower end to 10,000 tons at higher end. As discussed above, heavy destroyers have essentially turned cruisers out of fashion. China's Type-55 class, Japan's Maya class, South Korea's Sejong-The Great, and United States Arleigh Burke Flight-III class are amongst the largest and heaviest surface combatants with displacement in excess of 10,000 tons each. But navies operating these warships still label them as destroyers. Other naval powers also operate destroyers as their top-tier surface combatant. Standard destroyers, weighing below 9000 include: Royal Navy Daring class destroyers and its derivative operational with European navies, Australian Navy Hobart class, Russian Navy Udaloy class, Indian Navy Kolkata class, and China's Type-52 C/D class destroyers. These destroyers, although sufficiently equipped with modern systems, carry lesser missiles than the heavier counterparts.

At the lower end of size and weapon load-out, destroyers' distinction began to overlap with that of frigates. Modern frigates have displacement in range of 3000-7000 tons, putting those in-between destroyers and corvettes. When compared with destroyers, frigates are relatively small, carry comparatively less weapon load-out, but are more cost-effective and can also operate in blue waters. During Cold War, frigates were primarily designed for ASW missions. But many modern frigates are now fully equipped multi-mission capabilities. Germany's Baden Wurttemberg class, Italy's Bergamini class, Spain's Álvaro de Bazán class, Russia's Gorshkov class, and India's Shivalik class are the examples of frigates that have displacement of more than 5500 tons and are armed with long range guided missiles. These heavy frigates are destroyers in disguise. When dealing with 4000 tons displacement category, People Liberation Army Navy (PLAN) is the largest operator of frigates, with Type-54A (4000 tons displacement) being the most abundant example. Russia's Grigorovich class also falls in similar category. On lighter displacement side, South Korea's Daegu class, Turkey's Istanbul class, and Australia's Anzac class are notable examples of 3000 tons category frigates.

Corvettes are compact and less heavily armed than frigates but are well-suited for operations in littoral (near-shore) environments. Their reduced size limits their ability to operate in blue waters, confining them to coastal or littoral zones. Modern corvettes can be designed for specialized role, or they can even also host multi-mission capabilities. For example, Pakistan Navy's Babur class, Qatar's Doha class, Israel's Sa'ar-6 class and Russia's Gremyashchiy class corvettes are multi-mission vessels. Meanwhile China's Type-56A and India's Kamorta class are primarily ASW warships. Modern corvettes, just like bigger warships, also contain flight-deck for rotary-wing and drone operations at sea. This significantly enhances their operational potential and employment flexibility. The varying alteration of corvettes indicate that these vessels are designed to meet specific requirement of naval forces, and beside traditional patrolling duties, these compact vessels can act as credible war-fighting assets particularly for defensive operations. The evolution of warships reflects the dynamic nature of naval warfare. Understanding this evolution not only highlights the technological advancements shaping naval forces but also offers insights into how nations assert their influence and safeguard their interests in the maritime domain. The unique capabilities of each warship type remain indispensable to modern navies. Together, they form a cohesive and formidable force, capable of addressing a wide range of threats in an increasingly complex maritime environment.

Contemporary Conflicts and Hybrid Warfare

S No	Article Title	Author	Source	Date	Page No
1	Haniyeh's Assassination: Unleashing a New Era of Political Violence	Fizzah Shuja	Middle East Monitor	01 Aug 2024	85
2	The Assassination of Ismail Haniyeh: A Grave Escalation with Unintended Consequences	Hamna Ghias, Javaria Shaikh	Security Lense	06 Aug 2024	87
3	Ukraine War: Failed Interplay of Russia's Hybrid and Hard Power	Ahmad Ibrahim	Stratheia	23 Sep 2024	89
4	The Unjustifiable War in Gaza	Fizzah Shuja	Middle East Monitor	20 Nov 2024	91
5	Rocky Road to Peace: Navigating Peacebuilding Challenges in 21st Century	Safia Mansoor	Minute Mirror	21 Nov 2024	93
6	An Overview of 1000 Days of Russia-Ukraine War	Ahmad Ibrahim	Global Defense Insight	27 Nov 2024	95
7	The Enduring Power of Deception in Warfare	Ahmad Ibrahim	CSCR	27 Nov 2024	97
8	Russia-Ukraine War and Vulnerabilities of Civilian Nuclear Power Plants	Ahmad Ibrahim	Security Lense	02 Dec 2024	99
9	Resurgence of Syrian Civil War: Conflicting Interests and Its Consequences	Ahmad Ibrahim	Modern Diplomacy	10 Dec 2024	101
10	Syria's New Reality: A Nation at Crossroads	Ahmad Ibrahim	Modern Diplomacy	16 Dec 2024	103
11	Resource-based Conflict in Niger Delta: Assessing Scramble for Oil Wealth	Safia Mansoor	The Asian Mirror	25 Oct 2024	105
12	The Costly Gamble of Ukraine's Denuclearization	Ahmad Ibrahim	Strafasia	26 Dec 2024	107

Haniyeh's Assassination Unleashes a New Era Of Political Violence

Syeda Fizzah Shuja

The assassination of Hamas political chief Ismail Haniyeh in a “treacherous Zionist raid” on his Tehran residence has ignited a firestorm of fury, as Iran’s new president vows to make Israel “regret” its “cowardly action”. The Islamic Republic’s Supreme Leader, Ayatollah Khamenei, has decreed that avenging Haniyeh’s killing is Tehran’s sacred duty, casting a long shadow of retribution. Meanwhile, Israel remains tight-lipped, its military merely conducting a “situational assessment” amidst the carnage. This latest provocation comes mere hours after an Israeli strike in Beirut killed three innocent people, including two children, and wounded 74.

As the Israeli war machine ravages southern Lebanon, displacing over 80,000 citizens, and unleashes a maelstrom of air strikes upon Syria, rekindling the embers of animosity with Damascus, the true motives of the occupation state start to surface. This relentless campaign of aggression has been punctuated by a series of targeted killings, including the assassinations of nuclear physicist Dr Mohsen Fakhrizadeh, senior Islamic Republican Guard Corps officer General Hassan Sayad Khodaei, Colonel Ali Esmailzadeh, another high-ranking IRGC officer, and Dr Ayoub Entezari, a prominent scientist and former IRGC member, all of which have been attributed to Israel, with some also implicating the United States.

The Israeli attack earlier this year on the Iranian consulate in Damascus — a wanton act of aggression — betrayed a hydra-headed agenda, driven by an insatiable hunger for control, as Israel’s shadowy hand orchestrates its deadly violence, from the streets of Tehran to the skies of Syria, leaving a trail of devastation.

The repercussions of this violence reverberate throughout the region. Meanwhile, the death toll in Gaza mounts, with a staggering 39,445 Palestinians killed in Israel’s war in the enclave. The spectre of unending bloodshed looms large, as the cycle of vengeance threatens to consume all in its path. Israel’s latest manoeuvre, the assassination of Haniyeh, is a calculated strategy to decapitate the ceasefire talks. This is a sinister pattern of behaviour, where the eradication of the Palestinian leadership serves as a cold-blooded means to an end: the systematic weakening of legitimate resistance. Israel’s actions are fuelled by a desire for dominance and control, driving a Machiavellian agenda that prioritises power and control over peace. This approach perpetuates a cycle of violence, undermining efforts to salvage peace and instead cementing the forces of retribution as a permanent fixture in the region. Haniyeh’s assassination, though, reveals a more complex narrative.





It aims to strengthen Israel's deterrence factor, hampering groups like Hezbollah psychologically, while sending a clear message of belligerence. Moreover, this calculated move serves as a cynical ploy to bolster Netanyahu's waning political fortunes within Israel's as yet undeclared borders, where discontent with his leadership still simmers. With this high-profile political murder, Netanyahu seeks to divert attention from domestic criticism and fortify his position as Israel's strongman in charge, further entrenching its hard-line stance and perpetuating the violence. In this Byzantine-like dance of death and power, one truth remains constant: the far-right Israeli regime's unyielding pursuit of hegemony, no matter the human cost. As the region teeters on the brink of chaos, one question echoes through the void: what next in this grim cycle of retribution and domination?

A grim regional impact is on the cards, as the murder of Haniyeh while in Tehran to attend the inauguration of President Masoud Pezeshkian sent shockwaves throughout the Middle East. This "cowardly act that will not go unpunished", said senior Hamas official Moussa Abu Marzouk. It extinguished the pragmatic face of Hamas, leaving a power vacuum that threatens to unleash militancy. Haniyeh was essentially a diplomat who navigated the treacherous landscape of Arab capitals with finesse, seeking a ceasefire in Gaza and tempering extremism. His presence served as a bulwark against the militarism of Yahya Sinwar, the Gaza-based leader of Hamas. With Haniyeh's demise, a chasm has opened, inviting the forces of radicalism to seize total control. In this void, a chilling convergence of interests has emerged, as disparate groups like Hezbollah, the Houthis and Iran's Quds Force coalesce around a common cause: vengeance against Israel. The assassination has forged an alliance united in the quest for retribution, with Iran poised to become the epicentre of a more militarised and violent "axis of resistance".

The region teeters on the edge of the abyss. Hamas, already reeling from relentless pressure, has been pushed to the brink, probably contemplating a backlash that Israel may have provoked deliberately to justify its war aims. Now, the resistance movement and Haniyeh's successor, whoever it may be, faces a fateful choice: embrace the shadows as a guerrilla force or be a political leader who can extend an olive branch. This glimmer of hope seems fleeting, as the Hamas network readies its arsenal to strike. We may even see Hamas splinter into rogue factions, each fuelling the chaos, as opportunistic followers forge their own militant paths. Although Hamas has never carried out any armed resistance outside the borders of historic Palestine, that may change. On the other side of the Atlantic, meanwhile, a decisive drama unfolds, as Israel's stalwart champion the United States gets ready to choose a new president. Joe Biden's tenure has already seen a staggering \$12.5 billion in military aid bestowed upon Israel, a deluge of support that has reshaped the regional landscape. Meanwhile, Trump's past allegiance to Israel's cause has been a beacon of hope for some, a harbinger of doom for others; his re-election would likely usher in an era of unyielding support, casting a long and ominous shadow over the Palestinian people. As the electoral tide rises, the world watches with bated breath, aware that the outcome will be a geopolitical reckoning, one that will recalibrate the fate of nations.

In essence, the fragile peace process hangs by a thread, threatening to snap under the weight of unrelenting aggression. Haniyeh's assassination looks set to unleash a devastating chain reaction, propelling the Middle East towards further chaos. The world must act to prevent this, with urgent decisive action for a ceasefire, to revive the peace process, and work towards a lasting resolution.



The Assassination Of Ismail Haniyeh: a Grave Escalation With Unintended Consequences

Javaria Shaikh & Hamna Ghias Sheikh

The recent assassination of Ismail Haniyeh in Tehran represents a dramatic escalation in the Israeli-Palestinian conflict, with far-reaching implications for the region and beyond. This bold move by Israel underscores its ongoing strategy to disrupt Hamas' leadership and operational capabilities, reflecting a determination to dismantle a key pillar of the Palestinian resistance.

He had been the face of the group's international diplomacy during the ongoing conflict in Gaza. Known for his tough rhetoric, Haniyeh was nonetheless considered a moderate in comparison to the more hardline members of Hamas based in Gaza. Appointed as the top leader of Hamas in 2017, he frequently traveled between Turkey and Doha, Qatar, evading the travel restrictions imposed on the Gaza Strip. This mobility allowed him to engage in ceasefire negotiations and maintain communication with Hamas' allies, including Iran. Tragically, during the hostilities in Gaza, three of his sons were killed in an Israeli airstrike, underscoring the personal toll of the conflict on his family.

As the geopolitical landscape becomes increasingly volatile, the assassination raises urgent questions about the path forward and the potential for lasting peace in the Middle East. Israel's targeted killing of Haniyeh is part of a broader pattern of strategic actions aimed at weakening Hamas and undermining its influence. At around 2am local time on Wednesday, Ismail Haniyeh was killed by an "airborne guided projectile" in Tehran, along with his bodyguard. He had traveled to Iran for the inauguration of President Masaoud Pezeshkian and was last seen at the event, where he expressed gratitude for Iran's support for Palestinian freedom.

By a figure as prominent as Haniyeh, Israel seeks to cause internal disarray within Hamas, diminish its symbolic significance, and sow fear among its supporters. This operation is not merely a tactical maneuver but also a political calculation designed to bolster Prime Minister Netanyahu's standing domestically and internationally. As the U.S. approaches its elections, projecting an image of decisive leadership could play to Netanyahu's advantage, reinforcing his narrative of strength and resolve against perceived threats.

However, the repercussions of this assassination are likely to extend far beyond the immediate objective of crippling Hamas. Within the organization, the loss of Haniyeh could exacerbate internal divisions, empowering hardliners and potentially sidelining more moderate voices. This shift could lead to an escalation in militant activities, overshadowing Hamas' political aspirations and further destabilizing the region. Moreover, the assassination might inadvertently boost the legitimacy of the Palestinian Authority (PA) as a political alternative, altering the dynamics of Palestinian representation and resistance. The regional response to Haniyeh's killing has been swift and pointed. Iran, a staunch supporter of Hamas, has vowed retaliation, emphasizing its strengthened ties with Palestinian resistance groups. Iran's Supreme Leader Ayatollah Ali Khamenei's statement condemning the assassination as a "heinous terrorist crime" signals a potential escalation of hostilities, with Iran poised to take vengeance. The geopolitical implications are profound, as this event could further entrench divisions and ignite broader conflicts involving Iran and its allies.

Lebanon, too, finds itself in a precarious position following the recent assassination of a senior Hezbollah commander by Israeli forces. The timing of these actions suggests a coordinated effort by Israel to weaken its adversaries' leadership structures, raising the stakes for regional stability. Similarly, Yemen's Houthi movement and Turkey have voiced concerns over the broader implications of these developments, with Turkey warning of a possible expansion of the Gaza conflict into a regional crisis.

On the global stage, reactions have been mixed but predominantly critical. The United States, while denying any involvement, remains preoccupied with its domestic political landscape, potentially limiting its ability to respond decisively. Russia has condemned the assassination as an "absolutely unacceptable political murder," reflecting its broader strategy of keeping the U.S. engaged in multiple regional conflicts. Meanwhile, China, Algeria, and other nations have expressed their disapproval, underscoring the assassination's potential to disrupt international diplomatic efforts and heighten tensions. In light of these developments, the need for a strategic and coordinated response is more urgent than ever. Although, Structural power imbalances in the UN system have prevented it from halting Israel's ongoing war crimes against Gazans. Considering it, world states should take a lead and prioritize diplomatic engagement to prevent further escalation and address the root causes of the conflict. Proactive measures, including mediating ceasefire agreements and facilitating dialogue between conflicting parties, are essential to stabilizing the region and averting a broader conflict.

Ultimately, the assassination of Ismail Haniyeh highlights the fragility of the current geopolitical landscape and the immense challenges facing the pursuit of long-term stability in the Middle East. As tensions rise and the potential for violence looms, a concerted effort to promote peace and reconciliation is imperative. Only through sustained dialogue and cooperation can the cycle of violence be broken, paving the way for a more secure and prosperous future for all parties involved.



Russia Ukraine War: Failed Interplay Of Moscow's Hybrid And Hard Powers? Ahmad Ibrahim

The collapse of Soviet Union not only redrew the political boundaries in Europe and Central Asia but also transformed the bipolar world into a United States' led unipolar political order. As Washington began to fill the power vacuum and assert its influence across the globe, Moscow was also pushed to rebuild its diminished global stature. Additionally, the eastward expansion of NATO compelled Russia to safeguard its prime interests and devise strategies for countering NATO dominance. For past two and half decade, *Primakov doctrine* (1996) has shaped Russia's security and foreign policies. Moscow's adherence to this doctrine, however, has varied depending upon national capabilities. The doctrine can be encapsulated in three points: first, Russia must counter-balance the hegemony of United States and strive for multi-polar world; second, Moscow must undermine NATO's eastward expansion; and third, Kremlin should retain its influence in the post-Soviet space.

Primakov doctrine perceives military hard power as a necessary tool of national policy. But with a weakened economy and limited policy options in disposal, Kremlin experimented with new less risky options. Result was *Gerasimov doctrine* (2013) – a whole of government approach which encapsulated soft and hard power across various domains and transcended the barriers between peace and war. Russian interventions in Syria (2014) and Ukraine (2014) reflect successful application of *Gerasimov doctrine*. The application of this doctrine in its military posture suggested that Russia carefully calibrated its options to minimize the risks of military confrontation with NATO. However, this hybrid warfare approach is essentially an extension – not a substitute of Russian hard power. Although hybrid tactics can be used as instrument of risk management when employment of hard power is a precarious and costly endeavor, but the military strength is always present in the background. This suggests that *Primakov doctrine* – incorporating the element of traditional hard power, acts as enabler of *Gerasimov doctrine* and has been the defining concept of Russian foreign and defense policies.

Ukraine, located at cross-roads of Russia and NATO, has become litmus test for efficiency of Russian doctrinal thought process. In fact, despite initial success, the deepening Ukrainian relations with EU and NATO checkmated the long-term efficiency of *Gerasimov doctrine*. A doctrine structured around hybrid warfare lacks the coercion to subdue the adversary. For Russia, denying Ukrainian membership in NATO turned into a priority national objective. The question Moscow faced was: should Russia pursue higher ambitions by using hard power while taking equivalent risks? Or should it retain a less risky but less coercive approach against Ukraine which can eventually lead to Ukrainian membership in EU or even NATO? Moscow, driven by its notion of conventional superiority over Ukraine, opted for option of hard power.

This decision was also result of Russian high command improved confidence on Russian military prowess considering its satisfactory performance in Syria. Russian air-led intervention in Syria indicated that Moscow has the ability to deploy, sustain and maintain a high operational temperament for air power, along with the required force-protection package for its main operating base. Russia's considerable defense industrial complex could upgrade legacy systems and produce modern weapons. This industry kept Russia self-sufficient in majority of defensive requirements and retained a respectable place in global arms industry. As a result, Russian armed forces began to be portrayed by several military circles as potent force with increasing capability and competency. Thus, the Russian offense on Ukraine was a product of thought process assumption that overwhelming military superiority over Ukrainian counterpart, combined with territorial advantages, will ensure quick and decisive victory.



This, however, didn't happen. As Correlli Barnett, a renowned war historian has aptly said, "No plan survives first contact with the enemy." Unlike Moscow's expectation of quick success, the invasion on Ukraine turned out to be a military and economic disaster. Once believed to be amongst the most powerful armed forces in the world, Russian forces proved to be inefficient and incompetent as far as successful conduct of modern warfare is concerned. Despite overwhelming force superiority, Russian forces failed to achieve any credible breakthrough in opening days of conflict. Logistical challenges, poor communication, inadequate training, insufficient modern military hardware, limited employment of advance munitions, lack of co-ordination between ranks, and low morals played major role in degrading Russia's overall military efficiency.

Determined Ukrainian resistance, catalyzed by Western support with arms and intelligence, not only repelled multiple Russia's offenses, but also launched counter-attacks to retake the captured territories. Interestingly, despite losing initial momentum, Moscow also showcased steadfast commitment to restore and sustain kinetic pressure in the battlefield. Partial mobilization, use of mercenary militia, activation of vast reserves of Soviet hardware, and mass-production of armaments and heavy equipment, are some of the known measures taken by Kremlin to keep Russian military fighting in Ukraine. The conflict, however, has now turned into war of attrition where both Russia and Ukraine are unlikely to secure any conclusive victory through military means.

Russia has employed both hybrid as well as hard power to keep Ukraine in its sphere of influence and deny further eastward expansion of NATO. While containing NATO's expansion in South-Western Europe, Russia ended up causing NATO's extension in Northern Europe. Finland and Sweden, which had historically followed non-alignment policy, opted for NATO's membership to achieve collective security umbrella against increasingly assertive Russia. With hybrid tactics nullified and heavy toll suffered by Russian military, Moscow is unlikely to achieve victory in Ukraine decisive enough to justify its failures. But it still retains nuclear weapons in its disposal as ultimate insurance of independence and sovereignty. Historically, the presence of strategic and non-strategic nuclear weapons has allowed Moscow to deter NATO at multiple spectrums.

The decline of conventional hard power may have undermined Russia's ability to launch *Ukraine style* invasion in its neighborhood, but its ability to deter NATO's conventional superiority through nuclear weapons remains unchallenged. When viewed from wider lens, Russia-Ukraine war has not only showcased shortcomings of Russian hard prowess but has also exposed U.S. and its allies' limitations, particularly in prolonged conflict. U.S., while not directly suffering from combat losses, faces the challenge of maintaining global dominance. With overstretched resources to support war fighting efforts in Russia-Ukraine war and conflict in Middle East, Washington is now struggling to contain rising China's military might in Indo-Pacific. As the conflict drags on, U.S. and its European allies are finding it increasingly challenging to provide military support and aid to Ukraine.

Political shift on both sides of the Atlantic could bring about big changes in allies' commitments to Kyiv. Washington still wants to establish balance of power in Eastern Europe which is overwhelmingly favorable to NATO, but not at the cost of its efforts for sustaining global hegemony.

Russia-Ukraine war has put into question the efficiency of Moscow's interplay of hybrid and hard powers. The employment of hybrid tactics under the framework of *Gerasimov Doctrine* has proven efficient to achieve low-end objective. But against high-end threat, hybrid warfare, despite integrated element of hard-power, falls short to coerce the adversary. Although hard power has worked effectively as supporting tool for conduct of hybrid warfare, but when traditional employment of kinetic force is taken into account, major shortcomings have essentially hampered the Russian conventional combat potential. Nuclear weapons, representing the highest tier of Russia's hard power, continue to work effectively to deter NATO's aggression. But it's the conventional spectrum of Russia's hard power which has failed to deliver leading to prolonged conflict with no clear victory in sight.



The Unjustifiable War in Gaza

Syeda Fizzah Shuja

Writer Ernest Hemingway said in 1946, “Never think a war, no matter how necessary, nor how justified, is not a crime.” A morally justified war, where the use of force is considered to be the last resort to restore peace, is known as a just war. However, this very notion of a just war monopolises ethical and legal thinking about waging the war. The influence of Zionist lobbies is overpowering in the Western media, suppressing Palestinian and pro-Palestine voices and presenting Israel’s cruel ideology, Zionism, as a just cause to carry out heinous acts in Gaza, the occupied West Bank (including Jerusalem) and latterly Lebanon. By using the Western media as a propaganda tool to impose the Zionist narrative, and — above all — intimidate and slander opponents, as well as embellish lies, Western governments have legitimised prejudicial statements as facts. According to a PEW Research Centre report issued months into the Israeli war in Gaza, six out of ten Americans (58 per cent) think that Israel has solid reasons to target the Palestinian Islamic Resistance Movement, Hamas.

The mainstream media has a major role to play in the propaganda process. The New Arab analysed headlines from four of the UK’s most popular newspapers, looking at 617 internet articles on Gaza and Israel from the Times (112), the Telegraph (106), the Sun (114) and the Daily Mail (285) from 7 October 2023 to 7 February 2024. The Sun alone attracts almost 30 million readers per month. The headlines were then tested for bias using three criteria: utilising a lot of emotive language to describe Israeli pain; exaggerating Israeli justifications for violence; and qualifying the killing of Palestinians.

The ongoing claim of a link between Hamas and ISIS/Daesh is part of a concerted campaign to portray all Palestinians as “terrorists”, even though resistance against military occupation is legitimate under international law. This narrative makes it easy for people to empathise with Israel while desensitising them to Palestinians. As a result, people are generally more inclined to believe that Israel is the victim, while the mass slaughter of Palestinians is normalised. Disinformation is a major part of the pro-Israel propaganda used during the occupation state’s genocide in Palestine. The Times in London published images under the headline “Israel releases pictures of mutilated babies” and claimed that the babies were killed by Hamas on 7th October. French newspaper Le Monde revealed that no babies were beheaded during the cross-border incursion, a fact confirmed by the Israeli government press office.



The US government described the Hamas incursion as an “unprovoked terrorist attack”. The word “unprovoked” echoed across the media and was invoked frequently by politicians. Such language encourages the audience to consider Israel’s reaction to be “self-defence”, a claim also pushed out regularly by Western politicians and media commentators. No right to claim self-defence exists for an occupying power against the resistance of the people under occupation. The second component of propaganda, establishing pre-attack legitimacy, is simply the justification of Israel’s indefensible and disproportionate response in such a distorted way that makes the killing of tens of thousands of Palestinians and war crimes “acceptable” to the general public. For example, the BBC disseminated the Israeli claim that hospitals in Gaza were being used as cover by Hamas fighters the day before a hospital in Gaza was bombed by the occupation forces.

The third phase of Israeli propaganda is intended to dehumanise the victims of the so-called Israel Defence Forces. Hence, we saw the Sun headline: “EVIL UNLEASHED Hamas ‘b*****s’ roasted babies alive in ovens during massacre, medics reveal as scale of terrorist depravity laid bare.” No evidence was produced for this outrageous claim. The Western media has focused largely on Israeli victimhood, ignoring the Palestinian perspective. The Israeli government is “throttling” access to the Gaza Strip; foreign journalists are not allowed in (and at least 177 Palestinian journalists have been killed by Israeli troops since October last year) and humanitarian aid is prevented from being delivered. The policy is to starve the Palestinians into submission, but this is denied by the occupation regime and its supporters in the West.

Israel has destroyed civilian infrastructure, including hospitals, schools, universities, places of worship (churches as well as mosques) and homes, all while claiming “military necessity” to do so. No evidence for such necessity is ever provided. While entire neighbourhoods were being destroyed, killing and burying local residents alive in the process, senior Western officials, including the US president, propagated fake news, including tales of Israelis being burned and decapitated, as well as women being raped. The latter claim has been debunked. The very real sexual abuse of Palestinian men and women by Israeli soldiers has been given nowhere near as much coverage by the mainstream media.

Moreover, despite the International Court of Justice stating in January 2024 that “plausible genocide” is being committed in Gaza, Western politicians refuse to use the g-word in their comments, and the media still puts it out as “genocide”, thus casting doubt in readers’ minds. For too many journalists, commentators and politicians, history began on 7 October 2023; the context of the Hamas incursion is absent from the narrative; 76 years of occupation, ethnic cleansing and slaughter are ignored. The list of Israeli massacres of Palestinians is long and stretches back to 1948: Deir Yassen; Tantura, Kafr Qasem; Sabra and Shatlia; Ibrahim Mosque; Jenin; Gaza (in 2008/9, 2012, 2014, 2018, 2021) to name but a few.



An unjust war of aggression can be fought by just means, and a just war of supposed self-defence can be fought unjustly. At the end of the day, though, war is still a crime.

Rocky Road To Peace: **Navigating Peacebuilding Challenges in 21st Century** **Safia Mansoor**

The concept of peacebuilding has undergone significant evolution since it came to limelight 1992. Initially, it was viewed mainly as a post-conflict process, but over time, it has expanded into a more comprehensive approach that includes conflict prevention. Today, peacebuilding is understood as a bottom-up process that actively involves both states and communities. However, achieving peace remains a complex and difficult task. The multifaceted nature of 21st century conflicts has created numerous obstacles, making peacebuilding efforts increasingly challenging.

In 1992, then-UN Secretary-General Boutros Boutros-Ghali introduced An Agenda for Peace, a document that helped establish the concept of peacebuilding in political and academic circles. He defined peacebuilding as a long-term, cooperative effort aimed at addressing the underlying social, cultural, economic, and humanitarian issues that fuel conflicts. However, the precise definition of peacebuilding remained a topic of debate. In 1995, Boutros-Ghali revised his stance in Supplement to an Agenda for Peace, proposing that peacebuilding can be in preventive in nature. This broader perspective on peacebuilding emphasizes weakening the factors that sustain conflict while strengthening those that support peace and build positive relations.

Over time, the understanding of peacebuilding has expanded to include integrated strategies that address violent conflict at various stages, from prevention to post-conflict reconstruction. The ultimate goal of peacebuilding is to prevent the recurrence of conflict, sometimes requiring long-term nation-building efforts by international actors. This shift has posed significant challenges, especially for the United Nations, which is tasked with both maintaining international security and facilitating societal transformation. As peacebuilding increasingly intertwines with development policies, agencies like the United Nations Development Programme (UNDP) play a crucial role in post-conflict recovery. Peacebuilding is predicated on the security-development nexus necessitating tangible efforts and provision of conducive environment to ensure sustainable and ‘Positive’ peace.

The challenges to peacebuilding are diverse and complex. These obstacles arise from multiple sources, including financial constraints, coordination issues, legitimacy concerns, resource shortages, asymmetrical threats, and the risk of relapse into violence. A significant challenge is the funding gap that emerges once humanitarian responses diminish, leaving conflicts unresolved and development efforts incomplete. This issue is exacerbated when donors are hesitant to finance crucial, politically sensitive security and political activities, further hindering peacebuilding initiatives.

Effective communication and coordination are essential for peacebuilding. However, the rapidly changing facts on the ground, the lack of reliable information, and the spread of misinformation often complicate these efforts. Coordination at the national level is particularly challenging. National ownership of peacebuilding is crucial for long-term success, and this requires effective collaboration among various national stakeholders, including the government, civil society, traditional leaders, and the media. Politicized media, mismanagement, and inadequate communication systems further complicate the process. Coordination among international actors also poses a challenge. The involvement of multiple international stakeholders makes it difficult to reach a consensus on common strategies, roles, and responsibilities, often leading to inefficiencies and delays in peacebuilding efforts.

Legitimacy is another critical concern in peacebuilding. At the international level, legitimacy often revolves around the “right to intervene” and the authorization of the United Nations (UN) as the primary authority responsible for maintaining international peace and security. This also ties into the concept of “responsibility to protect” and the roles of international actors in peacebuilding. At the local level, legitimacy hinges on the support of local leaders and the general population. The success of peacebuilding efforts depends on the acceptance of international involvement by the host country’s citizens. Without local buy-in, peacebuilding initiatives are likely to fail.



A shortage of skilled human resources is also a major challenge. Many conflict-affected regions suffer from a lack of trained professionals with expertise in peacebuilding, making it difficult to implement effective strategies and sustain long-term progress. The rise of asymmetrical threats from non-state actors, such as extremist groups, insurgents, and rebels, further complicates peacebuilding. These groups often use unpredictable tactics and operate outside conventional warfare norms. This makes peacekeeping efforts more difficult and exposes both peacekeepers and civilians to significant risks. The humanitarian costs of these threats, including displacement, death, and disruption of daily life, are considerable.

In post-conflict situations, fragile state structures are particularly vulnerable to relapse into violence. Key factors contributing to this risk include the failure to address issues of economic and social justice, wealth redistribution, and territorial control. If these issues remain unresolved, they can quickly reignite conflict, undermining peacebuilding efforts. A lack of political will, especially among local leaders and elites, is another significant obstacle to peacebuilding. Political actors often prioritize personal or factional power over the well-being of the population, hindering progress. Additionally, resistance to new peacebuilding approaches from local communities—particularly those who are skeptical about their effectiveness—compounds the challenge.

To effectively address the challenges of peacebuilding, a comprehensive and integrated approach is necessary. This includes creating employment opportunities to alleviate economic deprivation, ensuring the successful implementation of Disarmament, Demobilization, and Reintegration (DDR) policies for ex-combatants, and prioritizing civic education to foster a shared spirit of peace at the grassroots level. Effective counter-extremism and terrorism policies, along with community-driven initiatives, are essential to prevent the recruitment of youth into violent groups. Strengthening mechanisms for information sharing between the population, civil society, and security forces is crucial for fostering coordination and building trust. Additionally, reinforcing dialogue frameworks between civil society organizations and the state at multiple levels will ensure a more cohesive, inclusive, and sustainable peacebuilding process. This multi-faceted approach will provide a pathway to overcoming the numerous obstacles to peacebuilding in the 21st century and create a foundation for lasting peace.

The image shows two globes resting on a dark, textured surface. The globe on the left is painted with the Russian flag (white, blue, and red horizontal stripes) and features the Russian coat of arms (a double-headed eagle) in the center. The globe on the right is painted with the Ukrainian flag (blue and yellow horizontal stripes) and features the Ukrainian coat of arms (a trident) in the center. Several bullets are scattered around the globes, some lying horizontally and others pointing upwards. A blue semi-transparent banner is overlaid on the left side of the image, containing the title and author's name.

An Overview Of 1000 Days Of Russia-Ukraine War

Ahmad Ibrahim

On February 24, 2022, when Russia launched multi-front invasion on Ukraine with the hope of achieving quick and decisive victory by occupying Eastern Ukraine and overthrowing current regime in Kyiv. Considering the force disparity between Russian and Ukrainian armed forces, no one was anticipating that war will continue for more than 1000 days. Stiff resistance by Ukraine, continuous foreign military support, operational deficiencies of Russian armed forces, have played important role in avoiding quick termination of conflict as perceived by Moscow's ambitions. The conflict is likely to reach its culmination point in near future as Donald Trump, the newly elected president of United States, has announced to put an end to this war. Whatever the end result may be, this conflict has not only significantly altered the geopolitical landscape in Europe but has also transformed the dynamics of modern warfare and military strategies.

Russian Invasion and Miscalculations: The war erupted with an intensity that caught many by surprise, as Russian forces executed rapid advances into Ukrainian territory, deploying a strategy believed to involve rapid strikes and psychological warfare. The initial phases of the conflict saw Russian troops quickly approaching major urban centers like Kyiv, Kharkive, and Mariupol. Ukrainian defenses were poorly coordinated and caught off-guard, leading to high-stakes chaos as the Russian military sought to capitalize on its momentum. However, this expectation was significantly flawed. By March 2022, Ukraine's military, which had been underestimated, began to adapt and reorganize, significantly rallying in the face of adversity. Western allies, who were initially reluctant to openly provide military assistance to Ukraine, gradually began to change their stance by providing intelligence, equipment, and logistical resources.

Key military assistance included anti-tank weapons like the Javelin ATGM and NLAW, shoulder launched surface-to-air missiles, combat drones, and anti-ship missiles, which bolstered Ukraine's defensive capabilities significantly. The mounting losses of Russian armor, artillery, logistical vehicles, fighter aircrafts, and helicopters undermined the momentum of Russian offensive forces which at several places got stuck due to loss of logistical support. In Black Sea, the sinking of Russian Black Sea Fleet flagship Moskva missile cruiser, significantly degraded Russia's ability to assert sea-control in Black Sea. The early resistance marked a turning point, demonstrating that Ukraine was determined to fight for its sovereignty.

From Defense to Counteroffensive: Following the initial setbacks, the Ukrainian military began to regroup and strategize effectively. By late May 2022, they had mobilized an impressive force numbering upwards of 700,000 troops. This surge, coupled with considerable Western assistance, ultimately allowed Ukraine to reclaim substantial territory previously lost to Russian advances.

The intensity of Ukrainian counteroffensives in the summer of 2022, especially around Kharkive and the Donbas region, showcased their military flexibility and resilience. Ukrainian forces employed combined arms tactics, integrating infantry, armor, artillery, and drones to launch successful operations. The liberation of key towns and cities not only bolstered morale on the home front but also drew international attention and support. By the fall of 2022, the Ukrainian offensive had achieved significant breakthroughs. Particularly notable was the successful counteroffensive in Kharkive, which resulted in the rapid collapse of Russian frontline positions, leading to the reclamation of vast territories.



Source: ISW

Political Implications and Changing International Dynamics

As the year 2023 unfolded, political dynamics surrounding the war also began to change. Domestically, Ukraine was faced with increased pressures to mobilize further forces and maintain public support amid the prolonged conflict. The government's ability to effectively manage its resources, sustain international aid – including military aid, and keep morale high became critical.

Internationally, discussions regarding the future of Western support came into prominence, particularly with the approaching U.S. presidential elections. The potential return of Donald Trump raised concerns among U.S. and European allies about the continuity of military aid to Ukraine. NATO's role evolved, with member states grappling with the implications of their support commitments.

By late summer 2023, as both sides prepared for renewed offensives, it became clear that the war was escalating into one of the longest and most intense military conflicts in recent history. Russia implemented a strategy of grinding warfare, intensively using artillery and drone strikes, which required Ukraine to adopt a defensive posture for more extended periods.

Current Situation: Humanitarian Impact and Ongoing Conflict

The situation on the battlefield remains fluid, with Russian forces demonstrating resilience and adaptation. While some areas have seen intensified fighting, Ukraine continues to strategize for counteroffensives and the retrieval of occupied territories. Currently, both sides are again preparing for another winter campaign.

The Winter Stalemate

However, as winter approached, the situation of the conflict took a stark turn. Instead of sustaining offensive operations, both sides entrenched around fortified positions, leading to a period of attrition characterized by heavy artillery exchanges rather than territorial gains. Russia began significant mobilization efforts, drawing on military reserves and modernizing its vast deposit of Soviet-era equipment to reinforce its military. During this time, Ukraine faced logistical challenges, struggling with ammunition shortages and a need for newer, more effective weaponry. The introduction of advanced systems from Western allies, including HIMARS rocket artillery, proved pivotal, allowing Ukraine to strike deeper into Russian supply lines and command posts.

Despite these advantages, the Ukrainian military's progress slowed, and morale began to wane. The human cost of the war became apparent as casualties mounted on both sides. Ukrainian officials estimated significant losses, and while exact Russian casualty figures were less transparent, they too suffered heavy losses, leading to increasing unrest within Russia over the war's toll.

The Path Forward: Uncertain Future and Prospects for Peace

The path ahead for the Ukraine war is fraught with uncertainties. The potential for diplomatic efforts remains elusive, especially with entrenched positions on both sides and severe challenges in reaching any form of a ceasefire or peace agreement. The involvement of global powers, the stabilization of the international community's resolve, and the internal political dynamics in both Ukraine and Russia are all pivotal for determining the direction of the conflict. The change in leadership at White House can bring major change in Russia-Ukraine war as Donald Trump – now new president of United States – have repeatedly expressed his decision to quickly end this conflict. Both Russia and Ukraine have intensified their military operations in-order to strengthen their position in battlefield which could be translated as leverage on negotiation table.

However, it's worth noting that the resilience of the Ukrainian populace, alongside sustained international support, continues to be a beacon of hope amidst the chaos. The ongoing development and potential increase of Western military support, along with innovative strategies to overcome logistical hurdles, could provide Ukraine with the necessary tools for maintaining its sovereignty.

The Enduring Power of Deception in Warfare

Ahmad Ibrahim

“All warfare is based on deception.” These are the everlasting words of Sun Tzu, a renowned Chinese general and military theorist who lived around 400-320 BC. Dummies and decoys are effective tools of deception in warfare and have been in use since ancient times. In 12th century BC, Greeks famously used hollow wooden Trojan horse to deceive the enemy and infiltrate the besieged city of Troy. Romans used to make their camps appear heavily guarded by using dummy soldiers dressed in combat outfit. Decoy campfire, fake encampments, and dummy guards, all have been used historically to deceive the enemy.

As technology evolved, the tactics and composition of decoys refined accordingly. During World Wars, dummy troops, false trenches, fake military hardware including tanks, aircrafts and artillery pieces were used to confuse the enemy and waste its firepower and resources. The Phantom Divisions of Allies, comprising of artists, engineers, soldiers, and volunteers, were equipped with fake replicas of tanks and artilleries.

To trick modern ISR systems, decoys are now produced with more precision and with better quality materials like wood, alloys, plastic and synthetic silk. Modern decoys have realistic outlook, have similar physical dimensions as original system, and even have radar, electronic and thermal signature to deceive enemy sensory systems. Some decoys can even have moving components – like radar decoys can be equipped with rotating antennae. Although such decoys are also expensive to develop, but their employment has made it increasingly difficult to positively differentiate fake systems from actual ones despite wide-scale employment of unmanned systems equipped with ISR sensors.

The Russia-Ukraine war is taking place in the age defined by abundance of military as well as open-source intelligence (OSINT) source which have made it challenging to keep military formations and deployments secretive. Yet the extensive use of decoys, dummies, and fake replicas by Russia and Ukraine has showcased that even in contemporary globalized world connected through multiple mediums of information, art of deception is still as effective as it was before in warfare. Ukraine in particular has been using large number of decoys to draw away Russia’s firepower from real high-value military assets.



These Ghost Divisions were used extensively to confuse intelligence network of Nazi Germany and played crucial role during Operation Fortitude. In this operation, Allies successfully used inflatable rubber tanks, trucks, aircrafts, and fake radio transmissions to simulate an invasion force aimed at Pas de Calais in Northern France, effectively diverting German forces away from the actual D-Day landing sites in Normandy. The employment of Phantom Divisions were so effective that even during first wave of amphibious attacks on D-Day, Germans continued to perceive that Normandy attack was a diversion to dislodge German forces from actual attack expected on Pas De Calais. During the Cold War, both NATO and the Warsaw Pact developed advanced dummy tanks, planes, and missile launchers designed to mislead enemy reconnaissance efforts. Decoy technology grew more sophisticated with radar-reflective materials, infrared signatures, and realistic sound effects to mimic real equipment.

Traditionally, decoys were crude in design, shape and quality and were produced from low-quality materials. Since intelligence, reconnaissance and surveillance (ISR) technologies were not advance, therefore these decoys, despite carrying no credible resemblance with original equipment were still good enough to be used effectively in battlefield. However, the proliferation of high-definition optics and high-quality radar and infra-red sensors has quickly turned such decoys obsolete. Inflatable decoys, for example, due to their very light weight, compact size and portability, were popular among military forces. But such replicas lack detailed physical compatibility with original systems and thus can be differentiated with relative ease by modern optical and thermal sensors. The popularization of aerial drones equipped with ISR sensors has greatly undermined the efficiency of inflatable decoys and crudely constructed replicas.



Many Western companies are producing real-size decoys of sophisticated western equipment like tanks, artillery, and air-defense systems. Majority of such replicas are being delivered to Ukraine. For example, a Czech company, Inflotech Decoys, has been producing and allegedly supplying 30 types of inflatable decoys to Ukraine. Perhaps the most eminent example of decoys' efficiency is the successful case of HIMARS decoys. In December 2022, Russia claimed that it has successfully destroyed 44 HIMARS rocket artillery systems. But by that time, Ukraine was operating only 16 HIMARS units donated by United States. Russian forces were actually fallen victim of decoys' deception where they ended up destroying decoys instead of actual HIMARS launchers. The destruction of HIMARS decoys ensured the survivability of real HIMARS rocket launchers.

As far as employment of decoys is concerned, Russia-Ukraine war provides four key take away. First, decoys save troops' lives as well as valuable equipment. According to Chinese Battlefield Analysis published in PLA Daily, a 1:1 between numbers of decoys and actual system can increase the survivability rate of original system by 40% in conflict. It's difficult to estimate the total number of lives potentially saved by decoys. But the large scale usage of decoys and their destruction indicates that decoys have been a significant life savior for both Russia as well as Ukraine.

Second, decoys are relevant in modern warfare as they impose 'opportunity cost over adversary' by tricking the enemy to expand resources like time, manpower, and hardware, against strategically irrelevant targets thereby undermining their ability to target actual high-value assets. According to Chinese Battlefield Analysis mentioned earlier, enemy's ammunition consumption can be increased by 70% if three decoys are used for every actual piece of equipment. Russia-Ukraine war has showcased that large volume of expensive and high-end offensive weapons, like long-range precise munitions, guided artillery shells, kamikaze drones, and missiles, can deplete against cheap and expandable decoys. Third, decoys foist the confirmation bias upon enemy which highlights a fundamental maxim of deception theory—that it is always easier to deceive an enemy by reinforcing what he already believes to be true. Decoys divert enemy's attention and firepower away from friendly forces, deplete its resources, degrade its morals, complicate and delay its decision making process which overall undermine its combat prowess.

And finally, decoys are effective tool to saturate enemy's defenses and penetrate well-protected areas. Recently Russia has started to use combination of decoy and kamikaze drones to swarm and overwhelm Ukrainian air-defenses. Additionally, decoys can provoke an enemy to reveal hidden defenses or prematurely activate countermeasures. For instance, decoy aircraft or vehicles can cause air-defense systems to expose their positions, allowing the real assault force to plan around or target these systems. Before Russia-Ukraine war, Azerbaijan was first to successfully use AN-02 bi-planes as aerial decoys to reveal and eventually target Armenian air-defense systems by artillery and long-range munitions.

The efficiency of decoys can be gauged from number of decoys destroyed in combat. If a decoy does not attract enemy's fire then it suggests that either it's poorly made or is inappropriately placed in combat zone which has exposed its fakeness. In contrast, a large number of destroyed decoys prove that enemy has been successfully tricked. Beside physical characteristics of decoys, their deployment tactics also contribute equally in their combat efficiency. For example, a key feature of decoys, i.e. light weight, can actually become one of their major vulnerability against an informed adversary. Being much lighter in weight, decoys do not leave physical footprint in surrounding environment. An inflatable tank for example will not leave track marks on ground. Therefore, if decoys are randomly placed without sufficient ground work, it becomes easier to identify their fakeness. To overcome this, decoys can be placed at locations where real equipment of similar kind was stationed previously. This allows the decoys to leverage the existential environmental footprint from actual equipment to make them appear as convincing targets.

The identification and countering of decoys mimicking actual military equipment is still a challenging undertaking. Identifying decoys involves a combination of advanced technologies and analytical methods. Persistent ISR, multi-sensor data fusion, satellite imagery analysis with high-resolution optics, thermal sensors, and Synthetic Aperture Radar (SAR), can detect discrepancies in heat signatures, material composition, and structural features. Additionally, AI-driven data processing aids in recognizing patterns inconsistent with operational military assets. The Russia-Ukraine conflict highlights the need for cost-effective countermeasures like expendable loitering munitions capable of performing secondary reconnaissance to verify targets before engaging, ensuring resources are not squandered on decoys. The war has also highlighted the evolving sophistication of decoy technologies, from inflatable replicas to electromagnetic signature emitters, shaping future strategies in electronic and physical domains of deception. This conflict reaffirms deception as a timeless yet increasingly advanced tactic in the art of war.

Russia Ukraine War And Vulnerabilities Of Civilian Nuclear Power Plants

Ahmed Ibrahim

Russia-Ukraine war has been raging for more than 1000 days and has witnessed wide-scale usage of variety of modern and vintage weapon systems. These systems have been used to target military as well as civilian infrastructure. As the largest nuclear power producer in Europe, Ukraine's nuclear infrastructure became an unintended frontline, exposing the catastrophic risks posed by military actions near such critical facilities. Any major damage to Civilian Nuclear Power Plants (CNPP) can jeopardize the safety or even functionality of entire region.

Before conflict, Ukraine was operating four nuclear sites housing 15 nuclear power plants in total. These nuclear power plants generate half of country's electricity generation. Chernobyl, the site of world worst nuclear disaster, is no longer operational and was in phase of decommissioning when the conflict erupted. Last nuclear reactor of Chernobyl was shutdown in December 2000. In the opening days of offense, Chernobyl Nuclear Power Plant (CNPP) was captured by Russian forces without any note-worthy incident.

Zaporizhzhya Nuclear Power Plant (ZNPP), the largest nuclear power plant in Europe, was also captured by Russian forces in first week of March. Unlike CNPP, which was captured with ease, fighting took place in proximity of ZNPP which also sustained physical damage by artillery fire. The combat between both forces under the threat of looming threat of nuclear calamities ended when Russian forces finally took control of ZNPP after intense fight. Unlike other nuclear plants, ZNPP has been vulnerable to military strikes through-out conflict and despite consolidation of Russian control still pose significant of nuclear disaster.

Strategically, ZNPP is crucial as it house six of fifteen reactors of Ukraine and full fills 20 percent of national electricity demand. Unlike Chernobyl, which returned to Ukrainian control after Russian retreat from North, ZNPP is has been in Russian control since March 2022. In fact, with annexation of Zaporizhzhya oblast, Russia has also declared legal takeover of the plant. A nuclear meltdown of ZNPP would have caused destruction far more than Chernobyl incident. On September 11, the plant was cold shut down to minimize safety risks.

Other Ukrainian nuclear power plants located in Khmelnytskyi, Rivne, and South Ukraine are currently far from ground battlefields however they are still vulnerable to Russian missile strikes. In total, nine civilian nuclear power plants are operational at these nuclear sites. Khmelnytskyi nuclear power plant (KhNPP) has two operational and two under construction nuclear reactors. Rivne nuclear power plant (RNPP) has four operational reactors. And South Ukraine nuclear power plant (SUNPP) has three nuclear reactors for power generation. On 15 November 2022, Russian missile strike damaged the connectivity of these nuclear power plants with national grid. KhNPP's connection with national grid was compromised and two of its units, i.e. Units 1 and Unit 2 were completely shut-down.

The plant had to rely on diesel back-up generators to perform crucial cooling functions. RNPP also lost its connectivity with national grid, forcing it to reduce its production significantly to avoid any safety related incident. SUNPP completely lost its connectivity with national grid. The connection was restored on 25 November 2022.





Beside 15 November 22 missile strikes and surveillance drone activity in proximity no direct attack has taken place against KhNPP, RNPP, and SUNPP till date. These plants are periodically supervised by IAEA inspectors and are currently fully operational.

With the change of leadership in United States, it's likely that conflict will eventually reach its culmination point in near future. To achieve better position on negotiation table, both Russia and Ukraine are opting for more escalatory options to achieve military objectives as quickly as possible. Ukraine's invasion of Russia's Kursk region, deployment of North Korean troops by Russia, Ukraine's use of ATACMS and Storm-shadow missiles against targets situated on Russian mainland, and striking Ukraine with intermediate range ballistic missile (IRBM) by Russia all are key examples in this regard. Under these circumstances, the vulnerabilities of nuclear power plants have increased even further as they can be targeted by long-range weapons advertently on inadvertently.

In brief, there are three types of threats to nuclear power plants. First: direct physical damage due to military actions such as shelling, missile strikes, and air-strikes. Such attacks can not only jeopardizes the integrity of the reactors but also increases the risk of radioactive leaks and potential meltdowns. Additionally, the occupation of nuclear facilities by hostile forces disrupts their normal operations, compelling plant personnel to work under extreme stress and potentially unsafe conditions, which heightens the likelihood of human error and operational failures. Second: disruption continuous power supply necessary for maintaining critical safety functions at power-plant can threaten its safe functionality. Damage to external power lines and substations forces these plants to rely on limited backup diesel generators, and prolonged outages can lead to overheating and severe nuclear incidents. Third: The threat of sabotage is also ever-present, with occupied plants like ZNPP facing the risk of deliberate destruction of key systems, such as cooling mechanisms or spent fuel storage, which could trigger widespread radioactive contamination. Fourth: cyber-attacks poses another significant danger, as targeting of reactor control systems and safety protocols can disable essential operations undermining the already precarious situation. Russia's demonstrated cyber capabilities further intensify these concerns, making NPPs prime targets for digital assaults aimed at destabilizing Ukraine's energy infrastructure. And finally: the war has compromised the security of nuclear materials, increasing the risk of theft or diversion for malicious purposes, including the creation of radiological dispersal devices or "dirty bombs."

Russia-Ukraine war has exposed the vulnerabilities of civilian nuclear power plants (CNPPs) in modern warfare. It has also showed the inability of non-proliferation regimes to overcome the security threats posed by CNPPs situated in conflict zones. Threats like use of direct kinetic force, mismanagement, cyber sabotage, disruption of power-supply, and theft of nuclear materials can undermine the prospects of nuclear safety and security. As example of ZNPP illustrates, the presence of nuclear facilities in active combat zone can advertently or inadvertently increase the risks of nuclear catastrophe. Similarly, even CNPPs located at far locations are also exposed to enemy's long range weapons. Overall, the Russia-Ukraine war has exposed the multifaceted threats to civilian nuclear power plants, highlighting the urgent need for robust international safeguards and protective measures to prevent these critical facilities from becoming collateral damage or strategic assets in modern warfare.

The Resurgence Of Syrian Civil War:

Conflicting Interests And Its

Consequences

Ahmad Ibrahim

The Syrian civil war, which ignited 13 years ago during the Arab Spring, abruptly escalated into a devastating conflict characterized by diverging interests of internal as well as international payers. The war has claimed the lives of over 500,000 Syrians and displaced millions from their homes. In a surprising turn of events, the Syrian rebels' coalition led by Hay'at Tahrir al-Sham (HTS) has achieved a significant breakthrough in after an eight-year break in Syrian civil war. Rebels advancing from city of Idlib located in North-Western Syria have successfully captured cities of Aleppo (November 30), Hama (December 05), and Daraa (December 07), and are currently fighting for strategic city of Homs. As Bashar al-Assad's Syrian Arab Army (SAA) continued to retreat, it was anticipated that the rebels will be fighting a long bloody battle with SAA for control over Syrian capital Damascus. However, due to another co-ordinated uprising in Derra Region of Southern Syria, the fall of Damascus has taken place far quicker than previously predicted. The rebels have now entered the capital Damascus and Syrian President Bashar al-Assad has fled the country and has taken refuge in Russia. With Assad regime toppled, Syrian Prime Minister has called for free elections. This rapid advance has surprised observers, as not even during the peak of the civil war had rebels achieved such progress.

To truly understand the dynamics of conflict in Syria, it is vital to consider diverse perspectives. The Syrian conflict has long been a stage for international actors pursuing their own agendas. Russia, Iran, Turkey, Israel, and the United States each play pivotal roles, shaping the battlefield and its broader implications.

Despite two decade long intense civil war, Bashar al-Assad successfully retained its power as president of Syria. One of primary reason was continuous support of his allies including Russia and Iran. But in past few years, regional power dynamics have changed dramatically. When recent uprising took place, Assad was left alone as none of his allay was in position to support him through military means. Although Russia attempted to undermine the momentum of rebels' offense by conducting targeted strikes against enemy positions. However, due to limited availability of military resources amid war in Ukraine, Russian forces no longer possessed the capability to assist SAA for repelling offense of that magnitude.

The fall of Assad regime marks a major blow to Moscow's status as great power. By keeping Assad in power, Putin had consolidated Russia's image as reliable power with enhancing geopolitical credibility. Beside reputation, Russia has also been using Syrian mainland for power projection in Mediterranean and Middle East. Two major Russian military bases - an air-base in Hmeimim and a naval base in Tartus, have been pivotal in this regard. Hmeimim air-base is crucial for supporting regional military operations and also serves as logistical hub for Africa borne aerial missions. Tartus naval base, with missile frigates, conventional submarines, and replenishment vessels, is important for sustaining Russia's naval presence in Mediterranean Sea. With rebels moving towards center, these bases, located in North-West Syria along the coast, has been cut-off from rest of country and is now facing threat from rebels. So far, silence has been observed from Russian officials as far as future of its military bases is concerned.



Russia has suffered significant losses in Russia-Ukraine war and Iran has also lost its key assets against Israel in, both at homeland and in Lebanon.

Iran has been central to the Syrian conflict for over a decade, not only supporting Assad but also using Syria to establish a land corridor to its Lebanon eventually linking up with Hezbollah. This land bridge is essential for transporting supplies and personnel, augmenting Iran's regional influence and supporting Tehran orchestrated "Axis of Resistance." However, Israeli airstrikes have significantly weakened Iran's logistical networks and suffered major losses to its key assets, both in homeland and in Lebanon. With Assad gone, the crucial connectivity with Lebanon no longer exists. This, when combined with rapidly weakening Iran-backed militant groups, can dismantle Iran's "Axis of Resistance" and compel Tehran to recalibrate its geostrategic calculus. The current position of unprecedented weakness, may push Iran to speed up nuclearization efforts to develop its nuclear deterrent.

Turkey, which shares long border with Syria, has borne the brunt of the refugee crisis. With more than two millions of Syrian refugees seeking shelter within its borders, Ankara has been facing significant political and social tensions within. Ankara's initial optimism in normalizing relations with Assad suffered set back when Assad refused to accept returning refugees and demanded the withdrawal of Turkish forces from northern Syria. Beside refugees, Ankara is also concerned about the rise of Syrian-Kurdish militia called Syrian Democratic Forces (SDF) in northern Syria which currently enjoys military collaboration with United States which still maintains approximately 900 troops in northern Syria. Thus, Turkey faces complex challenges. Collapse of Assad regime could trigger chaos and new refugee waves, adding to domestic political pressures from past migrations. But in contrast, an empowered HTS can be used to counter SDF. Ankara has supported arrival of new era for Syria and has expressed unwavering support for Syrian people with hope that ISIS and PKK will be prevented to take benefit for prevailing situation.

Israel, meanwhile, has emerged as the most beneficiary faction. Israel's Prime Minister Netanyahu has already dubbed the fall of Assad rule as historic day in Middle East. While Israel views Iran as its primary adversary and wants to diminish Tehran's led 'axis of resistance', the prospect of Sunni militia filling the Assad's power vacuum also poses an equally significant challenge. Therefore, instead of a unified and powerful foe in Syria, for Tel Aviv, a fragmented Syria with different factions fighting for power would be a far acceptable undertaking. Israel Defense Forces (IDF) has already exploited the opportunity to capture more Syrian territory in Golan Heights. With Syria's link gone, Israel will have more advantageous position, to exercise even more assertive military options in Gaza as well as Lebanon.

The rebel factions, comprising of more than 50 groups, themselves are far from unified. Hayat Tahrir al-Sham (HTS), an offshoot of Al-Qaeda (ALQ), has emerged as a dominant force. Despite its designation as a terrorist organization by the international community, HTS operates with considerable autonomy, often clashing with other rebel groups like the Turkish-backed Syrian National Army (SNA). The SNA, which started as part of the original opposition, now functions as a proxy force for Turkey, aligning its objectives with Ankara's strategic interests. These militant groups are united against a common cause, i.e., removal of Assad regime. With Assad gone, it's feared that these factions will compete against each other for establishing control over Syria. This may push Syria towards a new phase of civil war.

The fall of Bashar al-Assad marks a pivotal moment in Syria's history and will reshape the regional balance of power. As capital falls under rebel control and the battle for Syria's heartland intensifies, the coming months will be crucial in determining the country's future. With ongoing Russia-Ukraine war, Houthi's crisis in Red Sea, Iran's nuclear ambitions and Israel's brutalities in Gaza and Lebanon, the entire region is currently engulfed in military crisis. There is growing need to understand the core reasons causing these crises which require a mutually-agreed and multi-perspective approach, balancing narratives and recognizing the underlying stakes for each actor involved.



