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During the month, the VIF Pakistan Experts Group discussed critical issues shaping Pakistan's current landscape. The session focussed on Pakistan's political outlook, noting the dominant role of the military following the marginalisation of former Prime Minister Imran Khan. The current Prime Minister, Shehbaz Sharif, faces challenges, reflecting the military's enduring influence despite opposition limitations. Economically, despite potential IMF support and Gulf investments, structural reforms remain elusive, with a shift away from Chinese engagement noted. Security concerns have escalated due to rising insurgency, particularly in Khyber Pakhtunkhwa and Balochistan, amid challenges from groups like the BLA and TTP. The Pakistan Army's governance role was scrutinised amidst internal divisions, though recent statements reaffirmed its political authority. Relations with India remain strained, with India emphasising cessation of terrorism and progress on trade and transit issues for meaningful engagement. Future engagement hinges on Pakistan's actions, with strategic restraint from India as the current policy option.

The China Experts group convened to discuss Chinese presence in West Asia and the strategic landscape obtaining post the Israel-Hamas conflict. The group discussed China's Strategic Objectives in West Asia which seeks to secure its energy interests and to counterbalance US influence in the region, assert its position as a global power, and expand economic engagement. China's increased diplomatic engagements in West Asia including its role in brokering diplomatic agreements between Saudi Arabia and Iran, signals its goal of being a leading player in West Asia. Increasing defence cooperation agreements and rising Chinese arms sales to the region which reflect China's efforts to strengthen its defence ties in the region were discussed, despite questions about China ability to serve

as a net security provider in West Asia at the expense of the US. China's economic engagements, including Chinese technological cooperation in the region were also deliberated. Other issues that were discussed by the group included China-Israel Relations, China-Iran Relations, US influence and presence in the Region. Finally, the group recommended that India must adopt a proactive and nuanced approach to safeguard its interests and capitalise on emerging opportunities and could strengthen its regional influence by broadening its cooperation in sectors where it holds advantages, such as food security, pharmaceuticals, and cybersecurity.

VIF hosted a delegation from Taiwan's Institute for National Defense and Security Research (INDSR) led by Dr. Ming-Shih Shen. The meeting, organised by the Indo-Pacific Experts Study Group, attended by various experts from both sides, emphasised the importance of India-Taiwan relations amidst China's assertive actions in the Indo-Pacific. Discussions highlighted the need for supply chain resilience, semiconductor industry challenges, and cooperation against China's grey zone operations. China's strategic brinkmanship, especially towards Taiwan, was noted, stressing the need for collective action by like-minded countries. India's stance on China, including border management and reducing dependency on Chinese imports, was also discussed. Strengthening India-Taiwan economic and technological ties to counter China's aggression was emphasised, alongside potential high-tech sector collaborations.

VIF's Cyber Task Force held a brainstorming session on AI development, deployment, and use which was attended by various experts from the institution as well as outside. AI's rapid advancement, Web 3.0's integration of AI and its impact on national security and societal development were key topics of discussion. AI's widespread adoption spans professional applications, entertainment, and defence, with Generative AI creating diverse content. AI's potential to transform healthcare, education, finance, agriculture, and defence was noted, alongside market projections of \$300-320 billion by 2027. However, AI also poses risks such as job loss,

deepfakes, privacy violations, and cybersecurity threats. The session highlighted the need for regulation, emphasizing ethical AI development. Current frameworks, like NITI Aayog's National Strategy for AI and international guidelines from OECD and UNESCO, were discussed. A comprehensive AI roadmap for India was proposed, focusing on accountability, legal frameworks, testing, and cybersecurity. A high-level stakeholder group involving government, industry, and academia was recommended to ensure responsible AI development, promoting innovation while addressing AI-related risks.

The Climate Change Experts Group hosted a session on "Role of India's Judiciary in Promoting Sustainable Development," where Justice Adarsh Kumar Goel, former Supreme Court judge and NGT Chairperson, discussed India's environmental protection framework, constitutional provisions, and judicial contributions to environmental governance. Key legal underpinnings include Articles 14, 19(1)(g), 21, 32, 48A, 51A(g), 253, and 226, enabling significant environmental laws. The National Green Tribunal (NGT), operational since 2011, addresses environmental cases nationwide, resolving 16,042 cases from July 2018 to July 2023. Despite legal advances, challenges persist: frequent industrial accidents, waste management issues, pollution, and illegal sand mining. Discussions highlighted "Rights of Nature," advocating fundamental rights for ecosystems, though enforcement challenges were noted. Emphasis was placed on fostering environmental awareness from school levels and prioritizing environmental issues in government and industry. Effective utilisation of Environmental Damage Compensation (EDC) funds was also stressed, ensuring polluters finance environmental restoration. Participants called for systematic, community-involved approaches to enhance India's environmental protection efforts.