Syria's New Reality: A Nation At A Crossroads

Ahmad Ibrahim

The fall of Bashar al-Assad's regime has once again pushed Syria into an era of uncertainty. After decades of rule, a swift rebel offensive from North overran Bashar-al-Assad forces, compelling him to flee to Moscow, where he has been granted asylum. While the streets of Damascus erupted in celebration, the future of Syria is still shrouded with ambiguity as well as fear. The war against Assad may be over, but the conflict has left a fractured and polarized nation facing looming threat of another insurgency for occupying the newly created power vacuum. Various factions, who were united against Assad regime, may compete against each other. Whoever will fill the power vacuum will not only shape Syria's destiny but also influence the stability of the broader region.

Situation in Syria is rapidly changing. The Turkish-backed Syrian National Army (SNA) and the American-backed Syrian Democratic Forces (SDF) have clashed fiercely in the North. Manbij, a strategic town near the Turkish border, has been captured by SNA. Meanwhile, Russian forces are hastily withdrawing their assets from their military bases. The status of Russia's prized assets, the Khmeimim Air Base and Tartus Naval Facility, remains uncertain as Moscow is attempting to engage with new Syrian leadership to protect both bases.

Amid uncertainty, Russia already is moving ships from Tartus Naval Facility as a precautionary move. While these bases are integral to sustaining Russia's influence in Middle East, Mediterranean Sea and Africa, there is speculation that they might be relocated to Libya under Khalifa Haftar's control if Russia's position in Syria weakens further.

Amidst these tensions, some Western analysts are once again floating the idea of partitioning Syria into three sections to stabilize the region. However, such a solution is likely to face strong opposition from Syrian rebels who have fought too hard against Assad, Russia, and Iran to established control over entire country. The threat of reemergence of ISIS adds another layer of complexity to Syria's already fragile situation. U.S. forces have intensified efforts to neutralize the group's infrastructure, but skepticism abounds among Syrian rebels. Many view this as a pretext for maintaining an American military presence in the region.

With several non-state actors now controlling different geographical sections of country, it's difficult to predict future outcome. Hay'at Tahrir al-Sham (HTS), an Islamist faction that controls much of Syria's population, has emerged as a key player.



Led by Abu Muhammad al-Julani, a former al-Qaeda affiliate, HTS has rebranded itself and now controls major cities such as Aleppo, Idlib, Hama, and Homs, along with the country's vital coastline. The southern half of Syria is managed by two factions allied with HTS: the Syrian Free Army (SFA) and the Southern Operations Room (SOR). The SFA, an American-backed group originally stationed near the Jordanian border, has expanded its control to parts of Damascus and other strategic locations. Meanwhile, the SOR—a coalition of Sunni Syrians and the Druze minority—acts as a buffer zone between Syria and Israel. While these factions contribute to HTS's broader goals, their divergent interests also pose the threat of conflict between these factions. Ethnic and sectarian divisions further complicate the post-Assad Syria. Country's demographic landscape includes Alawites along the coast with Mediterranean Sea, Druze communities in the south, Kurds in the north, and a Sunni Arab majority spread across the country. Years of war have widened these divides, making mutually-agreed governance nearly impossible.

The most dominating faction, HTS, faces stiff competition from the SNA and SDF. The SNA, backed by Turkey, controls a relatively small territory near the Turkish border in North-East Syria. But they control advanced weaponry and can thus employ effective firepower with superior situation awareness. The SDF, dominated by Kurdish forces and supported by United States, holds a more significant portion of the country in North East. However, the region occupied by SDF is predominated by Arab population, thus creating friction within. Recently, Arab protests against SDF authority have increased, with incidents of civilian casualties and curfews imposed by SDF forces. These tensions highlight the fragile foundation of SDF control, which relies heavily on external backing rather than public support. Turkey, a key player in Syria's future, has made its stance on the SDF clear. Viewing the group as an extension of the PKK, a Kurdish separatist organization deemed a terrorist entity by Ankara, Turkey sees the SDF as a direct threat to its national security. The extent of Turkey's influence in shaping Syria's post-war landscape will depend on its ability to rally support among local factions and dissolve SDF power. In future, the SDF is likely to face a coalition of HTS and the SNA, backed by Turkey - a scenario that can dismantle SDF from entire region.

Adding to the complexity is the issue of Syrian refugees. As of 2024, the United Nations reports, at least 7.4 million Syrians remain internally displaced, with approximately 4.9 million seeking refuge in neighbouring countries. An additional 1.3 million have resettled elsewhere, mostly in Europe. As stability returns to parts of Syria, thousands are attempting to return home, but reconstruction efforts are insufficient. The World Bank estimates that rebuilding Syria's infrastructure will require over \$400 billion—a daunting figure that delays the safe resettlement of refugees. Meanwhile, defecting Assad loyalists are fleeing toward Iraq, abandoning their weapons. These individuals, with military expertise, could pose a future threat, potentially forming militant groups that can be used by foreign powers. The rapid rise of ISIS, after all, was partly fueled by former Iraqi military personnel who had the training, weapons as well as will to fight asymmetric war for regaining control in the Middle East.

As Syria teeters on the edge of a new chapter, its future remains uncertain. Avoiding ignition of another civil war should be the top priority. The international community, regional powers, and Syrian factions must tread carefully to avoid trapping the country into another cycle of violence. Only through inclusive governance, meaningful reconstruction, and genuine reconciliation can Syria hope to rise from the ashes of war.



Resource-Based Conflict in Niger Delta: Assessing Scramble for Oil Wealth

Safia Mansoor

Nigeria is the hub of resource-based conflict in Africa. Agricultural land and crude oil are the main resources in Nigeria around which conflicts revolve. Since 1999, percentage of violent conflicts occurring in Nigeria entails 95% of resource-related conflicts. Nigeria is largest oil producing country in Africa reaching 73.9 million metric tons of oil production in 2023. Almost 80% of Nigeria's capital and recurrent expenditure 90% of forex earning is oil based. Despite enormous oil wealth, Niger Delta Region has been suffering from what Richard Auty calls 'Resource Curse'.

The conflict is between federal government, militant groups, oil companies and oil host communities over control of crude oil. Repeated armed clashes has embroiled the whole region. The crises mainly erupted in 1990s known as Ogoni crises which eventually led to drastic situation in 2000 as the conflict disrupted export sector of state sporadically and took many lives. Conflict over ownership of resources, land and oil bearing sites and environmental degradation exacerbated the situation. The land from where oil is exported or has been discovered is claimed by various groups. The reason behind this was the belief that central government would show keen interest and attention towards possession of oil enriched land and dispense development benefits for community owning oil enriched land. Non-actualization of this belief inevitably resulted into recourse to violence.

Moreover, people of Niger Delta region assert that crude oil resources should be under their dominant control because it is being extracted from their soil. Additionally, a demand is presented by them regarding sharing formula or increase in derivation. The lands have been lost by these communities as a result of exploration of oil and lack of MNOCs-Multinational Oil Companies' compensations.

The first aspect of oil conflict is pursuit for resource control between the federal government and oil host communities. Oil host communities put forward demand for 50% derivation, but federal government agreed to merely 13% derivation. Second aspect implies conflict between oil host communities, and international oil firms & federal government. Over exploration of oil along with environmental degradation has led to animosity between conflicting sides. Oil spillage and gas flaring done by international oil companies in Niger Delta have caused environmental degradation affecting fishing and farming (traditional people's occupation). This combines with lack of development and basic amenities has led to recurrent sabotaging of oil facilities.





Third aspect signifies confliction between oil companies/federal governments against Niger Delta militants. According to United Nations Development, poverty and miserable living conditions have flamed the conflict. High unemployment and idle young generation has led to regions' restiveness. Widespread belief among region's people is that government along with country's people living in other parts are united in discriminating indigenous people of Niger Delta.

This perception and mass marginalization has led to the formation of various militant groups. The militant groups includes NDLF (Niger Delta Liberation Front), NDPVF (Niger Delta People's Volunteer Force), MEND (Movement for the Emancipation of the Niger Delta), and NDV (Niger Delta Vigilante). Fourth aspect is hostilities between and within oil host communities. This struggle is due to the lack of agreement over oil well's ownership, development projects' location by oil companies or government, and oil rents sharing formula. Limited resource to meet needs of people have exacerbated conflict. Inter-communal conflicts and inter-group crises have resulted due to scramble for development projects and perks.

Various militant groups bomb the oil installations and also kidnap foreign oil workers and keep them as hostages. The state has deployed military due to recurrent abduction of staff and attacks on oil companies. This military deployment aims at protecting the oil companies, staff as well as family members. In 1990, the deployment of military began. Special Task Force was also constituted for Ogoni region's security. Late 1990s witnessed more protests which led the navy and army to carry out massive deployments and heavy armaments termed as Operations Hakuri 1 and 11. President Olusegun Obasanjo created Joint Task Force.

Operation Scorpion Sting, Operation Crocodile Smiles and Operation Octopus constitutes various military efforts but presence of military received criticism due to abuse of human rights. President O. Obasanjo ordered the military deployment in 1999 oil bearing community known as Odi in state of Bayelsa resulted into 2483 people deaths that were mainly children and women. Failed conflict resolution led government to propose a program in 2009 in which President Yar'adua put amnesty in place; however it failed and led to reemergence of militants mainly due to failure of the state to address the resource control, under-development, marginalization and neglect. The hostilities in Niger Delta will remain prevalent unless all stakeholders alongside international community devise holistic conflict resolution mechanism addressing grievances of conflict parties. The structural and underlying causes of violent conflict in Niger Delta requires peacebuilding to bring about positive peace in region.

The Costly Gamble of Ukraine's

Denuclearization

Ahmad Ibrahim

Following the dissolution of the Soviet Union in 1991, Ukraine inherited a substantial nuclear stockpile—making it the third-largest nuclear power globally. This nuclear arsenal included 1900 strategic and 2,600 tactical nuclear warheads, and delivery systems including 176 intercontinental ballistic missiles (ICBMs) and 44 strategic bombers armed with AS-15 Kent cruise missiles. On May 23, 1992 Lisbon Protocol, was signed between Russia, and newly created Belarus, Ukraine, and Kazakhstan to return Soviet Union nuclear weapons to Russia and accede to Nuclear Nonproliferation Treaty (NPT). However, Ukraine was reluctant to abide by all aforementioned commitments seeking security assurances, economic compensation, and partial retention of nuclear weapons.

The turning point came in the form of Budapest Memorandum, signed on December 05, 1994 during the Conference on Security and Cooperation in Europe summit. The Memorandum, signed by Ukraine, the United States, the United Kingdom, and Russia, pledged respect for Ukraine's sovereignty and territorial integrity. It emphasized non-interference and non-aggression, with an agreement to consult if Ukraine's security was threatened. On the very day the Memorandum was signed, Ukraine joined the NPT as a non-nuclear state, marking the formal end of its nuclear arsenal. Overtime, Ukraine's nuclear arsenal was either returned or dismantled. By 1996, Ukraine had returned all nuclear warheads to Russia. Last nuclear delivery system was dismantled in 2001 under the 1991 START-I.

In 2008, joint declaration by Washington and Moscow reconfirmed their commitments to Ukraine after expiration of START-I. The Budapest Memorandum, although regarded as remarkable success in arms control, is now often viewed with skepticism considering Russian invasion on Ukraine. The current situation thus raises the question: Should Ukraine have retained its nuclear arsenal to deter any potential aggression against Russia? No clear answer to this question can be given. However, to address this question, it's crucial to understand the realities of that time involving Ukraine's nuclear inheritance. Retaining nuclear stockpile during time of independence would have been a very challenging undertaking for Kyiv. In brief four reasons can be highlighted.

First, Ukraine lacked technical control over its nuclear stockpile. Mere possession of Soviet origin nuclear weapons does not mean that Ukraine would have exercised complete control over them. In fact, the technical control was in possession of Moscow. The warheads were equipped with electronic locks, known as Permissive Action Links (PALs), which could only be activated with codes held by Russian authorities. Even if Ukraine had bypassed these security systems—an improbable feat—it lacked the infrastructure and expertise necessary to safeguard those warheads. Second, maintenance of such vast nuclear stockpile was also beyond Ukraine's capacity. Due to decaying radio-active material, functioning replacement cycle was required to sustain the operational lifespan of warheads. Without credible replacement option, these warheads would have become obsolete after certain interval of time.





In other case, poor maintenance would have increased the risk of accident or similar hazards. Third, considering Ukraine's financial constraints at the time of independence, maintaining a large nuclear arsenal and various delivery systems was an expansive endeavor beyond its economic capacity. And finally, by possessing nuclear weapons, Ukraine would have defied the global nuclear disarmament efforts thus causing severe geopolitical ramifications. Diplomatic isolation and economic sanctions would have crippled the Kyiv as functional government. Despite aforementioned reasons, even if we assume that Ukraine had kept nuclear weapons, the credibility of its deterrence would have been dubious. Unlike nuclear-free Ukraine with NPT membership, nuclear-armed Ukraine would have been perceived as a threat by Russia as well as NATO. With majority of stockpile retired or non-functional, Ukraine would have possessed only handful nuclear weapons which would have been inadequate to reliably deter foreign aggression. Nuclear-armed Ukraine might have provoked more aggressive preemptive actions from Russia. Historical precedent suggests that Moscow views a hostile nuclear neighbor as intolerable. Targeted strikes on Ukraine's nuclear facilities could have escalated regional tensions, leading to catastrophic consequences. Similarly, the risk of losing nuclear weapons' control due to political instability or security crisis would also have been a major threat.

The actual issue is not the denuclearization of Ukraine, but the lack of credibility of security assurances provided to Kyiv by United States as well as Russia. The Budapest Memorandum was a diplomatic promise, not a binding defense pact. Its failure to deter subsequent violations of Ukraine's sovereignty exposes the limitations of unenforceable security guarantees. If Ukraine had secured NATO's membership in return of dismantling its nuclear stockpile, situation would have been very different for Kyiv. However, security assurances without legal binding and tangible enforcement mechanisms leave nations vulnerable to the threats they sought to counter. Ukraine's case serves as an example in this regard.

Russia-Ukraine war is still going on. Millions have lost their lives. Despite stiff resistance, powered by Western military and financial support, Russia still controls approximately 25 percent of Ukrainian territory. The frontline is almost frozen and no considerable advance can be hoped from Ukrainian side. The question now lingers about pathway which Ukraine will adopt in future after termination of conflict. Will Ukraine continue to look towards NATO membership for achieving collective security umbrella? Or will it seek to develop nuclear deterrent of its own? Both pathways seem equally unrealistic now. Moscow won't sit on negotiation table unless denial of Ukrainian membership in NATO is guaranteed. In contrast, with stringent measures in place, Ukraine simply no longer has any opportunity in its disposal to ensure development of its own nuclear weapons. This route will not only yield severe international backlash but will destabilize the region even further.

In the end, it can be argued that Ukraine's decision to disarm its nuclear capacity was shaped by necessity, not choice. It was not a gamble, but a byproduct of circumstances. The grim situation Kyiv faces today is due to failed international security commitments. From a realistic perspective, in an anarchic world, self-help and power are the only credible options available for survival of any nation. As history unfolds, the lessons of Ukraine's denuclearization will undoubtedly shape global discourse on arms control and national security for years to come.

Geo-politics and Global Power Dynamics

S No	Article Title	Author	Source	Date	Page No
1	Sweden Membership in NATO: A Strategic Outlook	Ahmad Ibrahim	Strafasia	12 Apr 2024	110
2	Strategic Impasses: Analyzing Conflict Triggers Between India and Pakistan	Safia Mansoor	Strafasia	04 Jun 2024	112
3	Houthi's Attack on Red Sea: Repercussions for Global Trade	Hamna Ghias	The Asian Mirror	21 Jun 2024	114
4	The Return of Taliban: Afghanistan after the Americans Left	Cdre Ehsan Ahmed Khan	Modern Diplomacy	09 Jul 2024	115
5	China's Soft Power Ascendancy: A Blueprint for Global Harmony	Hamna Ghias	Eurasia Review	09 Jul 2024	117
6	AUKUS: A Game Changer in Indo-Pacific Region	Safia Mansoor	Minute Mirror	01 Aug 2024	119
7	Ripple Effects: Ismail Haniyeh's Assassination on Middle Eastern Stability	Hamna Ghias	RIAC	07 Aug 2024	121
8	Indian Ocean as New Political and Security Region	Hamna Ghias	Eurasia Review	07 Aug 2024	122
9	India's Power Play in the Gulf and Implications for Pakistan	Fizzah Shuja	Daily Sabah	17 Aug 2024	124
10	Navigating Turbulent Waters: Red Sea Crisis and its Far-reaching Impact on Maritime Trade	Javaria Shaikh	Security Lense	18 Aug 2024	126
11	Project 2025: Trump's America – A Path Forward or a Descent into Authoritarianism	Javaria Shaikh	Modern Diplomacy	31 Aug 2024	127
12	Contemporary Strategic Developments in the Indian Ocean: Key Takeaways	Fizzah Shuja	Eurasia Review	01 Sep 2024	128
13	Deciphering Indian Cold Start Doctrine: Strategic Response of Pakistan	Safia Mansoor	Global Defense Insight	24 Oct 2024	129
14	Mackinder and Mahan: Geopolitics of BRI in South Asia	Safia Mansoor	Modern Diplomacy	26 Oct 2024	131
15	Strategic Alignment: Power Balancing in Indo-Pacific through Quad	Safia Mansoor	Modern Diplomacy	06 Nov 2024	135
16	The Strategic Impact of Expanding AUKUS in the Indo-Pacific	Lt Cdr Dr Sufian Ullah	RIAC	17 Nov 2024	138
17	Will China's Version of World Order Challenge Western Liberal Order?	Safia Mansoor	South Asia Times	19 Nov 2024	141
18	Indo-Pacific Convergence: Balancing the 'China Threat' in Indo-Pacific	Safia Mansoor	Minute Mirror	23 Nov 2024	143
19	The Arctic Geopolitics: Melting Ice and Rising Tensions	Ahmad Ibrahim	Modern Diplomacy	23 Nov 2024	144
20	World on Edge as Trump Gets Ready	Cdr (R) M Azam Khan	The News	10 Dec 2024	146
21	Trump's America First Redux: Its Impact on Ukraine and Israel-Palestine	Javaria Shaikh	Minute Mirror	10 Dec 2024	148
22	Ukraine's Future: Zelensky's Victory Plan or Trump's Swift Peace Plan?	Ahmad Ibrahim	Modern Diplomacy	11 Dec 2024	149
23	United Nations (UN): An Institution in Need of Reforms	Ahmad Ibrahim	South Asia Times	31 Dec 2024	151



Sweden Membership In NATO: A Strategic Outlook

Ahmad Ibrahim

On 07 March 2024, Sweden became 32nd member of North Atlantic Treaty Organization (NATO) marking end of Swedish 200 years of non-alignment policy. Historically, Finland and Sweden have maintained non-alignment to avoid hostilities with Russia. However, Russian invasion of Ukraine compelled both nations to reconsider their policy and seek security umbrella of NATO. Article V of treaty constitutes the foundation of alliance and act as enduring commitment by each member to ensure collective defense whenever national security of any member state is threatened. Primary rational of Russia's invasion on Ukraine was to deny NATO's eastward expansion. However, Moscow policy has backfired and instead has catalyzed expansion of NATO's northern flank. Recent membership Finland and Sweden membership in NATO has overwhelmingly tipped the balance of power against Russia in Nordic region, particularly in Baltic Sea.

For joining NATO unanimous support from all member-states is crucial. Unlike Finland, which acquired NATO's membership on 04 April 2023, Sweden's bid to join NATO was a turbulent process. The unwillingness from two NATO members; Turkey and Hungary, essentially placed Swedish membership process in a standstill. Turkey and Hungary, essentially placed Swedish membership process in a standstill. Turkey and Sweden share strain relations as Ankara blames Stockholm for harboring Kurdish militia leadership. Kurdish militant groups, including the Kurdistan Workers' Party (PKK) and its affiliates, are labeled as terrorist outfits by Ankara. In contrast, Sweden has maintained a sympathetic approach regarding Kurdish communities and has often sidelined Ankara's concerns. Similarly, Hungary has repeatedly expressed discomfort regarding Stockholm's criticism on nationalist policies of Orban's ruling Fidesz party in Budapest. These differences have often created challenges in maintaining a constructive diplomatic relationship

between both nations.

After 18 months of foot dragging, the concerns of Turkey and Hungary were eventually rectified. Turkey agreed to support Sweden's bid after close-door negotiations involving two key settlements. First, Stockholm agreed to co-ordinate with Ankara to address later concerns regarding Kurdish terror outfits. And second, United States approved previously blocked sale of 40 new F-16 Block 70 fighter aircrafts to Turkish Air Force (TAF) in a deal worth 23 billion USD. Later, Hungary also approved Sweden's application when Orban's government was persuaded by European allies, and an agreement was reached to supply four new JAS-39 Gripen aircrafts to Hungary and extend service support of existing fleet of 14 aircrafts. The agreement cleared final obstacle from Swedish entry into NATO.

Sweden membership will significantly contribute in enhancing military capabilities of NATO's northern flank. Despite being a small nation of 10 million, Sweden has well-trained and well-equipped armed forces and a well-developed defense industry which produces several indigenous military systems in land, air, and naval domain. While Sweden armed forces lacks manpower, it more than makes up with cutting edge military technology. Sweden is gradually increasing its defense spending and has earmarked 11.83 billion USD for defense budget in year 2024. With this 28 percent increment in comparison with past year, the net-spending of Sweden will exceed the NATO's pledged threshold of 2 percent of GDP.

According to SIPRI fact-sheet 2024, Sweden is 13th largest exporter of arms, and its equipment is known for reliability and high quality standards. In 2023, 18 percent increment has been observed in foreign sales of Swedish origin weapons. Brazil, United States, and Pakistan were top three importers of Swedish arms in 2019-2023. After becoming part of NATO, Sweden now has increased

accessibility to advanced military technologies which will further improve the capability of its armed forces and diversify the productivity of its domestic defense industries.

Saab is the most prominent defense company in Sweden and is known for its wide range of military equipment. The land based systems include small arms, man-portable guided weapons like NLAW anti-tank guided missile (ATGM) and RBS-70 air-defense missile, CV-90 armored vehicle, 155mm Archer self-propelled wheeled artillery system, and variety of surveillance and electronic warfare (EW) systems. In aerial domain, Saab is globally famous for JAS-39 Gripen multi-role fighter aircraft known for its versatility, advanced avionics, and diverse weapon package. Saab's Erieye Airborne Early Warning and Control (AEW&C) is also highly adaptive and capable force-multiplier and is operated by Swedish as well as several foreign air forces. Its version, called Saab-2000 Erieye, has been used with remarkable success by Pakistan Air Force (PAF) during operation Swift Retort (2019) against Indian Air Force (IAF). In naval domain, multi-mission Visby class corvettes, which feature stealth hull-design and low acoustic and thermal signature, provide flexible operational capability in littorals. Swedish Gotland class diesel-electric submarines, equipped with Stirling Air-Independent Propulsion (AIP) system, are also testament of Swedish engineering potential. HMSM Gotland submarine earned fame in 2005 when it "sank" USS Ronald Regan aircraft carrier during war-game after successfully breaching US-Navy anti-submarine defenses. The combination of Visby corvettes and Gotland class submarines, equipped with modern weapon systems and sensor-suite, grants Swedish navy highly capable sea-denial prowess in the Baltic Sea.

Perhaps the most important aspect of Sweden is its strategic location. The heartland of Sweden is surrounded by sea, therefore, maritime domain plays crucial role in shaping country's geopolitical and geostrategic environment. Sweden shares longest coast with Baltic Sea which accounts for 15 percent of global maritime trade. One-third of Russia's maritime trade passes through Baltic Sea. The Island of Gotland, located approximately 170 km south of Stockholm, is bastion of Sweden in Baltic Sea. The island sits in the middle of Baltic Sea, mere 250 km away from Russian enclave, Kaliningrad, which headquarters Russian Navy Baltic Fleet. From strategic perspective, Gotland can serve as military node point to support NATO military action in Baltic States. Even before joining NATO, Sweden has been gradually militarizing Gotland amid Russia invasion on Ukraine, and has invested approximately 160 million USD to strengthen military infrastructure on island.

The Suwalki corridor, a 70 km long narrow gap between Kaliningrad and Belarus, represents major geographical vulnerability of NATO. In case of conflict, Russia forces can overrun this corridor and block land connectivity of NATO members Estonia, Latvia, and Lithuania with rest of alliance. Control over Baltic Sea and military presence at Gotland will allow NATO to establish and sustain naval connectivity to actively support and replenish NATO forces in Baltic States.

Moscow has called joining of Finland and Sweden in NATO a meaningless step. According to Russian President Vladimir Putin, Russia will deploy troops and systems of destruction to the Finnish border. Russia has lost significant portion of its conventional military capability in war against Ukraine. Russian forces currently lack the capacity to rebuild their military capacity to overcome growing NATO's presence in North. This suggests that Russia's dependency on nuclear weapons as battlefield deterrent will deepen further. To deter NATO, Russia would deploy, as also hinted by Putin, non-strategic nuclear weapons (NSNWs) in the bordering region. The militarization of Nordic region will now potentially include a nuclear dimension which will enhance the volatility of regional strategic stability and increase risks of inadvertent escalation of any crisis.

Sweden's decision to join NATO marks a significant shift in its strategic posture and has wide-ranging implications for regional stability. The membership of Sweden in alliance has granted NATO the strategic depth in an area once dominated by Russia and will be instrumental in safeguarding alliance northern flank against Russia. On one side, the expansion of NATO will provide security umbrella to newly joined nations against potential military aggression by Moscow. But on flip side, it will re-ignite tensions with Kremlin and will lead to counter-developments including regional nuclearization by Russia. This action-reaction dilemma can undermine strategic stability and can have far-reaching consequences for entire world. As long as hostilities persist between NATO and Russia, and both factions continue to exercise assertive options instead of seeking collaborative solutions through dialogue and confidence building measures (CBMs), the fate of secure and progressive Europe and eventually entire world will remain at stake.



Strategic Impasses; Analyzing Conflict Triggers Between India And Pakistan

Safia Mansoor

India and Pakistan, the two nuclear arch-rivals, have remained embroiled in multi-faceted conflict since independence, posing an incessant risk of inadvertent escalation. Strategic impasses with respect to both states imply perennial-cum-unresolved state of conflicts and tensions, begetting periodic hostilities and perpetual instability.

Such deadlocks characterized by territorial disputes such as Kashmir, water issue, limited conventional war, inadvertent and accidental escalation under nuclear threshold serve to be the key point of confliction that entail colossal potential to catalyze and exacerbate the conflict between both states.

Kashmir has remained a source of discord between India and Pakistan since 1947 and both states have fought three wars over it in 1947-1949, 1965, and 1999. Although it is sometimes regarded as 'frozen conflict', however, continual skirmishes along LOC and India's coercive military response or surgical strikes after allegedly blaming Pakistan for sponsoring terrorist attacks in Indian occupied Kashmir (such as in case of Uri and Pulwama attacks), recurrently flicker conflict after brief hiatus. 2024 Annual Threat Assessment report by US intelligence community has regarded Kashmir as Potential flashpoint whereby heightened tensions could potentially cause direct conflict between India and Pakistan. It reinforces that camouflaged-cum-confused spectrum in Kashmir under punitive Hindutva ideology has upped the ante.

At the heart of Kashmir issue is burgeoning water insecurity of Pakistan and India further aggravated by population explosion. *"Fierce competition over fresh water may well become a source of conflicts and war in future"* as stated by Kofi Annan in 2001 underlies the possibility of water resources becoming a conflict trigger between both adversaries. Water serves to be pernicious fault line between India and Pakistan since division of Indus Basin System made India an upper riparian and Pakistan as low riparian. Although 1960 Indus Water Treaty has continued to survive hostilities and wars, various loopholes such as lack of quantitative measure concerning water distribution and non-regulation on number of dams' construction by India have emboldened it to over-exploit treaty. India has been throttling water supply of Pakistan by building dams over Western rivers.

Kishenganga Dam on River Neelum will reduce its average flow towards Pakistan by 21%, whereas, Baglihar hydropower project on River Chenab would allow India to inhibit 7000-8000 cusecs of water on daily basis. Currently, India has constructed 14 run-of-river projects on river Chenab and more such projects are underway that could impede Chenab's water for 20-25 days. Dam building spree of India manifested from current hydropower projects in Indian occupied Kashmir alongside plan to build 93 dams worth Rs 230 billion would provide India to exercise domineer on Western rivers, thereby blatantly violating Indus water treaty. The fierce competition over scarce water sources buttressed by the horrendous ramifications of climate change on Indus Basin could trigger a 'water war' between both states.

The risk of conventional attacks under the nuclear threshold implies another potential flashpoint between India and Pakistan. This coincides with India's limited war strategy (under the framework of Cold Start Doctrine) in order to materialize key political ends through leveraging strategic space below nuclear threshold that is assuredly precarious given the inherent risk of escalation. Resultantly, this strategy of India has horrendous potential to beget uncertainty and instability in region. In case of potential crisis between Pakistan and India, compounding factors such as inability to gauge intentions of nemesis, erroneous evaluation of political goals, inadequate intelligence regarding adversary's combat strength, and surprise conventional attack could become genesis of conflict escalation.

Another phenomenon in nuclear lexicon which signifies potential cause of instability can be analyzed through Glyn Snyder espoused 'Stability-Instability Paradox' whereby nuclear weapons bring stability at strategic level but simultaneously it paradoxically encourages lower level conflicts such as covert operations, proxies, indirect conflicts, and other altercations.

Interminable skirmishes and low-level provocations alongside LOC, a defacto boundary separating Indian occupied and Pakistan administered Kashmir area, implies the quintessential actualization of stability-instability paradox. Various incidents such as Kargil conflict (1999) coupled with comparatively recent Uri attack (2016) and Pulwama attack (2019) are pertinent in this regard. Most notable is the Pulwama conundrum as it involved India's co-called surgical strike at Balakot that marked major violation of Pakistan's national sovereignty thus necessitating a retaliatory response. Pakistan's operation 'Swift Retort' was a successful response to India's aggression. Such instances offer valuable insight with regards to occurrence of low-intensity conflicts under nuclear threshold.

Another probability of conflict arises from India's ill-conceived misadventure and false-flag operations against Pakistan. One of the key examples can be taken of Brahmos Missile Crisis occurred on 9 March, 2022 which although didn't bring about casualties but underlie the accidental launch of lethal technologies that substantially augments the risk of escalation. The dual-capable cruise missile that made ingress into Pakistan airspace and crashed proximal to Mian Channu raises serious doubts regarding technical safeguard mechanism and security protocols against unauthorized and accidental missile's launch in a highly volatile nuclearized environment. Such incidents exemplify the circumstances that may lead to inadvertent escalation between India and Pakistan with horrendous repercussions.

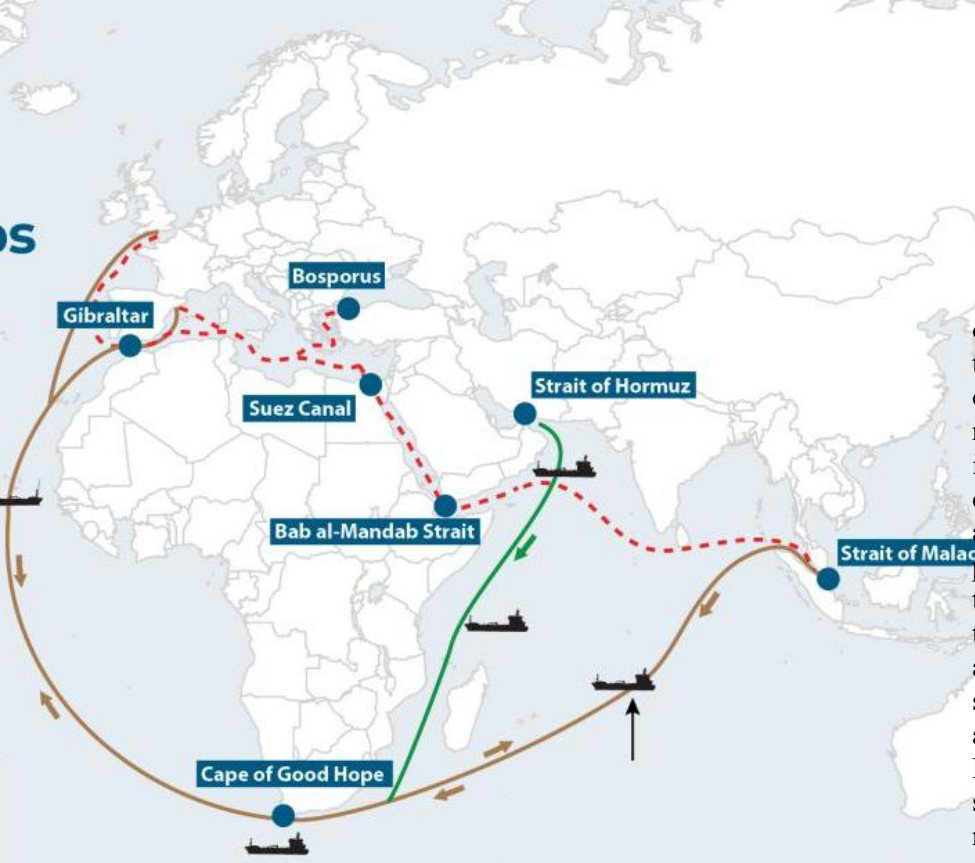
Inadvertence or escalation dynamics between India-Pakistan conflict poses three key strategic risks: a) wrong estimate of adversary intentions as well as material capabilities that in turn can cause perilous actions and counteractions; b) Amalgamation of emerging technologies and accurate missile systems is facilitating cross-domain deterrence which provides opportunity for venturing greater risks during crisis situation; and c) Nuclear weapon conventionalisation or 'Nuclear entanglement' which inevitably increase the chances of strategic blunders that may turn into accidental wars, as such entanglements may blur the respective doctrines of both states and invite lethal response by either state given lack of information whether the incoming missile is carrying conventional or nuclear attack.

Pakistan policy responsive must remain holistic-cum-pragmatic that on one hand should deter the adversary while on the other hand reduce the risk of escalation of conflict. At diplomatic level, hotline/Direct Line of Communication between concerned military and civilian leadership can play an instrumental role, thereby diminishing the risk of miscalculation and mistrust. At national level, Pakistan should cater both traditional and non-traditional sources of conflict. With regards to non-traditional security threat of water crisis, Pakistan needs to invest in water infrastructure and emphasize water management. For curbing traditional sources that may trigger war, Pakistan should amplify its defensive military capabilities in two ways: firstly, Pakistan should increase conventional military capabilities by reinforcing strategic partnership with key allies such as China and Turkey while concurrently focus on indigenous military industrial complex; and secondly Pakistan shall move towards second strike capability for deterring India.



Impact of Houthis Attack In Red Sea: Repercussions For Global Trade

Hamna Ghias Sheikh



Following escalating attacks by Houthis on commercial ships in the Red Sea, global trade concerns have surged. Houthis are carrying out indiscriminate attacks in Red Sea in response to Israel's cruel and inhumane action in Gaza. Given the centrality of maritime commerce to the global economic framework, any disruption to these vital sea lanes carries profound ramifications. The global response to the Houthis attacks in the Red Sea has escalated tensions precariously, risking further conflict and disrupting maritime traffic, which could severely impact the global economy. The U.S. and British naval forces have responded to the Houthis attacks by destroying their missile storage locations and drones through Tomahawk missiles launched from submarines and warships.

Red Sea serves as a critical sea route for maritime commerce, with nearly 15 percent of global shipping traffic traversing this route, including oil exports and 30 percent of global container shipping volume. However, with the sporadic targeting of merchant ships in Red Sea by Houthis, global shipping has been forced to reroute via the Cape of Good Hope. This has resulted in shipping costs skyrocketing by up to 250 percent and transit times increasing by 7 to 8 days. While re-routing of shipping mitigates threats emanating from Houthis attacks in Red Sea, this situation has increased prices for energy and other commodities, as well as disrupted the supply chain. Shutting of Tesla's production in Germany is one such example.

Major shipping companies, including the oil tanker group Frontline (FRO.OL), oil major BP (BP.L), and Hapag Lloyd, are circumventing the Red Sea and sending their ships around Africa via the Cape of Good Hope. This has added weeks to voyages and increased both the cost and time required to reach their destinations. The cost of a 40-foot container from China to Europe has surged to \$4,000, and the number of containers passing through the Red Sea declined from 500,000 to 200,000 in December. These shipment delays have contributed to the decline in world trade.

Moreover, Houthi attacks have heightened the risks for vessels approaching the Suez Canal. Oil prices have surged to \$80 per barrel, exacerbating the economic impact of disruptions to international trade. Shipping disruptions and increased fuel prices may reignite inflation, reminiscent of the peaks experienced during the COVID-19 pandemic and the Russian invasion of Ukraine in February 2022. With growing hostility, U.S. has alleged Iran for facilitating the Houthi attack in the Red Sea and has made a coalition through Operation Prosperity Guardian in order to employ warships against the attacks, including its own Arleigh Burke-class guided-missile destroyers to provide protection to merchant ships. Houthis have successfully applied classical asymmetric warfare using cheap munition against selected targets while inflicting a heavy cost to warships to neutralize Kamikaze drones. According to the Pentagon, each munition used to shoot down Houthi missiles costs between \$1 million and \$4.3 million.

The U.S. intervention has incited regional and global response. China has linked Israel's assault on the besieged Palestinian enclave of Gaza to tensions in the Red Sea and called on all relevant parties to avoid further escalation of conflict. However, despite these diplomatic efforts, a Chinese-owned and operated oil tanker, MV Huang, was still targeted by Houthi anti-ship ballistic missiles. In response to the recent wave of attacks, India has deployed guided missile destroyers (INS Kochi and INS Kolkata) to maintain a deterrent presence, while Pakistan has increased its monitoring of the Arabian Sea and has voiced concerns that the recent attacks on vessels in the Red Sea have led shipping companies to escalate their insurance costs, directly affecting their businesses.

It is pertinent to reiterate that maritime commerce plays a pivotal role in connecting the world. Such attacks are potent in every aspect. Containers and shipments are crucial to globalization, akin to the importance of eighteen-wheelers to the United States. Any disruption in global trade can ultimately stagnate the world economy. Tensions and poor decisions in the Red Sea can disrupt the machinery of globalization. Nations never benefit from prolonged wars, so it is imperative to understand that the humanitarian crisis in Gaza could bolster militias against Israel. Immediate resolution of the crisis is essential to ending the humanitarian crisis in Gaza and preventing further deterioration of the world economy.

The Return of the Taliban: Afghanistan After the Americans Left

Cdre Ehsan Ahmed Khan

Hassan Abbas's book, "The Return of Taliban: Afghanistan: After the Americans Left", delivers an in-depth analysis of events leading to Taliban's takeover following the U.S. withdrawal from Afghanistan in 2021. The book comprises six chapters that examine the new regime's composition and structure, religious ideology, international relations, and the challenges it encounters. Following the United States' withdrawal from Afghanistan, the geopolitical landscape of the region has experienced a profound transformation that has captured the interest of both academics and policymakers. This phenomenon has significant ramifications for the broader spectrum of debates in the discipline of international relations since it necessitates a re-evaluation of regional power dynamics, the impact of external actors on a state's build-up, and a reassessment of key theoretical frameworks.

Hassan Abbas's book "The Return of the Taliban," describes the evolutionary process of Taliban in Afghanistan from their emergence in 1994, to their down fall post 9/11 and resurgence after 20 years. The author highlighted the impact of Sunni-Hanfi-Deobandi religious ideology and Pashtun ethnic culture, contestation of regional powers and the divergences within Taliban groups. Abbas provides a lens to explore the internal fissures in Ghani's government, its exclusion from US-Taliban negotiations and lacklustre competence of Afghan National Army and other state organs. He also analysed how Taliban strategized their return to power through hard bargain on one end of the spectrum and increased violence on the other end while exploiting social media for perception management and creating narratives.

In the aftermath of US-Taliban secret deals, the author examines the complexities of state-building in Afghanistan giving a detailed description of transition from warriors to governors, and mentions "The Taliban have not changed much in ideological sense but today's Taliban are different from the last time they were in power". While discussing the evolution of Taliban leadership and their road to Kabul, in his book, Hassan Abbas ponders that one of the biggest challenges for Taliban leadership was to win the hearts of the people of Afghanistan post-US withdrawal.





The author highlights the key challenges faced by the Taliban regime such choice of right leaders in Pashtun heavy cabinet (ignoring other ethnicities), policies toward women, financial instability, and consolidating legitimacy of regime in the presence of global isolation. Abbas summarised Taliban Theory of Governance referring to Mullah Hibatullah's book which provided essentials of Taliban's world view and laid out philosophy and public policy for post-US Afghanistan. The author also broached on Taliban's aggressive and militaristic Deoband (revivalist) outlook evolved from its genesis in colonial India and its cross road with Salfism and Pashtunwali. Dwelling on Taliban's religious narrative, author questions if change in current generation of leadership would slowly end the Taliban as we know. The author also posits a detail description of TTP and ISKP evolution and presence in Afghanistan and its impact on security landscape within and outside Afghanistan.

Abbas mentions of the broken promises made during Doha negotiations especially in case of women seeking economic opportunities, continuation of girl child's education and displacement of Hazaras from ancestral lands vindicating return of Taliban's erstwhile hard-line stance. Amidst all the psycho-social turmoil, under the new regime, Afghan nation is economically destitute due seizures of foreign economic support and freezing of Afghan Government funds drastically shrinking the economy. The political fractures and intra-Taliban rivalries has accentuated the governance dilemmas leading to parallel power centres contesting for control and influence.

Diplomatically, Abbas mentions that Taliban Regime remains shrouded in cloak of isolation. Though formal communication channels with few countries established, Afghanistan largely remains cut off from rest of the world. The Regime's diplomatic relations with its

neighbours and other regional countries remain subjected to mistrust and scepticism over Taliban's intent to adhere to promises made, material capacity and political will to deny space to terrorist organisations perusing safe havens in Afghanistan. Even with Pakistan, contrary to obvious, all is not well between Taliban and Pakistan. The centre of quagmire being Kabul's inability to pursue TTP on Afghan soil, triggering a resurgence of terrorism in Pakistan.

The author has drawn insightful conclusions and thorough analysis. He concludes that the challenges being faced by Taliban regime are primarily rooted in their inflexibility and dogmatism. Internal ethnic fissures, potential threats like ISK, and complex relationships in the region and beyond contributing to a precarious regional security landscape. Moreover, the emergence of a new generation within the Taliban, influenced by global movements and technology, presents an opportunity for policy evolution, especially in religious inclusivity. Financial management is identified as a pivotal factor in the Taliban's success, impacting their ability to provide security and prevent public unrest.

Hassan Abbas's book is highly recommended to international scholars, policy practitioners and decision makers pursuing a holistic grasp of a comprehensive understanding of complex internal and external dynamics unravelling in Afghanistan post U.S. withdrawal. This book provides an invaluable exploration of the multifaceted challenges the Taliban are confronted with. By delving into the political, social, and economic dimensions, the author offers nuanced insights that can greatly enhance comprehension of the issue at both national as well as regional levels. The book serves as an indispensable resource for policymakers and scholars alike for crafting informed strategies and fostering a deeper understanding of the ongoing developments in the region post-US exit.

Shadows of Escalation: The Ripple Effects of Ismail Haniyeh's Assassination on Middle Eastern Stability

Hamna Ghias Sheikh

The recent assassination of Ismail Haniyeh in Tehran represents a dramatic escalation in the Israeli-Palestinian conflict, with far-reaching implications for the region and beyond. This assassination underscores an ongoing strategy to disrupt Hamas leadership and operational capabilities, reflecting a determination to dismantle a key pillar of the Palestinian resistance. As the geopolitical landscape becomes increasingly volatile, the assassination raises urgent questions about the path forward and the potential for lasting peace in the Middle East.

This targeted killing of Haniyeh is part of a broader pattern of strategic actions aimed at weakening Hamas and undermining its influence. The assassination carries significant political motto, as targeting such a high-profile figure as Haniyeh aims to weaken political as well as military leadership within Hamas. By targeting the leader, intent might be to disrupt the organizational structure of Hamas, impairing its operational and strategic planning. By eliminating a figure as prominent as Haniyeh, it is believed that Israel seeks to cause internal disarray within Hamas, diminish its symbolic significance, and sow fear among its supporters. The political implications of this assassination extend to the regional power struggle. Haniyeh's assassination, particularly on Iranian soil, can be interpreted as a direct challenge to Iran's support for Hamas. It underscores the ongoing proxy conflict between Israel and Iran, highlighting Israel's determination to counter Iranian influence in the region. This operation is not merely a tactical maneuver but more of a political calculation designed to bolster Prime Minister Netanyahu's standing domestically and internationally.



However, the repercussions of this assassination are likely to extend far beyond the immediate objective of crippling Hamas. Within the organization, the loss of Haniyeh could exacerbate internal divisions, empowering hardliners and potentially sideline more moderate voices. This shift could lead to an escalation in militant activities, overshadowing Hamas political aspirations and further destabilize the region. Moreover, the assassination might inadvertently boost the legitimacy of the Palestinian Authority (PA) as a political alternative, altering the dynamics of Palestinian representation and resistance.

The regional response to Haniyeh's killing has been swift and direct. Iran, a staunch supporter of Hamas since its inception in 1987, has provided extensive training and funding to the group, supplying them with rockets, missiles, and drones. Additionally, according to Middle Eastern intelligence officials, Iran has played a crucial role in helping Hamas construct an intricate network of underground tunnels in Gaza, designed to protect their equipment and infrastructure from Israeli attacks. Hamas has also received significant financial support from Iran, along with technical assistance to produce rockets and drones equipped with advanced guidance systems. Iran, a staunch supporter of Hamas, has therefore vowed retaliation, emphasizing its strengthened ties with Palestinian resistance groups. Iran Supreme Leader Ayatollah Ali Khamenei's statement condemning the assassination as a "heinous terrorist crime" signals a potential escalation of hostilities, with Iran poised to take vengeance. The geopolitical implications are profound, as this event could further entrench divisions and ignite broader conflicts with Iran and its allies.

Lebanon, too, finds itself in a precarious position following the recent assassination of a senior Hezbollah commander by Israeli forces. The timing of these actions suggests a coordinated effort by Israel to weaken the leadership structures of its adversaries, raising the stakes for regional stability. Similarly, Yemen's Houthi movement and Turkey have voiced concerns over the broader implications of these developments, with Turkey warning that the Gaza conflict can unfold into a regional crisis.

On the global stage, reactions have been mixed but predominantly critical. The United States, while denying any involvement, has firmly given a statement by US Secretary of State Antony Blinken that the United States had no involvement in or prior knowledge of the assassination. He clearly emphasized that the US was not connected to the incident, which has exacerbated the already high tensions in the Middle East. Secretary of State Antony Blinken's denial of US involvement in the assassination is critical. By maintaining a neutral stance, the US aims to uphold its role as a mediator in Middle East, avoiding any actions that could compromise its position. His statement overall aims to distance the US from the assassination, amid widespread regional condemnation and concerns about further escalation. Russia has condemned the assassination as an "absolutely unacceptable political murder", reflecting its broader strategy of keeping the US engaged in multiple regional conflicts. Meanwhile, China, Algeria, and other nations have expressed their disapproval, underscoring the assassination's potential to disrupt international diplomatic efforts and heighten tensions.

In light of these developments, the need for a strategic and coordinated response is more urgent now than ever. The international community must prioritize diplomatic engagement to prevent further escalation and address the root causes of the conflict. Proactive measures, including mediating ceasefire agreements and facilitating dialogue between the conflicting parties, are essential to stabilize the region and avert a broader conflict. Ultimately, the assassination of Ismail Haniyeh highlights the fragility of the current geopolitical landscape and the immense challenges facing the pursuit of long-term stability in the Middle East. As tensions rise and the potential for violence looms, a concerted effort to promote peace and reconciliation is imperative. Only through sustained dialogue and cooperation can the cycle of violence be broken, paving the way for a more secure and prosperous future for all parties involved.

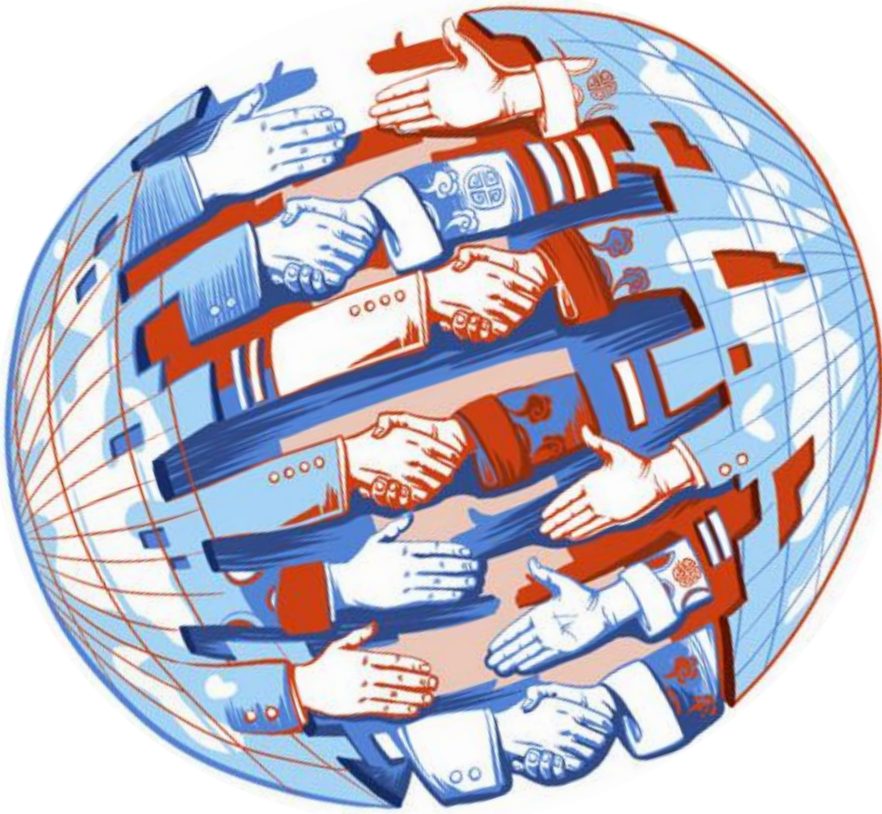


China's Soft Power **Ascendancy: A Blueprint For** **Global Harmony** **Hamna Ghias Sheikh**

In the intricate web of international relations, soft power has emerged as a defining force, weaving together nations through cultural affinity, economic cooperation, and diplomatic finesse. At the forefront of this paradigm shift stands China, orchestrating a multifaceted strategy aimed at projecting its influence and fostering cooperation on the world stage. As we delve deeper into the intricacies of China's soft power ascendancy, Joseph Nye's seminal theory serves as a guiding beacon, illuminating the pathways towards a more interconnected and harmonious global order. Soft power, as Nye defines it, is the ability to shape the preferences of others through persuasion and attraction rather than coercion. It encompasses a nation's ability to project its values, culture, and policies in a way that generates admiration, respect, and emulation, thereby enhancing its influence and achieving its objectives in the global arena.

Central to China's soft power calculus is the deliberate cultivation of cultural capital that transcends geographic boundaries and resonates with diverse audiences worldwide. From the timeless teachings of Confucian philosophy, emphasizing harmony and virtue, to the dynamic expressions of contemporary art and literature, China's cultural heritage serves as a powerful bridge, fostering mutual understanding and goodwill across cultures. Initiatives such as the Confucius Institutes symbolize China's commitment to cultural exchange, providing platforms for dialogue and collaboration that transcend linguistic and cultural barriers, echoing Nye's notion of soft power as the ability to attract and co-opt rather than coerce.

In addition to cultural diplomacy, China leverages its economic prowess to enhance its soft power footprint on the global stage. The Belt and Road Initiative (BRI), an ambitious infrastructure and economic development project, embodies China's vision of connectivity and mutual prosperity. Through strategic investments in infrastructure projects, trade agreements, and financial cooperation, China seeks to foster economic development and stimulate growth in regions spanning Asia, Africa, and Europe.



By championing the principles of win-win cooperation and shared benefits, China positions itself as a benevolent partner, fostering goodwill and enhancing its soft power influence in regions hungry for development and opportunity.

Furthermore, China's remarkable achievements in poverty alleviation underscore its commitment to inclusive development and socio-economic progress, a cornerstone of its soft power strategy. Through targeted policies, innovative solutions, and sustained investment, China has lifted millions of its citizens out of poverty, offering a compelling model for nations grappling with similar challenges. By sharing its experiences and best practices in poverty reduction, China not only enhances its soft power appeal but also fosters solidarity and cooperation among nations striving to overcome poverty and achieve sustainable development, embodying Nye's concept of soft power as the ability to shape the preferences of others through attraction and persuasion.

Amidst its soft power endeavors, China assumes a proactive role in fostering diplomatic dialogue and conflict resolution, recognizing the pivotal role of diplomacy in shaping international perceptions and relations. In the volatile waters of the Red Sea, where tensions simmer amidst geopolitical rivalries and security threats, China advocates for dialogue and peaceful resolution of conflicts, rather than confrontation or escalation. By urging all parties to normalize relations and engage in constructive dialogue, China seeks to create an environment conducive to cooperation, stability, and economic development, thereby reinforcing its image as a responsible and constructive global player committed to fostering peace and prosperity.



Moreover, China's strategic partnership with Pakistan serves as a testament to its commitment to building alliances based on mutual respect, shared interests, and strategic cooperation. Through initiatives such as the China-Pakistan Economic Corridor (CPEC), China and Pakistan have deepened economic, diplomatic, and military ties, underpinned by a shared vision of regional development and prosperity. By investing in infrastructure projects, energy cooperation, and people-to-people exchanges, China not only strengthens its bilateral relations with Pakistan but also enhances its soft power influence in the broader South Asian region, promoting stability, connectivity, and economic integration.

In conclusion, China's soft power ascendancy represents a transformative force in shaping the contours of global politics and governance, rooted in cultural enrichment, economic cooperation, and diplomatic engagement. By leveraging its cultural heritage, economic strength, and diplomatic finesse, China seeks to forge a more interconnected, inclusive, and harmonious world order, guided by the principles of mutual respect, cooperation, and shared prosperity. As China continues to navigate the complexities of global affairs, its soft power initiatives will undoubtedly play a pivotal role in shaping the dynamics of international relations and shaping the future of humanity on a global scale.

AUKUS: A Game-Changer In Indo-Pacific

Safia Mansoor

Since World War II, the AUKUS alliance—signed on September 15, 2021, between Australia, the United Kingdom, and the United States—represents the largest and most important security agreement in the region. AUKUS stands out not only because of its security objectives but also because of its emphasis on Indo-Pacific cooperation. The alliance is designed to complement existing Western security partnerships, including the Five Eyes and the Quad. Additionally, AUKUS will leverage emerging technologies such as artificial intelligence. This is a once-in-a-lifetime opportunity for the three countries to safeguard shared values, while buttressing their security vision of Indo-Pacific. The alliance marks a decisive shift in countering China's footprint in the region. AUKUS holds special significance for Australia, as it strengthens the country's historical alliances with the US and the UK. This agreement will enable Australia to build nuclear-powered submarines using US technology for the first time. These submarines offer a strategic advantage—they are faster, quieter, and harder to detect than conventional diesel-electric submarines, and they have virtually unlimited endurance.

Unlike conventional submarines, they can remain submerged for months, launch missiles over greater distances, and carry more cargo. With this new capability, Australia will become the seventh country in the world to deploy nuclear-powered submarines, following the US, UK, France, China, India, and Russia.

While Australia has made it clear that it has no plans to acquire nuclear weapons, the submarines will enhance Canberra's ability to deter aggression in the Indo-Pacific and protect its interests. Moreover, the submarines will provide Australia with the capability to deploy forces over much longer distances, reaching key geopolitical hotspots such as the South China Sea and areas near Japan. If Australia eventually develops the US Virginia-class submarine design, it would significantly enhance the country's strike capacity. This design allows for the deployment of up to 40 Tomahawk land-attack missiles, adding a powerful tool for Australia's defense. The addition of such advanced submarines would transform Australia's defense posture, enabling it to independently or collectively challenge Chinese forces in the region.

For the United States, AUKUS offers a unique opportunity to establish a local industrial base in Australia for the construction and maintenance of nuclear-powered submarines. This would support the US's broader Indo-Pacific strategy, reducing logistical challenges by providing a more reliable base for submarine operations in the region. The presence of these submarines in Australia also enhances US maritime and submarine capabilities in the Indo-Pacific, a key region for maintaining US influence. Furthermore, this agreement could help alleviate pressure on US submarine maintenance and production facilities, which are currently facing significant strain. For the UK, AUKUS presents a valuable opportunity to test and refine British technology alongside US components. This collaboration could accelerate the UK's own submarine development, particularly its future SSN(R) design.

Historically, countries have been able to speed up their defense projects by collaborating with partners. For example, Germany's collaboration with Finland on submarine technology in the interwar period laid the groundwork for its own U-boat production when needed. Moreover, AUKUS aligns with the UK's Integrated Operating Concept (IOpC), a strategic framework designed to adapt military operations to a rapidly changing and competitive global environment. The IOpC focuses on engaging with partners and confronting rivals without resorting to direct confrontation. The AUKUS agreement is a key example of how the UK can limit China's actions in the Indo-Pacific without direct military engagement, highlighting the UK's ability to exert strategic influence through partnerships rather than military might.

The AUKUS deal, particularly the planned deployment of nuclear-powered submarines by Australia, has intensified the US-China power competition. By providing Australia with advanced military capabilities, the agreement has raised the stakes in the region, heightening the risk of conflict. The increased presence of strategic nuclear platforms could destabilize the Asia-Pacific, making the region more vulnerable to geopolitical tensions and militarization. The US's pledge to station nuclear-powered submarines in Australia underscores the growing rivalry between the US and China. While the AUKUS partners argue that the agreement will promote regional security and prosperity, in reality, it may exacerbate tensions and complicate the geopolitical landscape. The region could become a battleground for competing strategic interests, as both the West and China escalate their military posturing. Although AUKUS is framed as a tool for fostering peace and security, it may inadvertently undermine regional stability, making the Asia-Pacific a more dangerous and unpredictable environment.

India's Power Play in the Gulf and the Implications for Pakistan

Syeda Fizzah Shuja

Over the past decade, India has made concerted efforts to cultivate stronger economic and diplomatic relations with the Arab world, ranging from the oil-rich Gulf Cooperation Council (GCC) to the Levant region. The GCC, a treasure trove of natural resources, holds the key to India's energy security, providing a lifeline of crude oil that fulfilled 55.3% of its demands in the year 2022-2023. This energy demand has transformed the Gulf monarchies into titans of the global economy, and India, a colossus in South Asia, has emerged as a coveted partner. Religions do not pay the bills, but oil purchases do and the numbers do not lie; bilateral trade surged, tripling to a remarkable \$180 billion in 2020-2021. With India's vast consumer market holding immense appeal, the GCC's investments have become a vital catalyst for India's economic growth, fostering a strong and enduring partnership that will shape the strategic dynamics of the region.

To fulfill India's political, economic and demographic stakes, under Prime Minister Narendra Modi, India has cemented a revitalized outreach toward the Arabian Gulf. With India rising as the largest trading partner of the GCC, it is described as the Bharatiya Janata Party's (BJP) biggest diplomatic achievement. The United Arab Emirates (UAE) proudly claimed its position as the fourth-largest investor in India in the dynamic fiscal year of 2022-23. Saudi Arabia's \$3 billion infusion in 2022 and Qatar's \$1.5 billion commitment in 2023 are merely the tip of the iceberg. The Comprehensive Economic Partnership Agreement with the UAE signed in 2022 aims to boost trade to \$100 billion in five years, while the Joint Working Group with Saudi Arabia will channel \$100 billion in investments, including a joint mega oil refinery project in Maharashtra. Furthermore, India has secured a \$78 billion liquefied natural gas pact with Qatar Energy, spanning 20 years, solidifying its position as Kuwait's largest trading partner and Oman's second-largest crude oil market. This multifaceted engagement highlights India's growing economic clout and its ability to forge mutually beneficial partnerships, as the ancient proverb "fortune favors the bold" aptly describes this new era of cooperation.

Along with economic ties, India has been able to foster defense and security relations with the Gulf Arab states. By casting a wide net of cooperation, India has secured its vital interests in the region, including the protection of sea lines of communication, the elimination of piracy threats and the exercise of the international law Freedom of Navigation (FON) in critical sea bodies like the Gulf of Aden and the Gulf of Oman.



In 2023, India deployed its front-line ship in the Gulf of Oman for anti-piracy operations, which is geopolitically vital for India, while Oman plays a crucial role in sustaining India's presence in the Gulf of Aden for maritime security missions. The Indian Army's first military exercise in the UAE and Saudi Arabia in 2024, "Sada Tanseeq," along with joint exercises like "AI Najah IV" with Oman in 2022 and "Desert Cyclone" with the UAE in 2024, demonstrates New Delhi's intent to build strategic trust among GCC countries, thereby cementing its position as a reliable security partner in the region. For decades, Pakistan has tenderly nurtured its relationships with Arab states, but India's growing influence in the region threatens to upend this delicate dance. As the Arab world grapples with the tumultuous forces of conflict and upheaval – from the bloody civil war in Yemen to the Syrian crisis and the Qatar diplomatic debacle – the ruling elites of the Arab Gulf have embarked on a path to diversify their economies and expand their political alliances beyond the Asian region. Pakistan's well-intentioned neutrality, however, has unwittingly played into Indian hands, as the latter has seized the opportunity to present itself as a stalwart defender of Arab interests, notably by voting three times against the Iranian nuclear deal at the United Nations. This deft maneuvering has earned India a coveted place in the orbit of the Arabic world, leaving Pakistan to ponder the consequences of its diplomatic inertia.

Likewise, Pakistan has experienced major setbacks in the context of the Kashmir issue. The Gulf states have adopted a neutral stance over Kashmir. In 2019, when India abrogated Article 370 in Indian-occupied Kashmir and stripped it of its autonomous status, the UAE called it an internal matter. Not only that, in 2020, the Indian Foreign Ministry announced that Gulf partners like Kuwait did not support any narrative that could be seen as interference in India's internal affairs.

Additionally, the China-Pakistan Economic Corridor (CPEC) has always been a thorn in India's side, as it views China's access to the Port of Gwadar as a future Chinese military base. Recently, Oman provided a special economic zone to India, bolstering the role of the Indian Navy in maintaining maritime security, especially amid the ongoing Red Sea crisis. This move is a clear strategic gambit by India to counter Chinese maritime ambitions in the Indian Ocean and to deter the Chinese and Pakistani navies near Gwadar. If it turns Duqm port into a military base, it could spell trouble for CPEC operations and disrupt trade routes from Gwadar to the Gulf.

Moreover, the I2U2 alliance emerged in 2021 among countries including India, Israel, the UAE and the U.S., aiming to resolve challenges through cooperation in areas like economy, energy, security, food and maritime security. India plans to boost itself as a sophisticated and powerful naval force, and its participation in strategic alliances like I2U2 has notably enhanced its maritime position in the Indian Ocean. The stakes for Pakistan have never been higher, as this strategic move by New Delhi poses a direct threat to Pakistan's interests in the Indian Ocean and the Arabian Gulf.

As the economic partnership between India and the Arabian Gulf flourishes, Pakistan's declining economic growth has greatly affected foreign direct investment from the Arab States. While Pakistan's slow progress in telecommunications, IT and petroleum has caused it to lose favor, India has been capitalizing on these opportunities and reaping the benefits. In 2023, both India and UAE announced plans to raise their bilateral trade from \$50 million to \$100 million, whereas, in the same year, Pakistan announced that it is likely to receive investments worth \$25 million from the UAE and Saudi Arabia within five years. This sharp decline from a high of \$200 million in late 2018 to a mere \$25 million today underscores a dramatic shift. With Pakistan's internal turmoil further straining its export relations, India has seized the opportunity to become a dominant player in the Arabian Peninsula, leaving Pakistan to grapple with a shrinking economic footprint.

With far-reaching consequences for Pakistan, India's increasing influence in the Arab Gulf signifies a seismic shift in regional dynamics. Robust trade links, energy security cooperation and growing investments serve as the foundation for India's strategic alliances in the Gulf, which encompass diplomatic, defense and economic facets. This move aligns with India's pursuit of energy resources and greater geopolitical influence. Consequently, the expanding India-Gulf nexus presents both opportunities and challenges for Pakistan. As India's geopolitical clout grows, Pakistan's influence in the region risks being eclipsed, potentially undermining its strategic depth and economic interests. This situation presents a clarion call for Pakistan to reassess its regional strategy. To navigate these changing dynamics, Pakistan needs to enhance its diplomatic and commercial efforts and expand its global partnerships to secure its position.



Indian Ocean As A New Political And Security Region – Book Review

Hamna Ghias Sheikh

The book “Indian Ocean as a New Political and Security Region” explores the evolving dynamics within one of the world’s most strategically significant regions. This comprehensive work delves into the multifaceted dimensions of the Indian Ocean, transcending its historical role as a maritime trade route to analyze its emerging status as a pivotal geopolitical arena.

Authored by experts in international relations, security studies, and maritime affairs, the book offers a nuanced understanding of how political and security landscapes are evolving across the Indian Ocean. It examines key geopolitical shifts, security challenges, and strategic interests of major and emerging powers that intersect in this vital maritime space. The book also explores the role of major powers like India, China, the United States, and regional organizations in shaping the Indian Ocean’s political and security landscape. It critically evaluates the strategic policies and initiatives of key stakeholders and their implications for regional stability and global maritime governance. With contributions from scholars and practitioners, “Indian Ocean as a New Political and Security Region” provides a comprehensive and timely analysis essential for policymakers, academics, and anyone interested in understanding the evolving dynamics and future prospects of the Indian Ocean region in the 21st century.

Chapter 2 of “Indian Ocean as a New Political and Security Region,” titled “The Advent of China’s Indian Ocean Strategy,” provides an in-depth analysis of China’s strategic initiatives and evolving role in the Indian Ocean region. Authored by experts in international relations and Asian geopolitics, the chapter begins by tracing China’s historical connections to the Indian Ocean through ancient maritime trade routes, emphasizing the revival of these ties in contemporary times under initiatives like the Belt and Road Initiative (BRI). It examines China’s strategic investments and infrastructure projects across the Indian Ocean littoral, such as the development of the Gwadar Port in Pakistan and the Hambantota Port in Sri Lanka, positioning these initiatives within the broader framework of China’s maritime Silk Road strategy.

Moreover, history shows that China’s early recognition of the geopolitical importance of the IOR, even before its emergence as a major economic power. It conducted its inaugural port visits to Pakistan, Bangladesh, and Sri Lanka from 16 November 1985 to 19 January 1986, marking a significant milestone in China’s naval capabilities and strategic outreach in the Indian Ocean Region (IOR). Despite this initial demonstration of naval capability, subsequent port calls in the region did not occur until the mid-1990s. By then, China had transitioned into a net importer of oil, emphasizing the pragmatic economic underpinnings of its expanding naval activities in the IOR. This strategic shift reflected China’s growing reliance on maritime trade routes to secure energy resources, highlighting the interplay between geopolitical strategy and economic imperatives in shaping China’s naval presence and influence in the Indian Ocean. Security considerations are a focal point, addressing China’s efforts to mitigate risks to its sea lines of communication (SLOCs) and protect its expanding maritime interests. This includes discussions on counter-piracy operations, naval diplomacy, and the broader implications for regional stability amid heightened geopolitical competition in the Indian Ocean. It also examines China’s engagement with regional organizations and its diplomatic efforts to build partnerships with Indian Ocean littoral states, analyzing the responses of traditional maritime powers and the United States to China’s growing influence. Likewise, the notion of China seeking permanent footholds in the Indian Ocean has significantly shaped debates on China’s regional ambitions and underscores its growing influence in the area. In the United States and particularly in India, analysts often interpret the “String of Pearls” as a challenge to American hegemony.

Likewise, the notion of China seeking permanent footholds in the Indian Ocean has significantly shaped debates on China's regional ambitions and underscores its growing influence in the area. In the United States and particularly in India, analysts often interpret the "String of Pearls" as a challenge to American hegemony or India's own strategic position, reflecting concerns about China's expanding presence and its implications for regional power dynamics. Conversely, skepticism persists within China itself regarding the effectiveness and rationale of securing energy supplies primarily through military means. This ongoing debate highlights differing perspectives on China's strategic motivations and the complex interplay between economic interests, regional security dynamics, and geopolitical strategies in the Indian Ocean region.

Likewise, Chapter 3 offers a fresh perspective on the evolving geopolitical dynamics between China and India in the Indian Ocean over the past two decades, particularly in the context of the Belt and Road Initiative (BRI). It underscores India's central role in the Indian Ocean, driven by its economic growth and the need for energy supplies and raw materials, paralleling China's needs. With China's rapid rise, India has actively sought to enhance its relationships with countries around the Persian Gulf and Africa, forging strong partnerships. It highlights India's strategic relationships with regional powers like Japan, France, the US, and even China. To bolster its regional influence, India has launched initiatives, such as rapprochements with small island states in the Indian Ocean through a trilateral framework. The authors note that India, in collaboration with Japan, is working on expanding infrastructure projects to counter China's influence in East Africa, Eastern countries, and Southeast Asia. This strategic shift has led India to redefine its policy in the Indian Ocean, assume a new, prominent role, and cautiously develop defense partnerships with various regional actors.

Similarly, Chapter 4 titled "The US, the Reluctant Offshore Balancer of the Indian Ocean Rivalries" explores the evolving role of the United States in the Indian Ocean region. Historically, the US has treated the area as a secondary priority, which has allowed China to expand its influence. Despite this, the authors assert that the United States remains a key player due to its significant military presence. The US's interests in the region are largely driven by its economic competition with China. The chapter begins by arguing that the Indian Ocean should be viewed through the lens of the great power rivalry between China and India. It then discusses how the US perceives other regional players, like South Africa and the Arabian Gulf countries, as secondary, which hinders its ability to effectively engage with these emerging powers. This limited engagement is highlighted by recent developments, such as the strengthening of relations between the Arab Gulf states, Iran, and China.

In the same way, Chapter 5 explores how France and the United Kingdom are reasserting their influence in the Indian Ocean region through strategic partnerships in Africa and ASEAN countries. Historically viewed as a competitive arena for European powers rather than a cooperative one, the region's dynamics are evolving amidst global financial constraints. This shift is driven by their increased investments and military engagements across sub-regions like the Horn of Africa and South Asia.

Likewise, Chapter 7 examines Australia and ASEAN's evolving roles from observers to proactive participants in Indian Ocean affairs. It questions their capacity to shape regional policies effectively, highlighting Australia's strategic adjustments in response to China's growing influence and ASEAN's internal challenges regarding its stance on China's expanding presence. Equally, Chapter 8 focuses on Africa's changing role from a passive stakeholder to a potential power broker in the Indian Ocean. The chapter underscores Africa's increasing integration into global initiatives like China's Belt and Road, signaling a shift from historical colonial dependencies. It emphasizes the efforts of East African countries to leverage their natural resources to attract regional powers, thereby transitioning from peripheral participants to influential actors in regional geopolitics.

Lastly, Chapter 9 rethinks the security architecture of the Indian Ocean, advocating for a governance-oriented approach rather than competitive dynamics among diverse stakeholders. The authors propose strengthening multilateral frameworks to mitigate potential power struggles and promote stability. They advocate for pragmatic strategies that bolster existing regional organizations while fostering new cooperative frameworks among states and organizations. This approach aims to prevent the Indian Ocean region from becoming a battleground for global powers, emphasizing collaborative efforts to manage and govern its complex geopolitical landscape.

Although, this book provides a thorough and insightful analysis of the region's evolving dynamics, yet it predominantly reflects a Western perspective, which may inadvertently limit the breadth of its analysis. The book's emphasis on the strategic interests and policies of Western powers, particularly those of the United States and European countries, often overshadows the perspectives and initiatives of regional actors. While the chapters meticulously detail China's growing influence and strategic activities, these are frequently interpreted through a lens of Western strategic considerations, rather than giving equal weight to China's developmental aspirations. Similarly, the analysis of regional powers like India and the Gulf Arab monarchies tends to focus on their interactions with Western nations and their competition with China, potentially underrepresenting their independent regional roles and strategies.

Navigating Turbulent Waters: The Red Sea Crises And Its Far-Reaching Impact On Global Maritime Trade

Javaria Shaikh

Global maritime trade is the backbone of the world economy, ensuring the circulation of goods, raw materials, and energy resources across nations. Indispensable to this interconnected network is the Indian Ocean Region (IOR), which plays a vital role in facilitating international trade. The IOR acts as a dynamic maritime corridor, connecting producers and manufacturers with consumers globally. Its strategic location enables efficient and economical transportation of goods between Asia, Africa, the Middle East, and beyond. Being the home to three established nuclear powers and one potential nuclear power, the Indian Ocean has been a central trade arena for centuries. Approximately 90,000 vessels, carrying 80% of the world's maritime oil and 9.84 trillion tons of cargo, traverse the Indian Ocean each year, crossing through its critical choke points to reach global destinations.

The strategic significance of the Indian Ocean in global supply chain lies in its four critical choke points: the Malacca Strait, the Strait of Hormuz, the Strait of Bab al Mandeb, and the Mozambique Channel. These chokepoints are crucial to international trade, with even minor disturbances causing significant impacts on global shipping. A disruption at one chokepoint often affects trade volume at others, intensifying the economic and security challenges in these vulnerable areas. One such critical chokepoint is Bab al Mandeb, connecting the Gulf of Aden to the Red Sea. The Red Sea is a strategically significant maritime corridor linking Europe, Asia, and the Middle East, handling about 12% of global trade, valued at billions of dollars. Its strategic importance is primarily anchored in the Suez Canal, which joins the Red Sea to the Mediterranean Sea, making the Red Sea a pivotal artery for global trade.

However, the Red Sea faces dire threats from violent non-state actors, such as the Houthis in Yemen, posing substantial challenges to maritime security in the region. These groups often target commercial shipping, naval vessels, and port facilities, disrupting trade and potentially causing economic and humanitarian crises. A surge occurred in the threat from the Houthis in the Red Sea, when Israel began its military operation against Hamas in Gaza in October 2023. Initially, the Houthis launched a long-range ballistic missile at Israel, which got intercepted by the US. By mid-November 2023, the Houthis shifted their attention to attack merchant vessels, starting with the hijacking of the vessel *Galaxy Leader* and continued with assaults in the lower Red Sea and the Strait of Bab al Mandeb using drones, missiles, and gunmen on speedboats.

Since October 19, 2023, the Houthis have targeted nearly 80 ships in the Red Sea and Gulf of Aden with missiles and drones, disrupting global trade. By April 2024, the Houthis had launched 164 missiles and 265 drones at 79 ships, hitting 29 merchant vessels, sinking one, and killing three seamen. The Houthi maritime operations have evolved through various phases, characterized by changing patterns in the location and targets of their attacks, spreading from Israel to the Red Sea and the Gulf of Aden. The targeted ships started from attacking primarily Israeli vessels to those with connections to Israel, the US, and UK.

Among these attacks, one of the most prominent incidents was the sinking of the British owned *Rubymar* cargo ship in the southern Red Sea. Recently, Yemen's Houthi militia claimed responsibility for two more drone and missile attacks on a US warship and a commercial ship in the Red Sea, vowing to continue striking ships in international waters near Yemen's borders in support of Palestinians. In a television broadcast, Houthi military spokesman Yahya Sarea stated that the houthi militia's naval forces launched a "precise" missile strike on the US Navy destroyer *USS Mason* in the Red Sea. Sarea did not specify when these attacks occurred or the extent of human casualties or damage.



The sprouting Red Sea crisis is having worst impacts on the global maritime trade and supply chain. The first major impact is the significant decline in trade through the Suez Canal, causing shipping lines to reroute their vessels around the Cape of Good Hope, resulting in much longer journeys. By the end of March 2024, traffic volume through the Suez Canal and Bab al Mandeb Strait had dropped significantly, while navigation via the Cape of Good Hope had increased by 100%. According to UNCTAD, by the first week of March 2024, the gross tonnage of vessels arriving at the Cape of Good Hope increased by 85% and containership arrivals by gross tonnage surged by an impressive 328%. Seadistance.net (2024), reports that circumnavigating Africa adds 4,575 nautical miles and 12 days to the sailing time between Shanghai and Rotterdam, assuming an average speed of 16 knots. Despite the additional costs and time involved, most large container carriers have suspended operations in the Red Sea.

The second major impact of the Red Sea crisis on maritime trade is the change in freight rates and surcharge practices. The crisis has significantly affected spot freight rates. Higher freight rates are attributed to capacity being absorbed by the longer Cape route, additional fuel costs, and negative shipper expectations regarding future capacity availability. J.P. Morgan Research estimates that these disruptions will lead to 0.7 percentage surge in global core goods inflation and 0.3 percentage increase to core inflation during 2024. The escalating Red Sea crisis has not gone unnoticed due to its severe implications for the global supply chain. Initially, in response to Houthi attacks, US, French, and British warships shot down Houthi drones and missiles. In December 2023, the US announced the formation of a coalition of countries to patrol the southern Red Sea to safeguard vessels from attacks. This coalition, named Operation Prosperity Guardian (OPG), includes the UK, Bahrain, Canada, France, Italy, the Netherlands, Norway, Seychelles, and Spain.

Moreover, on January 11, 2024, the US and Britain began bombing dozens of Houthi-linked targets in Yemen. In addition to Operation Prosperity Guardian, the European Union launched its own naval mission on February 19, 2024, to protect cargo ships in the Red Sea. This mission has deployed European warships and airborne early warning systems to the Red Sea, Gulf of Aden, and surrounding waters. Despite all countermeasures, the Houthis have shown no signs of stopping until their demand for a ceasefire agreement in Gaza is met. Recently, the Houthis stated that American and British airstrikes would not deter them from supporting the Palestinians and vowed that their attacks would continue. This indicates that the Red Sea crisis is unlikely to end soon, emphasizing the need for a collective effort by global powers to address the situation in Gaza and mitigate the ongoing threats to international trade.



Trump's America First Redux and its Impact on Ukraine **and Israel-Palestine Conflicts**

Javaria Shaikh

Donald Trump's return to the White House after the 2024 elections has reignited debates on US foreign policy and particularly regarding protracted global conflicts like the Ukraine-Russia war and the Israel-Palestine crisis. With his "America First" agenda in the spotlight, Trump's past policies, recent statements, and potential decisions can dramatically shift the trajectory of these conflicts. His emphasis on prioritizing American interests and reducing the nation's involvement in international conflicts aligns with his previous term but how this philosophy translates into addressing these crises remains to be seen.

Trump's 'America First' Dogma

During his first term, Trump underscored his aversion to prolonged foreign engagements by orchestrating the US withdrawal from Afghanistan. This move reflected his broader skepticism of America's role as the world's policeman. With his reelection the same doctrine is poised to inform his approach to Ukraine and the Middle East. Trump's apparent distaste for extended military aid to foreign nations and his threats to withdraw from NATO further underscore his intent to extricate the US from what he views as costly entanglements.

The Ukraine-Russia War

In his recent statements, Trump has advocated for an immediate ceasefire in Ukraine, positioning himself as a potential peacemaker. He has called on Russian President Vladimir Putin to act decisively and suggested that Ukrainian President Volodymyr Zelenskyy is open to negotiation, framing the war as "madness" that needs to end. Trump's remarks on potentially reducing military aid to Ukraine and reconsidering US participation in NATO have alarmed both Kyiv and Washington's European allies.

The question remains still remains can Trump broker peace in Ukraine or will his policies inadvertently embolden Russia? Critics, including former National Security Adviser H.R. McMaster, warn that Trump's approach can lead to concessions detrimental to Ukraine's sovereignty. A peace deal favoring Russia, such as territorial concessions can yield short-term stability but may set a dangerous precedent for future conflicts. Trump's praise of Putin's decisiveness and his criticism of Biden's extensive military aid to Ukraine suggest a departure from the current administration's hardline stance. Trump argues that his leadership can have prevented the war entirely. Whether this reflects strategic posturing or genuine confidence, his policies may compel Ukraine to agree to terms that many view as a compromise of its sovereignty.

In the Middle East, Trump's presidency previously marked a significant shift in US policy, heavily favoring Israel. From recognizing Jerusalem as its capital to facilitating the Abraham Accords, Trump prioritized Israeli interests while sidelining Palestinian grievances. His re-election has reignited optimism among Israeli leaders, with Benjamin Netanyahu quickly expressing enthusiasm for Trump's return. Trump has reportedly set a deadline for Netanyahu to address the ongoing Gaza conflict by January 20, 2025, signaling his intent to avoid prolonged US involvement.



Contemporary Strategic Developments In The Indian Ocean:

Key Takeaways

Syeda Fizzah Shuja

“Covering approximately 27 percent of the Earth’s water surface, the Indian Ocean is the third largest ocean. It’s surrounded by Asia, Africa, Australia, and Antarctic Ocean, and connects the Pacific Ocean to the Mediterranean Sea. The trade routes transiting through Indian Ocean are vital for commercial shipping and have strategic and military implications. The region recorded a total trade volume of \$6.17 trillion, in 2020. Chokepoints such as the Strait of Hormuz, Babel-e-Mandeb, Horn of Africa, Suez Canal, and Malacca Strait serve as crucial transit nodes for global trade.

In contemporary world, shaped by China-U.S. power struggle, control over the Indian Ocean and its crucial trade routes has significantly elevated its strategic significance. China’s Belt and Road Initiative (BRI) is a physical demonstration how Beijing is building up infrastructure and gradually expanding its presence in its surrounding regions, particularly Indian Ocean Region (IOR). To protect its economic interests in Indian Ocean, China is gradually increasing its naval capabilities and outreach. Chinese military base in Djibouti (2017) exemplifies Beijing’s increasing focus in securing sea routes through military means.

Additionally, People’s Liberation Army Navy (PLAN) is rapidly increasing its size and has already become the largest navy as far as numerical vessel count is concerned. Pentagon report titled Military and Security developments involving the People’s Republic of China (2023) forecasts that PLAN is focusing on increasing its fleet size to 400 warships by 2025, up from its current fleet of 340 warships. Therefore, China’s rapid naval capabilities modernization is perceived by Washington as threat to its naval hegemony, especially in the Indo-Pacific Ocean Region.

United States is undertaking measures to contain Beijing’s growing influence in Indo-Pacific Region. United States already has a robust presence in IOR and has its fifth naval fleet, USNAVCENT, stationed in Bahrain. Moreover, key strategic bases, like Diego Garcia, have allowed United States to consolidate its power projection capability in entire IOR. Beside, Washington is forming new alliances in the region.

Quad (2007), a strategic forum consisting of United States, Japan, India, and Australia, aims to enhance maritime security. But according to Beijing, this forum is directed to contain rising China though collaborative efforts of like-minded powers. The members of this coalition also conduct annual Malabar Exercise which represents military axis of this multi-lateral platform.

Furthermore, AUKUS, a trilateral strategic pact among Australia, United Kingdom and U.S., signed in Sept 2021, aims to enhance defence and security cooperation between three nations. The most prominent aspect of AUKUS is the \$368 billion worth deal for providing nuclear-powered attack submarine (SSN) to Royal Australian Navy (RAN). Beyond the risk of accelerated nuclear proliferation in the region, this agreement could motivate other nations to acquire similar capability. For instance, currently, India is focusing on acquiring French naval nuclear propulsion technology. This presents challenges related to nuclear arms race as well as, to the safety of nuclear assets.

Under Modi’s leadership, India has showcased a more assertive posture in Indian Ocean. This posturing is in accordance with India’s ambitions of being regional hegemon and to act as net-security provider in Indian Ocean Region. Similarly, U.S. and India also share common interests in the Indian Ocean as far as containment of growing Chinese influence is concerned. In 2016, U.S. designated India as a major defence partner to broaden American influence by facilitating increased bilateral defence trade, technology transfer and cooperation on various security issues in IOR.

According to U.S. and India security pundits, by developing economic and naval presence in Indian Ocean, stretching from mainland China to the Horn of Africa through various military and commercial instalments, Beijing is strategically encircling India.

This strategy, unofficially termed as “The String of Pearls,” aims to build a network of maritime infrastructure at key strategic locations in Indian Ocean including Bab el Mandeb, Hormuz Strait, and Lombok Strait while extending diplomatic and commercial support to regional maritime nations. New Delhi administration fears that Chinese capital deployment in Chabahar port and Gwadar port could potentially hinder India’s maritime trade in the region. Pakistan holds extremely important geostrategic position and intends to enhance its geopolitical standpoint in the Indian Ocean through China Pakistan Economic Corridor (CPEC) project. Since Pakistan is geographically close to the Strait of Hormuz, a conceivable flash point, the unhindered trade flow is a prime concern for Pakistan.

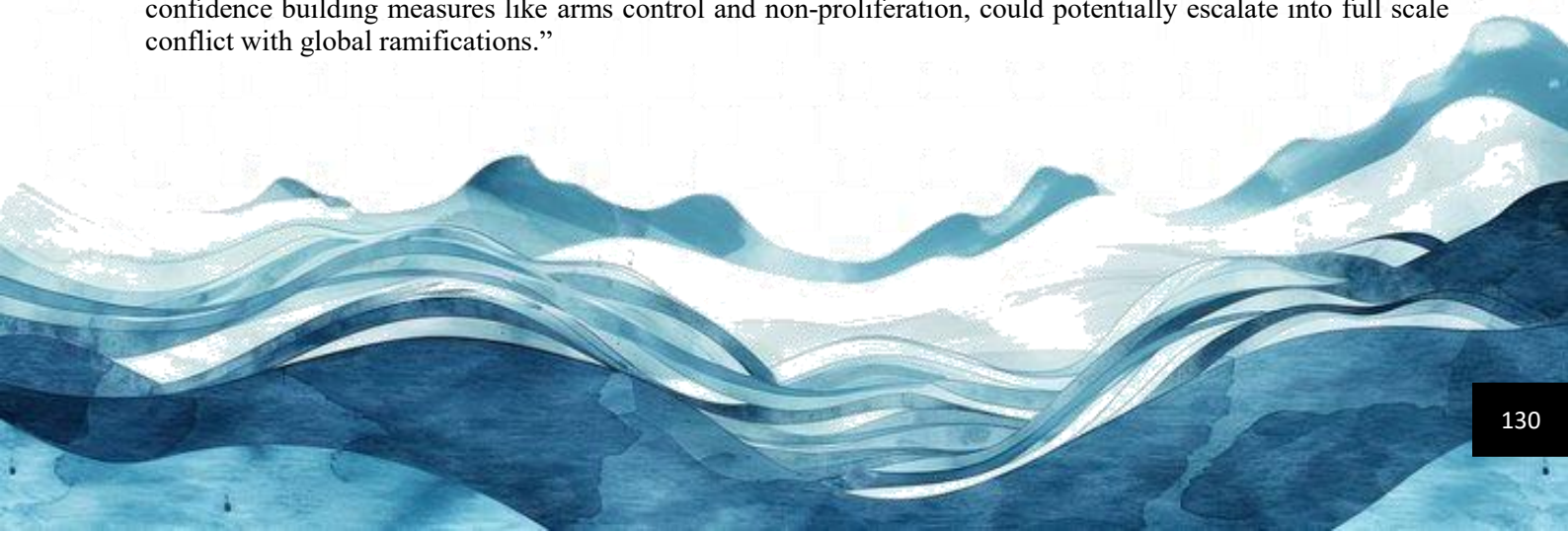
To counter this threat perception, New Delhi has also launched a counter strategy, unofficially called ‘Necklace of Diamonds’. The Necklace of Diamonds strategy comprises establishment of Indian Naval bases in Singapore, Indonesia, Iran, Oman and Seychelles which will significantly expand India’s naval outreach. Additionally, India has focused its foreign policy towards Africa, South-East Asia in order to out-compete China in the IOR.

Beside developing naval infrastructure in surrounding regions, New Delhi is also establishing robust military co-operation with Washington by signing several bilateral strategic agreements. In 2016, the U.S. and India signed Logistics Exchange Memorandum of Agreement (LEMOA) for logistics access, allowing port calls, refuelling and joint military exercises. Additionally, Communications, Compatibility and Security Agreements (COMCASA) was signed in 2018 and has ensured intelligence interoperability and intelligence exchange. Similarly, in 2020, Basic Exchange and Cooperation Agreement (BECA) deepened the partnership by facilitating the geo-spatial intelligence and aeronautical data. These agreements, however, are compromising the balance of power in the region. The intensification of security dilemmas has launched a new arms race in the region. Moreover, if this arms race gets aggravated, the situation might lead to conflict between regional and extra-regional IOR stakeholders.

In brief five key takeaways can be highlighted as far as contemporary strategic developments in Indian Ocean is concerned. First, China-U.S. power struggle is reshaping the geopolitical order. It has led to increased militarization and aggressive posturing by both nations. On global scale, this competition has polarized the countries, forcing them to find delicate balance between both powers. Second, collaborative arrangements like Quad has brought together United States, Japan, India, and Australia for securing collective interests like China’s containment. However, it’s unlikely that Quad will evolve into a NATO replica due to inherent compatibility in political and military domains, the shortfall in the geographical proximity among the stakeholders, and absence of a credible legislative framework. Third, security pacts like AUKUS can set trend of exploiting the loop holes in nuclear non-proliferation regime. This agreement has the potential to motivate other nations to gain nuclear capabilities which would potentially make the not only the Indian Ocean but entire world more nuclearized.

Fourth, enhanced U.S.-Indian cooperation and India’s assertive naval build-up can disturb the Indo-Pak balance of power. This development will compel Pakistan to modernize and expand its naval capabilities even further. Consequently, it will lead to naval arms race between India and Pakistan which can compromise regional strategic stability of entire region. And finally, any crisis in Indian Ocean can potentially disrupt key SLOCs passing through the region. The Indian Ocean stands as a critical theatre in a multipolar world where the pursuits of gaining control over vital trade chokepoints like Strait of Hormuz and Bab el Mandeb have attained significant security and strategic significance. The disruption can have global consequences as it can undermine global economy with severe spill-over impact.

The intensifying China-U.S. power struggle in Indo-Pacific region, particularly Indian Ocean, will intensify regional security dilemma, which will accelerate naval arms race involving global as well as regional powers. Emerging alliances, like Quad and AUKUS can jeopardize the balance of power. The situation might lead to tensions between regional and extra-regional IOR stakeholders. These tensions, if not mitigated through confidence building measures like arms control and non-proliferation, could potentially escalate into full scale conflict with global ramifications.”





Mackinder and Mahan: **Geopolitics of BRI in South Asia** **Safia Mansoor**

Geopolitics is incessantly at play within International relations, but its key functioning and presence is evident from China's various geo-political endeavors. Belt and Road Initiative (BRI) is prime project manifesting China's geopolitical endeavor with more than 150 states being part of it. Launched by the President of China Xi Jinping in 2013, BRI comprises of the land component-Silk Road Economic Belt and a maritime component-21st century Maritime Silk Road. The BRI would open pathways for China to Asia, Middle East, Africa, Europe, and beyond. The BRI indeed has substantial repercussions for the South Asia as well.

The successful realization of BRI will depict the aforementioned geo-political theories of Mackinder and Mahan as symbiotic, colossally enhancing the China's influence and power in world in general and with respect to South Asia in particular. Currently, the China and India have been significant power contenders and rivals in the South Asia in political, economic, and military domain. India has been bolstered by the USA as a regional influencer and key actor in containment of China's BRI project. Despite that, China through its ambitious BRI project has been making considerable space in the South Asia region through its complementary land and maritime components under BRI.

1) Halford Mackinder's Heartland Theory

As per the Mackinder, the Eurasia's vast area, marked by Arctic as well as inland drainage is regarded as the Heartland. The 900, 000 square miles geographical area extend from Volga River to Siberia's Eastern and then from the Mountainous Himalayas to Arctic Ocean. Mainly it was drained into lakes and inland seas as well as in the Arctic Ocean which in turn is characterized by its frozen nature all over the year which made it inaccessible to the sea power and ocean ships. In 1904, politically, the 'Pivot Area' was completely Russian Eastern Europe as well as in Asia because it encompassed Afghanistan, Iran, Baluchistan, part of Mongolia and Western China. However, in 1919 the Heartland didn't remain similar to the 1904 Pivot Area and was broadened westward in order to include entire European Russia. Areas added were the Black Sea, Baltic Sea, navigable middle coupled with lower Danube, Armenia, Asia minor, Mongolia, Tibet, and Persia. Hence the Heartland in 1919 lost its feature of solely area of Arctic and inland drainage. In 1943, Heartland's geographical contours were modified by the Mackinder as he excluded the Serbia's easternmost part. Entire Soviet Union excluding the Lenaland was added in the Heartland.

The Marginal or Inner Crescent:

Eurasia's marginal lands surround on its east, west, and south, which were called as the "marginal or the inner crescent" by the Mackinder.

It makes the circular arc of the Eurasia's coastlands raging from the Scandinavian area to the Manchuria. The areas included in the marginal crescent are entire Europe excluding the Russia part, Middle East most area, Asia's monsoon-lands-India, Far East and South East Asia, and North Africa. Contrarily to the Heartland, the area of navigable rivers and oceanic drainage is the inner crescent, approachable to the sea-power.

Insular or Outer Crescent:

The world's geopolitical organization as per the Mackinder regarded as the insular or outer crescent beyond the marginal crescent are positioned along with the widely segregated lands of the insular or outer crescent. It entailed mainly the South and North Americas, British Isles, Australia, South of Sahara, Africa, and Japanese island, which Mackinder labelled as second Heartland.

Key Assumption

As per the Mackinder, the Heartland is deemed more essential as compare to the outer or inner crescent, and the key reason was that the Heartland was enclosed by the physical barriers which makes it secure outside attack. The key postulate of his theory are that "whoever rules East Europe commands the Heartland; whoever rules the Heartland commands the World-Island; whoever rules the World-Island commands the World." Here the 'World Island' refers to the three interlinked continents also termed as the Afro-Eurasia. Mackinder envisaged the emergence of the Great land power in area what he called as Heartland that would spread towards the Eurasia's marginal lands which in turn would expand to the remaining world.

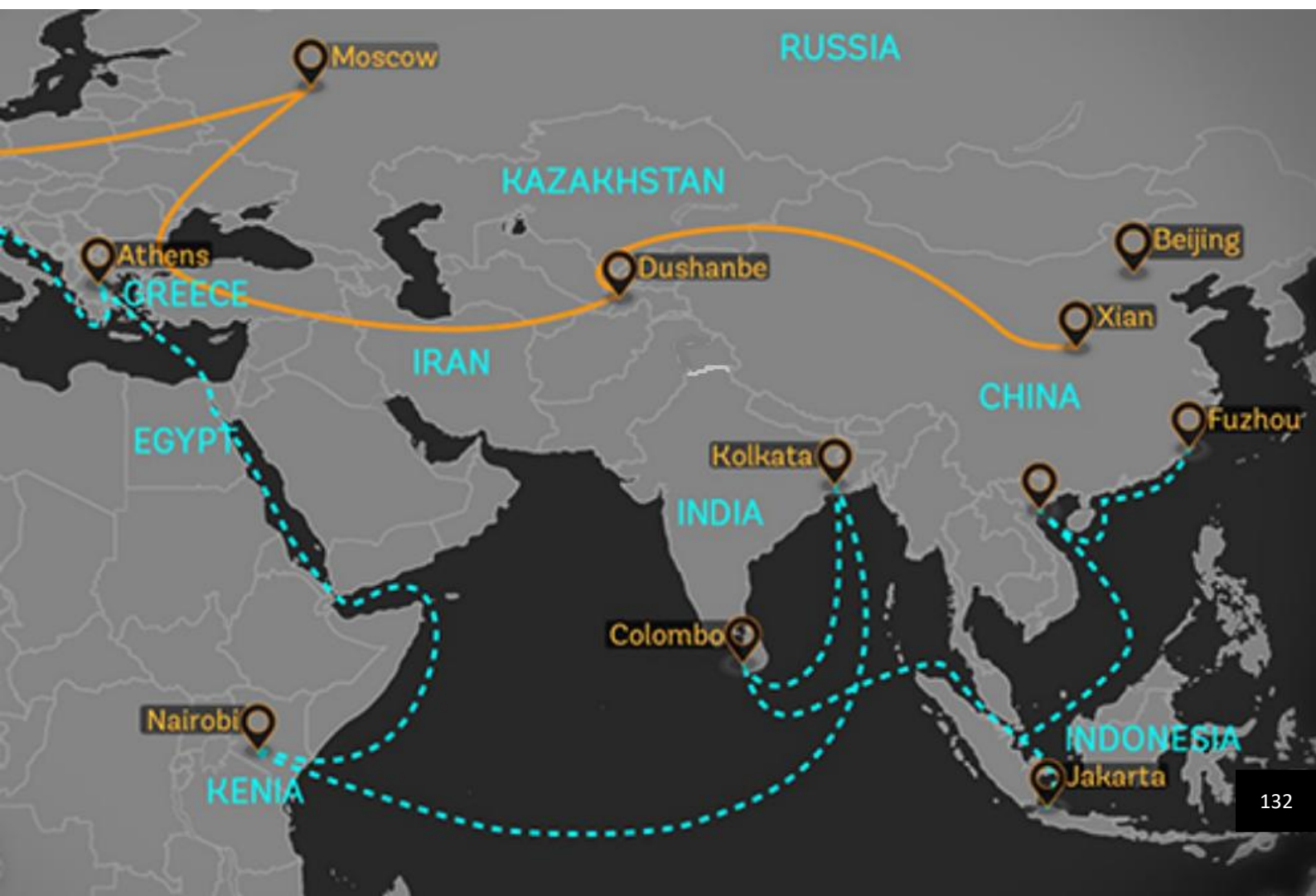
Silk Road Economic Belt and Mackinder

The Heartland theory of the Mackinder is a significant prism in order to envisage the great power competition in South as well as Central Asia. The interests of the China and Russia intersect, and the US is incessantly trying maintain a grueling-cum-fragile influence. The resurgence of the China and the changed geo-political landscape gives a chance to reconcile the Heartland perspectives with regards to BRI.

The mammoth potential of China to become a Eurasian land power along with the sea power hasn't been accounted by the various classical geo-politics. As a maritime power, the role of China is well-comprehended, but the Heartland conception of China is mostly ignored. Predominantly, the Heartland's European aspects were given importance, but in 21st century, the Eurasia's Asian conception and its geo-political importance cannot be underestimated while taking into consideration the rise of the revisionist power China. The increasing military and economic growth of China coupled with the Sino-Russian security cooperation provides an opportunity of economic as well as political collaboration, while simultaneously carry out the power projection from the inner crescent. The convergence of the interests between China and Russia might generate a situation where maritime access by China can be controlled towards Eastern Eurasia by observing the A2AD-Anti Access Area Denial Strategy and simultaneously getting the economic leverage through economic corridors on lands linking Asia to Europe's Western part via the Central Asian Region. However, the potential cooperation between Russia and China in order to get this end seems a dangerous and novel shift. The case of this collaboration is crucially vulnerable given the situation where the Russian and Chinese physical reach in the South and Central Asia began to diminish or the conflictual situation arises between the China and/ or Russia and US.

As the Russian and Chinese collaboration with respect to controlling the Heartland seems a distant idea, it is mostly presumed that a new Heartland will be created by the China consisting of the mega landmass based on the China, CARs-Central Asian States, parts of Western and Eastern Europe, which has tremendous similarity with the original landmass proposed by the Mackinder excluding Russia. In case of materialization of this idea and the proposed and undergoing corridors under the BRI, a new power's fulcrum projecting immense influence over continental area of Eurasia will become a source of economic and strategic prowess of the China. All these developments are not in isolation with the South Asia, as the BRI's pivotal corridors and the states are located in the South Asia and it's the region where MSR and SREB intersect giving China the gateway to other continents. South Asia at the cross roads of the Central Asia would undoubtedly be effected the China's access to this region. It would indeed enhance the multiple implications for the South Asia Region. Mainly, the strategic, political and economic clout of the China would be increased and it would be adverse for the regional hegemony seeking state- India in the South Asia. Moreover, the USA's power and interests in the region would be indeed challenged due to China's presence.

China is incessantly seeking to resurrect the ancient Silk Road which is envisaged as the superhighway of the Eurasia traversing the Heartland and connecting the China with continents other parts such as South Asia, South East Asia, Middle East and Europe. The BRI proposed or underway railway projects also seems to resonate with the Mackinder's emphasis on the trans-continental rail network in order to enhance the state's prowess.



Alfred Thayer Mahan: Theory of Sea Power

Alfred Thayer Mahan a theorist as well as founder of school of geopolitics in US is a renowned name because of his ideas regarding sea power of states. As far as Mahan ideas are concerned his vision reflects zero-sum game in context of international trade and shows approaches of mercantilism. His core ideas were that in order to protect the state interests as well as trade against enemy state, the acquisition of staunch navy is indispensable in this regard.

Three key principles

- i. The underline principles of Mahan theory are:
- ii. Building a very strong navy (naval power)
- iii. Building overseas bases
- iv. Developing merchant marines (it refers to commercial ships).

These three core elements will ultimately lead to opportunities for state at global level. Mahan further reinforced the fact that significant SOLCs (Sea lines of communication) as well as vested economic interests of a state can be protected by the navy. Besides this the navy could maneuver and can increase the strategic interests as well as expansion through overseas bases.

Control over Sea and relay points

Monetary means for building as well as sustaining navy would come from the trade revenues. This strategy could be materialized by gaining control over Sea lines of communication, canals as well as straits that act as choke points or narrow passages essential for trade. Mahan staunchly supported the communication by attaining control over sea and this can be achieved either by possessing that territory and making it as states own or through other means and for this a well-established and carefully spaced posts should be made originating from the home state. Mahan in his book “The influence of Sea power on History” said that possession over sea means possession over everything. Mahan’s theory of sea power stresses the fact that economic security of a state and its prowess is directly related to the power and command over sea. Mahan talked about the relay points in the sea more specifically significant maritime routes for trade and economic interests and to make them secure is essential for economic strength of state.

Command of sea

Mahan asserted that the state’s foundation is established by the strong navy in order to have a ‘command of sea’. But attaining former doesn’t ensure the latter. Aside from strength of navy, actual command of the sea requires the formation of prudent naval strategy. As per the Mahan, the naval strategy’s ultimate goal is to enhance and safeguard the sea power of the sea, either in times of peace and war. Sea power, particularly the command of sea is colossally reliant on the naval strategy and navy of state. Without effective naval strategy and strong navy, a particular sea area cannot be commanded as attack could be launched or blockade can be imposed via sea area by hostile state.

China’s Maritime Silk Road and Mahan

China’s 21st century Maritime Silk Road (MSR) was carefully mooted alongside the SREB-Silk Road Economic Belt as component of the Belt and Road Initiative in order to strengthen the maritime connectivity of China with the Indian Ocean Region, Africa and Southeast Asia. Besides increasing the regional connectivity, the BRI envisages to resurrect the cultural and historical linkages of China with states along the old Silk Road affiliated maritime routes. The Maritime Silk Road entails multiple infrastructure projects such as roads, ports, bridges, highways, underwater gas and oil pipelines. In case of South Asia, the MSR traverses the various South Asian States and the Indian Ocean, enhancing the China’s strategic clout there.

Although China is not Indian Ocean littoral state but it has invested huge sum of money even billion dollars in the littoral states of Indian Ocean or the South Asian such as in Pakistan, Sri Lanka, Maldives, in order to establish China maritime hubs that are essential for securing energy supply and raw material import and for export to Africa as well as Europe. The materialization of China’s mega infrastructural projects would provide it secure access to Indian Ocean and simultaneously pave way for enhancing its geo-political clout in region. As per China’s view these China ports and bases would act as commercial relays and are also for anti-piracy and for increasing its trade even towards the African region.

South Asia as potential gateway

As far as South Asia is concerned, it would serve as potential gateway to guarantee the access to Indian Ocean required for oil trade from Africa and Middle East to China, thereby addressing the Malacca Dilemma. MSR traversing through South Asia has is a gateway to connect landlocked southwestern provinces of China to coastal region. The stake of the China ports of South Asia would enable the People’s Republic of China to carry out power projection beyond its borders coupled with the deterring the external threats.

Sri Lanka and Hambantota port

China has built the Hambantota port at the fishing village site in Sri Lanka, which is regarded as the MSR's inception project in 2017. The Chinese company got the port at lease for 99 years. It is rapidly growing as RO-RO transshipment hub which handled 700, 000 trans-shipment vehicles in 2023.

Pakistan and Gwadar port

In Pakistan, the China has also created its another significant and strategically important Gwadar port Baluchistan province under the flagship China-Pakistan Economic Corridor worth of 64 billion dollars. The strategically located Gwadar port, adjacent to the Persian Gulf right below the Choke point Strait of Hormuz is pivotal component of CPEC. COPHC- China Overseas Port Holding Company which is a state run company is responsible for conducting operations as well as building mega projects and other work of development nature. In order to ensure the security of Gwadar port, Pakistan has created Task-Force 88. This port signifies the staunch strategic partnership between China and Pakistan and it would tremendously enhance the maritime presence of China in Indian Ocean region.

Bangladesh and Chittagong port

In Bangladesh, China has built a Chittagong port and this port has facility for containers and it includes commercial as well as comprehensive naval facility and access. Besides this, China is also providing military assets to Bangladesh such as submarines through the process of soft loans and this a major step in building the cordial relationship between two states. Importance of soft loans can be determined by the fact that these soft loans are less challenging for the booming Bangladesh economy as compare to the commercial loans which have much high rate of interest and harsh conditions. The development of the Chittagong port would enormously help China in maintaining safety of the energy channels. Additionally, this port can carry out colossal role by acting as significant bridge for South Asia in order to reach the East Asia, Southeast Asia, and beyond.. This would provide China with the maritime infrastructure to carry out the sea trade and enhance its maritime prowess. The government of Sheikh Haseena also sought investments from China build another port at the Bay of Bengal's gateway, particularly in Sonadia.

Maldives

As far as Maldives is concerned, it has mammoth strategic significance for the Peoples Republic of China. India as well as China consider Maldives as the focal point of the political-cum-strategic aspirations in the Indian Ocean. Since the election of Mohamed Muizzu as Maldives' President, the strategic partnership between both states is incessantly growing. Under the BRI, China developed 'China-Maldives Friendship Bridge' in 2018; however, recently both states signed a military agreement whereby China pledged to provide free of cost non-lethal military equipment. Moreover, research vessel of China 'Xiang Yang Hong' docked in Male in February 2024, signifying its geo-political clout in region.

Comparative Analysis

The amalgamation of the strategic and geo-political thoughts of the Mahan and Mackinder gives plausible interpretation with respect to the BRI strategic intent of the China. The successful materialization of the BRI would provide China 'Command of the Seas' as well as the 'Rule of the Heartland', both indispensable to the geographical and strategic contexts of the China.

As far as the maritime sphere of the BRI is concerned, it will provide the indispensable logical support basis in order to buttress and sustain the strategic interests and naval strategy which as per the Alfred Thayer Mahan are the crucial variables in order to ensure capability as well as sustain maritime power of the nation and enhancing the geo-political presence in the South Asia and beyond. The co-development of maritime support centers and ports in Sri Lanka, Bangladesh, Maldives and Pakistan under the sea-route of BRI in South Asian would provide China the relay points, base for merchant ships and significantly enhance its maritime prowess. Port's networks will buttress the future growth of China as a maritime power which would initially provide support to the merchant fleet of China and gradually the blue water navy. With respect to South Asia, the Maritime Silk Road traversing through the South Asia is crucial component of the BRI and would provide China access to the Middle East, Africa and Europe.

In case of the Heartland, it has been reinvigorated and considered as Great Power politics' forefront, pushing a reconsideration of military and diplomatic priorities in region. With respect to the Eurasian vision of China, the intertwining of the geo-strategic and economic considerations is visible. In terms of economy, the creation of integrated area under its auspices will tremendously benefit China. The Silk Road Economic Belt, the land-construct of the BRI, if successful would bring the land-connectivity in the Eurasian region under China's leadership and in this regard South Asia is important as it is at cross road to the Afghanistan and CARs, particularly through Pakistan in order to ensure the access to Eurasian Heartland. The proposed and underway corridors in South Asia under BRI (such as CPEC, Trans-Himalayan Corridor, Bangladesh, China, India, and Myanmar (BCIM) Maldives, would bring the connectivity to the Heartland

Hence the geo-politics of China under the auspices of BRI and its pivotal SRM and SREC component in South Asia as a source of connectivity and linkage to other continents for trade purposes would enhance the economic prowess of China which would undoubtedly provide the strategic and political leverage.



Strategic Alignment: Power Balancing In Indo-Pacific Through Quad

Safia Mansoor

The Contemporary scenario evidently signifies that theater of power contestation has shifted from land to maritime domain. The Indo-Pacific is considered the hub of containment, cooperation, conflict owing to its geo-strategic significance. The region has garnered renewed attention since China kicked off its mega Belt and Road Initiative, notably the Maritime Silk Road. Resultantly, states under the auspices of Quad have been incessantly collaborating to maintain balance of power in region.

Quad or QSD (Quadrilateral Security Dialogue) refers to the informal strategic forum consisting of four states: USA, Japan, Australia, and India with a view regarding Indo-Pacific Region. In 2007, the group held its first meeting on the ASEAN (Association of the South East Asian Nations) sideline meetings. The Quad group is characterized by maritime democracies' alliance which in turn is maintained by information exchanges, semi-regular summits, military drills as well as meetings between the Quad's member states.

The basic principle of the Quad refers to the key aims and objectives of Quad which are as follows: 1) Keeping Indo-Pacific strategic sea routes open and free from political as well as military alliance; 2) Freedom of navigation; 3) Rule based global order in the Indo-Pacific Region; 4) Liberal trading system; 5) Provision of alternative debt financing to Indo-Pacific region's states.

Balance of power is one of the oldest and most fundamental concepts in international relations. It is a state of affair in which imbalances and concentrations in military and material capabilities among great powers are checked and equilibrium is restored in order to ensure survival of major powers in international system. The concept remains dominant in work of key realist scholars such as Thucydides, Nicholas Machiavelli, Lorenzo Medici, Hans J. Morgenthau, and Kenneth Waltz. The self-help anarchic system and shifts in relative distribution of capabilities mean that balance of power recurrently form in international system. In bipolar distribution of power (two great powers), states balance through internal military buildup. In multipolar distributions of power (three or more), states balance through formation of counterbalancing alliances. Two assumptions are of central relevance: 1) International system is considered to be anarchic, with no system-wide authority being formally enforced on its agents; 2) States are principle actors in international system, as they "set terms of the intercourse", monopolize "legitimate use of force" within their territories, and generally conduct foreign policy in a "single voice".

Nation-states are constantly engaging in balancing acts: striving to weigh between interests and values; guns and butter; economic gain and national security. In three important ways, China's neighbors are engaging in balancing in line with what realist theory would predict. First, at a macro regional level, there is substantial evidence of accelerated internal and external balancing in the Indo-Pacific. Military spending has been growing faster in Asia than nearly any other region of the world and the continent now hosts nine out of the world's top ten defense importers. Second, what began a decade ago as tentative steps toward greater defense collaboration among some Chinese neighbors has broken into an open sprint in recent years. There has been material growth in the quality and quantity of defense collaboration and joint military exercises, security-focused bilateral, trilateral and multilateral dialogues joint vision statements and military inter-operability agreements most prominently seen in the form of Quad and AUKUS. Third, traditional military balancing has been accelerating among the Quad. China's deteriorating bilateral relationships with each member of group and growing concerns about its challenges to rules-based order helped spur the revival of the quadrilateral dialogue.

Leaders from the Quad, ASEAN and beyond have been more vocal in supporting the underlying tenets of regional order, including freedom of navigation, peaceful dispute settlement, support for international law and the UN Convention on Law of the Sea. Many Indo-Pacific states are increasingly devoting their energy not toward "containing" China but toward constraining its capacity to infringe on their interests and undermine what they consider as rule-based order. They're seeking to craft, enhance and defend norms, laws, institutions, and principles that constrain China in region.

Quad and defense capabilities of the member states

Since 2007 when the Quad was created, it has emerged into multilateral strategic forum in order to increase the coordination in military domain amongst the Japan, US, Australia, and India in the Indo-Pacific region. Addressing the mutual concerns' issue is at the core of the Quad, notably the rise of the China. In 2021, a joint statement was signed by the leaders of Quad in which they emphasized Indo-Pacific rule based order and this reference is particularly to territorial claims of China in East and South China Seas. Members of Quad have dispute PRC such as sovereignty claim of China and Japan over Senkaku Islands, China and India border dispute with China and worsening ties of Australia with China such as onerous tariffs and trade restrictions. Currently the group is termed as Quad 2.0 which refers to the group revised version since 2017, given the culmination of the strategic threats from military and economic power of China across the region.



Year	Agreement, dialogue or exercise	Member states	Key aspects
2014	Framework for Security Cooperation	India & Australia	Enhanced security cooperation, particularly through AUSINDEX bilateral naval exercise with emphasis on anti-submarine warfare
2015	Trilateral Security Dialogue	India, Japan, & Australia	Trilateral maritime cooperation in Pacific & Indian Ocean, South China Sea's freedom of navigation, & economic cooperation
Since 2015	Talisman Saber Biennial military exercise	US, Australia, & Japan (Japan joined in 2015)	Joint military as well as naval exercises
Since 2016	Major defense partners	US & India	2016: LEMOA Logistic Exchange Memorandum Agreement 2018: COMCASA (Communication, Compatibility & Security Agreement) 2020: BECA (Basic Exchange and Cooperation Agreement) 2024: MSRA (Master Ship Repair Agreement) 2024: SOSA (Security of Supply Agreement)
2018	Trilateral Summit	US, Japan, & India	Creating inclusive framework by building Indo-Pacific regional architecture
Since 2017	2+2 Foreign & Defense secretaries dialogues	India, Australia	Focus on Comprehensive Strategic Partnership 2020 ministerial level meeting aimed at cross-servicing and acquisition agreement
2020 2021 2022 2023 2024	Malabar Exercises	US, Japan, Australia & India	High-intensity naval operation such as advanced air defense exercises and cross-deck flying operations. anti-submarine and surface warfare exercises Ships, carriers, aircrafts and submarines were used by all the member states

Non-military cooperation under Quad

The partner countries have launched the Quad Infrastructure Coordination Group in order to share assessments of needs with respect to the regional infrastructure as well as coordination regarding provision of the high-tech and transparent infrastructure in Indo-Pacific region. It is considered as Quad states' response to China's Belt and Road Initiative project. In 2021 Virtual Quad meeting, leaders of four member states created a working group for three key non-military areas. The key aim of these working groups are

Vaccine Expert Group: effective and safe distribution of vaccine

Climate Working Group: To strengthen various climate related actions at global level such as adaptation, mitigation, technology building capacity and resilience.

Emerging Technology Working Group: Cooperation on innovative technologies, supply chain resilience as well as international working standards.

Analysis

With the changing strategic milieu of Asia-Pacific, like-minded states are forging staunch partnerships under Quad to balance the rise of China in region. The group's cooperation is likely to enhance however prospects of its consolidation into NATO like formal alliance remains bleak. It is expected to become preeminent security framework whereby member states will benefit from economic, diplomatic, and most importantly military coordination. Despite ever-increasing frequency and intensity of security cooperation among Quad states, it is also expected that number of Quad states will increase in future which is also termed as 'Quad Plus' implying the addition of states likes UK and France. With China on one hand and Quad states on the other, the pursuit for increasing prowess will continue to remain making region a hub of geopolitical contestation.