Anurag Bisen

June 2024

Current Situation in Pakistan

Prepared by Dr Angana Kotokey

The Pakistan Study Group (PSG) convened on 9th May 2024 in a hybrid format. The primary topics of discussion included the political outlook and analysis, economic conditions in Pakistan, security landscape, the Pakistan army's role and future in governance, and Pakistan's relations with India. Among the attendees were Dr. Arvind Gupta, Director VIF, Lt Gen RK Sawhney, Shri Tilak Devasher, Lt Gen Ata Hasnain, Dr. Shalini Chawla, Shri Rana Banerjee, Shri Rahul Bhonsle, Amb Satish Chandra, Sushant Sareen, Amb D.P Srivastava, Lt Gen Rakesh Sharma, Amb Ajay Bisaria, Amb G Parthasarathy, Rajiv Sinha, along with other Distinguished Fellows and scholars from VIF.

Political Situation and Prognosis

A year following the riots of May 9, 2023, triggered by the arrest of former Prime Minister Imran Khan—a pivotal event in Pakistan's recent political landscape—the country's political situation appears to be firmly under the control of the Pakistan Army. The military successfully sidelined Imran Khan from active politics after he was barred from participating in the last parliamentary elections. Subsequently, the establishment manoeuvred to restore their preferred candidate, Shehbaz Sharif, as Pakistan's current Prime Minister, consolidating military influence over the current administration. However, Shehbaz Sharif's political stature seems weak, rendering him perceived as the most vulnerable Prime Minister in Pakistan's recent history, a situation conducive to the Army's dominance

over the political scenario.

Meanwhile, opposition parties have shown limited effectiveness in challenging the current government, contributing to a relatively stable position for the military. However, the Army is currently entangled in a conflict with the judiciary, particularly concerning the judiciary's shifting stance towards the Pakistan Tehreek-e Insaf (PTI) and former PM Imran Khan. Amid rising tensions between the two, the PTI has emerged as a primary beneficiary, notably after the Supreme Court suspended the Election Commission of Pakistan's decision to redistribute reserved seats, leading to significant losses for the ruling coalition in various provincial assemblies.

Despite the inherent weaknesses in the current coalition government and the growing political turmoil, it is anticipated that the regime will retain power for at least the next two to three years.

Economic Situation

Despite a potentially forthcoming IMF loan and potential foreign investments in different sectors of the economy, there is unlikely to be any major improvement in the economic situation in the short term. The economy requires major structural reforms. While there could be some positive developments, largely hinged on another IMF loan, the macroeconomic numbers do not add up and the structural factors have not been addressed. Despite countries from West Asia (UAE, Saudi Arabia in particular), pledging to increase investments in Pakistan's economy, these engagements are unlikely to improve the economy on a sustained basis. Moreover, apart from West Asia, there has been little news regarding investments in Pakistan's economy from China. Instead, there are reports indicating a pivot towards economic engagements with West Asian countries rather than China. These reports also suggest a declining significance of the China-Pakistan Economic Corridor (CPEC). However, it remains to be seen whether investments from West Asian partners can

alleviate Pakistan's current economic difficulties. Ultimately, addressing Pakistan's economic challenges may require bold decisions that may not enjoy widespread support.

Security Scenario

The internal security situation in Pakistan has become a matter of grave concern after an increase in the number of insurgency-related activities in the state. The security scenario in provinces like Khyber Pakhtunkhwa and Balochistan has deteriorated considerably, including the rise in attacks on foreign nationals in the past few months. The current security situation could deteriorate further if speculation about potential ties between the Baloch Liberation Army (BLA) and Tehreek-e-Taliban Pakistan (TTP) materializes. The escalation in TTP attacks has already exacerbated the security environment in Pakistan, and the prospect of its merger with other insurgent groups could bolster insurgency within the country. Additionally, Pakistan remains concerned about TTP sanctuaries within Afghanistan's territory, though Afghanistan's interim administration has denied allegations of harbouring militants targeting neighbouring countries.

Meanwhile, counter-terrorism efforts could play a crucial role in strengthening future US-Pakistan relations. Both countries recognise the threats posed by TTP and Daesh (ISKP) to regional and global security, leading to a potential re-evaluation of Pakistan's strategic importance by the United States. Western powers view the Pakistan Army as essential for maintaining stability and security in the region, particularly following concerns about increased radicalization since the Taliban's takeover of Kabul in 2021. Addressing these challenges necessitates that the Pakistan Army reaffirms and demonstrates its authority through military exercises to confront non-state actors effectively.