The Strategic Impact of Expanding AUKUS in the Indo-Pacific

Lt Cdr Dr Sufian Ullah

China's rise as a great power is the most important geopolitical challenge confronting the US today. Washington remains concerned over Beijing's expanding economic and strategic influence around three maritime zones in the Indo-Pacific region, including the South China Sea, the Indian Ocean and the Pacific Ocean. Thus, the Indo-Pacific region remains a defining area in the new era of contention between China and US, signifying an impending tussle for global and regional primacy and competing postures between the two states. The US 2022 National Security Strategy notes that besides Moscow's "imperialist foreign policy", Beijing's attempt to "reshape the international order" compels Washington to reinvigorate and deepen its alliance network in the Indo-Pacific. Among the most noteworthy of these alliances is AUKUS, a crucial and developing security pact. Originally, it was signed by the US, the United Kingdom, and Australia in 2021. Now, member states aim to expand its membership to include Japan. This triggers serious debate over the expansion of AUKUS and how it can potentially shape the evolving dynamics of the highly uncertain security environment in the Indo-Pacific region.

AUKUS primarily aims to enhance Australia's military capabilities by providing it with nuclear-powered submarines (SSNs) and other advanced military capabilities in artificial intelligence, hypersonic missile capabilities, quantum technologies, and cyber warfare. The enhancement process is based on a four-phase plan that involves capacity building of Australian personnel, selling US submarines to Australia, and the development of a new SSN-AUKUS submarine in next two decades. The main types of nuclear submarines include SSNs, nuclear ballistic missile submarines (SSBNs), and guided missile submarines (SSGNS).

SSBNs are designed to carry and launch nuclear ballistic missiles, hence contributing to nuclear deterrence. SSGNs are capable of carrying guided cruise missiles and are used for land-attack and anti-ship operations. On the other hand, SSNs are equipped with nuclear propulsion and may not necessarily carry nuclear delivery systems. SSNs are also known as hunter-killer submarines, as they are designed to attack enemy ships and submarines. AUKUS focuses on the development of SSNs and aims to assist Australia in acquiring up to eight SSNs in next two to three decades.

It is generally argued that this security arrangement is launched as a strategic response to Beijing's expanding influence in the Indo-Pacific region. Since this military alliance specifically targets a single adversary, it depicts the prevailing Cold War mentality that consumes Washington. As US jealously guards its global dominance by reasserting its military influence to retain hegemony in the international system, AUKUS as a military pact brings adverse implications for the regional security architecture in the Indo-Pacific. It creates political and strategic divergences through alliance polarization, further aggravating the risks of a potential arms race and the proliferation of nuclear technology. The long history of the countless European wars, US – Japanese World War II rivalry, and Cold War indicate that a strong naval presence in maritime domain plays a crucial role in shaping the outcome of any conflict. The US recognizes that ensuring naval superiority in the Indo-Pacific ensures a strategic advantage in the case of a possible conflict with China. Through enhanced cooperation and interoperability among the three navies, AUKUS provides its member states with the ability to maneuver freely in the Indo-Pacific region.

Here, a crucial question remains: despite its deep economic interdependence with Beijing, why does Canberra choose to become a part of the US-led anti-China security arrangement?

The imperative behind this decision to join AUKUS are multifold. First, it considerably adds to the strategic value of Australia, which has so far possessed a limited ability to influence Indo-Pacific strategic affairs. It also enhances Canberra's relevance within the US-led alliance system, even at the cost of severing ties with France when it scrapped its submarine deal with the latter. Further, in addition to its membership in the Quad, the security alliance with UK and US bolsters Australia's status and influence in the region. This makes Australia the seventh nation to operate a nuclear-powered submarine and only second, after the UK, to receive nuclear propulsion technology from the US. With the assistance of the other two states, Australia also aims to fill the potential gap in its subsurface capabilities. Australia's ageing fleet of six Collins-class diesel-electric submarines has limited range and endurance, which undermines their ability to operate in distant waters.

In the wake of China's growing naval power, Canberra feels the necessity to equip its navy with nuclear-powered submarines to effectively conduct sustained naval operations at longer distances. Because of their robust cruising ability and enhanced navigational speed, SSNs enable the Royal Australian Navy to effectively complement US naval operations in the Indian Ocean, South Pacific, and South China Sea. By remaining on patrol for longer durations, SSNs increase Australian Navy's situational awareness and response time. Relatively advanced sensors and communication systems will further augment its ability to detect, track and engage Chinese vessels when required. Since these submarines will have vertical launch missile capabilities, more missiles can be deployed, making them more effective. In addition, being equipped with torpedoes and conventional land attack capable cruise missiles, SSNs not only influence the naval battlespace in the Indo-Pacific, but also shape outcomes on land.

These aspects can support any imposed blockades on major sea lanes, thus hampering freedom of navigation in the Indo-Pacific region. The recent debate on Japan possibly joining AUKUS hints towards the expansion of this security pact. Tokyo's prospective participation in AUKUS is being referred to as "Pillar Two" of the agreement, as it will not involve delivering nuclear-powered attack submarines to Japan at this stage and is confined to jointly developing quantum computing and technology in the cyber sphere, artificial intelligence, hypersonic systems, etc. Nevertheless, it still raises significant concerns in Beijing, who views these developments as "bloc-to-bloc confrontation". The expansion of AUKUS could potentially turn this security arrangement into an "Asian NATO" that seeks to contain China from different sides. The US, UK, and Australia already cover the Pacific region and aim to strengthen their presence in the Indian Ocean, while Japan is capable of fortifying the East China Sea, raising further concerns for China's strategic leadership. The expansion of AUKUS and Japan's inclusion in this arrangement adds a significant dimension to the materialization of the US; the Indo-Pacific strategy militarily contains China's expanding influence. Japan, being a technologically advanced country, can use its military capabilities to strengthen US influence in the region. With a closer proximity to critical maritime routes, Japan can enhance maritime surveillance in disputed areas, like the Senkaku Islands.



AUKUS exacerbates the risks for a potential arms race among major powers and politics that are fueled by bloc-thinking, thus having a direct impact on the region's overall growth and prosperity. As the US-led alliance continues to unfold, other states in the sub-regions of the Indo-Pacific feel compelled to choose sides between the US and China. Lastly, the provision of nuclear propulsion technology to a non-nuclear weapon state undermines the spirit of the international non-proliferation regime. Given that US and the UK use highly enriched uranium (HEU) for nuclear propulsion in submarines, experts worry that AUKUS may lead to the proliferation of fissile material that is necessary to produce nuclear weapons. Despite growing concerns over the risks of nuclear proliferation – due to the provision on nuclear submarine-related technologies to non-nuclear weapons states like Australia – AUKUS member states consistently signal a further expansion of this security arrangement that, in turn, can escalate into a regional arms race. It also leads to the possibility of the Quad following suit, in which India and Japan may also aspire to acquire nuclear submarine technology from the US. This possible scenario proves detrimental to the peculiar strategic environment in South Asia, as India continuously attempts to establish its strategic supremacy in the region. As a result, this can lead adversarial states to elevate their own military capabilities to ensure deterrence stability. Pakistan has already expressed concern over AUKUS, as it instigates a bloc-like mentality in the region. Therefore, despite the stated claims of AUKUS member states, this military alliance will have far-reaching adversarial implications for the security architecture in Indo-Pacific region.



Will China's Vision Of World Order Challenge Western Liberal Order?

Safia Mansoor

The global stage, much like an ever-shifting chessboard, is often re-arranged by those with the power to control its pieces. In this dynamic world order, one country, China, has been quietly, yet steadily, reshaping its strategy and vision for the future. This vision is not a sudden ambition born from modern politics, but a dream rooted deeply in China's ancient and revolutionary past. The question, then, is not whether China will rise, but what type of order it seeks to construct—and what it might mean for the world.

The key feature of China's vision is one inspired by its past imbued with principles of power under Leninism. Western models have been rejected by the Chinese state party and primary focus remains on the traditional and historical conceptions of China as an empire, often referred to as “Tianxia” (literally meaning “everything under heaven”). In this context, *Tianxia* refers to a political system, a geographical entity, a worldview, a moral aspiration, or a cultural unit that can be seen as a borderless order with the People's Republic of China (PRC) at its core. It is an order with a benign hierarchy, guided by principles of morality, wherein the surrounding regions are not attracted due to coercion but are instead protected by the center and subordinated to it..



There is a heavy reliance on China's historical models of supremacy, with intellectuals and political elites generally abstaining from clarifying the normative underpinnings of the vision. China's vision of an order is not grounded in Confucian principles, traditional Chinese wisdom, or the revolutionary ideals of the Communist Party. Rather, it is deeply entrenched in Leninist ideas of domination and power.

China envisions a partial system that is neither regional nor fully global. The absolute collapse of the international order in the current era is not the aim of China. Rather, the objective of China, if not long term, is the creation of new partial system being carved out of current international order. The hierarchical subsystem being in asymmetric in nature with China at center and top remains fundamental to new partial system. It implies that China would be most powerful, biggest, and technologically advanced, with subordinated, weaker and smaller states around it or in its orbit. This orbit is expected to expand, encompassing the non-Western and developing world, where the power asymmetry will be evident.

Lose Control under Dominance of China

Another significant characteristic of China led-world order is the loose control which China exerts under its dominance. Within this subsystem, China will not seek a tight, full, or total absorption and control over other states. The main emphasis of China would be creating deep interdependencies, developed in the shadow of military and economic dominance of China, which would make it enormously arduous for countries to robustly oppose the system. The economic, security and political benefits through the states' relation with China would act as a source of incentive for preservation of the system as well as a leverage in order to enforce compliance. Within the subsystem's confines, China will not enforce its political-cum-governance model, rather the preference of China would be suppression of principles and values of democracy. This system is less about direct governance and more about securing China's influence over other states and regions.

What does it hold for Western Liberal Order?

The vision of China about International order is a loose, partial and malleable hegemony. The loose nature of hegemony is because China does not envision absolute or direct control over foreign governments or territories. Partial hegemony signifies that China will seek to exercise influence in a specific sphere though the extent of that sphere is still a mystery. Malleable nature of China's vision for international order implies that states under China's orbit would not be strictly and precisely defined along ideological, cultural, or geographic lines, as far as states would respect the predominance of China. It can be asserted that China's vision would not lead to decline of the Western Liberal Order. The rule over the entire world or seeking global hegemony has not been on the agenda with regards to China's vision and neither it wants to fully overthrow the existing Liberal International Order.

Moreover, currently China is not even in the capacity to define International order in its own terms given current material circumstances of China. Additionally, China lacks the discourse power to present China's principles acceptable for the entire world.

The vision of China is fundamentally aimed at inveighing against the liberal order dominated by the West which is considered threatening for survival of the communist party of China. Furthermore, it aims at carrying out the alteration of the world in order to make it much safer for the unobstructed rise of China under continuous rule of the party.

Regarding the Belt and Road Initiative (BRI), it may act as a cornerstone of the new world order which leadership of China foresees and multiple components would be used by China to engrain its influence in the emerging and developing world for the long-term. Partial order which China visualizes can act as an intermediary step in order to move towards full hegemony, owing to material circumstances of China and non-emergence of countervailing power.

The Dream of Empires Past?

China's vision of the international order is less about global domination and more about a careful, calculated reordering of influence that harks back to imperial dreams. It is a vision built on the weight of history and the power of Leninist control, framed within a world where China remains the unchallenged center. Yet, whether this vision will lead to a new world order or simply revive the remnants of an empire long past is a question only time will answer. For now, it remains a tantalizing glimpse into what might be, rather than what is.

Balancing The ‘China Threat’ In Indo-Pacific

Safia Mansoor

In recent years, the strategic partnership between India and the United States has gained significant momentum, driven by their shared objective of countering China's growing influence in the Indo-Pacific. As China expands its military presence and economic footprint, particularly through initiatives like the Belt and Road Initiative, both nations recognize China as a direct threat to their security and regional stability. India, with its strategic position and rising capabilities, is emerging as a critical counterweight to China's dominance in the region. United in their aim to contain China's rise, the U.S. and India are deepening their defense and maritime cooperation, working together to safeguard a free, open, and secure Indo-Pacific.

Stephen M. Walt's 'Balance of Threat' theory, as outlined in his seminal works *Alliance Formation* and *The Balance of World Power* (1985) and *The Origin of Alliances* (1987), offers a valuable framework for understanding the Indo-US strategic relationship. Unlike the 'balance of power' theory, which focuses on military capabilities as the primary determinant for alliances, Walt's theory emphasizes the importance of perceived threats. These threats, according to Walt, stem from four main factors: offensive capabilities, aggressive intentions, geographical proximity, and power, the latter being a combination of economic strength, latent potential, population, and size. When a state's attributes align with these factors, it is perceived as a threat, prompting others to form alliances to counterbalance that threat. This theory is particularly relevant in the context of the Indo-US partnership, where both nations view China's increasing military and economic power as a direct threat to their interests.

In Indo-Pacific, the Indo-US strategic partnership is a response to the growing presence of China, particularly through its Belt and Road Initiative (BRI) and the Maritime Silk Road. China's economic rise, coupled with its massive population and latent military capabilities, has raised concerns for both India and the U.S. As China expands its naval presence in the region by investing in key ports and strengthening military ties with littoral states, its proximity to India further exacerbates these security concerns. The aggressive posturing of China, especially in the South China Sea and its claims over contested maritime territories, underscores the potential threat to both the U.S. and India. While China maintains that its rise is peaceful, the strategic encirclement of India through its maritime projects is viewed as an aggressive move by both India and the U.S.

The shared interests between India and the U.S. have coalesced around several key rationales. First, both nations see the Indian Ocean and Asia-Pacific as a unified strategic continuum. Second, their security cooperation in the maritime domain is driven by a dual agenda: countering China's growing influence and fostering regional multilateral alignments. Third, the two countries have strengthened their Maritime Domain Awareness to address non-traditional security challenges, such as piracy, terrorism, and illegal fishing. This convergence of interests has led to a significant deepening of bilateral ties, particularly in the maritime domain.

While India and the U.S. became partners in the Quad in 2007, their maritime cooperation took on new dimensions during the Obama administration's "Pivot to Asia" and the 2015 U.S.-India Joint Strategic Vision for the Indo-Pacific. This was further solidified under the Trump administration with the adoption of the term "Indo-Pacific," emphasizing the region as a strategic priority for the U.S. and highlighting India's central role as a key security partner. In 2016, the Logistics Exchange Memorandum of Agreement (LEMOA) laid the groundwork for enhanced defense cooperation, followed by the Communication Compatibility and Security Agreement (COMCASA) in 2018, the Basic Exchange and Cooperation Agreement (BECA) in 2020, and the Master Ship Repair Agreement (MSRA) in 2024. These agreements represent the formalization of Indo-US maritime collaboration, enabling both states to coordinate more effectively on defense and security issues.

The Indo-US partnership is rapidly transforming the regional strategic milieu, disrupting traditional power dynamics in the Indo-Pacific. By strengthening military cooperation and enhancing defense capabilities, this alliance is fostering new military asymmetries, prompting neighboring nations to enhance their defense capabilities. As India and the U.S. deepen their maritime collaboration, the Indo-Pacific is becoming a more militarized zone, where power competition and security concerns are likely to intensify in the coming years.

The Arctic Geopolitics: Melting Ice And Rising Tensions

Ahmad Ibrahim

The Arctic is no longer the frozen and remote region it once was. As the ice melts, the geopolitical, economic, and strategic stakes are heating up. The region, rich in natural oceanic resources like oil, gas, fish, and rare earth metals, has become a focal point of interest for global powers. Countries are preparing for intensified competition over its resources and shipping routes. The Arctic holds vast untapped reserves of natural resources. Greenland has become notable for its rare earth metals, while Siberia is a treasure trove of energy supplies. These assets are increasingly drawing attention, especially from nations with vested interests in securing untapped resources and diversifying trade routes. For China, the potential of the Arctic's Polar Silk Road, as part of its Belt and Road Initiative, holds both economic and strategic allure.

The Polar Silk Road, if operationalized, could dramatically reduce shipping distances between China and Europe. A voyage from Shanghai to Rotterdam via the Arctic route is approximately 6,400 kilometers shorter than the traditional routes via the Malacca Strait and the Suez Canal. This translates to substantial savings in time and cost, reducing a journey of 48 days to around 35 days.

Recent disruptions in traditional trade routes—such as Houthi rebels' attacks on commercial maritime vessels in the Red Sea—highlight the potential value of Arctic shipping. Despite these incentives, traffic along the Northern Sea Route remains negligible. In 2023, Russia's Northern Sea Route managed only 34 million tons of cargo, a fraction of the over 1 billion tons passing through the Malacca Strait in the same year. Only a handful of non-Russian ships dared to traverse the Arctic waters, highlighting the region's logistical, environmental and political challenges.

The Arctic may appear as a shortcut on the map, but its navigation remains fraught with peril. Despite melting ice, sailing conditions are becoming more unpredictable due to floating ice floes, extreme weather, and prolonged darkness during winter months. Ships require enhanced hulls to withstand ice collisions, and the region



Experts emphasize that the risks outweigh the benefits. A Suez Canal-like incident in the Arctic, such as the stranding of a major vessel, could prove catastrophic, leaving crews stranded in icy isolation. Additionally, Russia's limited patrol and rescue capabilities further intensify these risks. The Arctic is not just an economic battleground but a stage for growing strategic competition. Following Russia's invasion of Ukraine, the Arctic Council—a body coordinating regional cooperation among eight Arctic nations—has largely sidelined Moscow. This has weakened Russia's diplomatic standing, especially as all other Arctic Council members are NATO states.

Sweden and Finland's recent NATO accession further tilts the balance against Russia, enhancing the alliance's military presence in the region. NATO has demonstrated its Arctic readiness through exercises like Nordic Response, involving thousands of troops from Norway, Sweden, and Finland. Meanwhile, Russia's military presence in the Arctic, though significant, has been strained by its war in Ukraine, with critical resources redirected to the front lines.

Even China, an Arctic outsider by geography, has declared itself a "near-Arctic state." Beijing's ambitions, as outlined in its Arctic white paper, are twofold: securing access to Arctic resources and exploiting emerging shipping lanes. However, Russia remains cautious about China's encroachment on its Arctic dominance. While Moscow allows limited Chinese involvement in energy projects, it enforces strict controls, including transit fees and pilotage requirements for Chinese vessels. This reflects underlying tensions in the so-called "Dragon-Bear alliance."

China, on the other hand, is taking a long-term approach. It is investing heavily in Arctic research and developing technologies for polar shipping, icebreaking, and resource extraction. By expanding its technological capabilities, China is positioning itself to capitalize on the Arctic's potential in the coming decades. However, Beijing's rhetoric around the Polar Silk Road has notably cooled in recent years, reflecting the logistical and geopolitical challenges of the route.

The Arctic remains one of the few maritime regions where the U.S. Navy does not dominate. This has raised concerns among American defense strategists about Russia and China's growing influence. Admiral Daryl Caudle of the U.S. Navy warns against allowing Russia to establish territorial claims over Arctic waters, akin to China's assertive moves in the South China Sea. The U.S. is gradually recognizing the Arctic's strategic importance. While American icebreaker capabilities lag behind Russia's, efforts are underway to bolster Arctic military readiness. The outcome of the Ukraine war will also have significant implications for Arctic geopolitics. A weakened Russia could struggle to maintain its dominance in the region, opening the door for increased competition among global powers.

The Arctic's future as a trade route remains uncertain. While the melting ice theoretically opens new possibilities, practical challenges—ranging from harsh conditions to geopolitical tensions—limit its viability. The region's development will likely hinge on breakthroughs in technology, shifts in the global balance of power, and cooperative frameworks for sustainable resource extraction.



Despite their partnership against Western dominance, Russia and China harbor conflicting Arctic ambitions. The Arctic accounts for a significant portion of Russia's GDP and exports, making it a top priority for Moscow. Russia currently has the largest fleet of ice-breakers. Beside traditional conventional powered ice-breakers, Russia is the only country to operate [nuclear-powered ice-breakers](#). Ice-breakers are important for clearing the route, particularly in winters when frozen ice can block the transit of merchant vessels. Russia views Chinese Arctic aspirations with suspicion, evidenced by its reluctance to grant China preferential access to Arctic ports or allow majority Chinese stakes in strategic energy projects.

Despite the current hurdles, the Arctic remains a region of immense potential. For Russia, it is a lifeline to maintain geopolitical relevance. For China, it is a strategic frontier for securing resources and diversifying trade routes. For the U.S. and NATO, it is a theater to counter rising authoritarian influence. The Arctic may not yet rival the Suez Canal or the Malacca Strait as a global trade artery, but the slow, silent competition beneath its melting ice is reshaping the contours of international relations. In this theater of frozen dreams and heated ambitions, the stakes are as high as the polar ice caps are low.



World on Edge as Trump Gets Ready

Cdr (R) M Azam Khan

Donald Trump's resounding victory in the presidential elections that were recently held in the United States has frightened the world. In capitals around the world, there is a sense of dread and anxiety, while, in others, the mood is that of exultation. In the US itself, immigrants and naturalised citizens seem worried. In his previous term, Trump had left deep divisions and inflicted grievous scars on American society. Racism spiked to unprecedented levels. Trump's mercurial predisposition as well as his transactional approach and aversion to the liberal world order is viewed by analysts as the most worrisome of his personality traits.

His intense loathing of constitutional and democratic norms, and superficial knowledge of international security matters, coupled with an authoritarian bent of mind, remind one of the rise of Adolf Hitler in 1933. The two differ only in political creed, 'Lebensraum' (living space) and 'America First', but wield an identical state of mind. One does not need to cite how Hitler's undisguised ambitions changed the course of world history. Hitler's propaganda tsar once remarked, "Give me resources and I will make the people believe the devil is God." Would it be far-fetched to surmise that had Hitler not been on the global scene, there would have been no nuclear weapons around? For Trump, climate change is a 'big hoax', and that bodes ill for the future.

Regardless, the interest, fear and jubilation produced by Trump's second win clearly lead to one simple conclusion: the US is still the most powerful actor within the international system. China, a peer competitor, is in several and critical ways still behind. Trump will inherit a different world than it was in his previous term. In theatres of war, like Russia-Ukraine and Israel- Lebanon, belligerents are showing strategic exhaustion. Vladimir Putin is not likely to be an easy diplomatic win-over by Trump, especially given his recent success on the ground against Ukraine. Iran, though quite weak economically, has placed its nuclear programme on a fast track. The Houthis are still vibrant, with enough potential to imperil global shipping in the Red Sea. Both Hamas and Hezbollah have been hit hard, but they have not been demolished.



On its part, China stands stronger in the larger western Pacific region, with American power standing rather diluted. With a toxically hawkish anti-China nominee Marco Rubio as the next secretary of state, one wonders what to make of the US naval chief's recent memorandum asking the US Navy to be ready for war with China in 2027. In Australia, apprehensions are widespread about the continuity of the trilateral security partnership involving Australia, the United Kingdom and the US (AUKUS), a technical arrangement aimed at equipping Australia with eight Virginia class nuclear attack submarines.

Moreover, Australia fears that under the 'America First' refrain, Trump may annul the agreement on the pretext of arming the US Navy which is already short of such submarines. Trump's philosophy of uninhibited use of American power to upend the world and change the US domestically will soon bump into ground realities. Mass deportations and the use of military for political purposes are bound to create unimaginable chaos at home. The world, meanwhile, sits on the edge, like millions of those watching on the US soil, waiting for the catastrophe to unfold.

Project 2025: Trump's America—A Path Forward Or a Descent Into Authoritarianism

Javaria Shaikh

The dramatic event of assassination attempt on third time presidential candidate Donald Trump has caused political dynamics to shift in ways that few could have predicted. With democrat's ratings continuing to decline, Trump is gaining considerable momentum. According to internal Democratic polling, Trump is gaining ground in 14 crucial states, including the five that Biden won in 2020, Arizona, Georgia, Michigan, Pennsylvania, and Wisconsin. Additionally, the Democrats are also struggling in states such as Colorado, Minnesota, Maine, New Mexico, Virginia, and New Hampshire.

A major point of contention in the 2024 U.S. elections is the controversial "Project 2025", a conservative policy blueprint that has sparked fears of potential authoritarianism and Christian nationalism under a possible Trump presidency. Initiated by the Heritage Foundation and unveiled in April 2023, Project 2025 represents a comprehensive plan aimed at expanding executive power, streamlining federal agencies and implementing conservative policies. Its primary objective is to facilitate a smooth transition to conservative governance in 2024.

Project 2025 encompasses several key components:

- **Government Reorganization:** The plan proposes consolidating federal agencies to reduce bureaucracy and enhance efficiency, which could result in the elimination of thousands of federal jobs.
- **Deregulation:** It aims to roll back environmental regulations, particularly those related to climate change, to stimulate economic growth and minimize government overreach.
- **Judicial Appointments:** The project seeks to appoint judges who adhere to an originalist interpretation of the Constitution, similar to Trump's previous appointments of Justices Neil Gorsuch, Brett Kavanaugh, and Amy Coney Barrett.
- **Immigration Policy:** It advocates for stricter immigration controls, including the construction of additional border walls and restrictions on asylum claims, reflecting Trump's prior policies.enforcement of immigration laws.
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Project 2025 is structured around four main pillars: creating a database of potential administration personnel, developing a training program for these candidates, and drafting a playbook for actions to be taken within the first 180 days in office.

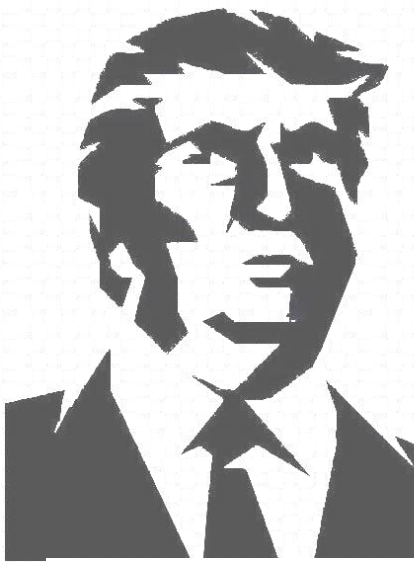
Additionally, the plan includes controversial measures such as reversing federal approval for abortion drugs, eliminating the Department of Education, removing employment protections for many civil servants, and intensifying enforcement of immigration laws.

Although the recommendations of Project 2025 align closely with Trump's policy objectives, the project is not officially tied to him. Nevertheless, many of its contributors are former Trump administration officials, including Russ Vought, who led the Office of Management and Budget; former acting Defense Secretary Chris Miller; and Roger Severino, who served as director of the Office of Civil Rights at the Department of Health and Human Services. Vought now serves as the policy director for the 2024 Republican National Committee's platform committee, which adopted the platform at July's convention. John McEntee, the former director of the White House Presidential Personnel Office under Trump, is a senior advisor to the Heritage Foundation and has indicated that the organization will "integrate a lot of our work" with the Trump campaign once official transition efforts are announced.

Moreover, the potential impact on global dynamics is substantial, especially regarding U.S. involvement in conflicts such as those in Ukraine and Gaza, heightened tensions in the Asia-Pacific region, and deteriorating U.S.-China relations. Project 2025's policies, perceived as antagonistic towards China, could significantly worsen U.S.-China relations. Experts advise China to prepare for heightened tensions and to avoid escalating conflicts further. Stringent U.S. policies against China could disrupt major economic interactions, potentially affecting key American companies like Tesla and Apple, which have significant operations in China. Such disruptions can lead to have broad global economic repercussions.

As the 2024 election looms, the debate surrounding Project 2025 underscores a critical question: Is it a blueprint for revitalizing American governance or a path toward authoritarian rule? The proposed changes and the influence of Trump's allies on the project reveal a deep-seated tension between conservative reform and potential democratic erosion. The outcome of the election and the potential implementation of Project 2025 will likely determine whether the U.S. charts a course towards renewed conservative governance or descends into a more autocratic regime. The international community will be closely watching to see how this pivotal moment in American politics unfolds and its broader implications for global stability and democratic norms.





Ukraine Future: Zelensky's Victory Plan Or Trump's Swift Peace Plan?

Ahmad Ibrahim

The Russia-Ukraine war, which began in February 2022, marks one of the most significant conflicts in modern history. Stemming from long-standing tensions over Ukraine's sovereignty, its Euro-Atlantic aspirations, and Russia's regional ambitions, the war has escalated into a full-scale confrontation with devastating consequences. The conflict is not just a conventional battle over territory but also a clash of power politics, pitting a Western-aligned Ukraine against a resurgent Russia seeking to reassert its sphere of influence.

With advanced military technologies, including hypersonic missiles and drones, and asymmetric strategies employed on both sides, this war after witnessing rapidly shifting frontlines is now in a frozen phase. Despite suffering grave losses, Russia is still slowly gaining ground. The war has been raging for more than three years and symbolizes failure of international community's resolve for conflict prevention and conflict resolution.

On 5th October 2024, Ukrainian President Volodymyr Zelensky unveiled his Victory Plan for the first time. This plan was aimed at securing country's future amid Russia-Ukraine war. However, the plan, while ambitious and visionary, drew criticism for its unrealistic expectations. Zelensky's Victory Plan comprised of five publicized objectives. First, Ukraine would seek to solidify its security by joining NATO, rendering future negotiations with Russia on Ukraine's sovereignty moot. Second, the plan called for substantial military support, including advance weapon systems, training, and support equipment. Third, the plan suggested deployment of NATO troops and NATO systems in Ukraine as a form of "extended deterrence" to counter potential Russian aggression in future. Fourth, Ukraine would offer access to its vast deposits of critical minerals such as uranium, lithium, and titanium, with objective to attract Western investment. And finally, plan proposed that Ukrainian forces could assume security roles in Europe post-war, potentially allowing the U.S. to pivot to other global challenges like Taiwan or the Middle East.

Despite its audacious goals, the plan received no considerable reception in Western capitals as besides misjudging rapidly transforming geopolitical landscape, the Zelensky's plan also overestimated Western willingness to commit continuous war resources' supply for Ukraine. An ineffective and poorly structured plan not only fails to achieve its objectives but can also have detrimental long-term consequences. For Ukraine, the repeated and abrupt demands for weapon systems which U.S. and its allies deem highly escalatory created the perception that Kyiv lack a coherent strategy to counter Russia. This could bolster calls for premature peace negotiations, potentially on terms unfavorable to Ukraine.

The conflict has seen abrupt escalation in recent week primarily due to arrival of North Korean troops, targeting of Russian mainland by ATACMS by Ukraine, and Russia's use of new Oreshnik medium range ballistic missile against Ukraine. As Donald Trump - who has vowed to put an end this conflict within 24 hours - is about to hold his position in White House as president of United States, both countries are employing increasingly assertive means to secure dominant position in battlefield. This position will grant significant political leverage on negotiation table.





Donald Trump has recently assigned Keith Kellogg as special envoy for Russia-Ukraine war. Previously served as chief of staff for National Security Council (NSC) during Trump's first term, Keith Kellogg shares similar thought as far as Russia-Ukraine war is concerned. Kellogg's plan calls for a ceasefire and negotiated settlement to end the Russia-Ukraine war. This plan follows a multi-dendritic approach to address the issue. According to this plan, Washington would sustain the delivery of military hardware and weapons to Ukraine to enable it to counter potential aggression from Russia. However, this military aid will be conditional as Kyiv would have to show willingness to participate in peace talks with Moscow. If Ukraine refuses to do so, United States can simply halt further delivery of weapon systems it has pledged, thus hampering Ukraine's ability to defend against Russia. As far as Moscow is concerned, Washington would incentivize it by ensuring that Ukraine's application for joining NATO will be paused for time being. Additionally, limited relief will be provided to Russia as far as economic sanctions are concerned. Currently, it's hard to evaluate that to what extent both Russia and Ukraine will be willing to acknowledge peace negotiations structured upon aforementioned conditions.

In past, Zelensky has been criticizing Trump's swift peace plan by warning that a rushed peace deal will be dangerous for Ukraine. Although, he has expressed his wish for ending the war: but not at the cost of Ukraine's sovereignty. Kyiv has repeatedly emphasized that Russia must leave the occupied Ukrainian territories – including Crimea, before approaching for any peaceful settlement of war. Since 2014, Russia has captured about 20 percent of Ukrainian territory. Kyiv is currently planning for joint meeting with its key Western allies to strengthen its position in potential peace talks. As next year is approaching, tensions are increasing, both in battlefield as well as on discussion tables.

There can be four primary scenarios as the potential outcomes of the Russia-Ukraine war. The first is a prolonged war characterized by attrition, where both sides will keep pushing each other to final limits in a drawn-out battle. However, with rapidly depleting resources on both sides, neither Moscow nor Kyiv want this situation to prevail. The second is a "frozen conflict," where both militaries will consolidate their positions to the point that neither side will be able to make any breakthrough. In this case, the battlefield will remain contested and losses will continue to mount albeit at a reduced rate compared to attrition. The third is a Ukrainian victory, contingent on increased Western support enabling Ukraine to push Russian forces back to the pre-war demarcation line of February 23, 2022. This outcome is reflected in Zelensky's victory plan. And considering the ground realities, despite desperate attempts, this outcome is no longer a possibility. And finally, a defeat for Ukraine could see the country accepting Russian terms, including territorial concessions, a change in government, demilitarization, and neutrality.

Beside aforementioned scenarios, there is Trump swift peace plan which will employ carrot-and-stick strategy to compel both antagonists to sit on negotiation table and settle issue on give-and-take basis. However, the prospects for peace are hindered by mutual distrust, conflicting strategic goals, and the deep scars left by the war. Thus, for a durable conflict resolution, Trump's plan appears as a viable solution. However, instead of imposed negotiations, all sides must willingly engage in meaningful discussions to end this conflict on agreeable terms.

United Nations (UN): An Institution in Need of Reforms

Ahmad Ibrahim

The United Nations (UN) was established after World War II on 24 October 1945. UN replaced its predecessor, the League of Nations which was created in 1919 to achieve peace and security. The League of Nations, however, failed to live up to its reputation after the outbreak of World War II. The fundamental purpose of UN was to act as a platform to avoid conflicts by offering substitute options like diplomacy, to undermine the prospects of conflict. The UN Charter, adopted in 1945, set the foundation for this vision, establishing six main bodies, including the General Assembly, Security Council, International Court of Justice (ICJ), Economic and Social Council, the Trusteeship Council and UN Secretariat. At its inception UN was joined by 51 states. Today, the UN has 193 member states, and covers the entirety of the globe. Despite this growth, its foundational structures remain largely unchanged, a fact that contributes significantly to its current challenges.

In 2024, General Assembly approved an annual budget of approximately \$3.59 billion, funded by contributions from member states. The United States is the largest contributor, followed by China, Japan, and Germany. While this funding supports critical programs and operations, it also showcases the dependence of the UN on a few developed nations. This financial interdependence often undermines the US's capacity to effectively deal with emerging crises.

The Security Council (UNSC) is arguably the most important yet controversial body of UN. Tasked with maintaining international peace and security, it has the power to impose sanctions, approve peacekeeping missions, and pass legally binding resolutions. The council comprises of five permanent members, i.e. United States, Russia, China, United Kingdom, and France, and ten non-permanent members. Permanent members have veto power. Therefore, they wield disproportionate influence which in several instances has undermined the prospects of mutual collaboration for prevention or resolution of major issues. This veto system has now become a major barrier to effective decision making as veto-powers tend to follow national interests instead of respecting global consensus. Thus, the veto power highlights the disparity within the Security Council, where a single nation can override the collective decision of the rest.

General Assembly is the primary policy making and representative organ of UN and has 193 members. The principle of "one state, one vote" in the General Assembly in theory treats all nations on equal grounds. However, the reality is very different. Bigger and developed states exercise significant influence through lobbying and grouping, usually sidelining smaller and developing nations. This imbalance degrades the credibility and proficiency of the General Assembly, where resolutions are non-binding and often symbolic.





Despite all shortcomings, the UN has also achieved noteworthy success. Its specialized agencies, such as the World Health Organization (WHO), United Nations Children's Fund (UNICEF), and International Monetary Fund (IMF), play crucial part in addressing global challenges ranging from economic crisis to health issues. Moreover, the UN's peacekeeping missions have also helped stabilize regions like Kosovo and Sierra Leone, but have suffered setbacks in Somalia, Rwanda and the former Yugoslavia in the early 1990s.

The successes of UN are often overshadowed by its failures. The Rwandan genocide, the Syrian civil war, the ongoing conflict in Yemen, humanitarian calamity in Gaza, all expose the UN capacity issues in prevention of these crisis. In addition, the U.S. invasion on Iraq in 2003, and Russian invasion on Ukraine in 2021, all represent major failures of UN. These failures are byproduct of structural problems, lack of enforcement mechanisms, and the prejudice power of veto in the Security Council.

Since establishment of UN, global political order has changed significantly. From bipolar world during Cold War, to unipolar order after collapse of Soviet Union (1991), to rise of multi-polarity in contemporary world, UN functional mechanism has remained the same. Therefore, UN now struggles to address the challenges of multipolar world. Many regions in world, like Latin America, Africa, Middle East, and Continent Australia, have no permanent member representative in UNSC. In practice, no new members can be added and no older member can be expelled from UNSC. Similarly, the frequent use of veto, mostly by Moscow and followed by Washington, has undermined legislation and collective action on several issues. Numerous calls have been raised to undertake reforms in UN functional structure. Proposal varies from expanding the number of permanent members to eliminating the veto altogether. However, undertaking reforms in UNSC is not a simple task. Changes require the approval of two-thirds of the General Assembly and all five permanent members—a near-impossible feat given the vested interests of the veto-powered nations. Yet, without necessary reform, the UN faces the existential risk of turning into an obsolete platform with no relevancy. Instead of a global platform, regional platforms will eventually take its place.

As the world faces new challenges like climate change, the need for a globally collaborative platform has never been greater. The UN must evolve to address realities of multipolar world and undertake reforms to remain relevant. At its core, the UN's mission remains as vital as ever: to promote peace, protect human rights, and foster international cooperation. While its structure may be outdated and its processes overcomplicated, the organization still serves as the physical manifestation of global collaboration. Reforming the UN is not just a necessity but an imperative to ensure it can meet the demands of the 21st century.

Environmental Issues and Climate Change

S No	Article Title	Author	Source	Date	Page No
1	Environmental Degradation: Planet on the Brink	Gul Hameed	The Nation	05 Jun 2024	154
2	Reclaiming Our Planet: Combating Land Degradation, Desertification, and Drought	Ahmad Ibrahim	Modern Diplomacy	05 Jun 2024	155
3	Deteriorating Ocean Health: A Grave Concern of Our Times	Gul Hameed	Pakistan Today	08 Jun 2024	157
4	Triple Threat of DLDD for Pakistan	Safia Mansoor	Stratheaia	26 Jun 2024	159
5	Projected Water Security of Pakistan	Safia Mansoor	Modern Diplomacy	07 Aug 2024	161
6	Anthropocene Epoch and Multi-Generational Legacy of Climate Change	Safia Mansoor	Modern Diplomacy	04 Dec 2024	163
7	Ocean Health: Imperatives for New Age	Gul Hameed	Minute Mirror	11 Dec 2024	165
8	Humanity's Journey of Climate Change Awareness	Ahmad Ibrahim	Modern Diplomacy	26 Dec 2024	168

Environmental Degradation: **Planet on the Brink** **Gul Hameed**

Largely occurring due to harmful human activities, deterioration of our environment is one of the most pressing concerns of our times. Mounting pollution, overconsumption of earth's resources and mass indifference to the impending doom have pushed us to the verge of a dangerous precipice. If this continued, it is only a matter of time that our planet will no longer be able to sustain many of life forms including humans. Urgent transformative actions are more than ever necessary to restore our relationship with the planet to balance and sustainability. Environment friendly policies and individual efforts can still pull us back from the brink.

Following the Industrial Revolution, the invention of technologies from mechanized looms and steam-powered engines to the modern-day mind-bending advancements in all facets of human existence, have led to improved living standards and economic conditions. However, this progress has had a downside to it in the form of damage to the earth's environment. Industrial waste, carbon emitting vehicles, chemical fertilizers and pesticides have caused air, water and soil pollution. Overpopulation and subsequent rapid urbanization have led to massive cutting of trees. Studies have shown that half of the world's forests have been depleted, and with that, half of world's forest wildlife has also been lost. Harmful emissions combined with deforestation has led to depletion of Ozone layer which has led to disturbed temperature balance on earth along with other problems. Advancement in technology, enabling us to extract more natural resources, has led to unchecked consumerism resulting in overexploitation of land and oceanic resources. Improved defense against disease has increased lifespan, and this coupled with high birthrate has led to ever-expanding human population now living beyond earth's accommodating capacity.

There are grim statistics on environmental degradation occurring due to harmful human activities. According to UN's Food and Agriculture Organization, 420 million hectares of forest have been lost during last one hundred years. Presently, forest cover is being lost at the rate of 375 square km per day. A research from World Health Organization (WHO) shows that 92% of the world population lives in the places where air pollution exceeds safe limits. In the year 2012 alone, there were approximately 7 million deaths worldwide from diseases related to air pollution. Land degradation driven by mining, ranching, urbanization and farming has reached unprecedented levels resulting in 1692 acres of productive land becoming desert every hour.

Oceans sustain life on earth by providing sustenance and employment. However, plastic pollution, industrial waste and overexploitation of living and non-living resources have affected the health of oceans negatively. There are 46,000 pieces of plastic in every square mile of our oceans and about 8 million pieces of plastic end up into the oceans every day. These colossal amounts of plastic pollution cause immense damage to ocean health and marine biodiversity. Moreover, release of industrial waste into oceans, unsustainable fishing and tourism practices, oil spillage and pollution from maritime transport have rendered seas more acidic which has had a negative impact on marine biodiversity. Many may find it surprising to know that about 90% of predatory and 80% of commercial fish in our oceans has died and if this continues unchecked, we will have barren oceans void of fish. Nearly half of coral reefs and many of the fish species in our oceans have already gone. Some of the fish species which have recently gone extinct include black fin cisco, galapagos damsel, silver trout, and yellow fin trout. All this has come down very heavily on our environment, disturbing the balance between human consumption and earth's ability to heal itself and replenish its resources.

There are many international protocols and conventions in place for the conservation of environment; however, throughout previous decades, the environmental degradation and mass oblivion have run ahead of our will to reverse the damage. Responsible actions at government and individual levels can enable us to stop borrowing from our future and hand over the planet to the next generation with grace and dignity.



Reclaiming Our Planet: Combating

Land Degradation, Desertification

And Drought

Ahmad Ibrahim

Human existence hinges upon a healthy and thriving environment. As humanity confronts unprecedented challenges related to climate change, overpopulation, and subsequent resource depletion, there is growing need to safeguard our environment and restore natural ecosystem. United Nations Environment Programme (UNEP) has been organizing World Environment Day since 1973 to spread awareness and support ecofriendly policies by stake holders. Today, Kingdom of Saudi Arabia (KSA) is hosting World Environment Day 2024 with theme “accelerating land restoration, drought resilience & desertification progress.”

The theme aims to raise understanding and drive collective action to restore degraded lands, reverse desertification, and strengthen resilience to droughts. It's closely associated with multiple United Nations Sustainable Development Goals (SDGs). The theme primarily links with SDG-13 and SDG-15, which, respectively, promotes climate action and emphasis the need for protection and restoration of terrestrial ecosystems. By enhancing agricultural productivity, improving availability and sustainability of food and water resources for well-being of humanity, the theme, henceforth, also aligns with SDG-02, SDG-03, and SDG-06. Additionally, the collaborative nature of this theme relates with SDG-17, as it prioritizes the need of partnerships and mutual collaboration for achieving shared objectives regarding environment preservation.

Land restoration involves rehabilitating degraded lands to restore their ecological functionality. Land degradation occurs due to climate change, overgrazing, and human activities like deforestation and destructive agricultural and urban practices. It leads to soil infertility and erosion subsequently affecting food productivity. UN-Environment Programme estimates suggest that more than 3.2 billion people, or roughly 40 percent world's population, are adversely affected by land degradation. By 2040, food production is estimated to decrease by 12 percent, leading to 30 percent increase in cost of food due to land degradation. Therefore, land restoration is crucial not only for sustenance of biodiversity, but also for increasing soil productivity and ensuring food security.

Techniques like agroforestry, where trees and shrubs are planted into agricultural lands, and managed grazing, which controls livestock to prevent overgrazing, are commonly used in restoration projects.

Similarly, reforestation and reintroduction of native animal and plant species, generally called, rewilding, can be used to re-stabilize natural ecosystem. Multi-crop cultivation and soil management for preserving natural balance of nutrients in soil can also help restoration of land for sustainable revitalization.

Desertification, a form of land degradation, is a process by which fertile land becomes barren and gradually turns into desert. Drylands, covering nearly 34 percent of the land mass, are crucial for food supply. But desertification of drylands significantly renders the land's capacity to support life, leading to a decline in biodiversity, agricultural productivity, and eventually, destruction of ecosystem. Human-induced factors such as deforestation, pollution, and improper irrigation practices have exacerbated desertification.

The risk of desertification spans more than 100 countries, hitting some of the poorest and most vulnerable populations the hardest. According to the United Nations Convention to Combat Desertification (UNCCD), desertification currently affects 250 million people globally, and it could displace up to 135 million people by 2045, making it one of humanity's most severe environmental challenges.

Desertification can be countered through a combination of sustainable land management practices and ecological restoration efforts. Key strategies include reforestation and afforestation, which help restore vegetative cover and prevent soil erosion. Implementing sustainable agricultural techniques such as crop rotation, agroforestry, and conservation tillage can enhance soil fertility and moisture retention. Water management practices like rainwater harvesting and the construction of terraces can reduce runoff and improve water infiltration.

Drought resilience refers to the ability of an ecosystem or community to withstand and recover from prolonged period of drought. They can devastate ecosystems by damaging natural habitat, and can permanently diminish food and water resources. In an era of increasing climate variability, droughts can cause severe economic and social disasters like famine and mass migration, which in turn can cause social unrest, political instability and even trigger conflicts. Over 11 million people have perished and more than 2 billion people have been affected by droughts since 1900. Currently, East Africa is experiencing its worst drought in last 40 years, and has caused force displacement of more than 1.4 million people in Somalia alone.

Drought resilience can be developed by implementing a combination of advanced technologies and sustainable practices. Efficient irrigation systems, such as drip and precision irrigation, can optimize water use in agriculture. The cultivation of drought-resistant crops, developed through genetic modification and selective breeding, can help maintain food supply during dry periods. Additionally, improving soil health through techniques like mulching, cover cropping, and organic farming enhances water retention and reduces erosion. Early warning systems and predictive analytics allow proactive preparation against potential drought threats. Moreover, adaptation of water-efficient practices and optimizing water-intensive activities, both in agricultural and urban areas, can help better withstand drought conditions.

In recent years, there have been few success stories as far as restoring land and countering droughts is concerned. Great Green Wall project in Africa, launched in 2007, is a massive tree-plantation initiative with objective of combating desertification. The project aims to plant 8,000 kilometers long wall of trees from West to East Africa and restore 100 million hectares of degraded land by 2030. The project, although still in progress, has shown remarkable results. The project aims to plant 8,000 kilometers long wall of trees from West to East Africa and restore 100 million hectares of degraded land by 2030.

China's greening campaign, started in the late 1990s, has increased forest coverage from 12 percent to over 22 percent, successfully combating desertification. China's Grain for Green (GFG) programme, initiated in 1999 and launched nationwide in 2002, has also achieved successful outcomes. Under this programme, 8.216 million hectares of degrading land with increasing vulnerability to desertification has been transformed into forestland. Similarly, the Green Belt Movement in Kenya, founded by Nobel laureate Wangari Maathai in 1977, has also planted over 50 million trees. This initiative averted desertification and also provided economic benefits to local communities via sustainable forestry practices.

Similarly, The Altiplano in Bolivia, once degraded by overgrazing, has been transformed through a community-led restoration project using check dams, native grasses, and rotational grazing. Technological advancements can also be employed to supplement environmental restoration efforts. Precision agriculture technologies, such as satellite imagery, drones, and soil sensors, can enable farmers to optimize water usage and crop plantation. Reforestation and afforestation efforts can be enhanced by using drones to plant seeds and monitor growth. Additionally, early warning systems and climate modeling tools can help predict and mitigate the impacts of drought by enabling proactive resource management and planning. Moreover, remote sensing and Geographic Information Systems (GIS) mapping can provide detailed insights into land conditions. These technologies, combined with sustainable land management practices, can significantly contribute to reversing land degradation and desertification while enhancing resilience to drought.

Without realization of threat, mitigation strategies cannot be developed. Ecosystem restoration is possible and degraded landscape can be restored into thriving ecosystems. But collaborative efforts of various stake holders, both at national and international level, are crucial. Without awareness and collective efforts, reclamation of our planet will remain a far-fetched reality.



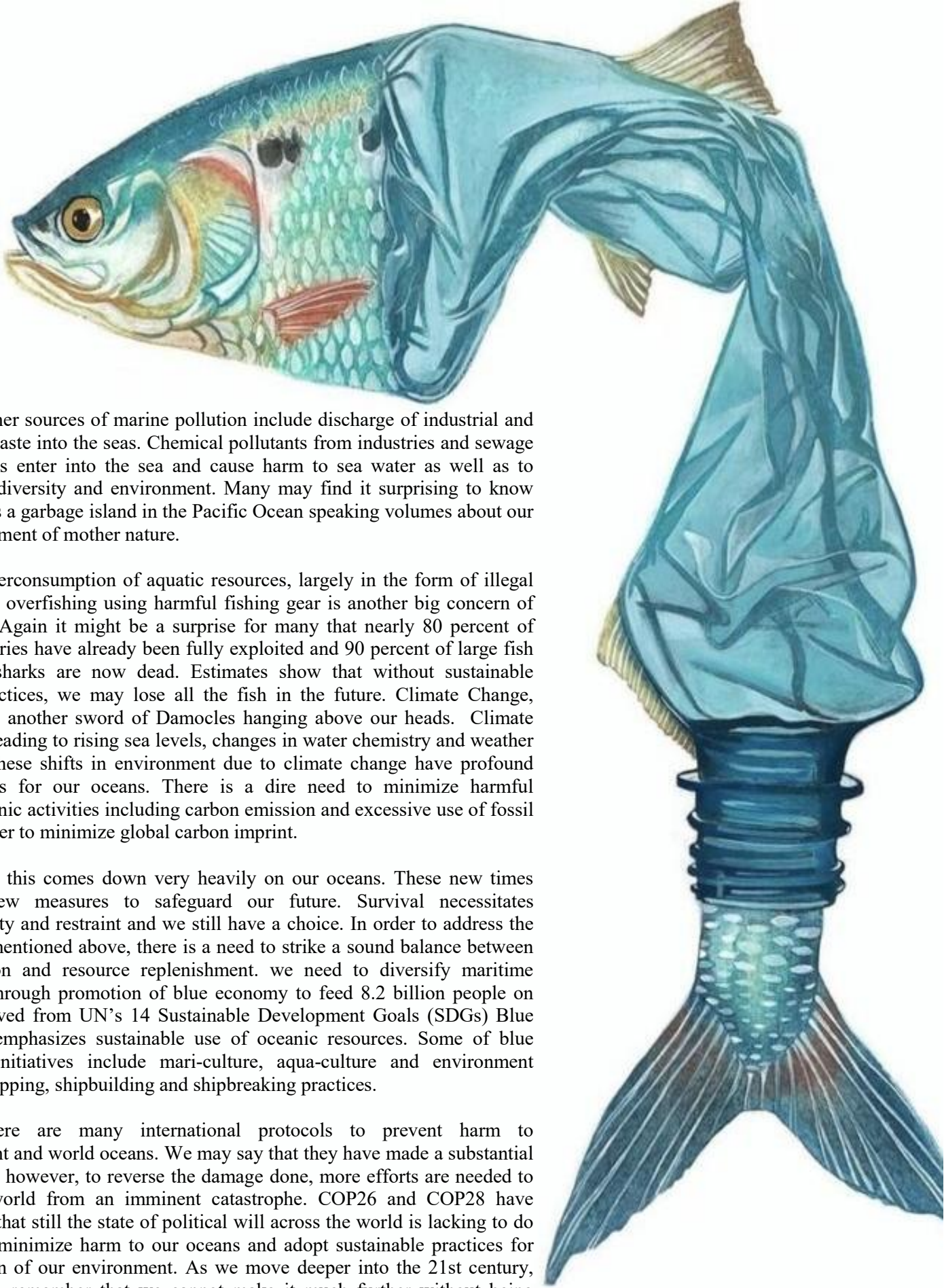
Ocean Health: **Imperatives For New Age** **Gul Hameed**

Oceans, the lifeblood of our world, have now been imperiled by harmful human activities. Once teeming with thriving ecosystems, world oceans now face severe pressure from expanding population, over-exploitation of oceanic resources and global warming. If continued unchecked, this can have devastating consequences for life on us including humans. Fast deteriorating ocean health invites us to broaden our understanding of our life-sustaining oceans and calls for urgent and transformative actions for preservation of oceans and critically important ecosystems. It is to be remembered that oceans and life on earth are inseparably tied together with one affecting the other. Half of oxygen in our atmosphere and protein for billions of people come from our oceans. Besides, maritime commerce rivets the world together providing jobs to millions of people worldwide and opportunities to transport commodities to every corner of the world. However, overpopulation and unsustainable practices have wreaked havoc and oceans are under a critical threat from harmful human activities. If we failed to restore our practices to sustainability, we cannot hope for any prosperous future for ourselves.

As human population is now 8.2 billion, the need for resources has also accelerated. With advancement in technology, we have become more efficient in extracting resources to cater for our increasing needs. There is, however, an inverse relation between human progress and environment. Rapid exploitation of oceanic resources has led to marine pollution, overconsumption, habitat destruction and species loss.

In the quest to cater for food and commodities for more than 8 billion people, humanity now faces three grave challenges: marine pollution, resource depletion and the critical need to diversify ocean economy through promotion of blue economy initiatives. Without taking tangible measures to address these issues, situation seems to be strained, rather hopeless.

As of marine pollution, once again, mounting pressure for resource exploration as well as mindless consumerism have pushed us to the verge of a dangerous precipice. Nearly 55000 cargo ships, about four thousand ports worldwide and over 1.5 million seafarers active on any given day constitute modern day globalization. While they transport commodities from one corner of the world to another, this staggering seaborne activity also has a downside to it in the form of harmful emissions, ship generated waste and oil spills. In the year 2022 alone, globally 858 million tons of CO2 emissions were recorded from shipping sector. Oil spills merit special mention here as these cause harm not only to ocean health itself, but also result in enormous loss of ocean life including seabirds etc. The famous Deepwater Horizon accident in 2010 spilled about 205.8 million gallons of oil as well as 225,000 tons of methane gas into the Gulf of Mexico. Investigations estimated that this enormous oil spill resulted in killing of about 82000 birds of different species, 25900 marine mammals over 6000 turtles and an alarming number of fish.

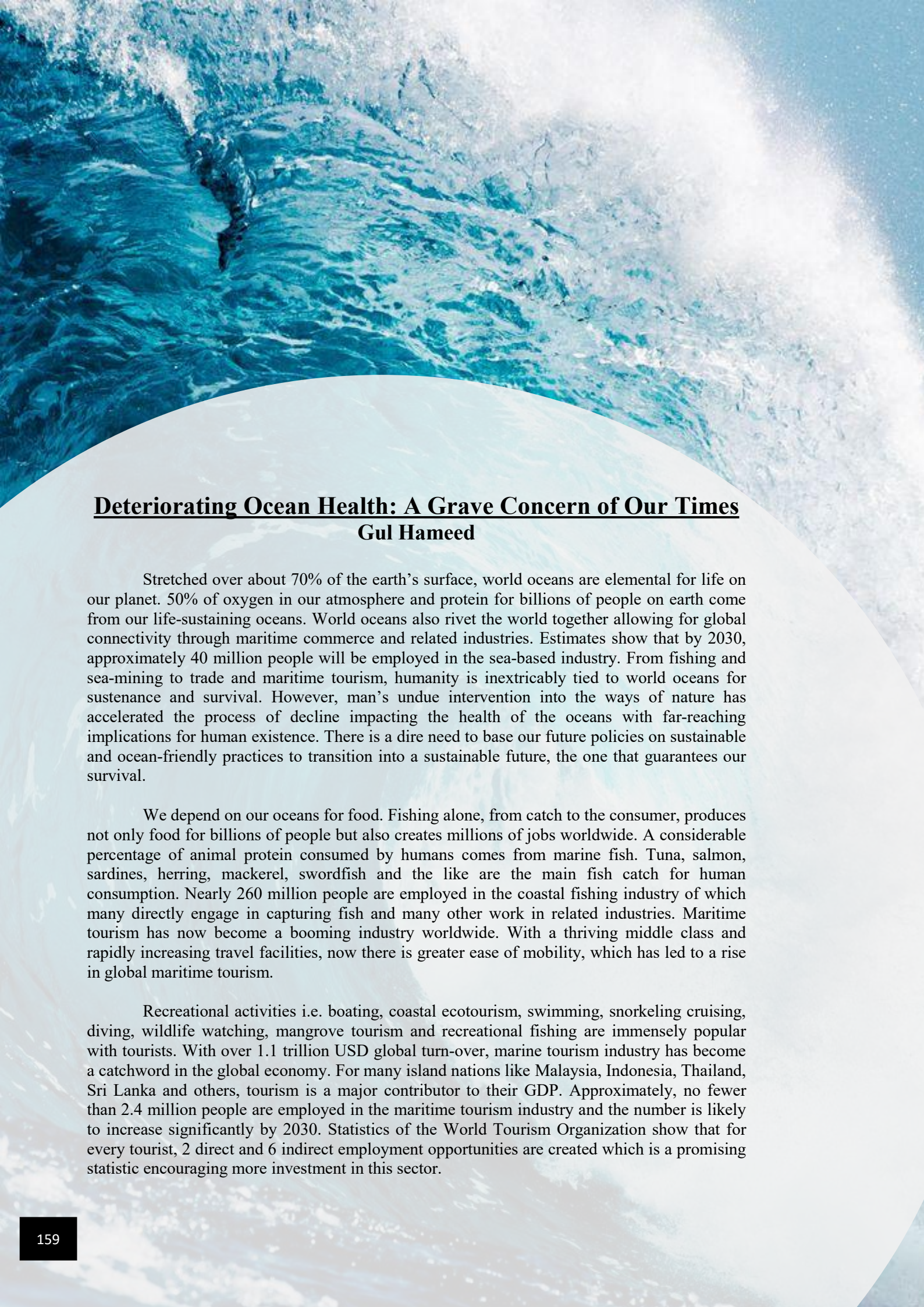


Other sources of marine pollution include discharge of industrial and domestic waste into the seas. Chemical pollutants from industries and sewage from homes enter into the sea and cause harm to sea water as well as to marine biodiversity and environment. Many may find it surprising to know that there is a garbage island in the Pacific Ocean speaking volumes about our unjust treatment of mother nature.

Overconsumption of aquatic resources, largely in the form of illegal fishing and overfishing using harmful fishing gear is another big concern of our times. Again it might be a surprise for many that nearly 80 percent of world fisheries have already been fully exploited and 90 percent of large fish including sharks are now dead. Estimates show that without sustainable fishing practices, we may lose all the fish in the future. Climate Change, similarly is another sword of Damocles hanging above our heads. Climate change is leading to rising sea levels, changes in water chemistry and weather patterns. These shifts in environment due to climate change have profound implications for our oceans. There is a dire need to minimize harmful anthropogenic activities including carbon emission and excessive use of fossil fuels in order to minimize global carbon imprint.

All this comes down very heavily on our oceans. These new times demand new measures to safeguard our future. Survival necessitates sustainability and restraint and we still have a choice. In order to address the problems mentioned above, there is a need to strike a sound balance between consumption and resource replenishment. we need to diversify maritime economy through promotion of blue economy to feed 8.2 billion people on earth. Derived from UN's 14 Sustainable Development Goals (SDGs) Blue Economy emphasizes sustainable use of oceanic resources. Some of blue economy initiatives include mari-culture, aqua-culture and environment friendly shipping, shipbuilding and shipbreaking practices.

There are many international protocols to prevent harm to environment and world oceans. We may say that they have made a substantial impact too; however, to reverse the damage done, more efforts are needed to save the world from an imminent catastrophe. COP26 and COP28 have concluded that still the state of political will across the world is lacking to do enough to minimize harm to our oceans and adopt sustainable practices for preservation of our environment. As we move deeper into the 21st century, we have to remember that we cannot make it much further without being empathetic to our natural world including our oceans. Deteriorating ocean health is a serious threat to our existence. By taking remedial actions on time, we can save our future generations from having to look back on us with disapproval and dissent.



Deteriorating Ocean Health: A Grave Concern of Our Times

Gul Hameed

Stretched over about 70% of the earth's surface, world oceans are elemental for life on our planet. 50% of oxygen in our atmosphere and protein for billions of people on earth come from our life-sustaining oceans. World oceans also rivet the world together allowing for global connectivity through maritime commerce and related industries. Estimates show that by 2030, approximately 40 million people will be employed in the sea-based industry. From fishing and sea-mining to trade and maritime tourism, humanity is inextricably tied to world oceans for sustenance and survival. However, man's undue intervention into the ways of nature has accelerated the process of decline impacting the health of the oceans with far-reaching implications for human existence. There is a dire need to base our future policies on sustainable and ocean-friendly practices to transition into a sustainable future, the one that guarantees our survival.

We depend on our oceans for food. Fishing alone, from catch to the consumer, produces not only food for billions of people but also creates millions of jobs worldwide. A considerable percentage of animal protein consumed by humans comes from marine fish. Tuna, salmon, sardines, herring, mackerel, swordfish and the like are the main fish catch for human consumption. Nearly 260 million people are employed in the coastal fishing industry of which many directly engage in capturing fish and many other work in related industries. Maritime tourism has now become a booming industry worldwide. With a thriving middle class and rapidly increasing travel facilities, now there is greater ease of mobility, which has led to a rise in global maritime tourism.

Recreational activities i.e. boating, coastal ecotourism, swimming, snorkeling cruising, diving, wildlife watching, mangrove tourism and recreational fishing are immensely popular with tourists. With over 1.1 trillion USD global turn-over, marine tourism industry has become a catchword in the global economy. For many island nations like Malaysia, Indonesia, Thailand, Sri Lanka and others, tourism is a major contributor to their GDP. Approximately, no fewer than 2.4 million people are employed in the maritime tourism industry and the number is likely to increase significantly by 2030. Statistics of the World Tourism Organization show that for every tourist, 2 direct and 6 indirect employment opportunities are created which is a promising statistic encouraging more investment in this sector.



Aforementioned are only some of the most important aspects in which world oceans have sustained life on earth by providing food and supporting global economy. However, in turn, we should have been a little more considerate towards our life-sustaining oceans. The health of the earth's oceans is under severe threat because of harmful human activities. We are exploiting ocean resources faster than they can replenish.

Due to overfishing, illegal fishing, the use of harmful fishing gear and the destruction of the marine environment, world's oceans are experiencing an alarming decline in fish populations. This puts human nutrition security and other biodiversity at stake. It goes without saying that this deplorable damage is taking place largely due to our irresponsible and unsustainable practices.

Marine pollution is another man-made hazard taking its toll in the form of diminishing marine biodiversity. Seventy-nine percent of all the plastic we make ends up in the oceans and will take another 1000 years to degrade. It is immensely harmful to marine wildlife as fish mistake plastic for food. Each year, nearly one hundred million marine animals perish because of plastic pollution alone. Industrial waste and other chemical pollutants dumped into the rivers, too, end up in the oceans causing severe damage to marine life.

Today's interdependent world could not have been imagined without maritime commerce. About 55000 merchant ships, four thousands ports and nearly 1.5 million seafarers active everyday underpin modern day globalization. This large-scale maritime activity also has damaging impact on environment and ocean health. Harmful carbon emissions, oil spillage and other pollutants from maritime transport press heavily on ocean health and marine biodiversity.

Similarly, maritime tourism too is not without its downsides. Careless tourism practices cause pollution, destroy animal life, and disturb human and animal communities. Major negative impacts resulting from unsustainable tourism practices include marine pollution, soil degradation, landscape erosion, rise in the sea level, and loss of marine resources i.e. destruction of coral reef. Apart from that, the rising levels of greenhouse gases are accelerating climate change with threatening implications for the near future. Glacial melt down, rising sea levels and the temperature have added greatly to the already strained conditions. Marine biodiversity has to battle with rapidly changing and threatening environmental conditions. Acidification of oceans due to pollutants is yet another concern. All this comes down very heavily on the health of our oceans and consequently, on human existence.

Without healthy oceans and related ecosystems, life on earth, especially human existence is impossible. Presently, the pace at which we are polluting and pillaging the oceans has brought us to the verge of an apocalypse. In fact, with nearly 200 million tons of plastic in our oceans, with waters increasingly becoming toxic, and with marine ecosystems dying at an alarming pace, we cannot hope for any future.

To reverse the damage done, there is a dire need to mend our ways in which we affect the oceans and life forms in them. There's a need to develop sustainable fishing as well as tourism practices so that sea-based resources can keep up with human consumption and have enough time to replenish. Responsible action at government and individual level can save us from an imminent doom. Let us all awake.

The Triple Threat of Desertification, Land Degradation, and Drought (DLDD) For Pakistan

Safia Mansoor

The ominous specter of Desertification, Land Degradation, and Drought (DLDD) has been widely prevalent in world, acting as an ecological predicament which jeopardizes life, livelihood, and sustainable development. DLDD comprises of three interlinked threats: Desertification — land degradation in arid, semi-arid, and sub-humid regions primarily caused by anthropogenic activities and climate change; Land Degradation — chronic loss or decline in ecological integrity and biological productivity of lands due to human-induced processes; and Drought — protracted deficiency of precipitation leading to hydrological imbalance that affects land resource productions. Collectively, the triple threat of DLDD not merely endangers environmental sustainability but also brings socio-economic instability. For Pakistan, the ever-enhancing menace of DLDD has risen to prominence owing to horrendous impact of climate change.

Lands are quintessential for survivability of humanity; however, the poisonous concoction of climate chaos, biodiversity devastation, and widespread pollution also termed as ‘Triple Planetary Crisis’ are metamorphosing vibrant lands into barren deserts, analogous to dead zones. With the grasslands and forests being brutally annihilated, the lands are unable to thrive ecosystems, produce agriculture, and support communities. With vulnerable poor population hit hardest due to vanishing resources, failing crops, and crunching economies plunging sustainable development into abyss, the world is trapped into vicious cycle, whereby land use is source of 11% of Carbon dioxide emissions, that in turn begets global warming.

United Nations Policy Brief issued in June 2023 on ‘Desertification, Land Degradation, and Drought’ documents that drylands of the world comprising half of planet’s land and home to three billion people residing in almost 169 states are periled from DLDD. These drylands are source of food, fuel, and burning materials, coupled with various ecosystem services such as carbon sequestration, and water filtration and retention. Most importantly, they hold 50% of biodiversity and livestock, and nearly 44% of croplands of the world. Anthropogenic activities in 21st century have been accelerating the phenomenon of desertification at 30-35% in comparison to past. Statistical analysis from the same policy brief implies that world lost 100 million hectares of productive land per annum between 2015-2019, and it is projected that more than one million hectares of fertile land will undergo degradation by 2030, if desertification and land degradation remains unabated. Moreover, daunting challenge remains projected 95% of planet’s land degradation by 2050 if remedial steps are not taken.

DLDD in Pakistan is often driven by amalgamation of political, social, and economic forces wherein most notable factors include intensive agricultural practices, unsustainable consumption, extractive industries entailing forestry, mining, oil and gas, and population explosion. In present times, it has been colossally exacerbated by the climate change. Alteration in precipitation cycles induced by climate change, also termed as ‘Precipitation Whiplash’ is causing prolonged and intense rainfall events on one hand and severe periods of droughts on the other. DLDD substantially decreases the access to water for drinking and agricultural practices, augmenting the risks of food insecurity, water crisis, and conflict. It doesn’t merely challenge the enjoyment of various human rights such as right to life, food, health, adequate livelihood, and sustainable environment, nay deepen the global inequalities by impacting vulnerable poorest people mostly living in dryland areas.





As far as Pakistan is concerned, it is primarily a dryland country wherein overall landscape constitutes 80 % of arid or semi-arid land, enabling livelihoods of nearly two-third of population. Withal, accelerated land degradation and desertification chiefly originating from human activities is incessantly vanishing this vital resource. The country is jeopardized from desertification that has been causing environmental degradation, loss of biodiversity and soil fertility, diminishment in land productivity, which is compounding vulnerability of fragile local populace.

With the average increase in Pakistan's temperature of 0.9 degrees centigrade during 1980—2021, shrinking Indus Delta by 92%, reducing per capita water availability from 5060 cubic metres to 908 cubic metres during 1951-2022, the predicament of arid country has magnified. 62 million hectares out of total 79.6 million hectares land of Pakistan is prone to desertification, notably in South Punjab, Baluchistan, and Sindh. Moreover, United Nations 2022 'Global Land Outlook' report has listed Pakistan in 23 drought-stricken countries. The co-occurring environmental stressors — longer heat waves and severe water scarcity — for crop production have been accentuating food insecurity in country. They are also causing biodiversity loss by affecting allied species and soil biota. As per the World Bank report, Environmental Degradation in Pakistan annually incurs mammoth loss of Rs 365 billion equivalent to 6% of its GDP. The same report attributes 20 % of environmental damage cost to decreased agricultural productivity consequent of soil degradation; 30% cost to waterborne diseases due to poor hygiene and water pollution; and remaining 50% to premature mortality and illness due to air pollution.

Pakistan must deliver on its SDGs commitments for restoration of lands and degraded eco-system. Harnessing new national climate action plan, and scaling-up finance for climate adaptation and resilience, is indispensable for land restoration by 2030. Through incorporation of effective agricultural practices and integrated water resources management, alongside community empowerment, country can curb desertification and bolster drought-resilience in order to ensure sustainable development. In this regard, increasing water-efficiency, furthering soil conservation, and adopting drought-resilience technologies, can restore vital landscape, Pakistan's first-ever National Adaptation Plan (NAP) adopted in June 2023 which envisages climate-resilient country is a leap forward in this direction. Efficacious-cum-swift action is essential for healthy lands, sustainable development, and survival of humanity.

Projected Water Security Of Pakistan

Safia Mansoor

Water security has emerged as a potent non-traditional security concern for Pakistan, endangering the two key referent objects of security: 'state' & 'human'. Water security is grounded on adequate water availability and quality for sustainable socio-economic development; diminution of water-related disasters and water-borne pollution; and curtailment of water-related conflicts that may precipitate from water sharing between and within the states. With respect to Pakistan, the alarming level of water shortage and deteriorating water quality signify the predicament of water security in near future.

The depletion of water resources of the country has not cropped up out of the blue, nay is the consequence of amalgamation of various factors. The water-intensive and dilapidated irrigation system, inadequate water infrastructure, and sheer neglect of the successive governments regarding water governance have paved the way for the calamity. Most importantly, the ballooning population remains factor of concern with mammoth potential to increase the demand that in turn would strain the meagre water supply.

According to 2015 International Monetary Fund's report on 'Water Security Challenges', by 2025 the water demand-supply gap in country would surge to 83 Million Acre Field (MAF) as the demand is predicted to reach 274 MAF with the unvarying supply of water at 191MAF. Another pertinent factor is the climate change that will bring about the shrinkage of hydrological reserves on one hand while catalysing the water-related disasters on the other. As per Global Climate Risk Index, Pakistan ranks as the 5th most vulnerable state to the long term ramifications of Climate change such as depletion of Himalayan glaciers, alteration in timing and intensity of precipitation, and reappearance of the drought and floods. Furthermore, the contamination of water by sewerage, industrial effluents and agricultural run-off also pose a formidable challenge to the water security given the fact that 80% of population is deprived of access to clean water.

The water profile of Pakistan is illustrative of the past, present and future grave aspects concerning the water security. From being a country abundant in water resources, it has drastically changed into 'water stressed' country. In 2018, a report published by the Pakistan Council for Water Relations (PCRWR) stated that in 1990 Pakistan reached the 'water stress line' and the situation further exacerbated in 2005 when it traversed the 'water scarcity line'. As per the International Monetary Fund (IMF), Pakistan ranked third amongst the 36 states experiencing the severe water shortage.





The per capita annual availability of water has dwindled from 5,650 cubic metres to 908 cubic metres during 1951-2017 which is anticipated to decrease to 860 cubic metres by 2025. If an efficacious water conservation strategy is not enacted, water availability may reduce to 500 cubic metres by 2040, thus leading Pakistan towards absolute water scarcity.

Water politics over the Indus River Basin System between Pakistan's provinces, and India and Pakistan will also threaten the water security in the coming decade. The normal flow of Indus Basin has plummeted to 40%, which is primarily due to climate change. Resultantly, Sindh and Punjab are facing the worst water shortage causing tensions to mount as each side blames the other for apportioning its share. Fear of drought prevails as the water levels in Tarbela and Mangla Dam have reached an abysmal level. Moreover, control of water headworks in India and the construction of various run-of-the-river dams such as the Kishanganga project will amplify water scarcity in Pakistan.

Water security of Pakistan is intrinsically linked to the human security and state security. With respect to human security, water remains a pre-requisite for food, economic, environmental and health security. Moreover, water crisis has the potential to threaten the traditional security of Pakistan (in terms of wars over water between India and Pakistan). The grim futuristic picture of the water security of Pakistan indicates its lethality for masses and state.

Given the complexity of the issue, necessary interventions shall be made at individual, national, and regional level. At national level, a paradigm shift from sectoral to cross-sectoral policy approach is indispensable for the effective conservation, utilization, and management of water resources. Drip irrigation system for reducing water wastage and multipurpose dams for storing water, flood control, and irrigation can prove instrumental. It is also important to consider the water pricing regime to avoid over-consumption; besides, the country should focus on water re-cycling and strict water management for overcoming contamination of water. For curbing the adverse impact of climate change, adaptation and mitigation strategies should be implemented. Most importantly, political education is required to deal with the key threat to water security, the population bomb. At regional level, improvement of water relations with India under Bharatiya Janata Party government seems a distant dream, however, Pakistan must incessantly strive for Hydro-diplomacy. For targeting the individual level, it is crucial to organize awareness campaigns and sensitize the disastrous repercussions of water insecurity.



Anthropocene Epoch And Multi-Generational Legacy of Climate Change

Safia Mansoor

The world is facing an Anthropocene epoch, an informal interval of geological time, signifying the disastrous impact of anthropogenic activities on earth's ecosystem. The term Anthropocene is an amalgamation of two words 'Anthro'- Man and 'Cene'- new, conceived by chemist Paul Crutzen and biologist Eugene Storer in 2000. According to some scholars, Anthropocene commenced at inception of 1800s's Industrial Revolution, when anthropogenic/human activity led to colossal concentration of methane and carbon in atmosphere of earth. On the contrary, the Anthropocene Working Group in 2016 stated that Anthropocene kicked off in 1950 when phenomenal surge in human social-cum-economic activity implicating earth—Great Acceleration—took off. The Anthropocene epoch is characterized by the worst legacy of past generations — Climate Change— long lasting shifts in weather and temperature patterns, primarily induced by human activities such as burning fossil fuels releasing GHGs (Greenhouse gases) that trap the heat of sun inside the planet earth and consequently raise the earth's temperature. Climate change effects all generations; however, youth remains the primary victims as they have inherited this existential threat from the consumption obsessed previous generations.

23rd June, 1998 is one of the most crucial day in the history of climate change hearing when James Hansen, former director of Institute of Space Studies at NASA, testified to US Congress affirming the detection of greenhouse effect, suggesting the tangible change in climate. Hansen delineated greenhouse effect as the pervasive combustion of non-renewable energy resources (fossil fuels) that brings about heat-trapping buildup of greenhouse gases like Carbon dioxide in atmosphere of Earth. Since then, greenhouse effect has become key aspect of common knowledge. In past 800,000 years, the atmospheric concentration of greenhouse gases has reached an unprecedented level. Atmospheric concentration of Methane (CH₄), Carbon Dioxide (CO₂), and Nitrogen Dioxide (N₂O) has surged by 262%, 149%, and 123% since 1750. Additionally, the concentration of Carbon Dioxide was almost 280 ppm (parts per million) prior to Industrial Revolution; however the monthly average concentration raised to nearly 418.28 ppm in march 2022, which is approximately 2.8 ppm greater than concentration in 2021. Since 1980, the temperature of Earth has hiked by an average of 0.08° Celsius, which is nearly 2° F in total. Additionally, since 1981, the warming rate observed is greater than twice as fast per decade: 0.18° C.

The idea of intergenerational justice underlies the duties of present generations towards the future generations. It raises pertinent issues such as how natural resources at one's disposal can be harnessed without undermining sustainable working of ecosystem of planet. Furthermore, it also raises the issue of maintaining an equilibrium between claims of rights of present and future generations.

Legal scruples of intergenerational justice takes into consideration the justice between generations. It seeks to address intergenerational conflict of interests, attempts to unravel inter-temporal distributive problems, and solicits temporal solidarity across different generations.

As far as environmental politics is concerned, it calls for intergenerational distributive justice at global level by highlighting the key assumption that rise in earth temperature will inflict mammoth harm causing infringement of basic human rights of future generations thereby requiring present generations to cap emissions in order to discharge duties of justice apropos future generations. This intergenerational perspective has also been highlighted in climate politics as well as policy making in second half of 20th century. For example, the final declaration of 1972 UN Conference on Environment, based in Stockholm, entailed intergenerational approach: key goal for mankind is to guard and ameliorate human environment for both present as well as future generations. 1987 United Nations Brundtland Report also expounded the link between climate politics and intergenerationality, which is deeply rooted in sustainable development — to carry out development in sustainable manner to meet the requirements of present generation without jeopardizing the potential of future generations to fulfill their needs.

Concerning climate change, there is an explicit generational friction. Catchphrase ‘Okay Boomers’ came to limelight when New Zealand Parliament’s young member named Chloe Swarbrick used it against a heckler. Chloe highlighted the reasons behind expeditiousness of her generation to address climate change. She pointed out that her generation (Millennials) coupled with the ones to follow will experience the cascading implications of climate change by 2050 which the Baby boomers will not. ‘OK Boomer’ term is a corollary of limitless series of debates about ‘issues facing the youth’ and ‘older generations who have destroyed everything’. Contrasting perspectives in intergenerational relationships are considered normal, however, in the case of climate change, the older generations, particularly the baby boomers are leaving behind the disastrous-cum-incurable problem for the next generations- Millennials and generation Z. In his book ‘A generation of Sociopaths: How Baby Boomers Betrayed America’, Bruce Gibey has also regarded the baby boomers ‘consumption-crazed’ who are leaving behind a destabilized climate and mountain of debt for millennials and other generations as well.

In 1989, E.B. Weiss wrote a book ‘Fairness to Future Generations’ entailing ‘theory of intergenerational equity’ which defines three assumptions: 1) options; 2) quality; 3) access. First principle underlies conserving natural resources’ diversity for future generations while the second one aims to balance the quality of environment between generations. Third principle implies fair access to earth as well as its resources among all generations. The aforementioned principles emphasizes the balance between the needs and present and future generations. Despite the scientific, academic, and legal developments related to climate change and intergenerational justice and equity, the intergenerational issues remain persistent may adopted worse form. Although a number of agreements on climate change were concluded, they remained ineffective in curbing the emissions causing the climate change. Beginning from the 1979 first World Climate Conference culminating into 1985 Villach Conference which highlighted the role of GHGs in climate variations. Resultantly, IPCC- Intergovernmental Panel on Climate Change formed in 1988 enshrined authoritative scientific assessments and effects of climate change in its First Assessment Report. Currently, the IPCC is in in 6th assessment cycle in which various Working Groups are analyzing the basis, impacts, vulnerabilities, adaptation, and mitigation strategies.

In 1992, UNFCCC-United Nations Framework Convention on Climate Change was concluded and opened for signatures at the very famous 1992 Earth Summit at Rio de Janeiro. UNFCCC developed a mechanism for states to produce and share data regarding their respective GHG emissions and obligated states to provide national GHG inventories coupled with provision of national reports on policy making and coping mechanism for climate change. However, explicit timetables and targets for reducing GHG concentration in atmosphere remained absent. States tried to extend the 1992 UNFCCC and address the aforementioned policy lacuna in the form of 1997 Kyoto Protocol but its fragility and limited effects can be determined from the absence of the United States from it. One of the most recent binding agreements on climate change- 2015 Paris Agreement– aims to reduce global warming below 2 ° C as compared to pre-industrial levels. This agreement futility is evident from the states failing to fulfill their commitments and lack of enforcement, accountability, incentivizing mechanism.

Climate change is exacerbating the environmental, social, and economic challenges that in turn aggravates insecurity at national as well as international level. Climate change is intrinsically linked to security concerns such as loss of livelihood, shrinking energy and water supplies, food insecurity, climate induced disasters, scramble over scarce resources, and forced migration. Being a threat multiplier, climate change provides pathways to violent conflict in three way: a) it corrodes livelihood and incite people towards violent conflict in countries facing armed conflict; b) alternations in climate patterns transform latent conflicts into deadly conflict; and c) climate changed leads to forced migration and displacement causing tensions among indigenous people and migrants. From endless droughts in Horn of Africa, Madagascar, and Afghanistan to cataclysmic flooding in Congo and Pakistan, climate change has displaced millions of people in regions vulnerable to its effects. The most notable example remains of South Asia, where climate change has intensified the hydro-politics between India and Pakistan on Indus basin that could spark ‘water war’ between them. The security repercussions of climate change are not limited to these regions, nay its detrimental impacts are observable in all regions. For instance, climate change has beget the ‘Arctic Opening’ and increased Arctic’s strategic potential, thereby acting as a catalyst to cause geo-political turbulence in region.

Immediate, holistic, and expeditious climate action is required to curb the issue of climate change in order to provide a resilient future for young generation. It requires active participating in climate change activism, notably the Baby Boomers (who dominate the political offices); enhancing political inclusion of youth in climate policy making, implementing mitigation and adaptation measures, furthering youth-led startups related to climate change, investing in green infrastructure, and materializing climate-smart development.





Humanity's Journey Of Climate

Change Awareness

Ahmad Ibrahim

Climate change refers to gradual alternation in Earth's climate system leading to long-term transition in temperature and weather patterns. Historically, planet Earth has passed through various phases of climate change and has fluctuated between extremely hot and cold climates. These changes were caused by natural factors like volcanic eruptions, asteroid strike, intensification of solar activity, and natural concentration of greenhouse gases. For example, during Cretaceous period (144 to 65 million years ago), Earth's temperature was much higher than today due to high content of carbon-di-oxide (CO₂) in atmosphere, leading to rise in ocean level. Similarly, in past 500,000 years, at-least four ice ages have passed which resulted in decline of global temperature, reduction in sea level, and expansion of glaciers on planet's surface. These climate variations have caused extinction of many species, but many species have thrived too. However, the current challenge of climate change which we are facing is anthropogenic in nature, i.e. it has been caused by human activity and is something which has never occurred in planet's history. Therefore, uncertainty surrounds regarding our planet's capacity to recover from damages caused by humanity like pollution, deforestation, and destruction of natural habitat through urbanization.

Humanity's journey toward climate change awareness has been a testament to the growing recognition of our shared responsibility to protect the planet. Initial understanding about greenhouse effect was theorized by French mathematician and physicist Joseph Fourier in 1820s. In 1950s, Fourier's proposal was further elaborated through experimentation by Eunice Foote - who can be regarded as climate science pioneer of that era. Her experiments, involving glass cylinders, proved that the solar heating effect is more evident in moist air – containing higher concentration of CO₂, than dry air. In the 1860s, experiments of John Tyndall, who is attributed as discoverer of green-house effect, also revealed that coal gas containing mixture of carbon-di-oxide (CO₂), methane (CH₄) and other volatile hydrocarbons, effectively absorb sunlight, with CO₂ uniquely acting like a sponge by capturing multiple wavelengths of sunlight. By 1895, Svante Arrhenius, had proven the direct relationship between CO₂ and global temperature.

His calculations showed that if CO₂ concentration is halved, temperature would reduce by 50 percent. However, if CO₂ concentration is doubled, corresponding increment in temperature would take place. Although the work of these scientists laid foundation of early understanding of climate change, but they didn't receive any credible attention due to remote nature of threat of climate change. As humanity entered the 20th century, the carbon foot-print of industrialization had increased substantially.

However, the concept of climate change was still viewed with skepticism. In 1938, British engineer Guy Stewart Callendar became the first person to discover the relationship between human activity and planet's rising temperature. His theory, called 'the Callendar Effect,' also didn't receive the acceptability it deserved, but at least it managed to identify and attract attention towards upcoming threat of global warming.

In 1958, Charles Keeling created Keeling Curve to demonstrate the gradual increment of CO₂ in the atmosphere by utilizing his measurements at Mauna Loa. His work marked a major contribution in analyzing the future threat of rising temperature due to increasing concentration of CO₂ in atmosphere. Beside previous individual efforts, perhaps the biggest leap was the organization of United Nations' Conference on Human Environment in Stockholm, Sweden, in 1970. This summit, for the first time, highlighted the growing concerns associated with climate change on international scale and marked the initiation of discussions between developed and developing countries on the relation between economic growth, pollution and human well-being.

By 1975, term 'global warming' had been crafted by Wallace Broecker, a geochemist and professor at Columbia University. In 1979, first World Climate Conference, sponsored by World Meteorological Organization, was held in Geneva, Switzerland. This conference led to the establishment of the World Climate Programme (WCP). The conference's declaration called for: A common strategy to understand the climate system, rational use of climate information, and Establishment of the WCP.

In 1985, ozone hole was discovered by British Antarctic Survey scientists Joe Farman, Brian Gardiner, and Jonathan Shanklin. This hole was byproduct of wide-scale adaptation of Ozone Depleting Substances (ODS) particularly Chlorofluorocarbons. To curb usage of ODS and restore ozone hole, Montreal Protocol was signed in 1987. The effective implementation of protocol has led to remarkable recovery of ozone layer which is expected to fully recover in next four decade. Montreal Protocol, thus, represents humanity's first success against climate change.

In 1988, The Intergovernmental Panel on Climate Change (IPCC) was established to assess climate science and provide policymakers with insights. The Second Report (1995) informed the adoption of the Kyoto Protocol (1997), while the Third Report (2001) emphasized the impacts of climate change and adaptation. The Fourth Report (2007) focused on limiting warming to 2°C, laying the groundwork for post-Kyoto agreements. The Fifth Report (2013-2014) provided the scientific basis for the Paris Agreement, and the Sixth Report (2023) supported the first global stocktake at the end of 2023. These assessment reports have played important role in climate awareness and have significantly shaped climate policies around the globe. The Kyoto Protocol was established in 11 December 1997 and came into force on 16 February 2005.

In brief, Kyoto Protocol operationalized the UNFCCC by committing developed economies and industrialized nations to develop and implement policies for minimizing emissions of greenhouse gases (GHG). These countries committed to curb collective GHG emissions by 5 percent during first commitment period (2008-2012). However, despite being a milestone the protocol faced criticism for not including major developing nations from binding commitments and for the withdrawal of key emitters like the United States.

The Kyoto Protocol was eventually succeeded by Paris Agreement in 2015 which was adopted at the 21st Conference of Parties (COP21) and entered into force on 4 November 2016. With 196 parties, the agreement covers the entire globe. Paris Agreement has primary goal of holding the global average temperature increment below 2°C and to limit the temperature increase to 1.5°C above pre-industrial levels. However, the agreement is struggling to meet even the minimum expectations. The Paris Agreement, hailed as a pivotal achievement by humanity for climate action, is struggling to meet even the minimum. The United Nations Environment Programme's 2024 Emissions Gap Report highlights that current greenhouse gas emissions are too high to meet the agreement's goals. Without significant strengthening of Nationally Determined Contributions (NDCs), the planet is projected to warm by +3.1°C by century's end. These challenges highlight the reality that agreements alone cannot solve the climate crisis—sustained action, innovation, and global cooperation are crucial.

The awareness about climate change has spread gradually. From the early warnings of climate science to landmark agreements like the Kyoto Protocol and the Paris Agreement, global efforts have evolved to address the mounting threats posed by a changing climate. However, the journey is far from over. This journey of climate change awareness must now transform into a journey of climate action—one where every nation, community, and individual plays their part in creating a sustainable and resilient future for all.

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Interplay of Economy, Energy and Maritime Domain

S No	Article Title	Author	Source	Date	Page No
1	Deep Sea Mining: Awakening New Depths with Caution	Ahmad Ibrahim	Modern Diplomacy	08 Jun 2024	171
2	Employing Space Technology to Harness Marine Resources	Safia Mansoor	Modern Diplomacy	20 Jul 2024	173
3	Pakistan Basin Studies: Collaborative Path to Unlocking Pakistan's Offshore Energy Potential	Hamna Ghias	Global Defense Insight	18 Aug 2024	175
4	Pakistan Offshore Drilling History	Hamna Ghias	Maritime Magazine	01 Oct 2024	177
5	Malaysia's Bold Move Amid Rising Tensions	Hamna Ghias	RIAC	16 Oct 2024	179
6	Prospects of Aquaculture in Pakistan	Ahmad Ibrahim	South Asia Times	18 Oct 2024	181
7	Oil and Ocean: A Shared Responsibility for Sustainable Future	Hamna Ghias	Minute Mirror	19 Oct 2024	183
8	Seabed Riches: Is Profit-Equity Balance Achievable	Fizzah Shuja	Minute Mirror	20 Nov 2024	185
9	Seabed Mining: The Final Frontier of Geopolitical Dominance	Fizzah Shuja	Eurasia Review	02 Dec 2024	187
10	Potential for Coastal Tourism in Pakistan: Hindrances and Prospects	Safia Mansoor	Minute Mirror	02 Dec 2024	189
11	Unleashing Potential of Pakistan's Blue Economy	Hamna Ghias	Minute Mirror	13 Dec 2024	190
12	Ship-Breaking in Pakistan: Balance of Opportunity and Responsibility	Safia Mansoor	Minute Mirror	14 Dec 2024	190
12	How Geopolitics of Oil Transformed the World	Hamna Ghias	South Asia Times	30 Dec 2024	192
13	How Geopolitics of Oil Transformed the World	Hamna Ghias	South Asia Times	30 Dec 2024	192



Deep Sea Mining (DSM): Awakening New Depths With Caution

Ahmad Ibrahim

Oceans envelop more than 70 percent of planet's surface and are vital for sustenance of life on Earth. Since millennia, oceans have played pivotal role in shaping patterns of human civilization. In modern times, humanity's dependence on oceans has grown manifold. Oceans are vast, but not infinite, and irresponsible exploitation of oceanic resources can cause irreversible damage to our planet.

To raise awareness about the critical role the oceans plays in our lives and to inspire actions to protect and preserve them, World Ocean Day is commemorated worldwide every year. This year, World Oceans Day is being organized on June 7th by the United Nations' Division for Ocean Affairs and the Law of the Sea of the Office of Legal Affairs (DOALOS), with theme "Awaken New Depths." This theme underscores the need to delve deeper not only in the physical realm of our oceans but to also inquire knowledge and develop understanding about unexplored underwater dimension of our blue planet.

Oceans hide enormous and invaluable organic and inorganic resources. Historically, humanity access to oceanic resources has remained limited. The crushing depths of oceans have always restricted humanity's ingress to deep sea treasures. But technological advancements in deep-sea exploration are enabling humanity to gradually overcome these barriers, leading to breakthroughs in sea bed mining, marine biology, and deep-sea ecology. Emerging fields, like deep sea mining (DSM), are opening new opportunities to access resources that are becoming increasingly scarce on land. Deep sea mining involves the extraction of valuable minerals and metal-deposits from the ocean floor. Mineral rich deep sea deposits are commonly found in abyssal plains, hydrothermal vents, and underwater mountains. In abyssal plains, or the flat sea floors, polymetallic nodules comprising iron, copper, nickel, cobalt, and manganese are present. Sulfide deposits with lead, zinc, gold, and silver often exists in proximity of hydrothermal vents. Similarly, cobalt-rich ferromanganese crusts exist in underwater mountains. These resources are crucial for various high-tech industries, including renewable energy technologies like car batteries which can potentially help to decarbonize our terrestrial ecosystem

As technology is advancing, new systems are being developed which can reach and effectively operate at sea bed level. Although, as of mid-2023, only a quarter of seabed has been mapped by high-resolution data, but efforts are underway to expand the discovery and extraction of untapped opportunities lying in dark depths of oceans. The Clarion-Clipperton Zone (CCZ), an abyssal plains region spanning 50,000 square-kilometers across central Pacific Ocean, alone contains an estimated 21 billion tons of polymetallic nodules, with a potential global market value projected to reach \$20 billion to \$40 billion annually by 2030.

Sulfide deposits from hydrothermal vents are estimated to contain around 600 million tons of metal-rich sulfides. Similarly, according to one estimate, about 6.35 million square kilometres, or 1.7 percent of the ocean floor, is covered by cobalt-rich crusts, translating to some 1 billion tons of cobalt. As we venture more into uncharted oceanic territories, it's highly probable that more resources with promising applications will be discovered in near future. Despite its potential benefits, deep sea mining poses unprecedented risks to marine ecosystems. The deep ocean is one of the least understood and most fragile environments on planet. Sea mining activities can cause extensive physical destruction to habitats, release toxic substances, and generate sediment plumes that can choke deep-sea life. Given the slow rate of recovery in deep-sea due to limited food and energy availability, even minor disturbances in biodiversity can have long-lasting or even irreversible effects.

Similarly, the legal and ethical aspect cannot be ignored at all. As far as maritime resources are concerned, countries oversee their own maritime territories and exclusive economic zones (EEZ), while the high seas and international ocean floor are regulated by the United Nations Convention on the Law of the Sea (UNCLOS). International Seabed Authority (ISA) is responsible for deep-sea mining regulations, and has issued more than 30 exploration licenses to international companies - covering over 1.3 million square kilometers sea bed area. According to UNCLOS, the seabed and its mineral resources are "common heritage of mankind" and cannot be owned or claimed by few nations. But the exploration and extraction of deep sea resources by companies belonging to developed nations has raised a fundamental question. Is it justified to allow few nations to get profit from shared natural resources just because they are first to access them? There is no mutually agreed legal framework in place to answer this question.

ISA has been working on deep-sea exploration and mining regulations since 2014 but is still a long way to craft a globally acknowledged framework. Major outstanding regulatory issues include process and criteria for application review of work exploitation, equitable sharing of financial and other economic benefits, environmental impact monitoring and management plans, inspection and enforcement rights of informal working group, confidentiality of information, dispute resolution, transfer of technology, and insurance requirements. Given the complex and dynamic nature of issues, it is difficult to predict when these issues will be resolved. For ecofriendly sea-bed mining, timely issuances and enforcement of regulations is paramount.

Beside regulatory mechanisms, technological innovation can be used for developing less invasive extraction methodologies. By minimizing human intervention and increasing reliance on automation the margin of error and risks of waste can be reduced. Instead of caterpillar track based excavators which move over sea-bed, floating robotic mining vehicles and remotely operated underwater vehicles (ROVs) can be used to reduce mining footprint. Similarly, remote sensing and advanced control algorithms can minimize noise and light pollution and enable more precise and less disruptive mining operations. As technology will evolve further, more eco-friendly systems will be developed to sustainably harness deep sea resources with minimum ecological side effects.

This year's World Ocean Day theme urges us to explore the untapped potential of oceans in sustainable manner while recognizing the importance of innovation and conservation. It also emphasizes the importance of fostering a deeper connection between humanity and the ocean. Deep sea mining has emerged as a nascent field of both immense promise and profound concern. By unveiling the secrets of deep sea, we could potentially combat climate change and reduce our reliance on terrestrial mining. However, given the unascertained nature of ecological risks involved, is the fight against climate change worth the irreversible environmental damage to oceans due to sea bed mining? Or rather, can deep sea mining be exercised without damaging the deep sea ecosystem? The answer to these questions must be pursued with utmost caution and responsibility while considering the scientific, ecological, economic, and legal dimensions of these issues. Only then an intricate balance between deep-sea riches and preservation of marine ecosystems can be established.





Employing Space Technology to Harness Marine Resources: Pakistan's Space Policy in Perspective

Safia Mansoor

Space is a transformative frontier synthesizing cutting-edge scientific technologies with strategic resource exploitation and management. Erstwhile virtues in space were considered an adventure; however, presently they are deemed colossally imperative for indigenous socio-economic development. In this regard, Pakistan's space policy seeks to capitalize on space technology to leverage various sectors, notably, marine and coastal resources, to boost economic growth, beget social uplift, and bolster national security.

The space odyssey of Pakistan began in 1961 when Pakistan Space and Upper Atmosphere Research Commission (SUPARCO) was formulated as Space Sciences Research Wing in 1961 that was upgraded to level of Space Commission in 1981. Being one of the key active states in space age, Pakistan space breakthroughs began with the development of Rehbar rocket program in collaboration with US. Despite landmark initiation of space program, ever-lasting unfavourable political-cum-economic situation rendered space developments at the hindsight.

However, space journey continued to adrift particularly with emphasis on satellite technology reflected from launch of indigenously developed experimental satellites Badr I and Badr II in 1990 and 2000 respectively, chiefly with the assistance of China. Pakistan remote sensing satellite program replaced the Badr series.

Subsequently, in 2018, Pakistan launched optical and earth observation satellites named as PRSS-1 (Pakistan Remote Sensing Satellite-1) and PAK-TES 1A (Pakistan Technology Evaluation Satellite) through Chinese launchpad.

In July 2011, SUPARCO's space spirit underwent rejuvenation when Pakistan's National Command Authority (NCA) sanctioned the first-ever space vision called 2040 space program underling space ambitions of Pakistan, encompassing launch of 5 GEO and 6 LEO satellites by 2040. This vision was afterwards named as vision 2047 in 2014 to commemorate Pakistan's 100 anniversary. Currently, the country has set sights on stars through unveiling National Space Policy approved on December 13, 2023, which charts progressive course to utilize enormous potential of space sector for realizing development objectives.

Space Policy of Pakistan enshrines several key objectives such as formulation of space regulatory framework, furthering public-private partnership in same

Development Goals (SDGs), buttressing space technological base, and strengthening international collaboration in space sector. The same policy calls for national space agency to encourage use of space applications in multifaceted economic sectors such as forestry, agriculture, geology and mineral prospection, water resources, urban planning and management, environment, and geographic information system. Other sectors are disaster monitoring and mitigation, land cover mapping, and cryosphere modeling. As far as maritime domain is concerned, space policy documents exploitation of coastal and marine resources.

Pakistan being vital Indian Ocean littoral state having 1001km coastline is endowed with diverse coastal and marine resources that can monumentally propel economic engine of country. However, these resources predominantly remain untapped due to lack of policy direction and dearth of requisite technology. In that non-conducive environment for exploring such available vast resource pool, Pakistan's space policy provides a ray of hope by highlighting use of space technologies to leverage maritime sector. The policy underpins use of remote sensing technology to assess coastal and marine resources; oceanography; map coastal configuration, landforms, navigation channels, and bathymetry; and to map creeks as well as coastal lakes. Moreover, it underscores to identify and monitor aqua culture and fishing sites, and simultaneously observe coast erosion and sedimentation.

However, the policy merely enlists the aforementioned sub-sectors pertinent to maritime sector whereby space technology can be employed, it doesn't address key means, targets, and possible course of action with respect to each sub-sector. Pakistan can use space technology to exploit marine resources, especially in Exclusive Economic Zone (EEZ) comprising 240,000 sq.km coupled with 50,000 km long continental shelf. EEZ of Pakistan with diversified-cum-distinct geological regions such Indus offshore, Makran offshore, and Murray Ridge have potential of producing oil, gas, minerals, and fish resources.



Pakistan's marine fishing sector play an indispensable role in national economy, directly involving 400,000, and indirectly employing 1 million people. 23,000 registered fish vessels are used to commercially exploit different fish species present in 22 fish landing sites in Sindh and Balochistan. Geospatial data and tools such as Vessel Monitoring Systems (VMS) and Automated Identification System (AIS) maybe used to identify and map movements of fishing vessels as well as to quantify fishing efforts which in turn are crucial for illegal, unreported, and unregulated (IUU) fish detection. Besides, analysis of environmental parameters such as chlorophyll concentration and sea surface temperature along coast can be helpful to identify fish aggregation, detect potential fishing zones and aquaculture sites.

The limited scientific knowledge regarding these marine resources can be overcome through satellite imagery for marine resources identification, monitoring, and management. With respect to oceanography, satellite technology has overhauled this domain providing unparalleled insights on physical characteristics of oceans, mapping ocean floors, forecasting extreme weather events, tracking marine life, and enhancing navigational safety. Pakistan can specifically harness that technology to study ocean acidification and sea-level rise as key indicator of climate change. Similarly, to map coastal configuration and coastal landforms, multi-temporal satellite images can dispense robust data on morphological status.

Pakistan can employ satellite technology to tremendously optimize navigation as it dispenses real-time location data thereby permitting ships to safely and easily navigate with pin-point precision, especially through difficult waters. From largest merchant vessels to smallest fishing vessels, seafarers use satellite data for navigation purpose. American GPS, Russian GLONASS, Chinese BeiDou, European Galileo, and Indian NavIC furnished by the satellites revolutionizing the marine navigation are key examples. Furthermore, satellite data may prove quintessential for location tracking and communication; obstacle and unauthorized access detection; docking operations and berth management; and remote vessel management. It is pertinent for Pakistan should indigenously develop its satellite navigation capabilities to effectively and uninterruptedly reap the benefits satellite navigation offers.

Bathymetry, measurement of ocean's depth, is another sub-sector whereby Pakistan can employ satellite technology in maritime domain. Satellite-Derived Bathymetry (SDB) which offers multifarious dividends can ensure cost-effectiveness given coastal mapping through SDB annuls necessity of expensive equipment as well as labor-intensive surveys. Swift data collection through satellite imagery can produce bathymetric maps that can prove instrumental in navigational safety, monitoring of coastal ecosystems, thereby facilitating coastal resources management and marine habitat conservation. It can also gauge coastal vulnerability in order to plan disaster response.

Satellite imagery is also indispensable for mapping of creeks areas in Pakistan. Sir Creek, 96km estuary in the Rann of Kutch, is enriched with different resources, entailing plant life, minerals, oil, gas, and petroleum, which can be extracted for commercial exploitation. Satellite imagery can revolutionize the resource exploration by providing aid in identifying potential resource areas and concurrently high-resolution mapping of resources' distribution in Creeks. Given the ever-changing course of creeks areas, satellites can tremendously help in analyzing the extent of accretion and avulsion for sustainable resource management; besides, this data may aid in predictability analysis of coastline morphology.

The dynamic coastline of Pakistan is also subjected to coastal hazards like shoreline erosion which is on rise due to ever-enhancing sea-level, detrimentally affecting the populated areas. Satellites equipped with the Synthetic Aperture Radar (SAR) can be used to carry-out large-scale monitoring of the main hotspots of coastal erosion such as Sonmiani, Pasni, Jiwani, and Badin, as identified in 2014 National Assessment Report on Coastal erosion. This would enable risk mitigation through pre-emptive detection of erosion trends causing land loss and infrastructural damages. Given the multitudinous boons satellite technology offers to tap marine resources, it is vital to draw a tangible roadmap for efficacious use of space technology in various sub-sectors under ambit of marine and coastal resources to optimize resource management and foster sustainable development in Pakistan.

Pakistan Basin Studies 2024: A Collaborative Path To Unlocking Pakistan's Offshore Energy Potential

Hamna Ghias Sheikh

Pakistan's offshore exploration has long faced significant challenges, from technical difficulties to attracting the necessary investment. Yet, the recent launch of the Pakistan Basin Studies (PBS) 2024 initiative by industry leaders like OGDCL, PPL, MPCL, and GHPL offers a renewed sense of optimism for bringing reform to the energy sector of Pakistan. This initiative, overseen by the Directorate General of Petroleum Concessions (DGPC) under the Ministry of Petroleum Division, is a step in the right direction towards unlocking the untapped hydrocarbon potential lying beneath Pakistan's offshore basins.

Despite this optimistic outlook, experts argue that a major flaw in Pakistan's offshore exploration efforts has been the tendency to abandon projects after just a few attempts. This lack of persistence has left vast resources untapped beneath the seabed. Compounding the issue is the absence of a robust strategy to attract investors, which hampered the country's ability to draw in the capital and expertise necessary for offshore exploration. The technical and infrastructural challenges are substantial, but they are not beyond overcoming. By failing to address these obstacles and make a strong investment case directly, Pakistan has inadvertently stalled progress on what could be a transformative resource for its energy future.

By incorporating advanced techniques like play-based exploration (PBE) and yet-to-find (YTF) strategies, the initiative aims to provide a clearer understanding of the country's remaining oil and gas reserves.

Many countries around the world are leading in the exploration of offshore resources through the means of collaborative efforts by industry partners. Consider the example of Brazil. The country's experience with offshore oil exploration, particularly in the pre-salt basins, offers valuable lessons. In the mid-2000s, Brazil discovered vast hydrocarbon reserves in deepwater areas, beneath a thick layer of salt under the seabed. Recognizing the immense potential of these reserves, the Brazilian government undertook significant energy reforms, opening the sector to foreign investment and forming strategic partnerships with international oil companies (IOCs). The introduction of Production Sharing Contracts (PSCs) allowed Petrobras to collaborate with global partners. Such collaborative efforts and strategic reforms unlocked Brazil's offshore potential.

By integrating successful methodologies and experiences from other countries, Pakistan can unlock its offshore potential. For instance, Chinese Geological Surveys have proven highly effective in gathering crucial data for offshore exploration in Pakistan. These surveys have provided valuable insights into the complex geological formations of the Indus Basin, offering a better understanding of the subsurface structures.

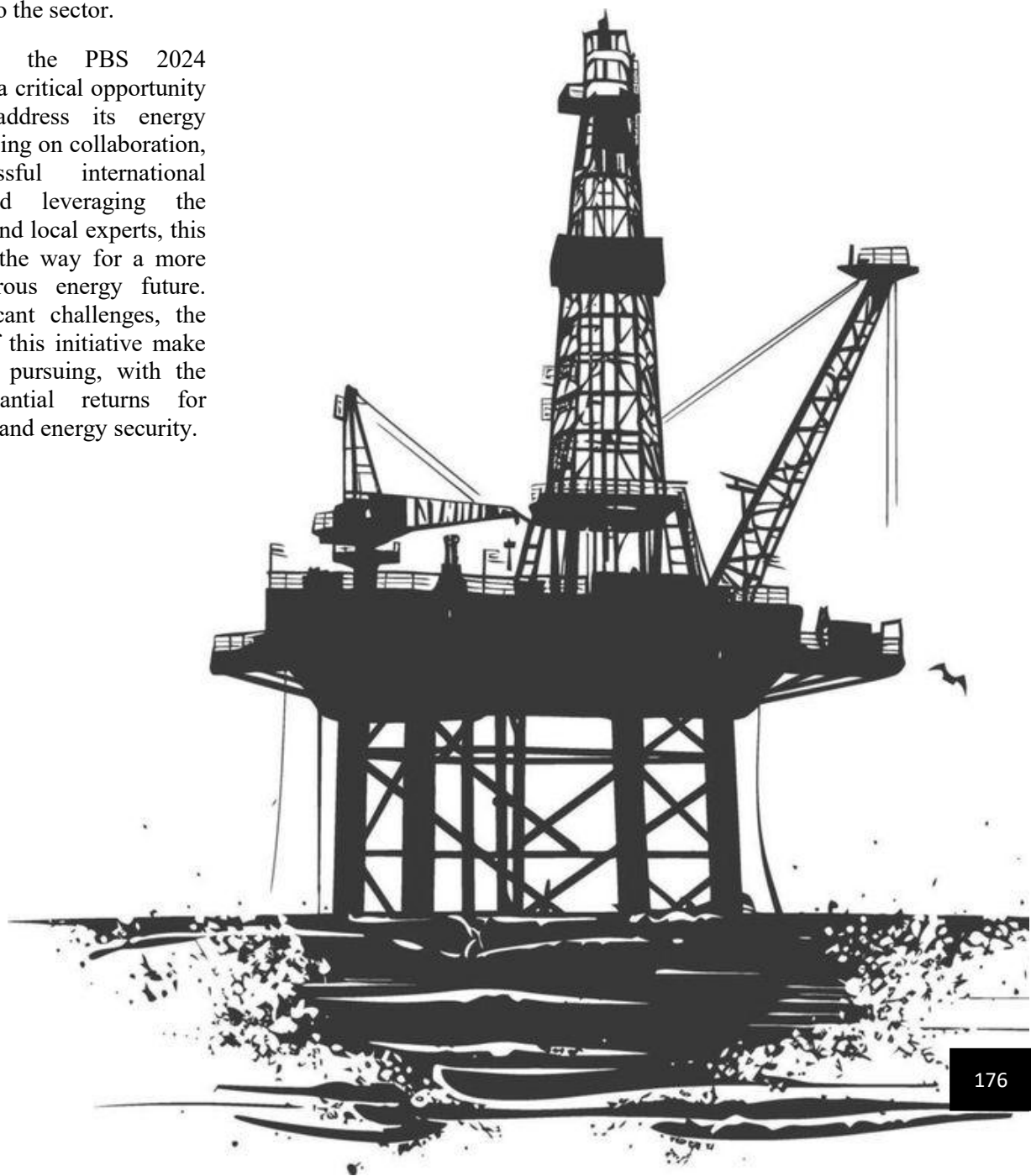


The success of these surveys highlights the importance of leveraging international expertise and advanced technology to enhance Pakistan's exploration efforts. By building on the comprehensive data obtained by the Chinese, Pakistan can better target promising areas for future drilling, thereby reducing the risks associated with offshore exploration.

Pakistan Basin Studies 2024, in this regard, will turn out to be fruitful for Pakistan. The PBS 2024 project will be executed in phases, starting with a focus on the offshore Indus and Makran basin regions located off Pakistan's southern coast that are believed to hold significant hydrocarbon reserves. These areas have remained largely untapped due to previous exploration challenges. By prioritizing these regions, the Pakistan Basin Studies 2024 initiative acknowledges both the potential rewards and the inherent difficulties. The involvement of D&M Consultants, a U.S.-based firm specializing in geological and geophysical analysis, adds further credibility to the project. With a team of international and local experts based in Islamabad, D&M will conduct an exhaustive review of all available geological and geophysical data, both onshore and offshore. This thorough analysis is expected to provide an updated and accurate forecast of Pakistan's oil and gas resource potential, offering insights that could significantly impact the country's energy strategy.

While the PBS 2024 initiative is a significant step forward, the challenges it faces are undeniable. Offshore exploration in Pakistan has been hampered by technical, financial, and logistical barriers. However, the collaborative effort by Pakistan's leading oil and gas companies, under the guidance of DGPC, reflects a strong commitment to overcoming these obstacles. This initiative not only aims to refine our understanding of Pakistan's energy potential but also to renew investor interest, potentially attracting increased foreign direct investment (FDI) into the sector.

Above all, the PBS 2024 initiative represents a critical opportunity for Pakistan to address its energy challenges. By focusing on collaboration, integrating successful international methodologies, and leveraging the expertise of global and local experts, this project could pave the way for a more secure and prosperous energy future. Despite the significant challenges, the potential benefits of this initiative make it a venture worth pursuing, with the promise of substantial returns for Pakistan's economy and energy security.



Pakistan's Offshore Drilling History

Hamna Ghias Sheikh

Despite drilling nearly 18 wells, the region remains largely unexplored, with only modest natural gas discoveries in Miocene sandstones. However, each exploration attempt has contributed valuable insights, laying the groundwork for future endeavors. The journey began in 1961 when the American Sun Oil Company conducted seismic surveys and drilled three near-shore wells. Although these early efforts, along with those of German company Wintershall in the 1970s and the U.S.-based Husky later on, did not result in commercial hydrocarbon discoveries, the geological data gathered was crucial in shaping subsequent exploration strategies.

In the 1980s, exploration efforts intensified when Pakistan's Oil and Gas Development Company Limited (OGDCL) partnered with Canadian firms to drill the PakCan-1 well. This effort, however, resulted in non-commercial gas quantities, underscoring the technical and environmental challenges inherent in the region. Similarly, the Sadaf-1 well drilled by another U.S. company in 1989 turned out to be dry, despite advanced seismic studies. The 2000s saw renewed international interest in Pakistan's offshore potential. In 2004, French oil giant TOTAL ventured into the deep waters of the Indus Basin with the Pak-G2 well, drilling to an impressive depth of 4,750 meters. Although the well was dry, it provided critical data on the region's complex geological formations. Shell followed in 2007 with the Anne-1X well, drilling to 3,250 meters. Despite the absence of significant oil or gas discoveries, these efforts enhanced the scientific understanding of the basin's subsurface structures.

The most recent and perhaps most high-profile attempt came in 2019 when ExxonMobil, in collaboration with ENI, OGDCL, and PPL, drilled the Kekra-1 well. Located 143 miles off the coast of Pakistan and at a depth of 6,200 feet, this project was Pakistan's most ambitious offshore drilling venture. Expectations were high, with hopes that a major oil discovery could propel Pakistan into the ranks of the world's top oil producers. Unfortunately, the venture wasn't successful. However, according to experts, the critical misstep in Pakistan's offshore exploration efforts has always been giving up after just a few attempts, leaving untapped potential languishing beneath the seabed. Without proper robust strategy to present to investors, the country has struggled to attract the necessary capital and expertise in offshore exploration. The technical and infrastructural challenges the country face today are significant, but they are not insurmountable. By failing to address these issues head-on and develop a compelling case for investment, Pakistan has inadvertently stalled progress on what could be a transformative resource for Pakistan's energy future.



An essential aspect of addressing these challenges lies in the integration of successful methodologies from other countries. Notably, Chinese Geological Surveys have proven effective in gathering vital data for offshore exploration in Pakistan. These surveys have provided valuable insights into the complex geological formations of the Indus Basin, offering a clearer understanding of the region's subsurface structures. The success of these surveys underscores the importance of leveraging international expertise and advanced technology to enhance Pakistan's exploration efforts. By building on the comprehensive data already obtained by the Chinese, Pakistan can better target promising areas for future drilling, thereby reducing the risks associated with offshore exploration. While past offshore exploration efforts in Pakistan's Indus Basin have faced significant challenges, the potential for future success remains considerable.

To unlock this potential, Pakistan must focus on fostering international collaborations that bring advanced drilling technologies and expertise to the table. At the same time, implementing policy reforms that make the country a more attractive destination for foreign investment is crucial. Encouraging innovation and research, particularly in partnership with global experts, is essential. Moreover, maintaining a strong emphasis on environmental stewardship and risk management can position Pakistan for a breakthrough in offshore exploration. With strategic alliances and a renewed commitment to leveraging cutting-edge geophysical techniques, the Indus Basin may yet yield the substantial oil and gas resources that could transform Pakistan's energy landscape.

In essence, Pakistan's journey in offshore exploration has been long and arduous, yet each setback has brought the nation closer to a potential breakthrough. By learning from past challenges and embracing future opportunities with the right mix of technology, policy, and collaboration, Pakistan can navigate the complexities of offshore exploration and realize the full potential of its energy resources.



Malaysia's Bold Move Amid Rising Tensions

Hamna Ghias Sheikh

The South China Sea, long a hotbed of territorial disputes, has entered a new phase of tension with Malaysia, stepping up its oil and gas exploration despite mounting pressure from China. This move highlights the significance of the region's untapped energy potential, estimated at around 11 billion barrels of oil and 190 trillion cubic feet of natural gas. The drive for energy resources, coupled with competing territorial claims, is transforming the South China Sea into a geopolitical flashpoint with far-reaching repercussions.

At the core of these disputes lies the vast offshore oil and gas potential within the South China Sea. The region holds one of the largest unexplored energy reserves globally, making it a key area for energy security, especially for Southeast Asian countries like Malaysia, Vietnam, and the Philippines. These nations depend on offshore energy exploration to reduce their reliance on imported energy, and to fuel economic growth.

Malaysia's recent intensification of offshore drilling is emblematic of the broader competition for these energy resources. The country's decision to continue oil and gas exploration, even under the threat of Chinese interference, underscores the high stakes involved. Offshore oil and gas reserves are seen as vital assets that can bolster national economies, and Malaysia's defiance reflects the urgency with which nations are pursuing their share of these resources.

For China, controlling the South China Sea is not just about territorial dominance, but also about securing energy. With its growing demand for oil and gas, China views the South China Sea's energy reserves as critical to its long-term energy security. Its aggressive stance in the region through foreign oil rigs, deploying naval assets, and constructing artificial islands demonstrates how deeply intertwined energy interests are with territorial claims.



While the potential for offshore oil and gas extraction in the South China Sea is immense, the region's complex political landscape presents a significant challenge. The overlapping claims, particularly from China, have made it difficult for countries like Malaysia and Vietnam to fully capitalize on their energy potential. Malaysia's Petronas, for example, has encountered frequent disruptions from Chinese vessels during offshore drilling operations, which delays exploration projects and adds significant risk to investments.

Furthermore, international oil companies that once eagerly sought to explore the region are now wary of the risks posed by geopolitical instability. The South China Sea's rich oil and gas fields remain largely underdeveloped, and without a resolution to these disputes, much of the offshore energy potential will remain untapped.

Malaysia's determination to press forward with offshore drilling sends a strong message to China and the international community. It highlights the importance of the South China Sea not just as a shipping lane but as an energy frontier. As energy demand grows, the exploitation of offshore oil and gas reserves will become an even more critical component of regional economic strategies.

For the broader region, the energy potential of the South China Sea could either fuel cooperation or deepen conflict. Countries like Vietnam and the Philippines may follow Malaysia's lead, ramping up their own exploration activities despite Chinese threats. On the other hand, China's increasing militarization of the region to protect its perceived interests could result in further confrontations, raising the risk of an armed conflict.

Above all, the South China Sea holds tremendous offshore oil and gas potential, offering Southeast Asian nations an opportunity to strengthen their energy security and economic resilience. However, these opportunities come with significant risks. As Malaysia continues to defy Chinese pressure and pursue its energy interests, it underscores the delicate balance between resource exploitation and geopolitical tensions. The future of offshore energy development in the South China Sea will depend not only on technological capabilities but also on the ability of nations to navigate the treacherous waters of international diplomacy.



Prospects Of Aqua Culture In Pakistan: An Overview

Ahmad Ibrahim

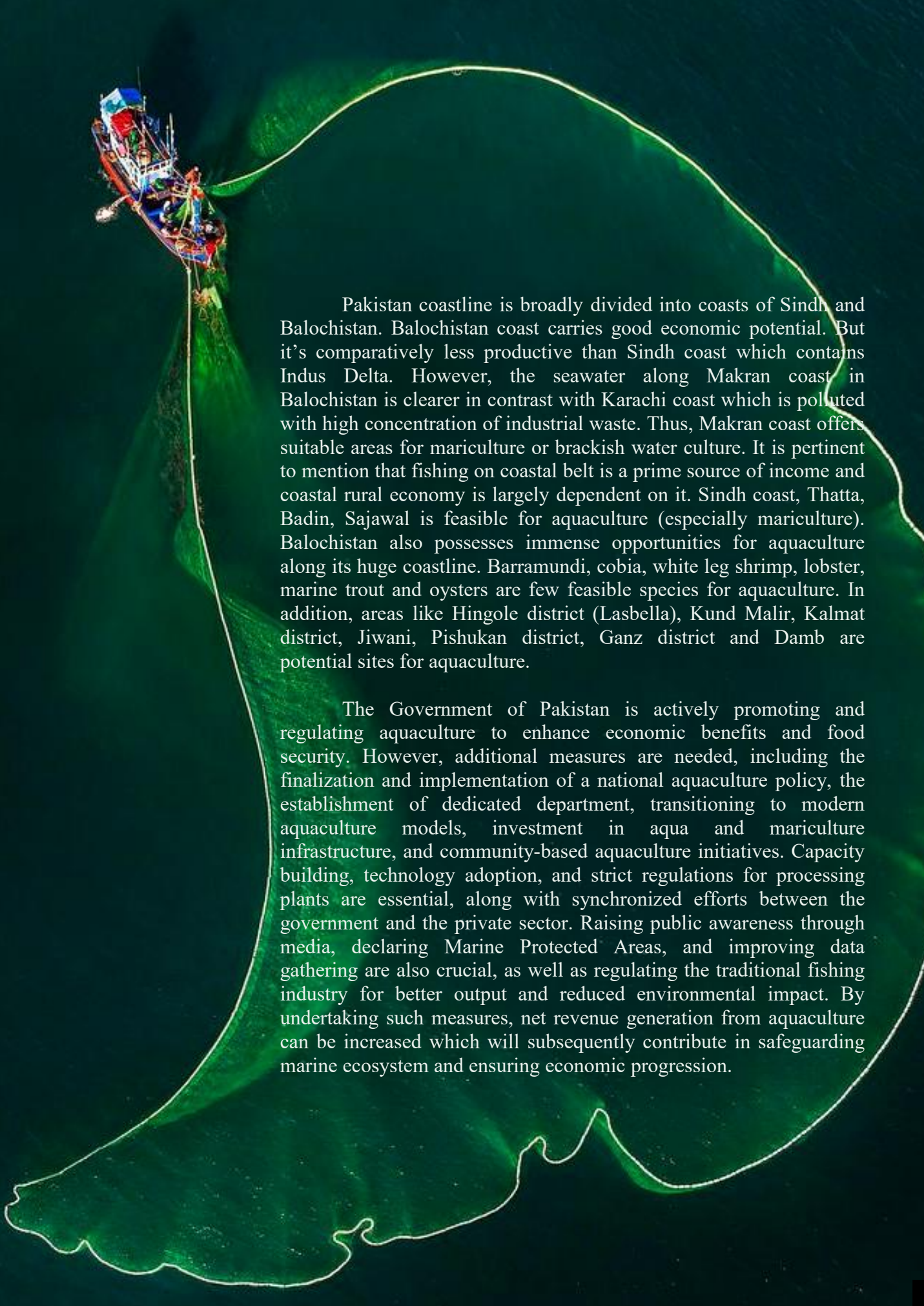
Oceans cover more than 70 percent of planet's surface and have shaped the patterns of human civilization. Beside crucial part of planetary ecosystem, oceans are source of livelihood and economic progression. According to Organization for Economic Co-operation & Development (OECD), value of global ocean economy is about 1.5 trillion USD per year, which would double by 2030. It is important to know that more than 600 million people (around 9.5 percent of world's population) live in coastal areas and approximately 2.4 billion people (about 40 percent of world's population) lives within 100 km of the coast. Oceans are crucial source of economic livelihood and support around 31 million jobs around the globe.

Fish is a staple food resource, and is primary medium of livelihood for coastal communities and island nations. Fishery contributes around 17 percent of total animal protein consumed by humans and supports approximately 12 percent of human livelihoods. With a global value of 113.2 billion USD, the fish industry encompasses both open-sea fishing and fish farming. Global seafood market is expected to reach 138.7 billion USD by 2027. The overexploitation of fish stocks has placed numerous species on the brink of extinction. The United Nations' Sustainable Development Goal 14 (SDG-14) focuses on preserving life below water. Contemporary approaches such as aquaculture, involving the controlled farming of fish, can safeguard fish stocks and the marine environment, thereby reducing reliance on wild fish stocks. Fishing is a traditional practice and an established industry, while aquaculture (particularly mariculture) is still an emerging sector.

Pakistan has a coastline stretching over 1000 km. Marine resource rich maritime zones of Pakistan extend from shores to 350 NMs seawards with a total area of 290,000 sq.-km. Fishing industry of Pakistan has thrived using these resources for providence of food as well as for generating economic revenue. However, increasing population has led to over exploitation of marine resources. Moreover, growing marine pollution, Illegal, Unreported and Unregulated Fishing (IUUF), and practices like usage of banned fishing equipment, is also threatening the stability of marine life cycle in Pakistan's territorial waters. On one axis, it is threatening the food security of Pakistan while on other hand it has undermined the economic prospects associated with fishery industry. This necessitates the adaptation and popularization of new measures to full fill the growing food requirements while sustaining marine resources. In this regard, aquaculture offers credible solution to problems related to food security, marine sustainability, and economic growth.

In Pakistan, fish industry is valued at 1.2 Billion USD and has created almost 1.8 million jobs. Pakistan's aquaculture production has increased manifold from 12,485 tons in 2000 to 164,527 tons in 2021. However, almost entire amount was produced from freshwater aquaculture and a meager quantity was from marine aquaculture or mariculture. Despite aquaculture contributing to 46 percent of the overall fish production in 2018 and experiencing a yearly growth rate of 7.5 percent since 1970 globally, only 15 percent of Pakistan's fish production is derived from aquaculture, with minimal contributions from marine fish. In contrast, India exported 8.09 billion USD worth seafood during 2022-23, majority of which was acquired through aquaculture products. While Pakistan has shown an increasing production trend, it needs to address various obstacles to ensure sustainable aquaculture, given the rising demand for fish.

Few key challenges which Pakistan is currently facing regarding development of its aquaculture industry can be underscored. First and foremost, there is a lack of awareness and community support, as the existing Ghato system restricts genuine fishermen from participating in educational or training activities without the permission of landlords or superiors. Secondly, Pakistan faces issues related to hatchery availability and the lack of local production of quality feed for aquaculture, resulting in higher costs and increased reliance on imports. Thirdly, there is a lack of a comprehensive legal framework and national policy for facilitation of aquaculture, both at the federal and provincial levels. And lastly, the country needs to adopt modern aquaculture technologies and provide effective training to improve productivity, as neighboring countries like Bangladesh, India, and Iran have embraced advanced techniques.

An aerial photograph of a fishing boat with a blue and red canopy, positioned on a body of water. A white line outlines a coastline that curves around the right and bottom of the image. The water is a deep blue-green color.

Pakistan coastline is broadly divided into coasts of Sindh and Balochistan. Balochistan coast carries good economic potential. But it's comparatively less productive than Sindh coast which contains Indus Delta. However, the seawater along Makran coast in Balochistan is clearer in contrast with Karachi coast which is polluted with high concentration of industrial waste. Thus, Makran coast offers suitable areas for mariculture or brackish water culture. It is pertinent to mention that fishing on coastal belt is a prime source of income and coastal rural economy is largely dependent on it. Sindh coast, Thatta, Badin, Sajawal is feasible for aquaculture (especially mariculture). Balochistan also possesses immense opportunities for aquaculture along its huge coastline. Barramundi, cobia, white leg shrimp, lobster, marine trout and oysters are few feasible species for aquaculture. In addition, areas like Hingole district (Lasbella), Kund Malir, Kalamat district, Jiwani, Pishukan district, Ganz district and Damb are potential sites for aquaculture.

The Government of Pakistan is actively promoting and regulating aquaculture to enhance economic benefits and food security. However, additional measures are needed, including the finalization and implementation of a national aquaculture policy, the establishment of dedicated department, transitioning to modern aquaculture models, investment in aqua and mariculture infrastructure, and community-based aquaculture initiatives. Capacity building, technology adoption, and strict regulations for processing plants are essential, along with synchronized efforts between the government and the private sector. Raising public awareness through media, declaring Marine Protected Areas, and improving data gathering are also crucial, as well as regulating the traditional fishing industry for better output and reduced environmental impact. By undertaking such measures, net revenue generation from aquaculture can be increased which will subsequently contribute in safeguarding marine ecosystem and ensuring economic progression.

Oil and Ocean a Shared Responsibility for a Sustainable Future

Hamna Ghias Sheikh

In an age of increasing globalization, the notion of the global commons has never been more pressing. Among these commons, our oceans stand as both a lifeline and a battleground for resources. Oil, a powerful asset found beneath the waves, embodies the complexities of this shared space. As we grapple with the challenges of climate change and geopolitical tensions, it's time to reconsider how we manage this precious resource. It will be not wrong to say that the oceans cover over 70% of the Earth, providing vital services that regulate planet earth's climate, support its biodiversity, and sustain millions of livelihoods. Yet, the extraction of oil from these waters has raised profound ethical and environmental questions. While nations race to capitalize on offshore reserves, the impacts of oil spills, habitat destruction, along with carbon emissions ripple far beyond their shores.

Take, for instance, the catastrophic Deepwater Horizon oil spill in 2010. This disaster not only devastated marine ecosystems but also highlighted the interconnectedness of our oceans. The fallout affected coastal communities and wildlife thousands of miles away. In the aftermath, fish populations dwindled, local fishing industries suffered the most, and tourism was affected in areas plummeted. The spill exemplified how the consequences of oil extraction are not confined to national borders, but also affects the livelihoods of those who are directly or indirectly dependent on the sea.

More recently, the war in Ukraine has brought to light the geopolitical implications of oil resources. As Western nations imposed sanctions on Russian oil exports, the ripple effects were felt globally. Countries reliant on Russian oil faced energy crises, while others sought to secure new sources, often turning to environmentally damaging extraction methods. This conflict underscores the tension between energy security and environmental responsibility, illustrating how oil's significance extends beyond national economies. Additionally, the fight against climate change has intensified calls for a transition to renewable energy all around the world. In 2021, the International Energy Agency declared that there should be no new investments in fossil fuel supply if the world is to meet net-zero emissions by the year 2050. Countries like Denmark and Spain have made significant strides in offshore wind energy, showcasing a model of sustainable energy development that contrasts starkly with the traditional reliance on oil.

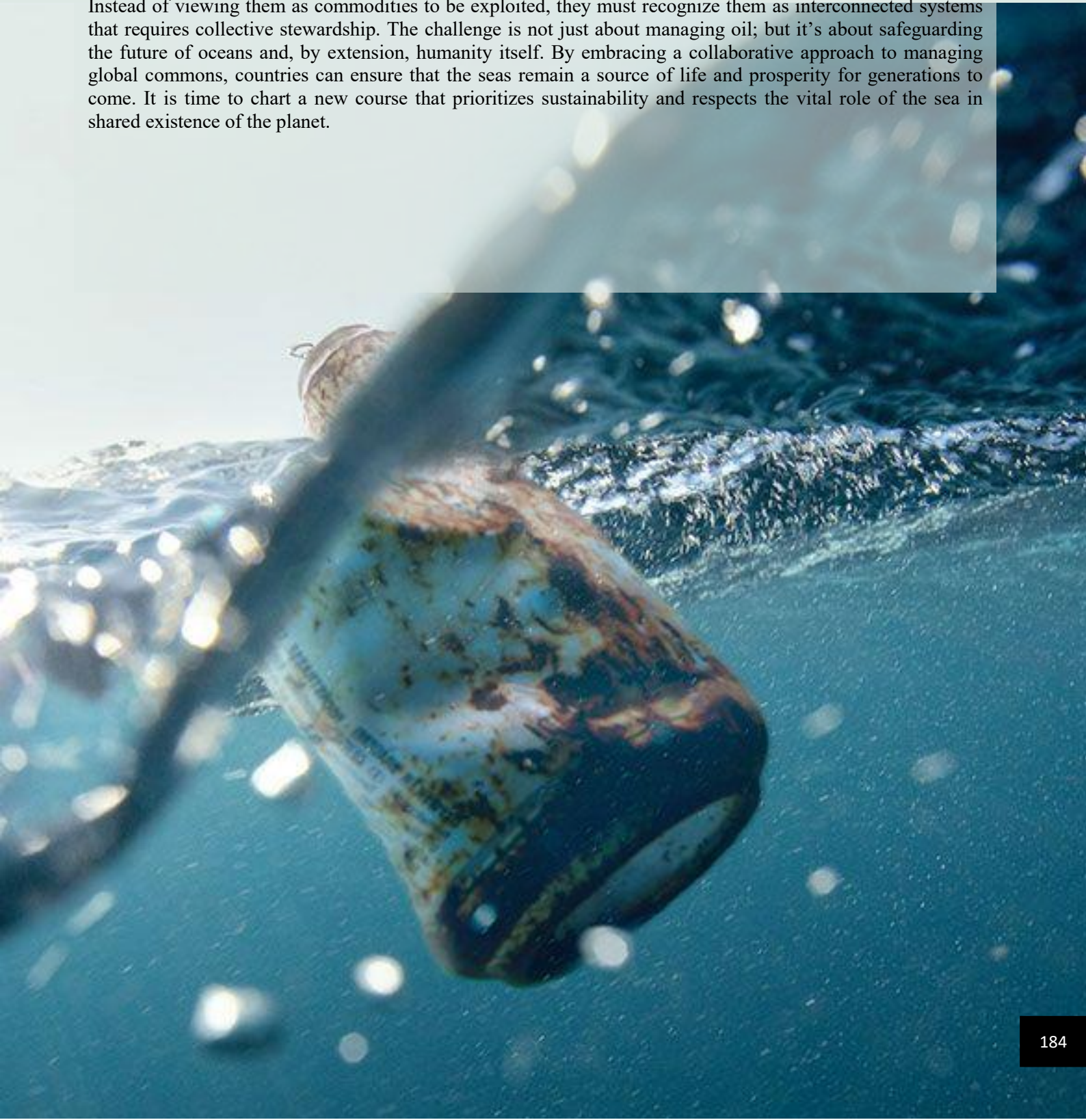
However, transitioning away from fossil fuels is fraught with challenges as well. The U.S. in that scenario is a prime example, where the Biden administration faces pressure to balance climate goals with domestic oil production. Despite commitments to reduce carbon emissions, the administration has approved new offshore oil leases in the Gulf of Mexico to address rising fuel prices.



This contradiction highlights the complex interplay between immediate economic needs and long-term environmental goals. As we navigate these turbulent waters, it is crucial to adopt a collective approach. Although, International frameworks like the United Nations Convention on the Law of the Sea (UNCLOS) lay the groundwork for cooperative resource management, yet they require stronger enforcement and adaptation to modern challenges collectively by all countries of the globe. The need of the hour is to work together to create equitable policies that prioritize sustainability over short-term profits.

Likewise, Investing in renewable energy is not merely a choice; it is a necessity. Countries around the world are beginning to recognize this. For example, Portugal has invested heavily in solar energy, aiming to generate 80% of its electricity from renewables by 2026. Transitioning away from fossil fuels can help mitigate climate change and protect marine environments. By fostering global cooperation in oil resource management through shared technologies and best practices can create a sustainable future that honors oceans as a shared heritage.

In a nutshell, the time has come for the countries to shift their perspective on oil and the oceans. Instead of viewing them as commodities to be exploited, they must recognize them as interconnected systems that requires collective stewardship. The challenge is not just about managing oil; but it's about safeguarding the future of oceans and, by extension, humanity itself. By embracing a collaborative approach to managing global commons, countries can ensure that the seas remain a source of life and prosperity for generations to come. It is time to chart a new course that prioritizes sustainability and respects the vital role of the sea in shared existence of the planet.





Seabed Riches – Is Profit-Equity Balance Achievable?

Syeda Fizzah Shuja

Extracting critical mineral resources from the ocean floor from depths greater than 200 meters is termed deep seabed mining. This process involves the collection of rare earth metals like polymetallic nodules, polymetallic sulfides, cobalt-rich ferromanganese crusts, and passports from “the area.” According to Part XI of UNCLOS (1994), the area lies beyond the national jurisdiction of states while the rules and regulations to gain maximum common benefits out of the area were approved by the International Seabed Authority (ISA).

In 1994, the International Seabed Authority (ISA) was established under the ambit of UNCLOS with the primary mandate to issue exploration and extraction licenses, regulate the set of rules to ensure sustainable practices, and verify environmental protection. Additionally, ISA oversees the enhanced capacity building of developing countries coupled with the transfer of necessary technology to pursue seabed mining. Moreover, ISA facilitates research and development programs to understand biodiversity better and estimate the mineral potential of the seabed.

Notably, the International Seabed Authority has formulated a detailed verdict for its healthy contribution to the 2030 Agenda for Sustainable Development, with specific focus on SDG 1 (poverty eradication), SDG 8 (Decent work and economic Growth), and SDG 10 (overcoming inequality). Currently, ISA is dedicated to ensuring a balanced extraction of deep-sea resources with 31 contracts in hand. The contracts for exploration and gathering the significant data to initiate the extraction process span 15 years. Among the contracts mentioned earlier, a few were extended under the sub-organization of ISA, the Legal and Technical Commission (LTC). This extension leveraged the states to continue exploring more relevant geographical data until the formal laws and regulations for the extraction of resources were finalized.

Within this scope of work, ISA ensures the equitable participation of the less privileged nations. As this venture is quite economically demanding with having access to advanced technology another tool, developing nations cannot afford this program. So, to ensure their participation, privileged nations applying for exploration contracts have to divide their application into two parts based on the commercial value of their findings within the high seas. The ISA, after gaining the data and required information from the applicant (developed nation), will designate some portion of the area as a “reserved site” which will later be accessible for the developing nations.



Deep-sea mining offers prolonged yet sustainable potential to supply critical minerals to interface with Clean Energy Technologies and their growing demands. In this regard, the International Seabed Authority has already outlined a plan to regulate deep-sea mining by 2025-reflecting its growing recognition in today's world.

This growing recognition is accentuated by recent global trends, where a steep climb of electric-vehicle purchases hit 60% in 2022 (surpassing 10m units) and notable calls for green technologies have been observed. It is to be noted that only between 2017 and 2022, the global energy sector's need for lithium upsurged tripling the overall demand for lithium with a 70% and 40% rise in the requirement of cobalt and nickel, respectively. The necessity of such minerals extended beyond this point as statistics project a 400%-600% sharp surge in global energy needs within the coming decade, driven by augmented reliance on zero-carbon technologies and wind and solar power batteries. Additionally, the International Energy Agency claims that the need for copper is going to double by the end of 2050, surpassing supplies by 2.7 million tons unless new sources take an alternative shift. This scenario has propelled the energy-related market size to double, hitting a staggering worth of US \$320 billion in 2022 making such minerals a top-notch need of mining industries.

In this regard, the global push has been noticed where major nations are formulating policies and initiating exploratory programs to save themselves a pertinent opportunity for economic growth. The International Energy Agency's Critical Minerals Policy Tracker has already identified around 200 regulations globally, out of which 100 regulations have been implemented successfully recently. A list of regulations started to surface in the contest of deep-sea mining, such as the European Union's Critical Raw Materials Act, the US's Inflation Reduction Act, Australia's Critical Minerals Strategy, Canada's Critical Minerals Strategy, and a lot more.

In a nutshell, hitting a balance between profit and equity is a persistent challenge. As the seabed mining industry flourishes, the ISA's regulatory framework has to be upgraded to ensure equitable participation and environmental protection. With the global demand for critical minerals projected to surge, responsible extraction and resource management are vital for a sustainable future. Ultimately, striking a balance between economic growth and social and environmental responsibility will determine the long-term viability of the ocean floor economy.

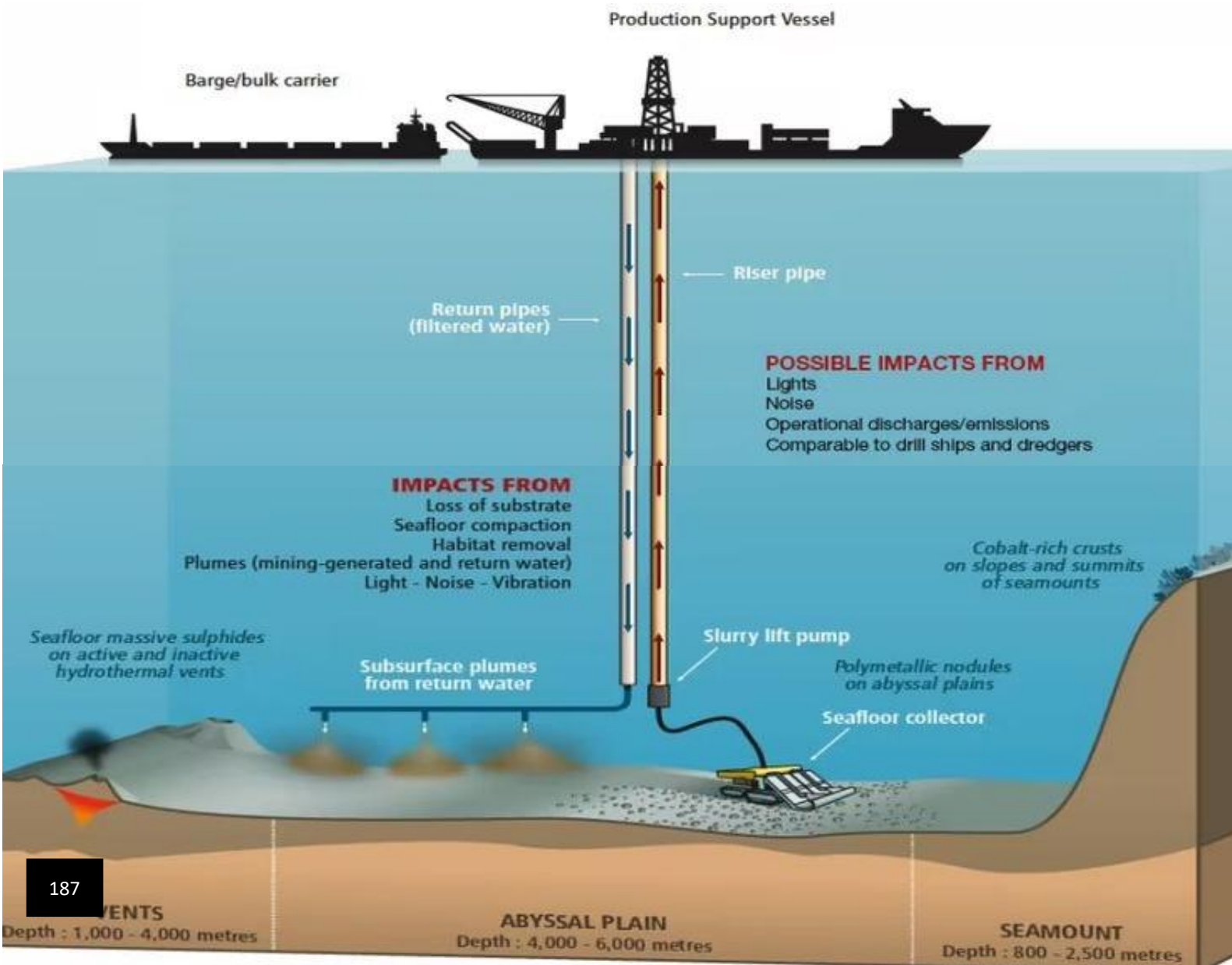
Seabed Mining: The Final Frontier Of Geopolitical Dominance

Syeda Fizzah Shuja

The seabed or the “final frontier” for resource exploration is increasingly evolving into a strategic axis for the major nations in constant pursuit to gain economic viability and regional dominance by securing strategic minerals. Recently, China and India have made substantial headway in the deep seabed mining efforts, motivated by their interests to enhance and modify their supply chains and industrial capacity, respectively.

Conversely, Article 76 of UNCLOS grants Pakistan rights to exercise sovereignty on the maritime territory expanding up to 290,000 square kilometers. This expansion appoints the nation as a critical player in regional maritime affairs, having a significant legal victory Pakistan has the leverage to unveil the untapped potential for the exploration and exploitation of seabed resources. Subsequently, an emerging avenue for economic growth and resource development awaits a productive exploration.

In this regard, the United Nations Convention on the Law of the Sea (UNCLOS) and the International Seabed Authority (ISA) provide the legal framework for deep seabed mining exploration. However, laws to regulate the sustainable extraction of resources are underway. Primarily, Articles 140 and 143 of UNCLOS highlight that the conduct of mining activities in high seas will bear equitable benefit for mankind as a whole keeping in view the regulation of environmental protection of marine resources. As states, especially those along the coast, attempt to define the boundaries of this “Area” of uncertainty, the high seas serve as a battlefield for their strategic interests. One potential avenue for claiming sovereignty is thought to be underwater resources. Although the deep seafloor is considered a “common heritage of mankind,” it has the same problems with fair sharing as other res nullius. ISA is criticized, meanwhile, for its lack of objectivity across its operations. For instance, the organization’s finance strategy prevents it from ceasing to give licenses without endangering its own survival. ISA mostly depends on the revenue from the exploration licenses it issues to support itself, receiving \$500,000 for each license granted and an annual fee of \$47,000 per contractor. Because of the way it operates, it is more likely to function as a regulator than a protector.



Because of the way it operates, it is more likely to function as a regulator than a protector. Additionally, it prioritizes its regulatory goal over its protective one in its operational mode. The organization has come under fire for its lack of openness and for not taking scientific advice seriously enough. China's veto of a proposal to put a prohibition on granting exploitation licenses until regulations are adopted on the agenda has raised concerns that it may silence opponents of deep-sea mining within the ISA. There are two opposing viewpoints: on the one hand, nations like China and Nauru favor expediting the approval process (fast track); on the other hand, nations like Canada and Peru favor a moratorium of 10 to 15 years; Brazil and Ireland support a "precautionary pause"; and France calls for a ban.

Within established alliances, whether they are strategic (OPEC, MSP, etc.), geographical (CELAC, African Union, AOSIS), or economic (G7, BRICS+, EU), deepwater mining creates a new rift. States are forced to create new and more ad hoc alliances to defend their interests as a result of the complexity of international affairs. States use four different narratives that conflict in the media to support or oppose seabed mining. By lowering environmental pressures on land, the first two highlight the potential advantages of mining: a) access to metals required for the ecological transition; and b) revenues made in the Zone that would be shared with poor nations, serving as a mechanism for redistributive justice. However, the next two stories highlight c) our ignorance of the seafloor and the ecosystem services it offers to the earth, and d) the necessity of a stringent conservation strategy that prioritizes metal recycling over a new extraction front. Three division lines within allied blocs—between small island states, Western nations, and what is referred to as the Global South—can be seen as these arguments collide, illuminating these new tensions.

Deep seabed mining signifies a \$20 trillion prospect to extract critical minerals to drive green technologies. Taking note of the preceding framework, deep seabed mining activities have become more relevant lately due to the continuous depletion and dislocation of terrestrial resources such as nickel, aluminium, manganese, lithium and cobalt. Additionally, increased dependence on valuable minerals, economic interests, and strategic opportunities stimulate the sustainable exploration of yet-to-be-explored rare earth metals and minerals. This endeavor offers a potential alternative to land-based exploration opening new frontiers of mineral discovery. Therefore, the world has shifted its eyes towards deep-seabed resources. China's seabed mining expeditions fueled by advanced technologies and institutionally centralized governance make it a leading nation in this venture. In contrast, India is demonstrating its intent to secure the "seabed hegemony" driven by a multi-institutional approach within the Indian Ocean Region (IOR) as a counterbalance to China. Regrettably, despite having established bodies like the Ministry of Energy, Ministry of Maritime Affairs, and the National Institute of Oceanography, Pakistan remains notably behind in this program. Concerning this, Pakistan is over-hauled by numerous challenges encapsulating technological limitations, weak or no concerned regulatory framework, poor environmental preservation techniques, and marginal investments. This deep seabed mining industry calls for advanced technologies coupled with complex regulations to ensure sustainable practices further supported by crucial funding- areas where Pakistan currently lags.

To sum up, the seafloor is becoming a new geopolitical theater with its own fault lines and justifications. The function of states is under scrutiny, as is common in contemporary geopolitics. In such a field, businesses play a crucial role – as to run million dollar venture Metal companies would advocate for the use of the seabed, which will directly profit them.



Nevertheless, they can also limit the economic benefit of these new resources by opposing their usage, as evidenced by the 49 multinational corporations who have endorsed a moratorium. Additionally, some states, beginning with France, have changed their minds and are now in favor of a ban on seabed mining due to the proactive engagement of NGOs under the Deep Sea Conservation Coalition and the mobilization of the scientific community and civil society. It is unclear if this spectrum of opinions will be represented in the ISA negotiations that are scheduled for this summer.

Potential For Coastal Tourism In Pakistan: Hindrances And Prospects

Safia Mansoor

Pakistan has an extensive 1,001-kilometer coastline, coastal tourism remains largely undeveloped, presenting significant opportunities for both the public and private sectors to create tourist attractions. Domestic revenue from coastal tourism is to be around \$300 million, equivalent to 0.1% of the GDP. Pakistan could potentially generate up to billion dollars annually by enhancing coastal tourism infrastructure. However, several challenges, such as the underdeveloped coastal areas, disregard for the rights of local and coastal communities, fragmented policymaking, and a lack of political resolve and foresight, hinder progress. Additionally, insufficient connectivity, tourist infrastructure, and a lack of security have contributed to the underdevelopment of the tourism industry.

The majority of communities residing along the coastline are economically disadvantaged. According to the Asian Development Bank (ADB), 79% of the population is categorized as poor, with 54% falling into the poorest of the poor bracket. Development of coastal tourism facilities and infrastructure could significantly benefit these local communities. Furthermore, a report from the World Travel and Tourism Council underscores the importance of tourism, noting that it accounts for one in every five new jobs created globally and is one of the fastest-growing sectors in the world economy.

Pakistan is blessed with a versatile coastline with pristine beaches and year round sunshine; stretching from creeks in the east, it transients to sandy beaches at Gadani, Kund Malir to a cliff-sand breathtaking combination. Embedded with religious and geological sites along the makran coastal highway through the mountainous Buzi pass and Hingol National Park to Ormara & and Pasni; thereafter the planes of Balochistan and the white sandy beaches stretch to Jiwani which was once a holiday resort for the Royal British Crown. The coastline of Pakistan is an all-in one-package for tourism. The scenic beauty and stunning beaches with clear waters, white sand and lush green hills offer untapped potential that can bring about colossal economic gains. These beaches hold promise for bolstering the local community, generating employment opportunities, and fostering the growth of small businesses, as they emerge as potential tourist spots for both domestic and international travelers. The Makran Coastal Highway stands as one of the most breathtaking coastal routes globally, spanning from Karachi through Balochistan to Gwadar along the Arabian Sea. Stretching 653 kilometers, this road links the N25 highway to the Iranian border.

Aforementioned sites in coastal belt has an estimated tourism potential worth 4-5 billion USD; however, Pakistan earns only 50,000 USD from this sector. In a nation such as Pakistan, the development of maritime tourism has the potential to establish a new sector and generate thousands of employment opportunities, thereby lifting coastal communities out of extreme poverty.

Pakistan's coastline, replete with beaches, historical sites, and unique marine biodiversity, holds the potential to emerge as a prominent tourist destination. By developing beach resorts, promoting activities like scuba diving and snorkeling, and establishing marine protected areas, Pakistan can allure international visitors and spur regional development. The government should actively invest in this sector through public-private partnerships. Additionally, it should facilitate private tour operators to enhance tourism promotion efforts. Furthermore, dedicated beach areas exclusively catering to foreign tourists could be set up.

As global interest in Pakistan's hidden treasures grows, the future of tourism promises transformative outcomes, fostering economic prosperity, cultural exchange, and global understanding. However, realizing Pakistan's tourism potential demands a comprehensive management strategy, substantial investments, effective marketing, enticing tour packages, and robust infrastructure. Crucial factors include the availability of information, ensuring security, round-the-clock emergency support, and cultivating a hospitable workforce

Ship Breaking In Pakistan: Balancing Opportunity And Responsibility

Safia Mansoor

The shipbreaking industry of Pakistan, primarily located in port city of Gadani, has long been integral to global maritime trade by attracting vessels from around the world for dismantling and recycling purposes. For Pakistan's national economy, this sector plays key role in supply chain of raw materials thus complementing other industries. It also provides employment opportunities for thousands of workers and supporting local communities. Despite being a neglected country, the industry possess vast economic potential given the ever-increasing domestic steel demand. Pakistan can recycle 100-120 large tankers annually and considerably caters to the needs of country's steel demand with an annual average output of 500,000 tons, which makes up 15 percent of total steel production in Pakistan.

The shipbreaking industry in Gadani offers direct employment to 20,000-25,000 individuals, with an additional 200,000-250,000 jobs indirectly linked to the sector. Annually, this industry contributes Rs14-15 billion in taxes to the national revenue and provides millions of tons of steel to various industries across the country. Shipbreaking industry holds a 20 percent share in the nation's total steel supply. Primarily, this industry supplies long steel products, which are extensively utilized in the construction sector. With a capacity to process three million tons of steel through ship dismantling, the industry plays a significant role in the steel supply chain.

On a global scale, Pakistan ranks as the third-largest shipbreaking country based on scrapped tonnage and the annual number of dismantled ships. In 2022, Pakistan contributed 16.6 percent to global shipbreaking activity. The Gadani shipbreaking yards disassembled 43 ships with a combined tonnage of 1.3 million LDT in 2022. In 2021, the yards dismantled 119 ships, totaling 3.0 million tons, and in 2020, they dismantled 99 ships, amounting to 2.3 million tons. The highest recorded number of ships dismantled at Gadani was 141, totaling 6.0 million tons, in 2016. Pakistan's shipbreaking industry, established in the 1960s, once dominated the global scene until the 1980s but lost its competitiveness due to inadequate policies of subsequent governments, allowing Bangladesh to take the lead.

Once a primary global hub for decommissioned ships, with at least two vessels—ranging from Japanese ore carriers to Italian passenger ferries—arriving daily at each of its 132 dismantling sites along its 10-kilometer coastline. The count of operational shipbreaking yards along Gadani beach dropped to seven in 2023 from peak of more than 130 in 2000.





The shipbreaking sector in Pakistan has frequently encountered censure due to its environmental and safety standards. Historically, insufficient safety protocols and an absence of environmental regulations have resulted in accidents, injuries, and pollution in the coastal regions where shipbreaking yards are situated. Presently, nearly two-thirds of retired ships undergo dismantling through the outdated and hazardous beaching method, whereby vessels are taken apart directly on the shoreline. All South Asian nations, including Pakistan, adhere to this Beaching approach, acknowledged as the poorest industrial practice despite its cost-effectiveness. However, there is a global shift towards alternative and superior technologies like Dry Dock, envisioned for recycling on stable and enclosed platforms in a regulated and efficient manner by 2030.

Pakistan has recently joined the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships, endorsing the 'cradle-to-grave' principle, which encompasses the responsible management and disposal of related waste streams in a safe and environmentally friendly manner. This convention imposes duties and obligations on all involved parties: ship owners, shipyards, recycling facilities, and the countries where ships are recycled or registered. Pakistan must gear up for a progressive transition towards green ship sustain competitiveness within the industry.

As a party to Basel Convention, Pakistan is obligated to ensure that its shipbreaking yards adhere to the principles of Environmentally Sound Management (ESM) of hazardous waste, as outlined in the Basel Convention and its Technical Guidelines. In relation to workers' rights, Pakistan must implement the relevant recommendations of the International Labour Organization (ILO) and incorporate the ILO Guidelines on health and safety specific to the shipbreaking industry. Furthermore, the Hong Kong Convention establishes requirements for the authorization and operation of facilities, as well as the creation of a Ship Recycling Plan for each vessel. Pakistan should aim for early compliance with the provisions of the Hong Kong Convention, while also ensuring these align with the existing legal obligations under the Basel Convention. Therefore, it is paramount for the government to prioritize the development of a national shipbreaking industry to fully harness its economic potential while concurrently marinating safety and sustainability in this sector

How Oil Politics Transformed the

World

Hamna Ghias Sheikh

Oil has been at the center of global politics for more than a century, shaping economies, alliances, and conflicts. The immense value of oil as a most critical energy resource has made it a driving force in geopolitical maneuvering, developing state relations, and international policy. Oil politics, in essence, has transformed the world in much broader dimensions by intertwining energy security with national interests, creating both cooperation and rivalry among states. From the rise of global energy powers to the volatility of oil prices, this complex interplay continues to influence global affairs.

The industrial revolution, which began in the late 19th century, laid the groundwork for the rise and importance of oil as a strategic commodity. With the expansion of mechanized industries and the advent of automobiles and airplanes, oil quickly became essential making a room in the world. The shift from coal towards oil as the primary energy source, especially during the time of World War I, cemented oil's role in military and industrial dominance. Oil became synonymous with power, and securing access to it became a top priority for all the industrialized nations.

As per the book "The Age of Oil" written by Leonardo Maugeri, the development of oil during this period is described as a "new epoch of energy," where oil's unmatched efficiency and adaptability gave it dominance over other forms of fuel. This transition was not only industrial but also a political transformation, as governments began to recognize the strategic importance of controlling oil resources.

History shows that the birth of the modern oil industry, spearheaded by companies like Standard Oil, shaped both economic structures and national policies, by laying the groundwork for oil's pivotal role in future global affairs.

Throughout the 20th century, the political significance of oil transformed how countries planned to forged alliances. The Middle East, home to some of the largest reserves, became a key focus of Western powers. The U.S., in particular, sought to establish strong relations with oil-rich Gulf countries, including Saudi Arabia, creating a mutually beneficial dynamic. In return, U.S. used to provide military support and security guarantees to these nations in exchange for stable oil supplies.

The unique position of Middle Eastern countries in terms of global oil supply set the stage for countries to think about alliances. As Middle eastern nations, which were initially under colonial influence, gradually gained control over their resources, especially after the rise of nationalism and the oil nationalizations in the mid-20th century. This shift allowed countries like Saudi Arabia and Iran to not only wield economic power but also to assert political independence and influence on the global stage.

Oil has been a factor in numerous conflicts, as states and non-state actors have vied for control over this crucial resource. One of the most notable instances was the 1973 Arab-Israeli War, which led to an oil embargo by Arab members of OPEC against countries supporting Israel, particularly the U.S. and Western Europe. This embargo caused a global oil crisis, quadrupling prices and demonstrating the political power oil-producing nations wielded.





The 1973 oil embargo is termed as a historical turning point in oil politics. As it not only showcased the ability of oil producers to influence global events but also marked the moment when Western countries realized their vulnerability. Moreover, this event led to major shifts in energy policies, including the diversification of energy sources and the development of strategic oil reserves in countries like the U.S. Likewise, The Gulf Wars in the 1990s and early 2000s further underscored the link between oil and conflict. The invasion of Kuwait by Iraq in 1990 was largely motivated by control over oil reserves. Similarly, critics of the 2003 U.S. invasion of Iraq argue that oil was a significant, if not primary, motivator. These were the conflicts which paved the way for broader "geopolitical chessboard" of oil, where control over resources became intertwined with military interventions and global security concerns.

Access to energy has historically been a crucial driver of national wealth and power. Nations that effectively harness their energy resources have expanded their industries and economies, while those that export energy have gained economic returns and geopolitical influence. The transition from wood and animal power to coal, and later to oil and gas, has consistently reshaped patterns of geopolitics throughout the world.

Britain's dominance in coal during the 19th century was pivotal for its empire, fueling its industrial and naval strength. However, the shift to oil, initiated by British naval demand, marked a significant transition. Oil's strategic advantages, such as greater range and ease of refueling, led to increased exploration and global supply, eventually making oil the dominant energy source by the early 20th century. Ironically, this transition diminished Britain's global status as it became reliant on imported oil.

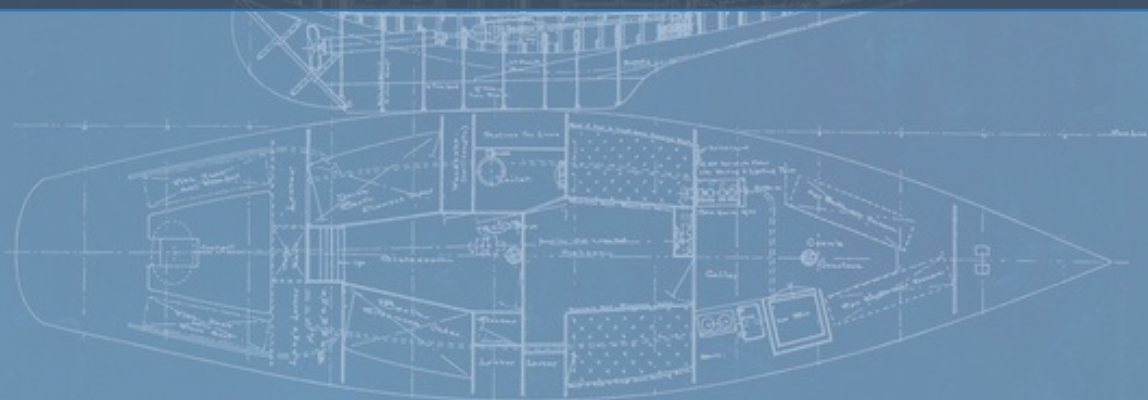
As the world followed Britain's lead away from coal, countries like the United States, Russia, and those in the Middle East capitalized on their hydrocarbon resources to build wealth and geopolitical power. This shift contributed to Britain's relative decline and helped elevate the U.S. to an economic superpower during World War I. In the latter half of the 20th century, natural gas emerged as a vital energy source, often found alongside oil deposits. Today, both Russia and the U.S. are leading natural gas producers. Russia's gas reserves have maintained its status as an energy superpower, while the U.S. has gained significant geopolitical influence through its natural gas exports, sometimes surpassing its oil exports in strategic importance.

As climate change concerns have grown, oil politics is now facing new challenges with the global push towards renewable energy. The transition away from fossil fuels towards greener alternatives such as solar, wind, and electric vehicles is reshaping the energy landscape. While oil remains essential, especially in transportation and industry, the shift toward sustainable energy sources is gradually reducing its dominance.

Similar to previous energy transitions, the current shift is driven by significant global events, particularly the impacts and risks associated with climate change and a more contentious geopolitical landscape. This transition is further supported by advancements in technology and decreasing costs in the renewables sector. In the era of hydrocarbons, wealth and power were influenced not just by resource availability but also by policy frameworks and geopolitical alliances. The same dynamics will apply to renewable energy in the coming decades. Above all, while the future points to a shift towards renewable energy, the politics of oil will remain central to international relations as long as oil continues to power industries and militaries. Understanding the actual dynamics of oil politics is essential in a broader context in order to grasp the broader forces at play in global power structures, both past and present.

Ideological and Theoretical Paradigm of Power Politics

S No	Article Title	Author	Source	Date	Page No
1	From Fringe to Forefront: The Mainstreaming of Hindutva Ideology	Safia Mansoor	Strafasia	04 Nov 2024	195
2	The Decline of Multiculturalism in Hindutva Dominated India	Safia Mansoor	Minute Mirror	16 Nov 2024	197
3	The Western Liberal Order: Foundations, Features, and Future Challenges	Safia Mansoor	Minute Mirror	18 Nov 2024	199
4	The Rise of Hindutva: The Systematic Marginalization of Muslims in Modi's India	Javaria Shaikh	Minute Mirror	19 Nov 2024	201
5	Capitalism Unveiled: Political, Economic Odyssey Across the Globe	Safia Mansoor	Minute Mirror	22 Nov 2024	203
6	Realism Behind the Liberal Veil: Is Liberalism in Retreat?	Javaria Shaikh	Modern Diplomacy	02 Dec 2024	205
7	Realist Constructivism: A Hybrid Approach Shaping Modern Power Politics	Javaria Shaikh	Strafasia	02 Dec 2024	207
8	Role of State Identity and Constructivism Paradigm	Safia Mansoor	Minute Mirror	27 Dec 2024	209
9	Deciphering Indian Cold Start Doctrine: Strategic Response of Pakistan	Safia Mansoor	Global Defense Insight	27 Dec 2024	211
10	Analyzing Alliance through a Realistic Lens	Safia Mansoor	Minute Mirror	28 Dec 2024	214



37-Foot Auxiliary Schooner or Yawl

Length o. a.....53 feet 0 inches
 Length w. l.....37 feet 0 inches
 Breadth.....14 feet 0 inches
 Draught.....6 feet 4 inches

Designed by James Murray Watts
 -1917-

Construction materials as follows:

For keel, stem, floor timber, ribs, deck beams... White Oak
 For auxiliary Motor Foundation..... Oak
 For knees..... Hackmatack
 For planking..... White Cedar
 For decking..... Mahogany
 For covering boards..... Mahogany
 For joinerwork and coaming..... Mahogany
 All fastenings, copper riveted or brass screws

From Fringe To Forefront: The

Mainstreaming Of Hindutva

Ideology

Safia Mansoor

Hindutva ideology, synonymous with 'Hinduness,' has always lured Hindu nationalists for decades. It is now ascendant in India, metamorphosing into unalloyed form. The zenith of Hindutva in modern India is coterminous with the electoral resurgence of the Bharatiya Janata Party (BJP), political wing of Rashtriya Swayamsevak Sangh (RSS). Being the torchbearer of Hindutva, RSS has meticulously carved space in India's social and political fabric through Sangh Parivar that has undergone immense growth over the last two decades. Amongst the various organizations under Sangh Parivar, the significance of BJP remains of prime importance as it seeks to carry out political mainstreaming of Hindu nationalism. The exclusive ideology of Hindu nationalism that was previously religious-cum-ethnocentric has evolved into punitive political ideology of India with the radical leitmotif to create Hindu Rashtra (Hindu nation), predicated on sacred territory, common race and shared culture.

The success of BJP in 2019 and the landslide re-election of Narendra Modi with an even greater public mandate as compare to 2014 demonstrates that Hindutva has been mainstreamed. Significant here is the BJP's propagation of Hindutva ideology and creation of profound Hindu superiority perception which has played an instrumental role in enhancing its political clout with 120 seats in 1991 election, 282 seats in 2014 elections which surged to 303 seats in 2019, causing a blow to the political space of secular Indian National Congress. In 2024 general elections, BJP once again secured a majority in government by bagging 240 seats. Confluence of factors such as BJP's anti-secular and pro majoritarian state stance, neoliberal policies, backed by the downfall of Indian National Congress owing to its ineffectiveness, lackluster leadership, and corruption charges, enabled the historic rise of BJP. The degree of legitimacy and normalcy it has achieved signals that it is widely supported and not merely imposed. The mainstreaming of Hindutva began in the 1990s, but under the Indian Prime Minister Narendra Modi it is now widely affirmed across Indian society's socio-economic classes. The mainstreaming of this exclusive and extremist nationalist ideology has authorized exclusionary nationalist discourse that was formerly restrained to the fringe.

The mainstreaming of Hindutva in Indian politics can be assessed through analyzing the spaces it has permeated to — cultural, social, & legal domain — that inextricably implies its political appeal, popularity and legitimacy among masses that in turn would determine its political future. Culturally, it is secluding the minorities as foreigners or outsiders having no share in Hindu culture rendering them as aliens who do not have any right to live in Indian state. Under the auspices of BJP, the state-driven phenomenon of Hindu radicalization in a country with 15% Muslims as compare to 79% Hindu population has been in full swing. BJP supported by its ideological parent RSS has successfully fabricated notion of 'Hindu victimhood' through propagation of slogans such as 'Hindus are in danger'. This 'otherisation' process involves use of various tools such as hate speech, state-subservient media, disinformation, reference to Golden Vedas age and historical-cum-religious clashes.

The social institutionalization of Hindutva is manifested through the launch of various campaigns such as 'Ghar Wapsi', 'Love Jihad' and 'Gau Rakshak'. Hindutva groups carry out mass conversions through ghar-wapsi (homecoming) ceremonies with the complicity of police. Charged with the communal and moral fervor, it takes unrestrained anti-Islamic and anti-Christianity polemic. Additionally, a reconversion campaign akin to 'Love Jihad' is characterized by Hindu masculinity and Hindu violence. BJP politicians propagate fallacious theory of Love Jihad that Hindu women are lured into marriages by Muslim men to convert them to Islam. In this regard, BJP has embarked on passing anti-conversion laws in various state, for example, Himachal Pradesh, Uttar Pradesh, and Madhya Pradesh. Furthermore, India's incumbent Prime Minister Narendra Modi during his 2014 national election campaign incessantly called for cow protection, capacitating nay motivating Hindu supremacist groups such as cow vigilantes or Gau Rakshak.





Butressed by 2019 BJP's election manifesto, Hindutva has also made rapid inroads in Indian constitution also referred to as Hindutva constitutionalism, begetting structural changes in order to create a majoritarian state. There are two key laws which are pertinent in this regard: a) Abrogation of Article 370 and 35A for changing demographic status of Kashmir; and b) Citizenship Amendment Act (CAA) making religion a clear basis for citizenship with motive to provide sanctuary to the other religious minorities excluding Muslims who might be left out during the proposed nationwide National Register of Citizens (NRC). Moreover, criminalization of instant divorce practice (Triple talaq) is essential in paving the way for the ruling party to push through Uniform Civil Code (UCC) which is considered as an important goal of the Hindutva agenda to homogenize the Indian society. The 2019 verdict of Supreme Court on Ayodhya Dispute in favour of Hindus also marks ascendance of Hindu revivalist forces such as RSS, its political affiliate BJP as latter included construction of Ram Temple in its political manifesto.

Since BJP came into power, it has continued the saffronisation of public sphere alongside concatenation of appointments of Hindutva sympathizers and RSS affiliates to top ministerial and government positions. The appeal of Hindutva to the masses and its permeation in cultural, social, and legal domain not only legitimizes nay reinforces its political embodiment particularly through BJP. Lamentably, it would provide a more conducive environment for India's transition from a secular to a majoritarian Hindu state.

The Decline Of Multiculturalism In Hindutva-Dominated India

Safia Mansoor

The term multiculturalism refers to a movement aimed at celebrating and elevating diverse ethnic backgrounds. It not only delineates a culturally rich society but also describes a policy focused on protecting cultural diversity. Multiculturalism has a long history, with some nations—such as the Ottoman Empire—having adopted multicultural policies in the past. The systematic study of multiculturalism emerged in late 20th century, when liberal philosophers began to pay special attention to the topic. Initially, Canadian philosophers dedicated significant time to this discussion, but by the 21st century, it had evolved into a contentious issue within political philosophy.

Multiculturalism serves as an umbrella for political and moral claims of various disadvantaged groups, including African Americans, women, minorities and the disabled. However, theorists of multiculturalism primarily emphasize immigrants, particularly those from religious and ethnic minorities (e.g., Muslims in Western Europe, Latinos in the U.S.), various minority nations (e.g., Basques, Quebecois, Welsh, Catalans), and indigenous groups (e.g., Māori in New Zealand and Native American peoples). Contemporary theories of multiculturalism focus on recognizing and including various minority groups defined by nationality, ethnicity, and religion. While multiculturalism encompasses a wide range of normative goals and claims, proponents commonly reject concept of “melting pot,” which expects minority members to assimilate into dominant culture. Instead, they advocate for an ideal where minority groups can retain their distinct practices and identities.

The primary aim of multiculturalism is to celebrate and respect individual cultures within a diverse society. The necessity of protecting culture is often argued from the perspective that individuals cannot separate themselves from the allegiances they hold. Multiculturalism fosters community cohesion and societal development while recognizing and protecting cultural diversity, aligning closely with the human rights framework.

From a liberal standpoint, every individual has the right to formulate their own interpretation of the good life. This recognition of cultural significance is echoed in international law. The UNESCO Declaration of Principles of International Cultural Co-operation, enacted in 1966, asserts that nations should respect the distinctive character of each culture. The UNESCO Declaration of Cultural Diversity, adopted in 2001, emphasizes that culture is fundamental to contemporary debates on social cohesion and identity, declaring respect for cultural diversity as indispensable for international peace. This declaration highlights that protection of cultural diversity cannot be separated from human dignity and advocates for cultural pluralism as an ethical imperative. The Convention on the Protection and Promotion of the Diversity of Cultural Expressions, enacted in 2005, states that human rights can safeguard cultural diversity, including the right to choose cultural expressions. This convention also emphasizes equal respect and dignity for all cultures, including those of indigenous groups and minorities, and calls for a conducive environment for the promotion and protection of these cultures.



Multicultural state policies are seen as crucial in resolving various ethnic conflicts in modern India. The Indian Constitution was hailed as a liberal and multicultural document, providing institutional and political measures for recognizing and accommodating the country's diversity. However, when a society is multicultural, multilingual, multinational, and multi-ethnic, it can lead to ethnic conflicts and human rights violations, particularly against minority groups.

India's two major communities, Hindus and Muslims, often find themselves at odds over multicultural issues. The ongoing conflicts between Hindus and Muslims challenge India's development and fragment its social fabric. The current resurgence of ethnic nationalism and violence against minorities, particularly Muslims, highlights a stark contradiction within Indian society, as these groups are often labeled as "other" and excluded from the national narrative due to their differing religion, culture, and civilization. This dynamic is especially evident under the Hindutva-led Modi regime, which is supported by a significant portion of the Indian population that views India as a homeland exclusively for Hindus.

Despite being the world's largest multicultural society, India continues to grapple with conflicts and violence stemming from its cultural diversity. Previous efforts—such as constitutional provisions and legal pluralism—aimed at ensuring the rights of various religious and ethnic groups have not fully succeeded. Incidents of mob violence, lynching, and attacks on places of worship illustrate the grim reality of human rights violations in India's democracy. The Ayodhya dispute of 1992 resulted in the deaths of thousands of Muslims, while the 2002 Gujarat riots and the 2020 communal violence in Delhi further exemplify the dire state of human rights for minorities. Instances of violence framed as "Love Jihad," a fabricated narrative claiming Muslim men lure Hindu women to convert them, further illustrate the pervasive atmosphere of fear and discrimination. The BJP party has been continuously altering the constitutional fabric of India by enacting discriminatory laws such as the Citizenship Amendment Act (CAA) and simultaneously abrogating Article 370, thereby undermining the constitutional protections afforded to minorities.

In light of these issues, despite decades of embracing multiculturalism, India has yet to achieve balance among its diverse groups, resulting in severe human rights violations. The decline of multiculturalism under Hindutva presents a critical challenge to the nation's social fabric, underscoring the urgent need for renewed commitment to inclusivity and respect for all cultures





Western Liberal Order: Foundations, Features, And Challenges

Safia Mansoor

The international order after World War II is regarded as an amalgamation of a complex set of norms, treaties, institutions, and other mechanisms formulated for the propagation and implementation of the key principles underlying the Western Liberal Order: non-aggression, economic stability, the advancement of liberal values, and collective responses to shared challenges. This order reflects the interplay of reciprocity and multilateral management, which are central organizing principles of the Western Liberal Order, alongside economic openness. The foundational basis for this order was provided by the 1941 joint declaration between Prime Minister Winston Churchill and President Franklin D. Roosevelt, known as the Atlantic Charter.

The principles outlined in the Charter emphasized security (preserving the status quo and the right to self-defense), peace, economic prosperity (social welfare, labor standards improvement, and economic development), and, most importantly, free trade. The four freedoms highlighted in the Atlantic Charter—freedom of worship, freedom from want, freedom of speech, and freedom from fear—underpinned the United States' commitment to rebuilding war-torn Europe and providing security through two fundamental initiatives: the Marshall Plan for recovery and NATO for security. American liberal hegemony was a key characteristic of the Western Liberal Order in the post-WWII era.

The Pivotal Features of the Western Liberal Order

1. **Multilateral Trade:** The post-war order was based on open, multilateral trade, which was also regarded as the primary vision of the liberal order's American architects. Liberal democracies, considered central to this system, advanced trade through institutions such as the General Agreement on Tariffs and Trade (GATT) and later the World Trade Organization (WTO).
2. **Open World Economy:** The United States was also strongly committed to the concept of a managed open world economy, referred to as “embedded liberalism” by John Ruggie. This meant that international agreements, enshrined in the Bretton Woods System, were designed to give governments enhanced capacity to manage and regulate economic openness, ensuring its compatibility with domestic economic stability and full employment policies.
3. **International Institutions and Multilateral Governance:** Both existing and new international institutions were at the core of the postwar liberal order, which was built upon a system of multilateral governance. The primary vision was intergovernmentalism, where governments remained the principal authority, but their relationships would be organized around permanent global and regional institutions.
4. **Liberal Democracies and Norms:** Another crucial aspect of the Western Liberal Order was the strong ties among liberal democracies in the West. The postwar American-led order was based on a “democratic alliance” to support and defend a shared political space, with liberal democracy at its core.
5. **Human Rights:** The protection of human rights was central to the Western Liberal Order, which prioritized human rights protection and democratization. These goals were embedded in various human rights frameworks, including the 1948 Universal Declaration of Human Rights and the 1966 International Covenant on Civil and Political Rights.
6. **Security Order and Rules:** The security order's functions were not limited to preventing aggression; it also aimed to shape the use of force by limiting it to avoid unnecessary conflict and enabling it to prevent unchecked aggression and abuse.



Post-Cold War Liberal International Order

In the post-Cold War era, U.S. policymakers sought to expand and transform the Western Liberal Order into what came to be known as the “Liberal International Order” or “New World Order.” This vision, articulated by U.S. President George H. W. Bush, was based on three key principles: a world free from the threat of terrorism, a secure world continuously seeking peace, and a world committed to justice. It was envisioned as an era in which nations from the North, South, East, and West could live in harmonious relations and prosper. Three key aspects characterized this order:

1. **Expansion of Institutional Membership:** This involved expanding the membership of the key institutions of the Western order and creating new institutions. The goal was to create a network of international institutions with universal membership. One example of this expansion was NATO’s inclusion of Eastern European countries, which transformed the bounded Western Liberal Order into a Liberal International Order.
2. **Integration of Global States into the Open Economic Order:** The aim was to integrate all states into the open economic order created by the United States and its liberal democratic allies during the postwar era.
3. **Promotion of Liberal Democracy:** The vigorous promotion of liberal democracy worldwide was a central mission of this new order, which had previously been hindered by the U.S. rivalry with the Soviet Union.
- 4.

Challenges to the Western Liberal Order

Creating a sustainable and resilient order is an extraordinarily difficult task, requiring the continued leadership of core states with transparent political systems, shared values, and respect for human rights. If the U.S. and its liberal democratic allies begin compromising on liberal principles, their leverage to combat illiberal tendencies that threaten the system may diminish. The liberal order entails the duty to protect members of the liberal community, and in some circumstances, this means overriding state sovereignty to protect people from oppression. Consequently, liberalism can sometimes conflict with illiberal movements and states. The Iraq War is often seen as the culmination of the liberal order’s mission. In recent years, these tensions have become more pronounced, with illiberal states strengthening their positions against the liberal mandates of the order. Russia, and particularly China, challenge the central elements of the postwar U.S.-led order, including the promotion of liberal values and the alliances that sustain U.S. hegemony. China’s rise, particularly in the economic domain, and its Belt and Road Initiative represent a direct challenge to the Western Liberal Order, sparking debates about China’s vision and its implications for the future of the liberal order.

Rise Of Hindutva: Unveiling Systematic Marginalization Of Muslims In

Modi's India

Javaria Shaikh

In last few decades the political landscape of India has been altered by an ever-increasing domination their Ideology, 'Hindutva (Hindu Nationalism)'. Vinayak Damodar Savarkar, in 20th century, has coined this term of Hindutva. He envisions not just the religious aspect of Hinduism but India as a Hindu Nation and considers Hindus as a fundamental unit of Indian culture. The ideology of Hindutva has always been integral part of India's political landscape, but its domination increases through the right-wing political party 'Bharatiya Janata Party (BJP)'. Moreover, its association with Narendra Modi has brought new dynamics in internal politics of India. The most blatant consequences of this power shift is the rising violence and Hostility against the Muslim population of India. Recently as India enters into a third regime of rule of Hindutva under the leadership Modi, the menace of even more aggressive policies and actions against Muslims looms large, potentially leading towards an era of barbaric oppression.

Historical Background of Hindutva

The ideology of Hindutva reclaims the glorious past of Hindus, where the traditions, values and culture of Hindus were unchallenged in entire Indian subcontinent. On the basis of this vision, Islamic rule of Mughals in India during the medieval period marked the start of domination of foreigners in India, and later, this loss of sovereignty was compounded by British colonialism. Keeping this as the basis Hindutva supporters created the narrative of calling Muslims of India as 'outsiders', which has become the cause of diluting the cultural Integrity of the Hindu nation.

This narrative became political expression after the establishment of organizations like Rashtriya Swayamsevak Sangh (RSS) in 1925, which mainly works to make India a Hindu state. The Political authorities working in the name of RSS can be labelled as politically mobilized and centrally working 'one culture and one nation' phenomena. However, in making India dominantly a Hindu state, Hindutva has since start has been involved in brutal marginalization of Muslims and casts them negatively by viewing them as 'other' and not as Indians. This division became predominantly definite after India's independence in 1947, but in current years this has demonstrated clearly through the political domination of the BJP.

The critical political arm of Hidutva Ideology is Bharatiya Janata Party (BJP) which was founded in 1980. However, under the leadership of Narendra Modi, the BJP became successful in having a decisive electoral victory in 2014, 2019 and 2024. Modi being an ex-RSS pracharak (a full-time worker of RSS) is being known for many controversies against Muslims, especially 2002 Gujarat riots, in which as a chief minister he was involved in killing of hundreds of Muslims.



Under Modi's control, Hindutva ideology has got unimaginable limelight in Indian politics. The BJP under the leadership of Modi has established an atmosphere of normalizing the overt anti-Muslim rhetoric and violence. In Modi's government several legislative measures are popular that are directly affecting the Muslim population, including his actions in Kashmir, involving the revocation of Article 35a and 370 (which granted special autonomy to Jammu and Kashmir, a Muslim-majority region) and implementing a Citizenship Amendment Act (CAA), which allows citizenship for non-Muslim refugees from neighboring countries but clearly excludes Muslims.

India's Internal Politics and the Marginalization of Muslims

The internal politics of India under Modi's rule has saw the barbaric majoritarian ideology that seeks to completely marginalize minorities.



This polarization in Indian politics is creating deepened societal divisions, depicting a clear us-versus-them phenomena in which Muslims of India are being portrayed as “anti-national” and an existential threat for Hindus of State.\

Moreover, in highlighting this narrative, the political apparatus, including media, and judiciary plays a significant role. Some incidents including the killings of Muslims in the name of ‘Cow Protection’, attacks on businesses owned by Muslims, and marginalizing efforts against Muslim's students and workers have become distressingly common. Moreover, Muslims are also marginalized completely in their political representation as well. Despite being 15% of population, Muslim representation in Parliament has increasingly declined under Modi's rule. Furthermore, all the state under the rule of BJP has enacted laws to curb Muslim religious rituals, including bans on cow slaughter, which are fundamentally tied to Muslim livelihoods. However, all these happenings are not isolated incidents but one smaller part of a larger pattern of systemic discrimination against the Muslims of India,

particularly planned to emphasize the supremacy of Hindutva ideology and Hindus.

Third Term of Hindutva Rule and Continuation of Violence and Sufferings of Muslims

In Modi's last two terms, India has witnessed highly increasing communal rigidities and hate crimes against Muslims, particularly. Numerous incidents of mob violence and target killing of Muslims is the integral part of Hindutva's anti-Muslim stance. Modi's government's hostile stance on issues like the creation of the Ram Mandir at the site wher Babri Mosque was demolished and the proposed National Registration of Citizens (NRC) has only additional isolated Muslims. The NRC, along with the CAA, poses greater risks of proving many Muslims stateless, if they fail to provide documentation for verifying their Indian lineage or ancestry. As this year Modi got the third term in PMs officer, there are grave concerns that the Hindutva regime will intensify its anti-Muslim agenda and riots against them.

The continued marginalization of Muslims, both economically and politically, compounded with the state's sponsored violence against them, echoes a grim picture of what lies in the future for Muslims. The third regime of Hindutva under Modi would more like be proved as more oppressive, with increased violence, biased laws, and the implicit encouragement of communal hostility against Muslims.

However, as India just entered in Modi's third term, the future for its Muslim population looks miserable. The intended unrestricted rise of Hindutva ideology, coupled with state backed killings and violence, looms to further erode the secular image of the state. As the first two terms of Hindutva rule under Modi are only the indication, the third regime is strongly expected to be even more barbaric for Muslim population of India. Most likely near future sees the complete marginalization and discrimination against Muslims, with completely institutionalized violence against them. If the world keeps on failing to take any notice, India's Muslim population is near to face an era of unparalleled suffering in the name of a Hindu nationalism.



Realist Constructivism: a Hybrid Approach Shaping Modern Power Politics

Javaria Shaikh

In the ever-evolving landscape of International Relations, the theoretical divide between realism and constructivism has long been a focal point for scholars. However, a new hybrid approach, Realist Constructivism, proposed by J. Samuel Barkin in 2010, bridges these schools of thought to better explain global politics today. Realist constructivism acknowledges the tangle of power and moral ideas, integrating the structural focus of realism with the ideational aspects of constructivism. It posits that states pursue power-driven objectives shaped by ideational forces, such as culture, religion, or historical narratives. The cases of Türkiye under Recep Tayyip Erdogan and India under Narendra Modi offer compelling illustrations of this theory in action.

Realist Constructivism:

Realism and constructivism at first glance may seem incompatible as realism emphasizes power, national interests, and the anarchic nature of the international system, often discounting ideational factors. Whereas, constructivism focuses on the impact of ideas, norms, and identities in shaping state behavior. J. Samuel Barkin's Realist Constructivism melds these perspectives, asserting that power and morality are not mutually exclusive but rather intertwined forces driving international politics.

Barkin's theory highlights five key tenets:

1. **Power and Morality:** Political change requires a balance between power and moral ideas. contextually morality cannot function independently of power in international relations.
2. **Normative Change and Power Structures:** Norms influence power dynamics, and power, in turn, reshapes norms. Creating a reciprocal relationship.
3. **Compatibility of Moral Ideas and Power Pursuit:** Even morally motivated actions are often underpinned by power-driven interests.
4. **Ideas and Balance of Power:** Ideologies and identities shape the way states define their interests and pursue power.
5. **States as Rational Actors:** States make rational decisions based on cost-benefit analyses influenced by their ideational underpinnings.

These principles underscore the notion that ideas are rooted in religion, culture, or historical memory and it always serve as a catalyst for realist power pursuits, giving rise to what Barkin calls 'Realist Constructivism'.

Turkiye Under Erdogan:

President Recep Tayyip Erdogan's leadership exemplifies realist constructivism through his vision of reviving Türkiye's Ottoman-era influence. This vision integrates a constructivist framework of identity and historical memory with realist power politics. Erdogan's invocation of Ottoman nostalgia aligns with the idea of Türkiye as the leader of the Muslim ummah. This constructivist narrative seeks to unify Muslims under Turkish leadership, evoking a shared historical identity to bolster Türkiye's international stature. Moreover, the realist narrative translates into power-driven actions, such as Türkiye's assertive policies in the Eastern Mediterranean, military interventions in Syria and Libya, and alliances with Muslim-majority states like Pakistan and Malaysia. These moves aim to expand Türkiye's geopolitical influence and secure a dominant position in the international order.

The blending of ideological aspirations with strategic maneuvers positions Türkiye as a rising power, not merely through military and economic means but also by reshaping norms within the Muslim world. Erdogan's policies illustrate how the constructivist goal of reviving Ottoman glory intersects with the realist pursuit of regional and global power.

India Under Modi:

India under Prime Minister Narendra Modi offers another case of realist constructivism, where the constructivist ideal of a Hindu nationalist identity fuels realist objectives of regional and global prominence. Modi's agenda as grounded in the ideology of Hindutva seeks to redefine India as a Hindu state. The construction of the Ram Mandir on the disputed Babri Masjid site, bans on cow slaughter, and policies targeting minorities reflect a drive to institutionalize Hindu identity as central to India's national ethos. The concept of "Akhand Bharat" further underscores the aspiration to create a culturally unified, dominant Hindu state.

However, Modi's government pairs these ideological goals with realist strategies, including revoking Jammu and Kashmir's special status, bolstering military capabilities, and asserting dominance in South Asia. These actions aim to enhance India's power projection while aligning with the ideological narrative of Hindu resurgence. By intertwining the pursuit of Hindu nationalism with power-maximizing policies, Modi's leadership exemplifies realist constructivism, showcasing how ideational forces drive strategic objectives.

A World Shaped by Realist Constructivism

The global political landscape increasingly reflects the principles of realist constructivism. Leaders like Erdogan and Modi illustrate how ideas and identities can be leveraged to achieve power-driven goals, reshaping international norms and power structures in the process. This hybrid approach offers a nuanced lens for understanding contemporary politics, where states are not solely motivated by power or ideals but by a dynamic interplay of both.

Today Realist Constructivism is providing a framework to understand state actions that cannot be fully explained by pure realism or constructivism. It also highlights the role of historical, cultural, and ideological narratives in shaping state behavior. However, in contemporary power politics, from China's Belt and Road Initiative to Russia's Orthodox nationalism, realist constructivism offers insights into how states merge identity with strategic ambition.

Conclusion:

As the international system evolves, the rigid paradigms of realism and constructivism struggle to account for the complexity of modern state behavior. Realist constructivism fills this gap, demonstrating how ideas and power interact to shape global politics. The cases of Türkiye and India vividly illustrate this theory in practice, where ideological visions of historical or cultural greatness drive power-maximizing actions on the world stage. In an era where power and ideas are inseparable, realist constructivism offers a compelling framework to navigate the intricacies of contemporary international relations.





Realism Behind The Liberal Veil: Is Liberalism In Retreat?

Javaria Shaikh

Liberalism, as a theory in international relations, has long emphasized the power of cooperation, institutions, and economic interdependence to mitigate the inherent anarchy of the global system. Rooted in the belief that human nature and governance can progress toward peace and stability, liberalism has been a dominant framework, particularly after the Cold War. Democratic governance, free trade, and international organizations are its cornerstones, seen as pathways to a more harmonious world. However, in recent years, liberalism seems to be overshadowed by the return of realism, as states prioritize power politics and self-interest. Even institutions built to uphold liberal principles appear to function within a realist framework, prompting the question: is liberalism fading, or is it merely adapting to a realist-dominated order?

Critics argue that liberalism is in retreat and it is unable to adequately address the enduring realities of international politics. The post-Cold War optimism that heralded a “liberal world order” has faced setbacks as states revert to prioritizing national interests over global cooperation. For instance, international institutions such as the United Nations and the World Trade Organization which are conceived as arbiters of liberal values, often appear to serve the interests of the most powerful states. Realists contend that these institutions reflect power hierarchies rather than fostering genuine global governance.

Similarly, the promise of economic interdependence as a mechanism for peace has been challenged by examples like the US-China relationship. Despite deep economic ties, the two nations remain locked in a strategic rivalry, demonstrating how economic interdependence can coexist with competition and mistrust. The rise of authoritarian regimes and the erosion of democratic norms in several countries further undermine liberalism’s vision of global cooperation, as populism and nationalism gain traction even within established democracies.

Realist scholars have long critiqued the core assumptions of liberalism particularly its optimism about human nature and the structure of international politics. Hans Morgenthau, one of the leading voices of classical realism, dismissed liberalism’s faith in human progress, arguing instead, that the pursuit of power and security defines international relations. Morgenthau viewed liberalism as naïve for underestimating the anarchic nature of the international system which inherently perpetuates insecurity and conflict. Neorealists, including thinkers like Kenneth Waltz, focus on the issue of relative gains, contending that states are reluctant to cooperate if they perceive that other states will benefit disproportionately. This perspective challenges liberals like Robert Keohane, who acknowledged that cooperation depends on shared interests and may falter in their absence. Realists also argue that anarchy remains a constant feature of the international system where the absence of a global governing authority ensures that insecurity prevails regardless of economic interdependence or institutional frameworks.



However, in response, liberalist scholars defend their framework by pointing to the transformative potential of cooperation and globalization. Strong liberalists emphasize the qualitative changes in international relations that differentiate the contemporary world from the past. For example, Karl Deutsch's concept of "Security Communities" highlights regions such as Western Europe and North America, where conflict among states has become unthinkable due to shared liberal values, democratic governance, and deep economic ties. Liberalists argue that institutions, despite their flaws, play a crucial role in reducing transaction costs, fostering trust, and facilitating cooperation among states. The European Union stands out as a success story of liberal institutionalism, where member states have integrated their economies and political systems to an unprecedented degree, creating a framework for collective governance.

Furthermore, liberalists emphasize the prohibitive economic costs of war in today's interconnected global economy. As production and consumption occur across global supply chains, conflicts that disrupt these networks are detrimental to all parties involved. liberals argue that this economic reality creates a powerful incentive for states to resolve disputes through diplomacy rather than force. Despite realist critiques, strong liberalists remain optimistic about the possibility of progress, highlighting those consolidated democracies tend to maintain peaceful relations and that globalization continues to tie economies together in ways that deter large-scale conflicts. Furthermore, liberalists emphasize the prohibitive economic costs of war in today's interconnected global economy. As production and consumption occur across global supply chains, conflicts that disrupt these networks are detrimental to all parties involved. liberals argue that this economic reality creates a powerful incentive for states to resolve disputes through diplomacy rather than force.

The veto power wielded by major powers like the United States and China underscores how state sovereignty and national interests often trump collective action. In South Asia, the persistent rivalry between India and Pakistan illustrates the limitations of liberal theories. Despite efforts at economic interdependence and institutional cooperation, mutual distrust and security concerns prevent meaningful collaboration. Trade remains minimal, and regional bodies like SAARC are largely ineffective in addressing tensions, underscoring the realist perspective that power dynamics and historical grievances dictate relations between states.

Even in the United States, often seen as a champion of liberalism, foreign policy frequently blends liberal rhetoric with realist pragmatism. For example, while the US promotes democracy and human rights globally, its strategic alliances with authoritarian regimes reveal the prioritization of national interests over ideological consistency. This duality reflects the enduring influence of realism, even in the policies of states that publicly espouse liberal values.

Liberalism is not vanishing, rather, it is adapting to the pressures of a realist-dominated world. Its ideals of cooperation, interdependence, and institutional governance remain vital, but their practical application often yields to the realities of power politics and state-centric interests. The current global order is best understood as a complex interplay of liberal and realist forces, where cooperation coexists with competition, and institutions operate within a framework shaped by power dynamics.

Ultimately, the future of international relations may depend on finding a balance between these two paradigms. Liberalism provides a vision of a more cooperative and interconnected world, while realism grounds this vision in the pragmatic realities of power and security. As the world grapples with challenges like climate change, economic inequality, and geopolitical rivalry, the tension between liberal ideals and realist realities will continue to shape the global landscape. Rather than choosing one over the other, the task may be to integrate the strengths of both frameworks, crafting a pragmatic approach to international politics that acknowledges the complexities of an increasingly interconnected yet competitive world.

Role Of State Identity And Constructivism Paradigm

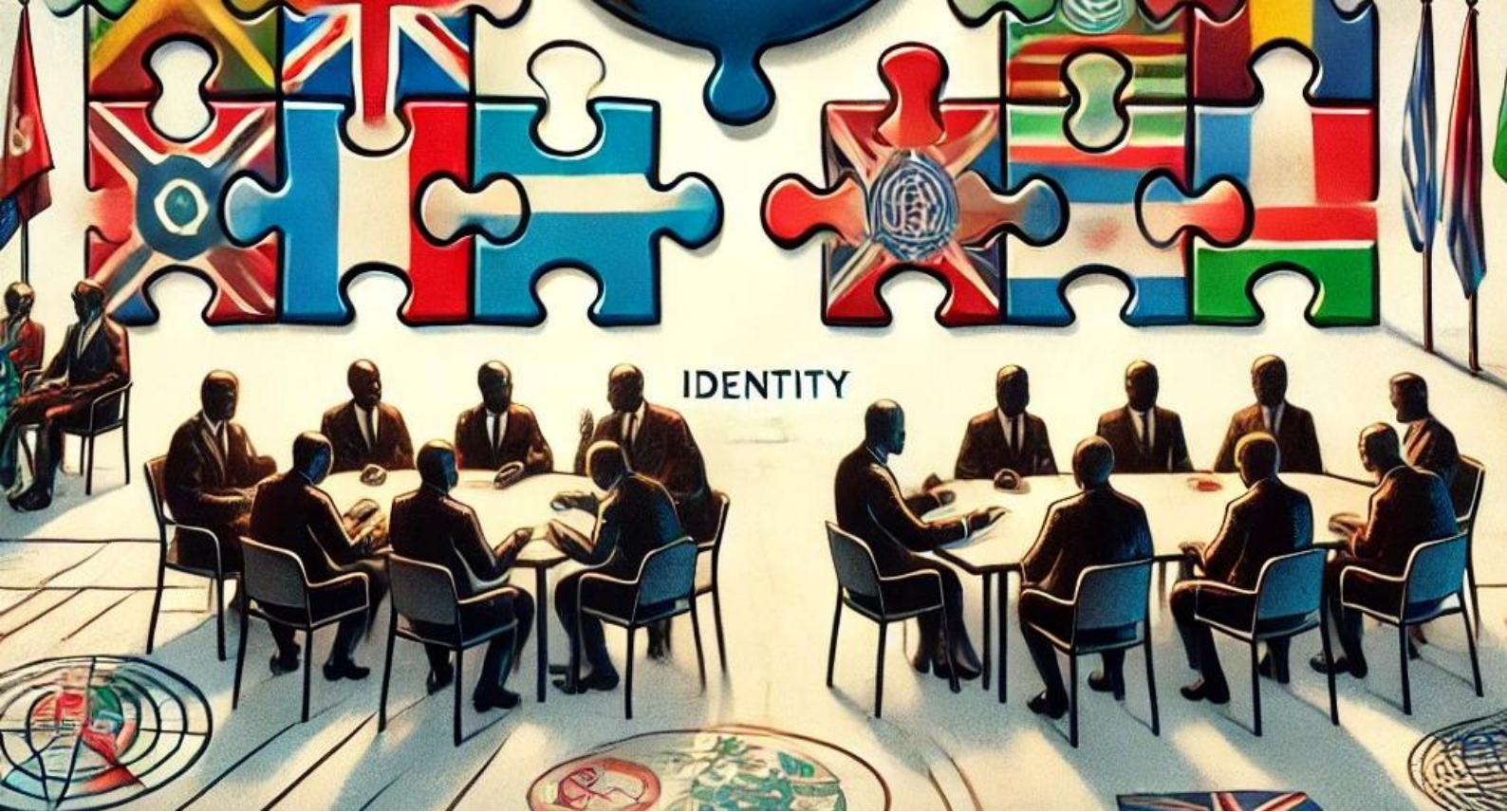
Safia Mansoor

Prominence of constructivism in IR is linked to Cold war end when mainstream IR theories such as realism and liberalism couldn't take into account the key aspects pertinent to cold war and its end. In 1989, Nicholas Onuf coined term 'Constructivism' which was later developed as a holistic theory by Alexander Wendt. Wendt has explained constructivism with respect to international politics. It is considered as an international system's structural theory which claims that state are key/principal unit of analysis with regards to international political theory; in international system, structures are intersubjective in nature rather than material; interests and identity of states are important that in turn are constructed by social structures and therefore are not given exogenously to system by either domestic politics or human nature. Considering that 'social world is our making' whereby actors incessantly shape as well as reshape the international relations through their interactions and actions. Constructivists focus that structure and agency and that they are mutually constituted implies that agency influences structure and structure influences agency. Here agency implies someone's ability to act while structure signifies ideational and material element of international system. Constructivism emphasizes on various themes such as norms, values, agency, structure, and state identity.

State identity as a concept has become perpetual attribute of constructivist discourse and resultantly the discourse is faced with four identity problematique. Underspecified relationship between fundamental concepts of constructivism and state identity constitutes first problem, while inadequate literature on how state plump for any particular identity among multiple state identities is second issue. Third problem includes ignorance of state identity by rationalists scholars implying lack of empirical research with respect to this concept, and fourth problem entails lack of power-state identities nexus in rationalist and constructivists debate. Alexander Wendt consider that culture of interstate community chiefly determines state identity. Wendt in his book 'Social theory of International Politics' describes Kantian, Lockean, and Hobbesian cultures of anarchy whereby culture implies 'socially shared knowledge' and assert that each culture has an attribute known as role which implies distinct orientation of self with respect to others.

In Kantian culture this role is of 'friends', whereas Lockean culture talks about orientation of rivals and in Hobbesian culture this role is of 'enemies'. Within constructivist paradigm, norms as per Katzenstein implies collective expectations for actors' adequate behavior within given identity. Second problem can be addressed by understanding they actors choose identity among various identities based upon their certain values and interests. Third and fourth problem can be addressed by reconceptualizing state identity as set of widely accepted metaphorical-cum-symbolic state's representation, notably with regards to other states, in conjunction with beliefs concerning responsibilities, rights, and behaviours; moreover, state identity has internal (domestic) and external (international dimension as well). The link between power and state identity is important as state identity can act as tool in strategic interaction, it influences accumulation and use of military power, and states.





In late 1990s, constructivism came to fore as a ‘via media’ between reflectivist and rationalist approaches grounded on premise that although ideational facets of social life has significant repercussions for international politics, it doesn’t entail repudiation of ‘science’. There are two strands of constructivism named as conventional and critical constructivists which differ on basis of epistemology. Conventional constructivists with intersubjective ontology and positivist epistemology focuses on how normative and ideational factors such as norms, values, identity, and rules have either semi-causal or causal impact on behavior of state. On the contrary, critical constructivists having post-positivist epistemology and methodology (notably discourse analysis) emphasizes on how discourse is chiefly constitutive of social reality. The key difference between critical and conventional constructivists lies in their focus on critical constructivists on language as intermediary between word and thing, or what is termed as signifier and signified. Conventional and critical constructivists can be differentiated on account of identity as former emphasizes on social practices that beget distinct identities which in turn signify certain interests and actions, whereas, critical constructivists with their discursive approach to identity belabor on how certain identity alongside its narratives are identified by people and how agents harness these identities to justify their foreign policies. For example, EU identity through critical constructivist lens implies construction of EU identity in its foreign policy discourse with regards to ‘Concept of Europe’ based upon shared history, humanistic and cultural heritage which are then linked to current times through principles, norms, and values (such as democracy, human rights, rule of law) constitute core of EU identity.

As per the constructivists, processes of interaction create and recreate the international environment and alteration in acts of states changes the international system. The key argument remains that identities of actors are not given nay created and transformed/ sustained through interaction. Constructivism differs from mainstream rationalistic approaches. Constructivist emphasis on ‘identity construction’ makes it a unique approach from Rationalists whom consider identity as one of key properties of actors that is external as well as prior to international political process. As per Wendt, identity being international actors’ property begets behavioural and motivational dispositions and provide foundational basis for interests that develop concurrently in process of explaining particular situation. After acquisition of identity, they become relatively stable and defines role-specific expectations and understandings of self; however, they might alter through interaction. Furthermore, defining identity also shapes formulation of cultures of anarchy and security environment. For example, Germany’s new identity is shaped not merely through adoption of non-military character but also through integration (new word) with West and acceptance of Western values, making it an enlightened-cum-responsible distinguished from dark Germany of past.

Analyzing 'Alliances' Through a Realist Lens

Safia Mansoor

In 1940s, Classical Realism developed as consequent of interwar period utopianism in order to counter moral decision making through prioritization power's rational pursuits. At that time, Reinhold Neibuhr alongside E.H. Carr gave various realist ideas in response to 'Utopianism', but the Realism as comprehensive theory was chiefly developed by Hans. J. Morgenthau. Later, Kenneth Waltz began to challenge Classical Realism and started to develop his own conception of Realism termed as 'Neo-realism' or Structural Realism formally enshrined in 'Theory of International Politics'.



Despite the contradiction on key issues such as ends of foreign policy of states and causes of war, both strands of Realism share the key assumptions such as prevalence of anarchy in international system; state are key actors in international system; states pursue their interests either for security purpose (defensive realism) or for power (offensive realism). Key themes within realism are balance of power, alliances, anarchy, national interests, etc. Amongst these themes, the role of alliances in realist discourse is indispensable.

Realist prism suggests the key rationale of alliances and reason of their termination. Alliances implies formal agreements among sovereign states primarily derived by external threat and with the key purpose to cooperate in military domain. While aiding the alliance parties with respect to their defense, alliances' fundamental purpose is to equip states for either collective fight in case of occurrence of military conflict or/and to deter the potential adversaries from military conflict through an integrated front. It is asserted that threat perception in the external environment of the states causes states to forge alliances and endure the current and possible alliances' costs. Here the key question is whether these military alliance agreements act as *rebus sic stantibus*— agreements significant as matters stand, or are they *pacta sunt servanda*— agreements kept in good faith despite altering circumstances? Abrogation of such alliances opportunistically occurs when member state(s) undergo changes impacting value of alliance, such as variance in domestic political institutions, international power, as well as creation of new alliances. Moreover, domineering the aforementioned changes and factors that implicate costs of terminating such commitments, for instance issue linkage and democracy, diminish the probability of alliance termination.

Neo-realist concept of alliance theory is also pertinent as it examines alliances with regards to balance of power and system structure, which differs from the statistically oriented scholars who stress correlations between aggregates such as frequency of war and alliance commitment rather than alliance making as well as maintenance. The landmark work on the subject begins from George Liska to Stephen Walt; however, considerable emphasis is laid upon on Kenneth Waltz neo-realist perspective that in turn poses that intra-alliance politics and alliance formation are influenced by structure of international system. As per this view, alliance signify states' formal association for either using or not using military force with the purpose of aggrandizement of the member states and/or their security, from adversaries. Alliances are subset of alignment which implies mutual expectation between states that in turn signifies support during wars or disputes. By acting as a mean to provide security against an enemy, alliances can be discussed at three levels: a) alliance at armament level- alliance game is burden sharing; b) action level- decision to either resist an attack or carry out an attack; and c) declaration level- alliance as a joint declaration or a mutual promise specifying the contours of action with respect to future contingencies.



System anarchy and structural polarity are the key stimuli of alliances and also highlights the substantial difference between alliance formation in multipolar world – where it is complex to ally with one side, and bipolar world – where alliance formation is relatively simpler process providing avenues for state to join either bloc.

Robert O. Keohane uses the neorealist lens to explicate the Walt's analysis of alliances in his seminal work 'Origin of Alliances'. One of the key argument Keohane focuses is that states form alliances in order to balance threats rather than against any power alone and this level of threat is in turn determined by offensive capabilities, geographical proximity, and perceived intentions. Moreover, ideology, political penetration and foreign aid aren't considered effective factors in alliance formation. As theory of neorealism is ingrained in neo-positivist epistemology which in turn necessitates treatment of propositions in a systematic manner, Walt adopted a systematic approach in analyzing alignment as well as realignment in region of Middle East during 1955-1979. However, neorealism theory with respect to alliances is primarily ahistorical and ignores international institutions as various alliances such as NATO are largely institutionalized in nature.

Deciphering Indian Cold Start Doctrine: Strategic Response of Pakistan

Safia Mansoor

The Cold Start Doctrine (CSD) was adopted by Indian military in 2004 against Pakistan in the backdrop of 2001 attacks on Indian parliament. The doctrine is predicated upon carrying a limited war against Pakistan under a nuclear threshold. It was adopted in 2004 grounded on use of conventional forces to carry 'Hit and Mobilize Strategy' to seize Pakistan's territory while concurrently precluding political and military response of Pakistan as well as international community under the nuclear umbrella.

The prominent aspects of CSD are as follows: 1) Military troops quick mobilization: CSD is based on the fast mobilization of the troops of the military in order to achieve the objectives which are limited in nature within the time period of forty eight hours with respect to the Pakistan side proactive action; 2) Shallow permeation: This doctrine emphasizes on the shallow permeation into Pakistan's territory in order to capture and obtain few limited areas inside the territory of Pakistan; 3) Minimizing the nuclear escalation chances: The CSD is based on the limited warfare so that the nuclear threshold cannot be crossed and hence the nuclear escalation chances would be minimized; 4) Objectives attainment prior to international community intervention: This doctrine envisages that the India should attain its objectives before the intervention and reaction of the international community; and 5) Limited objectives through limited warfare: CSD focuses on the limited warfare in which the military mobilization of extensive nature is not required rather the limited objectives can be obtained through the swift and abrupt utilization of troops.

Fundamental objectives of CSD are as follows: 1) Issues resolution as per wishes of India: CSD prominent objective is the giving India an edge on the issues resolution according to the wishes of India. This doctrine envisages that the territory that can be captured through the CSD even the 80km can be used as a bargaining chip in order to coerce and compel Pakistan to accept the dictation of India; 2) Punishment: Another objective of CSD of India is to chastise Pakistan in response to any terrorist attack on Indian soil; and 3) Coercive diplomacy: The use of coercive diplomacy in order to obtain short term objectives and the way to deal with the crises through short term management.





The utilization or execution of India's CSD can be described by focusing on its Modus Operandi which is basically the use of IBG-Integrated Battle Groups. The number of IBGs in order to permeate Pakistan are eight so that fifty miles or eighty kilometers territory can be captured. The synergy of artillery and infantry are the basic components of the IBG and this mainly includes T-90 tanks which are Russian based along with the another tank known as T-72 Mi, the air force of India and Indian navy possibly. The use of air force is to make its execution more credible. The positioning of the IBGs is as follow: 1) Jammu: The stationing of first IBGs can occur in the Jammu which holds indispensable significance in the relations of India-Pakistan; 2) Amritsar: The second IBGs can be stationed at the Amritsar which is the holiest city of Sikhs and its target could be Lahore which is regarded as the Pakistan's cultural capital and he Punjab's administrative capital, 3) Chandigarh: The third IBGs can be placed in the Indian city of Chandigarh in order to penetrate the Kasur as well as it adjacent areas, 4) Suratgarh: The fourth IBGs can be deployed at the Suratgarh in order to carry out the shallow penetration or attack the Bahawalpur, 5) Bikaner: The fifth IBGs might be placed in the Bikaner to attack the Rahimyar Khan and the adjacent areas of it; 6) Jaisalmer: The sixth IBGs can be stationed near the Indian city of Jaisalmer in order to penetrate and attack the Sindh; 7) Bermer: The seventh IBGs can be placed at the Barmer to attack the Mirpur Khas and its proximal areas; 8) Palanpur: The last and eight IBG can be deployed in the Palanpur to attack the Hyderabad. The purpose of these groups is that it eliminates the requirement of the military mobilization in case of Pakistan proactive action.

There are various limitations hindering the materialization of CSD. First is the Infrastructural Limitations: In order to save the mobilization time the IBS are supposed to be placed near the border area. Offensive operations based IBGs requires the staunch armored divisions and brigades and headquarters with respect to strike formation and their relocation as well as their forward mobilization from in-depth Punjab and Central India near the border areas. But there are various infrastructural limits for the execution of this doctrine. The example of these barriers include funds massive allocation as well as sufficient time for the building of new cantonments as well as other facilities for the IBG that are division sized near the border of Pakistan. Hence there is no progress yet which implies the huge difficulties for launching offensive operations. Second is the Uncertainty regarding limited warfare: Unlimited warfare is itself a caveat in the CSD of India as there is uncertainty if India's limited attack would remain limited. There are chances for provocation of Pakistan and massive retaliation which will undermine the achievement of goals for India.

The nuclear shadow fact cannot be eliminated by the innovation of any doctrine. It is difficult to determine the response of Pakistan in this situation and that Pakistan would succint to the aggression of India or it would escalate the crises. Hence the Pakistan response cannot be idol to the Indian aggression and then there is also the barrier of mutual assured destruction which limits the limited warfare notion. Third is the 'Insufficient Military weapons and equipment'. There is billion dollar spending by the India in order to overcome the deficiencies in the military structure but still there is shortage in the military equipment and the weapons. For this doctrine the quick, mobile and swift tanks are required by the India but the large dependence of India on the Russian made tanks such as T-90'S and MBT are present in the Indian defense system such as T-55 and MBT Vijayant.



Additionally there is also indigenous made tanks such as Arjun MBT but there are various technological problems hence creating a future independence of India on the Russia. Additionally the doctrine requires the robustness, speed and fast mobility but it requires the logistical capability as well as adequate mobility. Indian army is only equipped for movement about the India and the portion of Indian army for cross-border operation is even smaller than that. Additionally the helicopter airlift capability of India is also limited given heavy lift capability is in Mi-17 and Mi-26, whereas Dhruv choppers which are indigenous based and are not that efficient. In order to bridge these gaps. India requires massive time, investment and resources. Fourth is LOC makes advantageous position of Pakistan: Pakistan has very less strategic depth which means Pakistan military deployment is mostly near the Indian border. Hence the shorter LOC which are Lines of Communication would be advantage for the Pakistan. Moreover Pakistan would be able to exploit the situation in its advantage by portraying its defensive mode. This would remove the element of surprise and would be detrimental for the India.

The nuclear weapons have an important role in the South Asia stabilization and ensuring deterrence. The nuclear doctrine of Pakistan has undergone a shift from the credible minimal deterrence to Full Spectrum nuclear deterrence. In response to the CSD, new kinds of weapons were introduced by the Pakistan known as tactical nuclear weapons or the Low Yield Weapons. Pakistan has tested new weapons since 2010 which are capable to carry the nuclear as well as conventional warheads. The Hatf-IX is a prominent example which was tested by Pakistan in 2011 and then tests were conducted in series and with the advanced ranges. This TNW development is an important step towards staunch response to the CSD.



Capitalism Unveiled: Political-Cum-Economic Odyssey Across Globe

Safia Mansoor

In 1848, Karl Marx and Friedrich Engels predicted the spread of capitalism across the globe. This vision, however, was not fully realized until much later. Early capitalism, also known as the free market system or free enterprise economy, began to emerge after the breakdown of feudalism in Western Europe. It was characterized by private ownership of the means of production and market-driven income distribution. The origins of capitalism date back to the 16th century, with significant growth in the cloth industry in England during the 16th to 18th centuries. Early capitalist societies were supported by strong nation-states, which provided the legal, financial, and infrastructural foundations necessary for economic development.

In the 19th century, Western Europe became home to the first capitalist societies, marked by the systematic use of market exchanges and private property in land, capital, labor, and ideas. These societies introduced the rule of law and notions of citizenship, in contrast to feudal systems that granted legal status based on birthright. They were also grounded in a modern scientific outlook and secularism. According to Simon Kuznets, economic growth in Europe began in the 18th century, creating a significant gap between the West and the rest of the world in terms of military power, industrial strength, and material wealth. In some parts of the world, European imperial rule prevailed, while in others, empires like the Ottoman, Japan, and China attempted, with varying success, to reshape their systems—finance, markets, politics, and infrastructure—along Western lines.

John Maynard Keynes predicted that global economic integration would occur under European leadership, a sentiment echoed by Sir Norman Angell in his book *The Great Illusion*. Angell argued that war would be economically irrational in an integrated world. However, World War I proved otherwise, severely damaging the global capitalist system. The war had three major impacts: a) the weakening of European powers, leading to financial and trade imbalances that contributed to the Great Depression of the 1930s and the rise of Nazism; b) the collapse of the Russian and Ottoman Empires, leading to Bolshevism in Russia; and c) the destabilization of European imperialism. By the 1920s, Europe was struggling to rebuild its capitalist economies, while Russia and Eastern Europe faced hyperinflation and debt after military defeats. The Great Depression exposed the limitations of the pre-World War I capitalist system, revealing insufficient gold reserves to accommodate global income growth, which led to a financial crisis.

The Great Depression exposed the limitations of the pre-World War I capitalist system, revealing insufficient gold reserves to accommodate global income growth, which led to a financial crisis. World War II further disrupted the global economy. The war's aftermath caused the exhaustion of European imperial powers, which could no longer maintain their colonies. Meanwhile, Japan's defeat led to the end of colonial rule in Asia, and communist forces took control in China after years of civil war.

Following World War II, the U.S. hoped to create a new global economic and political system, grounded in institutions like the United Nations, the International Monetary Fund (IMF), and the World Bank. However, this vision was complicated by the Cold War rivalry between the U.S. and the Soviet Union, as well as the rise of communist regimes in Eastern Europe and China. However, the dissolution of wartime alliances between the Soviet Union, the UK, and the US led to the Cold War, dividing the world into two competing blocs: the capitalist (first world) and the socialist (second world) blocs. The third world, made up of newly independent states, sought an economic middle path, distancing itself from both socialism and capitalism. The newly independent nations of the Third World, which had hoped to avoid the Cold War's binary divide, often adopted non-aligned, state-led approaches to development. Many post-colonial countries viewed capitalist countries as exploiters, due to their colonial past. As a result, many Third World nations pursued state-led industrialization rather than embracing free-market capitalism.

From the 1950s to the 1980s, a semi-market approach gained traction in several developing countries, particularly in East Asia.

Taiwan, South Korea, Singapore, Hong Kong, and other Southeast Asian nations adopted market-oriented industrialization strategies. These economies included private ownership of industries, international currency convertibility, and low tariffs to encourage foreign trade. By the 1970s, these countries saw rapid growth, while capitalist economies in the U.S., Japan, and Europe recovered from the devastation of WWII.

The Soviet Union and its Eastern European satellites, however, faced economic stagnation by the 1960s. Key reasons included slow technological advancement outside of military sectors and the failure to shift toward information technology and services. Instead, they relied on outdated labor divisions and industrial structures, which hindered growth and led to financial crises. This stagnation, combined with inefficiency in the Third World, ultimately resulted in debt crises and the collapse of many state-led economies. By the 1980s, many countries began embracing market reforms after the failure of alternative economic models. Latin American countries, especially Chile, began liberalizing their economies in the 1970s, with other countries following in the 1980s. In Eastern Europe, market reforms were initially stifled but gained momentum in the late 1980s. In 1991, the Soviet Union collapsed, and its successor states struggled to adopt market reforms. In China, dramatic reforms began in 1976 under Deng Xiaoping, who dismantled collective agriculture and introduced market-based changes. These reforms, which included granting peasants the right to establish non-agricultural businesses and encouraging foreign investment, led to China's rapid economic growth.

Mikhail Gorbachev attempted to implement similar reforms in the Soviet Union, but the heavily state-controlled economy and the lack of a strong private sector led to instability, culminating in the collapse of the USSR. By the 1990s, many countries had adopted market economies, including the former Eastern Bloc states and even India, which began gradual market reforms after a financial crisis. Alongside these political and economic shifts, technological advancements played a crucial role in shaping global capitalism. Innovations in computing, communication, and transport enhanced the effectiveness of market reforms. The IT revolution, in particular, allowed for the globalization of production, as multinational corporations established production sites across multiple countries. This interconnectedness transformed global trade and production, enabling firms to optimize their operations through the integration of global supply chains.

The historical evolution of global capitalism has been shaped by political, economic, and technological forces. From its early days in Western Europe, capitalism spread through colonial expansion, state-led industrialization, and, eventually, through the adoption of market reforms in countries around the world. Despite setbacks such as the Great Depression and the Cold War, capitalism has continued to evolve, driven by institutional reforms, economic crises, and technological advancements. The rise of multinational corporations and the globalized production system has further solidified capitalism's dominance in the modern world. The story of global capitalism is one of persistence, adaptation, and transformation, with profound impacts on the political and economic landscape of the world.



Miscellaneous

S No	Article Title	Author	Source	Date	Page No
1	Pakistan Navy Wwar College – The Learning Seat of Pakistan Navy	Ahmad Ibrahim	Navy News	15 Apr 2024	217
2	Social Environment Enables Extremism	Cdr (R) M Azam Khan	Dawn	04 Aug 2024	219
3	Chat-GPT and Education Sector: Benefits and Challenges	Lt Cdr Dr Sufian Ullah	Pearl Magazine	25 Aug 2024	220
4	Science of Safety: Using Predictive Analysis to Enhance Safety at Workplace	Ahmad Ibrahim	Modern Diplomacy	23 Sep 2024	223
5	Navigating the Future: Safety First	Ahmad Ibrahim	Modern Diplomacy	05 Oct 2024	225
6	Burgeoning Youth in Pakistan: Challenges and Way Forward	Safia Mansoor	Paradigm Shift	06 Dec 2024	227
7	Contours of International Human Rights Law	Safia Mansoor	Minute Mirror	12 Dec 2024	232
8	MARSEW 2024 - Navigating Economic Prosperity	Dr Marriyam Siddique	Pakistan Today	12 Dec 2024	233
9	AMAN 2025: Emblem of Maritime Security	Safia Mansoor	Daily Times	20 Dec 2024	234

Pakistan Navy War College - The Learning Seat Of Pakistan Navy

Ahmad Ibrahim

“Untutored courage is useless in the face of educated bullets,” this is how General George S. Patton encouraged the embedment of education with the military affairs. The nature of relationship between education and military efficiency is often debated by academic and military circles. Having superior academic capacity does not necessarily mean military victory. But education in military provides the intellectual architecture necessary for advancing the professional and war fighting capacity of any armed force. It cultivates the culture of critical thinking, and acts as force multiplier to augment net-capabilities of armed forces. Moreover, it also contributes in establishment of stable civil-military relationship. The emerging technological advancements and new warfare concepts demand more intellectual capital than the traditional physical attributes. Therefore, professional and military education institutes now play even more important role within any modern armed force.

Pakistan is overwhelming dependent on sea-commerce for sustenance. Due to its proximity with Strait of Hormuz and ability to offer warm water connectivity to Central Asian Republics and China, it holds pivotal placement in regional security order. Pakistan Navy, being custodian of national maritime boundaries, has to keep familiarization with regional developments, thus demanding increased emphasis towards academic learning. Moreover, the intensifying power politics in Indo-Pacific also necessities enhanced focus towards naval domain for intellectual understanding of emerging developments in the global order. In this regard, military educational institutes hold paramount importance as far as projection of nascent knowledge within military ranks is concerned.

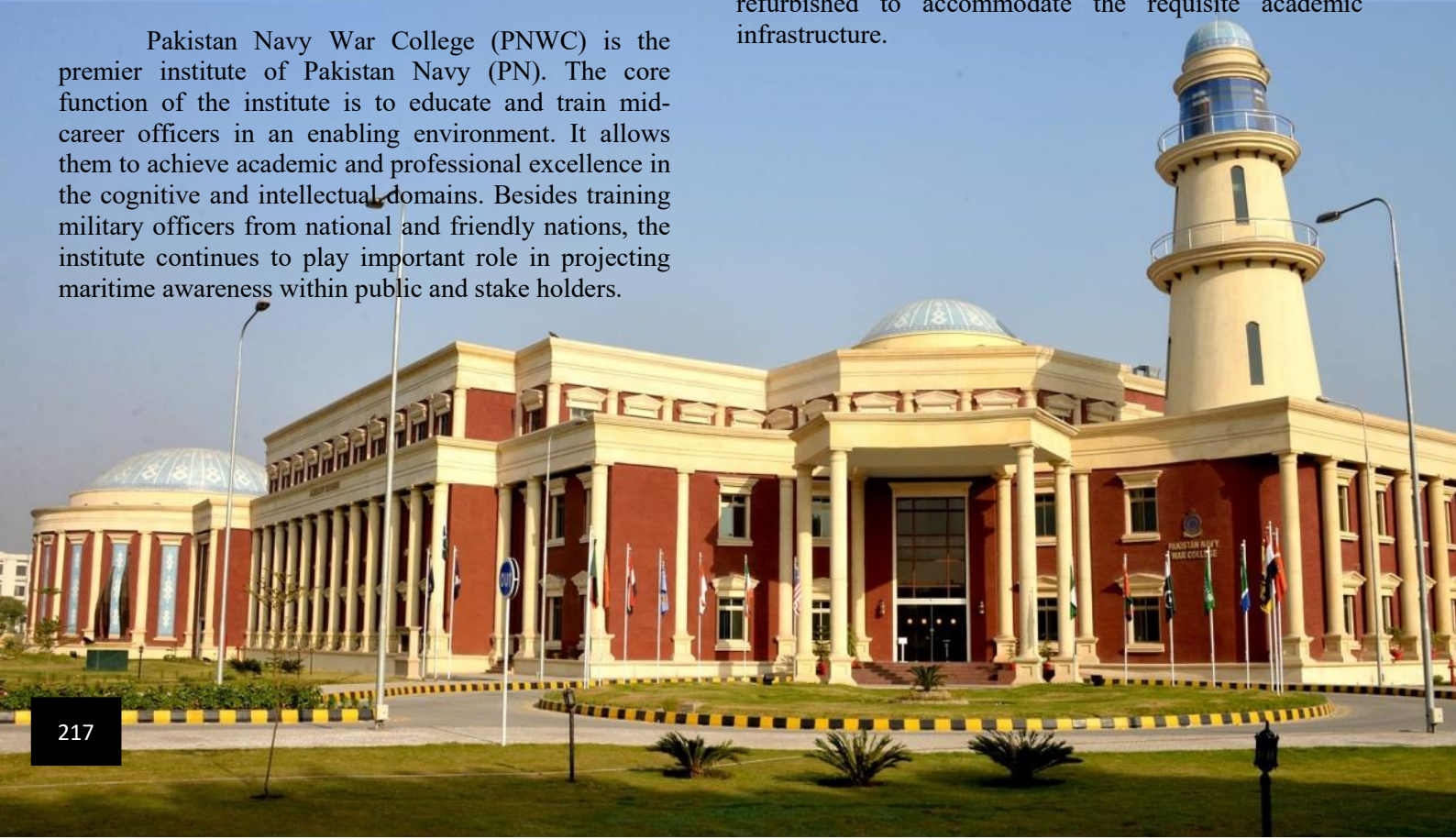
Pakistan Navy War College (PNWC) is the premier institute of Pakistan Navy (PN). The core function of the institute is to educate and train mid-career officers in an enabling environment. It allows them to achieve academic and professional excellence in the cognitive and intellectual domains. Besides training military officers from national and friendly nations, the institute continues to play important role in projecting maritime awareness within public and stake holders.

Prior to inception of College, PN had to chiefly rely on foreign staff courses for training its officers. This approach, however, was inadequate to accomplish service requirements. As a result, a staff school was set up at PNS Himalaya, Karachi, in 1968. The institutional evolution from a modest staff school into an international standard learning platform can be split into three phases.

The first phase began in 1971 after the upgradation of staff school to the level of staff college at PNS Karsaz, Karachi. The premier Pakistan Navy Staff Course (PNSC) commenced in July 1971. The qualifying officers were awarded degree by Karachi University. By 1995, the requirements of staff course had increased substantially. Consequently, it was also felt that Navy must advance its outreach and show presence in other regions of Pakistan. Eventually, the decision was made to shift the College from Karachi to Lahore.

The second phase began with the 25th PNSC when the institute was established at Bromhead Road (Shahra-e-Quaid-i-Azam), Lahore. The decision to move the institute to Lahore was based upon two rationales. First, to spread maritime awareness in the province of Punjab by establishing a naval institute in the provincial capital. And second, to diversify the presence of navy in the country for better accessibility to human capital. The affiliation of PNWC was also shifted to the University of Punjab, Lahore.

In June 2012, following safety concerns and modernization requirements, another relocation of PNWC took place marking the initiation of third phase. The institute moved from a make-shift arrangement at Bromhead Road, to the modern-day Naval Complex at Walton, Lahore. The new building was upgraded and refurbished to accommodate the requisite academic infrastructure.



The College continued to work in same premises until the graduation of 43rd PNSC in June 2014. During this period, the institute's affiliation also moved from University of Punjab to Bahria University, Islamabad. Last year, the college commemorated the golden jubilee of its inauguration. Till to date, 51 staff courses have graduated from PNWC. Currently, 52nd PNSC with 96 officers enrolled is underway at PNWC. Course members from friendly nations also participate in PNSC. The mutual academic learning with overseas officers' yields enhanced defense familiarity with friendly armed forces enabling lasting comradeship between different militaries. So far, 2434 officers, including allied officers from friendly countries, have graduated from PNSC. Since June 2007, the degree awarding body of PNWC has been National Defence University (NDU), Islamabad.

The Pakistan Navy Staff Course is structured on international semester system comprising of three course semester split into twenty modules. The modules relate to leadership & decision making, research methodology, contemporary warfare, maritime operations, sub-conventional warfare, military history, military technology, and combined operations. The organizational philosophy of "Self-Directed Learning" (SDL) envisions self-learning and mutual deliberation to resolve research-intensive problems under the supervision of accomplished Directing Staff (DS). War-gaming and simulations are also part of course work to develop more realistic familiarity with the emerging warfare concepts and strategies. Numerous inland as well as foreign study tours are also organized to familiarize students with national centers and maritime academic complexes abroad.



The net product of PNSC is a refined officer community ingrained with all necessary attributes of profession and academia.

This is the reason that with each staff course, PNWC adds new scholarly techniques, new subjects, and innovative learning practices to meet the contemporary and future challenges in the maritime domain. The purpose of PNSC remains to enhance the officers' learning process and intellectual capacity with respect to the modern standards. This consistent progress suggests that the institute will continue to act as premier learning platform for navy well into the future.

Social Environment Enables

Extremism

Cdr (R) M Azam Khan

On our part, we have had a long history of love-hate relationship with extremism. During the Cold War, the country saw a mushroom growth of seminaries. From just a few hundred in 1979, the current staggering number of seminaries stands at over 35,000. More than a few million children are enrolled therein. We saw how ‘Khuda hafiz’ morphed into ‘Allah hafiz’, didn’t we?

Besides, Pakistan once had the world’s highest number of private armies of various hues as well as politico-religious-sectarian strands. They badly affected governance, and eventually challenged the writ of the state itself. It was not until the noose of the Financial Action Task Force (FATF) surprisingly tightened around our necks that we found ourselves to be running diametrically opposite to the rest of the world. Such policies and their interplay with vested interests, as well as political incompetence gradually paralysed the state.

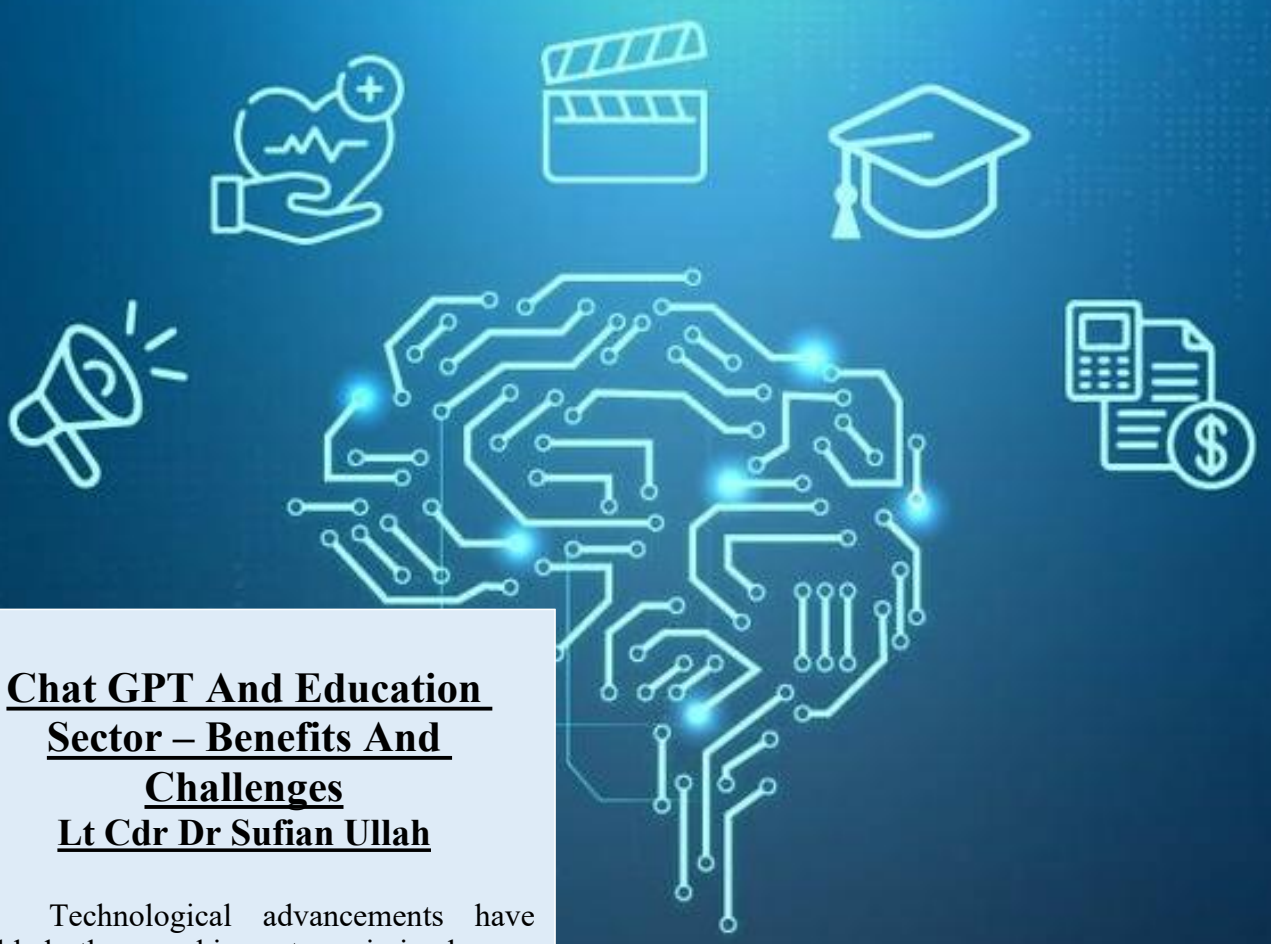
On a more sombre note, I can share my family experience. My elder brother, a retired army officer, was taken prisoner after the fall of Dhaka in 1971. He was just commissioned at the time, and at an impressionable age of 21, he suffered the trauma of a bloody civil war. His stay at the prisoner of war (POW) camp did the rest. It left mental scars on him. But he still muddled through.

Despite having studied in Christian missionary schools and having had a liberal upbringing, a visible change started to creep in. This was somewhere in the early 1980s. By then he was married and had two sons. The environment of preaching that started fanning out at the time consumed many a soul. Unfortunately, he was one of them.

Becoming indifferent to his domestic as well as matrimonial responsibilities, he turned to be overly rigid in his lifestyle. At home, he broke the guitar of his son, disfigured and scrapped photographs displayed on the walls, and punitively disallowed anyone to watch television. Besides, he disappeared for months on preaching tours.

It was a disturbing sight for the family except for my elder sisters who encouraged his extremist tendencies. His marriage eventually fell apart. Now burdened with their own childhood inner scars, the two sons abandoned home. Mercifully, they still managed to stand on their feet. Some four decades later, my brother is a shadow of his bright past; a veritable preacher whose own family is all but wrecked. I firmly believe that it was the country’s environment first and foremost that enabled and facilitated an educated, rational young man to become what he has.





Chat GPT And Education

Sector – Benefits And

Challenges

Lt Cdr Dr Sufian Ullah

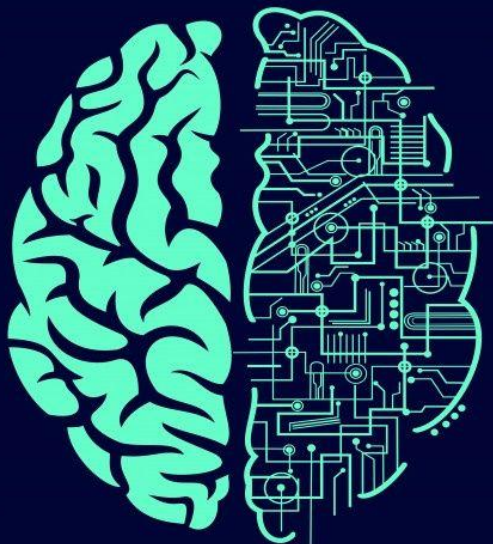
Technological advancements have enabled the machines to mimic human intelligence. The education sector is also witnessing a new era where artificial intelligence (AI) is reshaping the way we teach and learn. Chat Generative Pre-Trained Transformer (ChatGPT) is one of these powerful applications used to generate new content based on existing data. Its distinct ability to accurately understand the context of human language and generate an automatic human like response allows the user to interact with the computer in a conversational manner. ChatGPT distinguishes itself from other online tools as it offers personalized learning and self-directing experiences.

Although ChatGPT caters for menial tasks and allows students to immerse into more creative assignment that require critical thinking, yet easy access to this technology enables students to generate content with minimum involvement of their own mental faculties. It raises concerns about adverse implications of this technology particularly in education sector. This article highlights the importance to understand the risks as well as benefits associated with this application to promote responsible use of such tools.

Negative Aspects

For generations, written assignments like essay writing have been used to foster creative mindset among students. This tradition risks losing its value and utility with the invention of content generating technologies. Tools like ChatGPT are found extremely useful in doing multidisciplinary tasks that involve correlating the idea and synthesize information and knowledge from different domains. In most cases, ChatGPT produces better content than an average human being. Through this feature of offering immediate assistance in completing required academic assignments, ChatGPT offers new ways of cheating. This raises question about ethical aspects of human conscious as the examiner finds it difficult to distinguish between the content generated by AI and those produced by students' own thinking. Since this software does not solely rely on academic sources, it further complicates the problem of credibility of the content.

Human interaction has always remained a key ingredient to improve cognitive abilities of students in any traditional learning environment. This process encourages them to challenge pre-conceived notions and consider diverse viewpoints. This interaction between a teacher and student is one of the casualties of adopting AI-based methods of learning. It proves counterproductive particularly for the students who rely more on personal connection with the instructor.



ChatGPT can also serve as a virtual tutor to guide students by providing personalized teaching and learning paths according to student's own requirements. Given a user's current level of knowledge, it can also assist in providing the reading material to cover a certain topic. This software is capable to offer useful suggestions and recommendations to the teachers as they work on their course outlines and prepare lesson plans and lectures. Recent research indicates that the university level faculty members seek help from ChatGPT in this regard. ChatGPT can also foster creativity among the students. Since it considers multiple perspectives, it encourages its users to be acquaint with a variety of interpretations and perspectives on a given issue. ful in clarifying several points through brainstorming sessions. Hence, it could help setup the early stages of any creative process, enabling the user to expand the idea and develop further content on it.

It also offers students greater autonomy in learning according to their differing needs and prove useful particularly for those students who face difficulty in coping with teacher's teaching methodologies. ChatGPT reduces students' dependency on the teacher by providing them with adequate tools to acquire accurate knowledge, presented in a synthesized manner. ChatGPT can be helpful in saving time from reading lengthy documents as it is able to extract and present relevant provisions as required. ChatGPT can swiftly provide relevant and precise information and insights on a wide array of issues. This helps in conducting extensive research by saving valuable time and efforts. Additionally, round the clock availability of this software helps students to channelize their energies and efforts in a more focused way. The geographic and time zone related limitations now seem a problem from the past.

This software can also be used to overcome language barriers and enhance communication skills. Students with non-English social backgrounds generally struggle with English as a medium of education in countries like Pakistan. Students with good conceptual understanding can now effectively project their ideas and gradually enhance their own writing skills through responsible use of ChatGPT. This can be done by engaging in meaningful conversations with ChatGPT in a dialogue format, seeking suggestions regarding correct use of grammar.

Conclusion and Recommendations

Technological advancements always bring certain opportunities and challenges. Instead of defying rapid advancements, it is necessary to embrace technology for the benefit of mankind. However, this is possible only when adequate regulatory mechanisms are introduced to ensure responsible use of the technology. Introduction of AI-based generative tools has surprised most of the academic circles that were either ignorant or seemed ill-prepared to grasp with ongoing technological advancements.

It is recommended that these tools should be embraced by imparting adequate training of teachers and students to responsibly take benefits of these tools. By educating them about potential pitfalls and limitations of ChatGPT, the issues related to possible risks regarding implications for students' critical thinking processes can be addressed. Through proper integration of these software into educational practices, potential ethical challenges and issues related to plagiarism may be addressed. There is also a need to improve similarity detectors to identify suspected content. Hence, it is imperative to strike a balance between these software and human generated efforts and work to devise a system for holistic learning experiences. Therefore, instead of resisting this technological development, embracing ChatGPT can help the educators to reevaluate teaching methods, techniques and ways to assess the assignments of students.

Science Of Safety: Using Predictive Analysis To Enhance Safety At Workplace

Ahmad Ibrahim

Safety is simply the state of being free from danger. Over the centuries, safety has evolved from rudimentary practices to highly sophisticated, data-driven field. This evolution has been marked by a periodic shift from reactive safety measures to proactive ones, largely driven by the integration of data and technology in safety practices. Safety Science is a multidisciplinary field that studies and applies scientific research, methodologies, and technologies to understand, prevent, and mitigate accidents, hazards, and risks to human safety. It involves the systematic application of scientific principles, data analysis, risk assessment, and safety engineering methods to enhance safety across all spectrums of human life including living and work place.

In ancient times, safety was primarily an instinctive response to immediate threats, such as predators and natural disasters. As human civilization advanced, safety measures expanded to protect humans against daily-life accidents and the hazards of early industrialization era workplace. Workplace safety ensures the well-being of workers in the workplace, focusing on accident prevention, hazard identification, and safety protocols. In the past 150 years, human understanding of workplace accidents has evolved significantly. Safety measures first originated in the U.K. in the mid-19th century and focused on safeguarding machinery and elevated workplaces. In the early 20th century, the perception shifted during the Pittsburgh survey in the U.S., attributing accidents to the risky interaction between unskilled workers and hazardous machines. In Post-World Wars period, it was learnt that work place stress, and risky man-machine interactions are main accident contributors. In the 1960s-1970s, human induced error gained prominence, revealing that ensuring safety in complex technologies required more than following rules. The accident-incubation theory emerged, laying the groundwork for the socio-technical approach to safety. These efforts, however, were often reactive, addressing safety issues only after accidents occurred.

The 1980s-1990s witnessed the integration of technological and organizational explanations for disasters and occupational accidents. The normal accidents' theory highlighted the inherent complexity of technology, while the drift to danger model attributed disasters to external forces like aggressive markets. In contemporary era, safety science now spans a wide range of applications and evidence-based approaches to safety management.

In recent years, data collection and technology-driven solutions have become central to safety management at workplace. In past, safety measures were reactive. However, the integration of data and technology has brought a paradigm shift in the form of predictive safety. Technologies like Real-Time Monitoring (RTM), Internet of Things (IoT), and Artificial Intelligence (AI) can be employed to undertake predictive analysis for highlighting failure points and undermining factors that can cause accidents at workplace. Real-Time Monitoring (RTM) refers to the continuous observation of processes, events, or data as they occur. Artificial Intelligence (AI) is the ability of computer systems to perform tasks that typically require human intelligence. The Internet of Things (IoT) refers to the network of interconnected devices that can communicate and share data with each other through the internet.





These capabilities, when work in conjunction, enable the conduct of predictive analysis. Predictive analysis is a method that involves using historical data, statistical algorithms, and machine learning techniques to identify the likelihood of future outcomes based on past patterns.

In the context of work place safety, real-time monitoring involves the immediate tracking and prompt response to potential risks; IoT involves the integration of sensors and smart devices to collect and exchange data in real-time; and finally AI can be applied to analyze large datasets, identify patterns, and correlation. When combined, it enables predictive analysis to forecast potential risks and formulate solutions to promptly address safety related anomalies. Predictive analysis in safety offers several key benefits, with accident prevention being the foremost advantage. It also helps cut costs by preventing equipment failures, while extending machinery lifespan through timely maintenance. Additionally, predictive models improve operational efficiency by streamlining safety protocols and optimizing resource allocation. Compliance with safety regulations is enhanced, as predictive analysis helps organizations proactively identify and rectify potential regulatory gaps. Finally, it promotes a data-driven approach to safety, fostering continuous improvement and ensuring organizations stay ahead of emerging risks.

The utilization of modern technology for predictive safety is a transformative endeavor, yet it is accompanied by notable challenges. First, collecting and storing vast amounts of data raise concerns about privacy and ethical values. Privacy and ethical concerns will be more eminent in industries dealing with sensitive information, necessitating a careful balance between data collection and privacy regulations. Second, data used for safety analysis may carry biases, which can lead to unfair or inaccurate safety assessments. Algorithms can inadvertently perpetuate these biases, potentially affecting decision-making. Third, implementing comprehensive safety systems that incorporate various data sources and technologies can be complex and expensive. The high cost of implementing advanced technologies poses a significant economic barrier, especially for smaller organizations with limited financial resources.

AI and machine learning will continue to advance, enabling more accurate predictive models and real-time safety interventions. This includes AI-driven robotics, autonomous systems, and natural language processing for safety analysis. Similarly, edge computing, which processes data closer to the source (e.g., IoT sensors), will gain prominence. This allows for faster data analysis, reducing latency in safety-critical applications. Moreover, Blockchain technology may be used to enhance data integrity and security in safety-critical applications. It can provide transparent, tamper-resistant records of safety-related data. Furthermore, Human-Centered Designing based on human factors and user experience will be a growing trend. User-friendly interfaces and clear communication will enhance safety technology adoption.

The future of science of safety at work place will likely be characterized by a greater reliance on predictive analytics, AI-driven decision support systems, and the seamless integration of safety technologies. Predictive analytics will enable proactive risk management, preventing accidents before they occur. Additionally, safety will become increasingly personalized, adapting to individual behaviors and conditions, particularly at workplace. Moreover, the science of safety will extend its scope to address emerging risks associated with technologies like autonomous vehicles, drones, and the Internet of Things. Ethical considerations and regulations will continue to evolve to ensure the responsible use of data and technology in safety applications. These advancements will lead to more effective accident prevention, creating safer environments across various domains of working environment.



Navigating the Fututre: Safety First

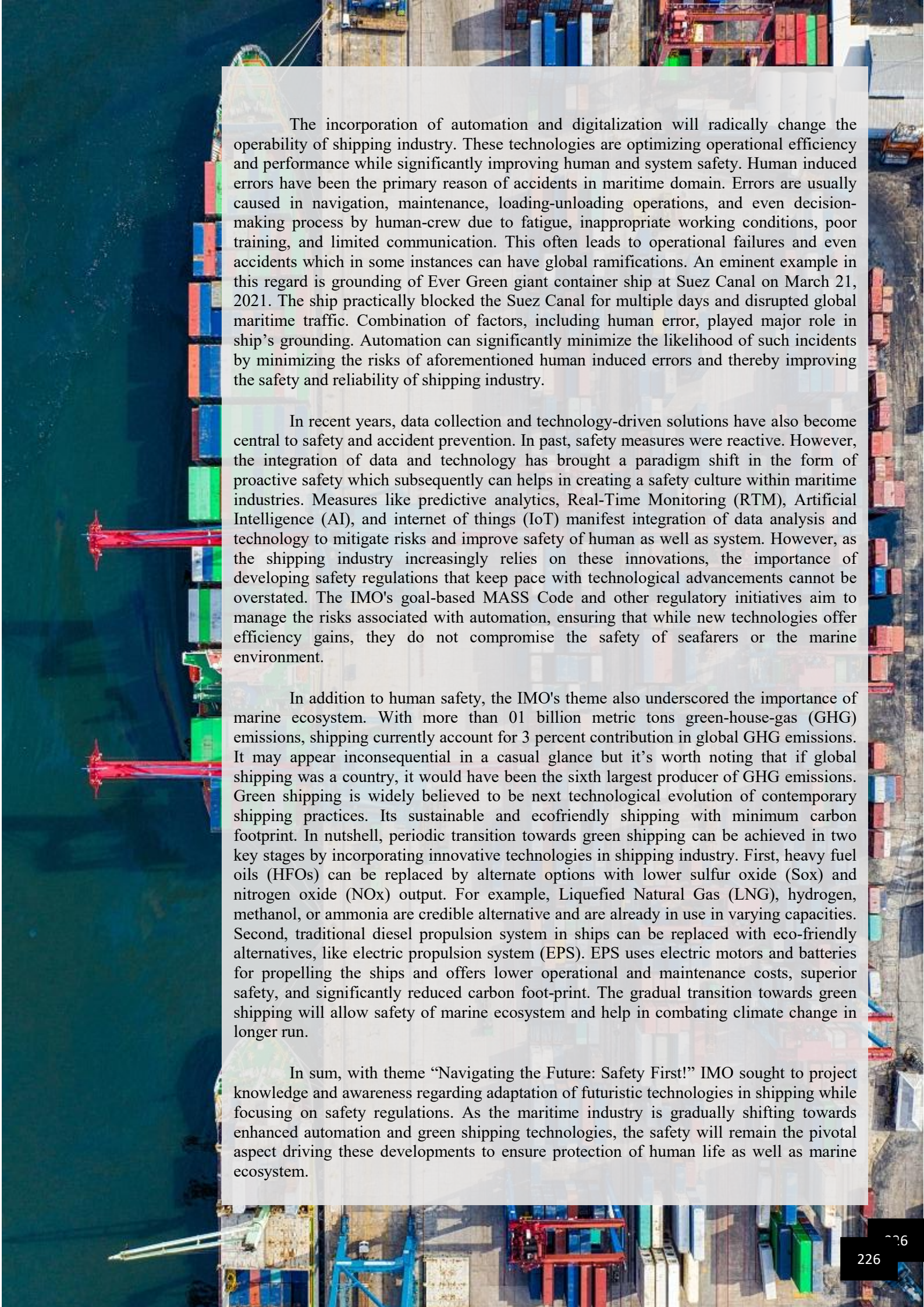
Ahmad Ibrahim

Shipping industry is physical manifestation of contemporary globalized world and has been backbone of global economy for past several centuries. According to UNCTAD, international shipping currently accounts for over 80 percent of net global trade by volume. Primary reasons for this overwhelming dependency on shipping industry include: cost-efficiency, global outreach, high load carrying capacity, and reliable safety standards. Maritime safety thus holds pivotal position as far as efficient conduct of maritime trade is concerned.

International Maritime Organization (IMO) commemorated the World Maritime Day on September 26, 2024 with theme “Navigating the Future: Safety First.” This theme highlighted the importance of technological innovation in shipping practices to ensure safer and reliable shipping in future. In addition, it also dealt with environmental sustainability by minimizing the carbon footprint of shipping industry. The theme aligned closely with several United Nations Sustainable Development Goals (SDGs) including SDG 7 (affordable and clean energy), SDG 8 (decent work and economic growth), SDG 9 (industry innovation and infrastructure), SDG 13 (climate action), and SDG 14 (life below water).

Since its establishment in 1948, IMO has focused on periodic improvement of safety standards in shipping industry by incorporating newer technologies and improving regulatory frameworks. One of the most significant milestones in this regard was the formulation of the International Convention for the Safety of Life at Sea (SOLAS), which has directed maritime safety for nearly half a century. The IMO's proactive approach to regulatory mechanism development ensures that the maritime industry evolves to overcome shortcomings and prepare for future challenges without compromising on the efficiency.

A key example of IMO's futuristic approach is formulation of a goal-based code for Maritime Autonomous Surface Ships (MASS). Semi-autonomous surface ships are in developmental phase. Few examples are already in trial phase. For example, Japan's company NYK conducted sea trials of maritime autonomous surface ship, called *Iris Leader*, in September 2019. Despite on-going debates regarding practicality of unmanned surface vessels, these ships are already being regarded as next big thing in shipping industry. Although risks and operational challenges are there but high-degree automation promises several opportunities as far as safety, security, and efficiency of operation in increasingly complex global shipping environment is concerned.



The incorporation of automation and digitalization will radically change the operability of shipping industry. These technologies are optimizing operational efficiency and performance while significantly improving human and system safety. Human induced errors have been the primary reason of accidents in maritime domain. Errors are usually caused in navigation, maintenance, loading-unloading operations, and even decision-making process by human-crew due to fatigue, inappropriate working conditions, poor training, and limited communication. This often leads to operational failures and even accidents which in some instances can have global ramifications. An eminent example in this regard is grounding of Ever Green giant container ship at Suez Canal on March 21, 2021. The ship practically blocked the Suez Canal for multiple days and disrupted global maritime traffic. Combination of factors, including human error, played major role in ship's grounding. Automation can significantly minimize the likelihood of such incidents by minimizing the risks of aforementioned human induced errors and thereby improving the safety and reliability of shipping industry.

In recent years, data collection and technology-driven solutions have also become central to safety and accident prevention. In past, safety measures were reactive. However, the integration of data and technology has brought a paradigm shift in the form of proactive safety which subsequently can helps in creating a safety culture within maritime industries. Measures like predictive analytics, Real-Time Monitoring (RTM), Artificial Intelligence (AI), and internet of things (IoT) manifest integration of data analysis and technology to mitigate risks and improve safety of human as well as system. However, as the shipping industry increasingly relies on these innovations, the importance of developing safety regulations that keep pace with technological advancements cannot be overstated. The IMO's goal-based MASS Code and other regulatory initiatives aim to manage the risks associated with automation, ensuring that while new technologies offer efficiency gains, they do not compromise the safety of seafarers or the marine environment.

In addition to human safety, the IMO's theme also underscored the importance of marine ecosystem. With more than 01 billion metric tons green-house-gas (GHG) emissions, shipping currently account for 3 percent contribution in global GHG emissions. It may appear inconsequential in a casual glance but it's worth noting that if global shipping was a country, it would have been the sixth largest producer of GHG emissions. Green shipping is widely believed to be next technological evolution of contemporary shipping practices. Its sustainable and ecofriendly shipping with minimum carbon footprint. In nutshell, periodic transition towards green shipping can be achieved in two key stages by incorporating innovative technologies in shipping industry. First, heavy fuel oils (HFOs) can be replaced by alternate options with lower sulfur oxide (Sox) and nitrogen oxide (NOx) output. For example, Liquefied Natural Gas (LNG), hydrogen, methanol, or ammonia are credible alternative and are already in use in varying capacities. Second, traditional diesel propulsion system in ships can be replaced with eco-friendly alternatives, like electric propulsion system (EPS). EPS uses electric motors and batteries for propelling the ships and offers lower operational and maintenance costs, superior safety, and significantly reduced carbon foot-print. The gradual transition towards green shipping will allow safety of marine ecosystem and help in combating climate change in longer run.

In sum, with theme "Navigating the Future: Safety First!" IMO sought to project knowledge and awareness regarding adaptation of futuristic technologies in shipping while focusing on safety regulations. As the maritime industry is gradually shifting towards enhanced automation and green shipping technologies, the safety will remain the pivotal aspect driving these developments to ensure protection of human life as well as marine ecosystem.

Burgeoning Youth Population in Pakistan: Challenges and Way Forward

Safia Mansoor

Youth bulge can either act as a time bomb or a demographic dividend, contingent on the engagement of youth in productive activities. Pakistan is home to an overwhelmingly young population with 64% of the population below 30 years. As per the estimates, the burgeoning youth population will grow even more by 2035. Presently, the youth of Pakistan is beset by multifaceted challenges; however, pragmatic and sustainable youth policies can transform them into a driving force that in turn could beget prosperity in Pakistan. Conversely, the capitalization of Pakistan's demographic remains unaccomplished, necessitating the development and execution of a holistic youth policy that could effectively address all the issues of the country's young population.

Against this backdrop, this essay discusses various challenges facing Pakistan's youth such as unemployment; outdated education, illiteracy, inadequate political and policy representation, and issues in the health sector. Most importantly, this research offers policy recommendations for overcoming the aforementioned challenges to turn the ever-enhancing youth bulge into a demographic dividend.

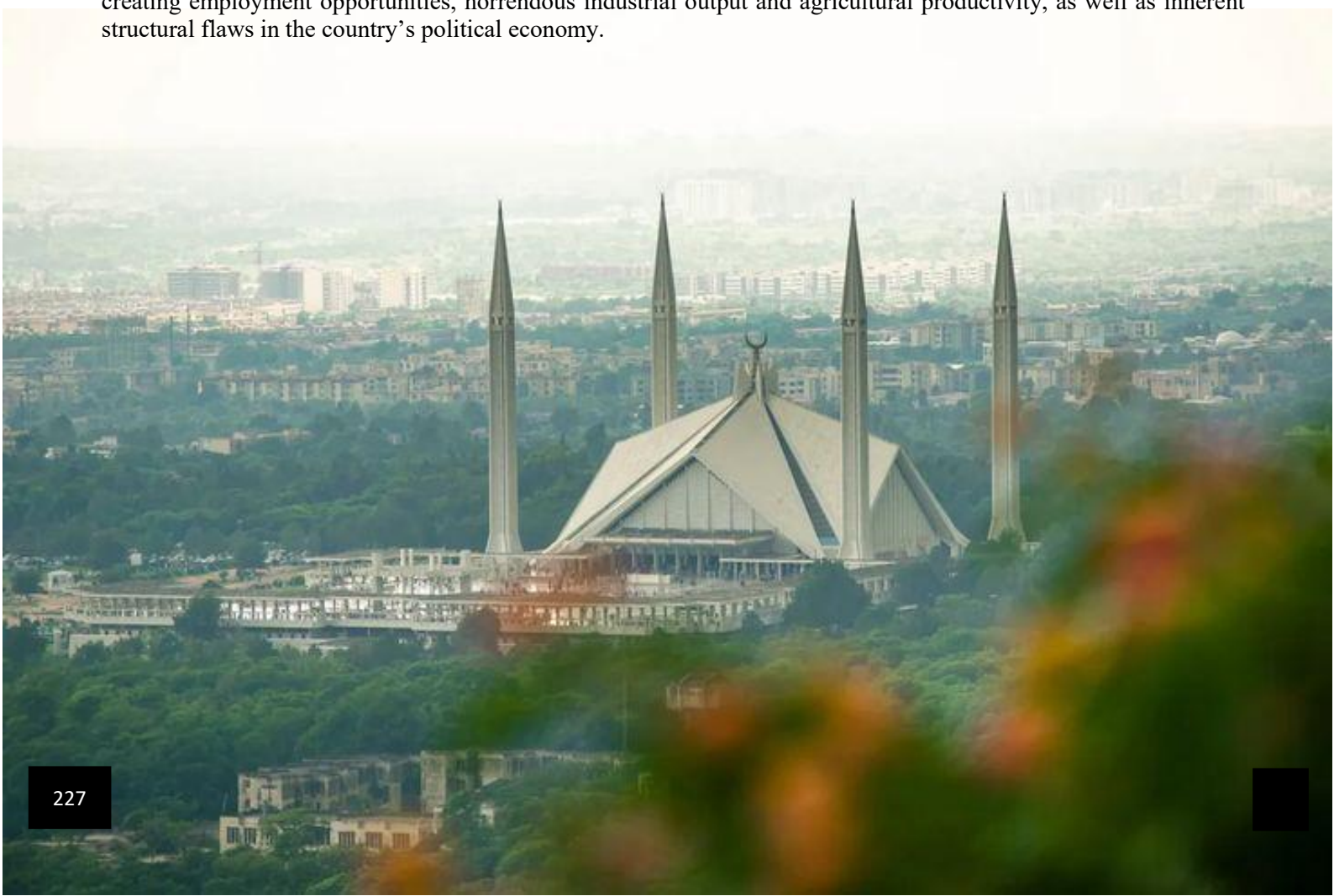
Challenges Facing the Youth of Pakistan

Youth Unemployment

Pakistan's youth population is categorized into three groups:

- i. 15-19 years
- ii. 20-24 years
- iii. 25-29 years

In 2021, the Pakistan Board of Statistics carried out the most recent Labour Force Survey according to which female youth make up 13.2% and male youth comprise 13.1% of Pakistan's population. As far as the labor force participation rate is concerned, the share of female youth is abysmally low which stands at 23.18 % while the share of male youth in this regard is 81.01 %. Contrarily, the unemployment rate is almost 16% as per the report released by PIDE (Pakistan Institute of Development Economics) in 2021. This is due to the predicament of Pakistan's economy characterized by fiscal imbalance, current account deficit, lack of institutional mechanism for creating employment opportunities, horrendous industrial output and agricultural productivity, as well as inherent structural flaws in the country's political economy.



According to the report published by PIDE regarding Pakistan's employment situation in February 2022, 31% of youth in the country are unemployed. Males constitute 16% of the total unemployed youngsters while females share in this 51%. Appallingly, most of these young people are educated having professional degrees which signifies the colossal graduate unemployment rate. The same report documents that a huge segment of working-age people doesn't have any share in the labor force as some of them have different livelihood sources while others have become discouraged workers.

Most importantly, there is no entrepreneurship culture in Pakistan. Start-ups have the potential to generate 15% of job opportunities for youth. 90% of such business ventures fail in Pakistan due to a lack of holistic vision of entrepreneurs, inadequate venture capital funding, a dearth of product market fit, intricate rules and regulations, and a lack of market-based research.

Outdated Education System and Illiteracy

The education system of Pakistan is afflicted with problems of overage enrolment, lack of technical training, and disparity between curriculum and industry requirements. Most importantly, illiteracy and outdated education systems are standalone problems that also aggravate unemployment. As per the PSLM-Pakistan Social and Living Standards Measurement Survey (2019-2020), the youth literacy rate (age 15-24) of Pakistan is 72%. Rural areas have a comparatively less literacy rate of 65%, whereas, urban areas stand at 84%. Provincially, Punjab has the highest literacy rate among youth with 78% while Balochistan has the lowest at 57 %.

There is a major gender gap in the youth literacy rate with 65% female literacy and 80% male literacy rate, as per World Bank data. The fundamental drawback in the quality and quantity of the education system implies the plight of human capital in the country. The poor education system of Pakistan doesn't beget skilled and quality human resources and therefore the young population remains unable to meet the requirements of a competitive job market. The country's education system relies on a traditional means of imparting education with an emphasis on cramming and neglects the learning outcomes.

The issue with Pakistan's education system is two-pronged:

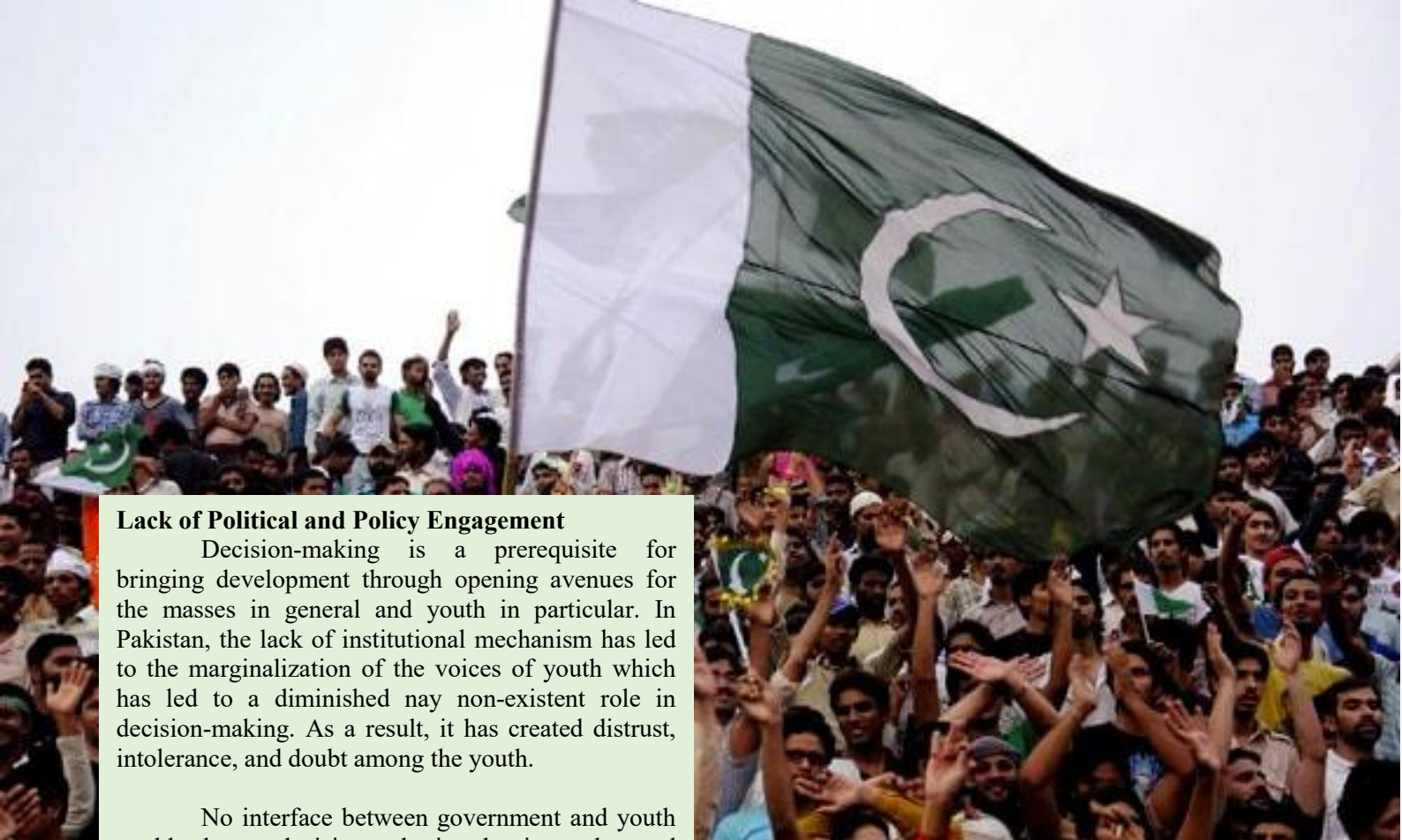
Low literacy rate and the gender gap in education

Inefficiency of the education sector as most graduates participating in the labor force have a general education inconsistent with national and international job market trends.

The Vocational Education System

The lack of vocational education is the most pressing issue concerning the education system which in turn leads to unemployment. The striking contrast between the vocational education system in developed countries and Pakistan highlights the underlying cause of education-cum-employment crisis facing Pakistan. An example can be cited in Germany where students after secondary school graduation join vocational training programs. Its vocational education system trains almost 51% of the workforce, enabling them to be at par with job market demands. In contrast, the 3800 TEVTA (Technical Education and Vocational Training Authority Institutes) in Pakistan with a total of 200,000 enrolled Pakistani students constitute a minuscule part of the total of 48 million enrolments in the country. It means that from 1000 enrolled students, only 4 are formally part of vocational institutions.

Almost 31% of the youth of Pakistan are NEET (Not in Education, Employment, and Training). Furthermore, the country's education system has remained unable to equip youth with technical or soft skills which are a dire need of time. Additionally, the TEVTA institutions substantially lag in providing quality linkages as well as content for the labor market. Courses offered by TEVTA institutions also don't equip youth with essential soft skills such as interpersonal, communication, adaptation, cognitive and analytical problem-solving, and project management. As a result, most of the time, TEVTA graduates do not undergo a smooth transition to entrepreneurship and employment.



Lack of Political and Policy Engagement

Decision-making is a prerequisite for bringing development through opening avenues for the masses in general and youth in particular. In Pakistan, the lack of institutional mechanism has led to the marginalization of the voices of youth which has led to a diminished nay non-existent role in decision-making. As a result, it has created distrust, intolerance, and doubt among the youth.

No interface between government and youth could play a decisive role in charting rules and regulations that can maintain an equilibrium between the responsibilities and rights of the young population in Pakistan. The lack of meaningful engagement avenues in the country has led to political and social marginalization of the young population, making their engagement and role in policymaking extremely low.

Physical and Mental Health Issues

The mental health of youth in Pakistan has never been a priority in policy, research, and health delivery. Economic and social inequalities, academic stress, and family issues have been the key causes of psychological problems in Pakistani teenagers. Most importantly, poverty has inculcated a sense of material deprivation which is further exacerbated by social media access which has led the youngsters to draw comparisons with others. Consequently, it has heightened despair, resentment, sense of deprivation, therefore causing mental health issues.

To curb unpleasant emotions and thoughts, these kids often resort to the intake of drugs. Daily, drug addiction takes 700 lives in Pakistan; moreover, another consequence of this addiction is suicide which is mostly committed by the disenfranchised youth. Stress and mental health issues often cause dysfunctional interpersonal relations due to enhanced aggression and anger on the part of the affected. All these issues have a compounding effect causing youth to carry out criminal activities.

The youth of Pakistan also faces health-related challenges. The absence of basic health care facilities as well as the increasing rate of contagious diseases disproportionately impact youngsters. The dearth of hospitals, paramedical staff, nurses, and doctors signifies multiple issues in Pakistan's healthcare system. Furthermore, life-saving medications are costly which patients are unable to afford. Most importantly, the trust deficit in the healthcare system has led to ever-enhancing quackery in Pakistan. The country's healthcare system comprises two parallel systems: private hospitals that are too expensive for the masses to afford, and public hospitals with extremely limited healthcare facilities.

The healthcare system of Pakistan is myriad with multiple flaws such as unequal resource distribution, poor governance, and corruption. Moreover, an inadequate health information management system, a paucity of educated professionals, and a lack of monitoring mechanisms for health planning and policy underlie the lamentable plight of the health sector. Most importantly, insufficient healthcare infrastructure such as a shortage of diagnostic centers, clinics, and hospitals is illustrative of the abysmal situation of Pakistan's medical system. Presently, the expenditures related to healthcare constitute 0.4% of the national GDP, which is far less than the 6% (for LIC-Low Income Countries such as Pakistan) that is recommended. Furthermore, this minimal expenditure is not justly distributed among rural and urban areas.

WHO's recommended doctor-to-patient ratio is 1:1000, however, it is 1:1300 in Pakistan. Workforce shortage in the healthcare system due to a lack of incentives for doctors has also led to the brain drain in Pakistan. Tuberculosis and malaria are the most prevalent diseases in adolescence (11-20) and adulthood (21-30 years) followed by diarrheal and respiratory tract diseases. Furthermore, the increased incidences of Hepatitis B as well as Hepatitis C in adults have also been observed.

Way Forward

Creating Employment Opportunities

One of the most effective ways of creating employment opportunities for youth in Pakistan is by encouraging startup culture and industrialization in the country. As far as the industrial sector is concerned, Pakistan should focus on global trends such as technological innovation and artificial intelligence to maximize production. Key challenges in this regard can be addressed through aligning curricula with entrepreneurial knowledge and skills and forging public-private partnerships to boost apprenticeship and practical-based knowledge of entrepreneurship and catalyzing a business ecosystem.

An inspirational model in this regard is the “Youth Entrepreneurship Development Program” of Bangladesh which emphasizes imparting guidance, and training, as well as providing financial resources to youngsters. Additionally, training of customers, logistics, and digital marketing can be given through establishing E-Commerce Training Hubs. Moreover, local startups in villages can be uplifted by creating a “Start-up Incubation Village.”

Moreover, the government should start job placement as well as training programs at a national level to create ease for youth to find employment. It should also create technology parks, incentivize organizations providing job opportunities, buttress venture capital funds targeted at uplifting youth-led startups, and simplify the application process of venture capital funding.

To guarantee employment, the government should start a three-month scheme under which unemployed youth could get work placement for a short duration endowing them with indispensable work experience that in turn can create long-term employment opportunities for them. The digital economy also has the potential to provide employment opportunities, therefore, it shall be channelized by the government through registering digital labor platforms with the country's social security system.

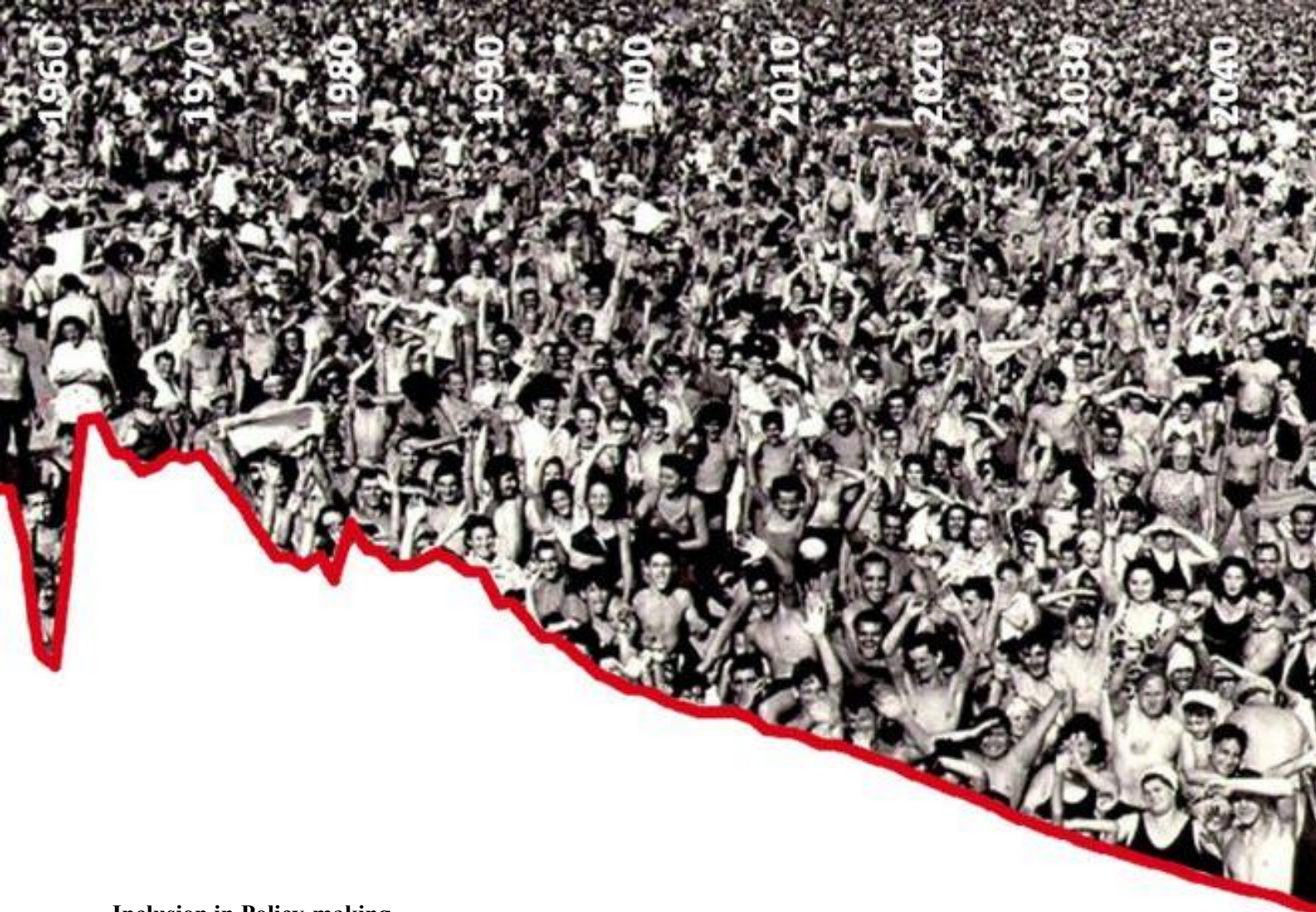
Ameliorating the Education System

To improve the higher education system, Pakistan should learn from China's education programs. To improve the quality of education, Pakistan can replicate Project 211 to enhance education quality and improve research culture in Pakistani universities. For improving the standard of educational institutes and bringing them to par with international systems, China's Project 985 can be taken as a model under which Pakistan's Government can attract top talent and build research centers.

Additionally, another Chinese model “2012 National College Students Innovation and Entrepreneurship Program” offers lessons for Pakistan. This program targets college students and emphasizes innovation training, entrepreneurship training, as well as entrepreneurship practice. Following this program will boost entrepreneurship and innovation among young students. Additionally, it will enable support as well as funding for student innovation projects and start-ups.

Prioritizing Vocation Education Training

It is indispensable to bridge the theoretical knowledge and practical experience through improving vocational education in Pakistan that will address challenges of technical gaps in education and meet the requirements of the job market. Germany and Japan offer good learning experiences for Pakistan in this regard. In post-WWII, both states focused on vocational and technical education which enormously transformed their economies. Japan has developed a trained and skilled workforce which has made it a technology giant. Similarly, Germany has laid a substantial focus on the vocational education system making it one of the largest economies in the world.



Inclusion in Policy-making

Youth policy engagement is crucial for shaping their future as their perspective and inclusion in policymaking can lead to the robustness and longevity of policy. Moreover, youth can inculcate newfound evidence and innovation into the process of policymaking. Youth inclusion in policymaking is a gradual and long process that requires imparting policy-related education to young people, pushing them to policy research, and then actualization of research into advocacy.

Reforming the Health Sector

Various policy interventions are required to improve physical and mental health in Pakistan. With respect to physical health, it is essential on the part of the government to allocate more budget to the healthcare system for reducing workforce shortage and ameliorating health infrastructure. The priority should be the development and upgradation of the healthcare system, notably in villages.

Healthcare funds can be increased through innovative financing models such as PPPs (Public-Private Partnerships). Under WHO's Universal Health Coverage, the government of Pakistan initiated the SSP (Sehat Sahulat Program) which is a collaboration between private insurance companies and Pakistan's government to dispense free healthcare facilities to the poor. Fundamentally, this initiative is hailed as a success, however, deferment in funds reimbursement and limited coverage are a few challenges that need to be addressed. SSP can serve as a model for other public-private partnerships. Moreover, to curb mental health issues, public awareness programs, integration of mental health into primary health, and provision of basic mental health services by community-based and general hospitals are the need of time.

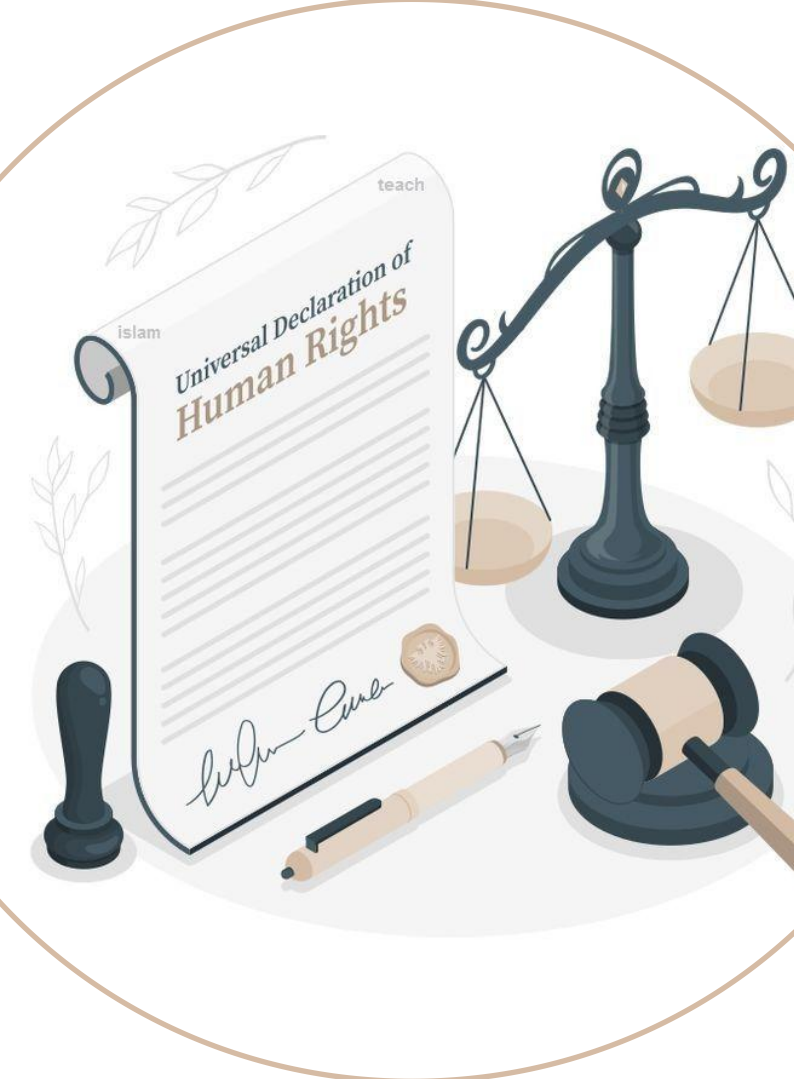
Conclusion

The demographic landscape of Pakistan offers enormous opportunities for progress and development as the ballooning population of the country enters adulthood. Creating employment opportunities, targeted investment in the education sector, notably the vocational education system, youth engagement in policy and politics, and improving the health sector can bring about the demographic dividend.

CONTOURS OF INTERNATIONAL HUMAN RIGHTS LAW

Safia Mansoor

International human rights law (IHRL) is a body of law that governs the state's obligations towards citizens alongside the individuals in their jurisdiction. Entailing the supreme human ideals, IHRL empathizes the sets of rights as well as freedoms inherent to every human being that are applicable all times and therefore cannot be withdrawn by the states. The genesis of modern IHRL can be traced back to 1776 US Declaration of Independence coupled with 1789 French Declaration of Rights of Man and of Citizens. The expression 'Human Rights' became part of UN Charter where it was used seven times, causing propagation and protection of human rights as core guiding principle and purpose of the UN. The defining moment was the adoption of United Nations Declaration of Human Rights (UNDHR) in 1948 which lay down the key principle, therefore bringing human rights into International law's realm.



The moral concept of Human Rights with its five key principles of equal status, physical and psychological integrity, personhood, participation, and minimum welfare enshrined in UNDHR metamorphosed into human rights law after the 1960 Sharpeville Massacre. This key incident changed the structure of human rights and heightened the role of secondary agents of justice such as UN. On one hand, Commission on Human Rights introduced the two key procedures '1235' and '1503' to monitor and address gross violations of human rights in countries; whereas, on the other hand, UN General Assembly adopted the Convention on Elimination of Racial Discrimination in 1965 which is hailed as the first global human right treaty. It was the water shedding moment as it led to emergence of customary human rights in 1960s when UN intervened in Southern Africa by making reference to prohibition on systematic racial discrimination that in turn established a precedent which could be generally applied to states. Furthermore, it revealed the limitation of state sovereignty given the occurrence of gross human rights violation.

Concurrently, the translation of UNDHR into two universal human rights treaties i.e., 1966 International Covenant on Civil and Political Rights (ICCPR) and 1966 International Covenant on Economic, Social, and Cultural Rights (ICESCR) referred to as International Covenants profoundly influenced the development of human rights law.

These two international covenants alongside the UNDHR are termed as 'International Bill of Human Rights'. Primarily, the UN or what is known to be secondary agents of human rights justice prioritized the prevention of dystopias, such as in case of Apartheid state; however, gradually it foregrounded promotion of human rights as a 'Utopion ideal– Human rights for all'.

Since 1945 various international human rights treaties as well as other instruments have been adopted conferring human rights a legal form and solidifying the international human rights law. Significant human right instruments after 1966 are 1979 Convention on Elimination of All Forms of Discrimination against Women (CEDAW), 1984 Torture Convention, 1989 Convention on Rights of Child, 1990 Convention on Protection of Migrant Workers, and 2006 Convention on Protection of People from Forced Disappearances. All these legal instruments signify the ever-enhancing spectrum of human rights law in every domain of individual life and responsibility of state to safeguard these right. International human rights law holds immense importance at national and international level: at domestic level, governments formulates legislation and carry out domestic measures commensurable to their treaty obligation; whereas at international level, it is indispensable in ensuring the implementation of international human rights standards.



MARSEW 2024-Navigating Economic Prosperity

Dr Marriyam Siddique

Oceans have gained significance in this century, often termed as "century of oceans". Pakistan Navy (PN) has reliably played a proactive and central role to ensure stable order in Western Indian Ocean. This has led to preserving and advancing maritime interests of the country in no small measure. Alongside, it provided safety and security to important international sea lines traversing close to the coast of Pakistan. The maritime interests of Pakistan encompass but are not limited to protection of sea commerce in times of peace and war, preservation and protection of maritime zones, combating crimes and illicit activities at sea, socio economic uplift especially in coastal regions, safety and security of international sea lanes, environmental protection etc. The country's geographical location and on-going development of Gwadar port under CPEC has added to the national maritime interests consequently increasing tasks of the Navy. PN is the principal maritime military arm that protects and preserves all these interests and furthermore facilitates advancing maritime interests overseas as, when and where needed. All in all, PN plays a central role in ensuring security of Gwadar port under CPEC, protecting and preserving national maritime interests whilst contributing to regional stability in the broader maritime environment of the Indian Ocean region.

Pakistan is blessed with over 1000 km of coastline. Maritime commerce serves as the fundamental pillar of our economic structure. Country's reliance on maritime trade is a pivotal component of its economic framework. Dominant part of Pakistan's trade, in excess of 90 percent by volume, is conducted via maritime routes. However, Pakistani flag carriers transport only around 16 percent of the country's seaborne trade. This necessitates actively enhancing country's maritime infrastructure and connectivity. PN has been making an effort to generate appropriate understanding of this fact at the national level. Accordingly, apart from holding a large-scale multinational exercise, AMAN every two years, Pakistan Navy has simultaneously launched several other initiatives to raise levels of awareness on maritime and ocean related matters across Pakistan. These include but are not limited to signing of MoUs with major top ranking HEC recognised Universities, instituting Inter University Essay Competition (IUEC) on annual basis, organising World Maritime Day (WMD) to create awareness in line with published theme of the United Nations over and above holding a yearly mega event, Maritime Security Workshop (MARSEW) at PN War College. Such engagement endeavours are aimed at increasing consciousness across the spectrum of country's academia and intelligentsia on the subjects of maritime security and blue economy. Alongside these efforts bring home the significance of national maritime sector and that of seas for sustaining human life on earth.

The annual conduct of academic cum informational initiative of Maritime Security Workshop (MARSEW) brings together a cross-section of Pakistan's literati who assemble to acquire insight into the vast maritime world. The participants are schooled on subjects like, maritime security, sea power, marine safety, blue economy, and other important geopolitical events unfolding in the Oceans. The nine day tour cum educational activities at Pakistan Navy's premier professional learning institute, Pakistan Navy War College clubs military officers, lawmakers, bureaucrats, business owners, academics, and media representatives to interact with top experts and witness first hand on-site activities of various field commands in PN. This year (2024) is the seventh edition of MARSEW. It is being held from 26 Nov – 5 Dec 26. The theme highlights direct and proportional relationship between national development and maritime security.

MARSEW activities are split into two phases. During first phase, participants engage in informed intellectual discussions and are provided first-hand knowledge on issues by a select panel of accomplished speakers. Participants are then taken to Islamabad and Karachi to acquaint them with Command and Control organization and mandate of various field commands. Briefings are held in Coastal and Creek Areas of Pakistan as well as at Gwadar port. This comes alongside visit to different installations at Karachi, Makran coast and other important sites.

Pakistan's National Security Policy (2022-2026) has taken a shift from geopolitics to geo-economics. Human security remains central theme of this change. The transition reflects recognition that economic stability and development along with human security are critical components of national security apart from other traditional security concerns. In this backdrop, MARSEW is a laudable endeavour by PN that aims to facilitate suitable propagation of maritime knowledge and foster collaboration among diverse stakeholders of Pakistani society and intelligentsia. A strategic policy shift, sustainable development of maritime sector and marine resources could translate into a boon for country's economy and support socio-economic uplift over and above human security.



AMAN 2025: Emblem Of Maritime Security

Safia Mansoor

Aman-2025 maritime exercise conducted under the auspices of the Pakistan Navy signifies a cornerstone in ensuring maritime security in the Indian Ocean Region (IOR). It aims to cultivate international cooperation among regional and extra-regional naval forces and enhance strategic preparedness to grapple with an array of maritime security challenges emanating from the Indian Ocean. It explicitly demonstrates the resolve of the country to protect vital sea lanes, curb maritime threats, and ensure a secure-cum-prosperous region.

Oceans as maritime global commons hold immense significance for international trade and security. With the dependence of almost 3 billion people in the world on oceans, they are a quintessential source of well-being and livelihood, the Indian Ocean is regarded as the world's third largest ocean, acting as a hub of pivotal Sea Lines of Communication (SLOCs) extending from Australia's Western Coast in East to strategically significant Mozambique Channel in West. Most vital are the Arabian Sea and Persian Gulf as they act as critical waterways connecting various regions such as Asia, Africa, Europe, and beyond. More than 50 percent of sea-borne oil traverses through maritime routes in the Indian Ocean and concurrently it hosts 23 out of 100 key container ports in the world. IOR entails seven choke points that include the Mozambique Channel, Sunda Strait, and Lombok Strait. Malacca Strait, Suez Canal, Bab-el-Mandeb, and Strait of Hormuz. Most notable is the Strait of Hormuz as nearly 1/5th of global fuel transit through it. Additionally, this narrow strait is the only route providing access to oil-enrich Gulf states.

Pakistan's proximity to the Strait of Hormuz makes it one of the most pivotal littoral states of the Indian Ocean. More than 90 percent of the country's trade is sea-based, signifying its sheer dependence on the ocean for trade and commerce. The inception of the China-Pakistan Economic Corridor (CPEC) with its crown jewel Gwadar has tremendously augmented Pakistan's strategic significance and its stakes in IOR.

Ergo, maritime security is a pre-requisite for national interest, but the ever-enhancing emergence of threats to maritime security, for instance, piracy, marine environmental degradation, smuggling and trafficking, and contested navigation routes have been incessantly undermining safe and secure access to the region. These dynamics necessitate maintaining naval prowess in the Indian Ocean Region through multilateralism. Pakistan Navy's biennial Aman series of exercises grounded on the notion of 'Together for peace and security underpins the country's concerted effort to maintain regional maritime security. In tandem with the AMAN Exercise, the Pakistan International Maritime Expo and Conference (PIMEC) was held from 12-14 2023 February at the Karachi Expo Centre. The Expo aimed to showcase the maritime potential of Pakistan and to harness avenues of mutual collaboration in the field. It included 14 exhibiting countries, and 144 exhibitors with 121 national and 23 international participants. As a subset of PIMEC, International Maritime Conference (IMC) was also held dispensing a conducive platform to various maritime policymakers, stakeholders, academicians, subject matter experts, and practitioners to delineate upon issues and ideas pertinent to maritime domain.

The participation trajectory of AMAN has increased from 28 navies in 2007 to 51 navies (including Pakistan) in 2023 signaling burgeoning acceptance of Pakistan-led collaborative approach towards peace in IOR. Moreover, the exercise is a testament to the Pakistan Navy's professional competence and staunch commitment to taking the lead against threats at sea. Since the inception of AMAN in 2007, the Pakistan Navy has been conducting this mega maritime event to enhance interoperability, buttress synergy, and advance the cause of a unified front against non-traditional maritime security threats.

The 9th chapter of AMAN exercise is now scheduled to be held in February 2025 with participation of more than 50 navies from across the globe. AMAN as hallmark of 'Naval Diplomacy' would bring together navies from various regions of the world to increase mutual understanding, galvanize information sharing, and further mutual preparedness against threats in maritime domain.

AMAN exercise is bifurcated in harbour and sea Phase. Harbour phase focuses upon seminars, professional demonstrations, operational discussions, and cultural displays are carried out: whereas, sea phase comprises of tactical maneuvers exercises against terrorism and piracy, air defence exercises, gunnery firing, and search and rescue operations. Most notable aspect of sea phase is International Fleet Review that is witnessed by foreign as well as national dignitaries. Furthermore, 'AMAN Dialogue' will be held that in turn will provide avenues for deliberation and collaboration upon emerging maritime security challenges and opportunities. The proactive role of Pakistan Navy in conducting the AMAN exercise signifies its pivotal demonstration in ensuring maritime security. On one hand, it symbolizes Pakistan Navy unwavering commitment to further international cooperation; on the other, AMAN exercise bolsters navy's capabilities to competently tackle contemporary maritime challenges.