The Role and Future of the Pakistan Army in Governance

There is a growing perception if the Pakistan Army is losing its relevance

in Pakistan after reports signalling internal rifts within the Pakistani Army surfaced on several media platforms. Strategically, the Army has been important to countries like the United States who seek the former's help for maintaining security at the Afghanistan-Pakistan border regions. Thus, in the current geopolitical scenario, the Pakistan Army may once again secure its strategic relevance. Moreover, despite everything being said against it, the Pakistani Army continues to dominate politics. The 07 May 2024, speech given by the Inter-Services Public Relations (ISPR) Director General (DG) Maj-Gen Ahmed Sharif regarding the 09 May riots last year was primarily aimed at reasserting the power of the Pakistani Army. The press conference was also geared to address the grievances of the people against the Army regarding its crackdown on the PTI and Imran Khan.

There is a growing perception that the Pakistan Army's relevance within Pakistan may be diminishing, fuelled by reports of internal divisions within the Army appearing on various media platforms. Historically, the Army has played a crucial role, especially for countries like the United States, which rely on its assistance for maintaining security along the Afghanistan-Pakistan border. Consequently, given the current geopolitical landscape, the Pakistan Army could potentially reclaim its strategic importance.

Furthermore, despite criticisms levelled against it, the Pakistani Army continues to wield significant influence in politics. The speech delivered by Maj-Gen Ahmed Sharif, Director General of Inter-Services Public Relations (ISPR), on 7th May 2024, particularly regarding the riots of 9th May the previous year, aimed to underscore the Army's authority. The press conference also sought to address public grievances concerning the Army's actions during its crackdown on the PTI and Imran Khan.

Pakistan's Relations with India

The primary issue between India and Pakistan stems from Pakistan's persistent anti-India stance. India's conditions for engaging with Pakistan should include a complete cessation of terrorism, dismantling terrorist

infrastructure, and extraditing terrorists sheltered in Pakistan. India also seeks Most Favoured Nation (MFN) status for bilateral trade, transit rights to Afghanistan, and strict control over consignments to prevent illegal activities. Given the current political environment, there is little urgency for India to pursue initiatives with Pakistan, considering past efforts have not yielded favourable outcomes. India should exercise strategic patience, awaiting clarity on Pakistan's intentions before deciding on future engagement.

While monitoring developments in Pakistan, maintaining a high commissioner in Islamabad would provide valuable insights into various issues. India could leverage the Durand Line issue in support of Afghanistan, although it has not taken a formal stance on this historically. Limited engagements, such as Track 2 Diplomacy with Pakistan, could be cautiously explored under controlled conditions.

China-West Asia Relations

Prepared by Prerna Gandhi

The steady expansion of Chinese presence in West Asia has significantly complicated the geopolitical dynamics of the region. Concurrently, the strategic landscape of West Asia has also seen enormous upheaval post the Israel-Hamas conflict. To discuss the above, the China Experts Group at the Vivekananda International Foundation held a discussion on 27 May 2024 on 'China-West Asia Relations'. After a backgrounder by Amb Ashok Kantha on China-West Asia relations, there were detailed presentations by Amb Anil Trigunayat, Amb Arun Singh, and Amb DP Srivastava, all former Indian ambassadors who have served in the region. The meeting was attended by the Director, Dr. Arvind Gupta, Lt. Gen. Ravi Sawhney, Amb Sanjay Singh, Lt. Gen. Rakesh Sharma, Vice Admiral Satish Soni, Air Marshal Rajesh Kumar, Amb Venkatesh Varma, Mr. Santosh Pai, Ms. Meena Singh Roy, Col. Rajeev Aggarwal, and other in-house VIF scholars. The meeting saw numerous interventions and a rich discussion. Some of the salient points made are discussed in succeeding paragraphs.

China's Strategic Objectives in West Asia

China's strategic expansion in West Asia is motivated by several key objectives. Primarily, it seeks to secure its energy interests, given its reliance on oil and gas imports from the region. Statistics indicate that six out of the top ten oil suppliers to China hail from West Asia, highlighting the region's critical role in meeting China's energy demands. Additionally, China aims to counterbalance US influence in the region, assert its

position as a global power, and expand economic engagement through initiatives like the Belt and Road Initiative (BRI), the Asian Infrastructure Investment Bank (AIIB), the Digital Silk Road, and high-level government visits. China's engagement in West Asia also needs to be viewed through the prism of its larger policies of securing Chinese external assets. In recent years, the membership of West Asian countries in BRICS and the Shanghai Cooperation Organization has also increased. China's attempts to internationalise the Yuan are finding favour with the Gulf states. The United Arab Emirates and Saudi Arabia are strengthening their financial cooperation with China through currency swap agreements, cross-border trade settlement arrangements, and digital currency collaboration efforts.

Diplomatic Engagement

China's diplomatic engagements in West Asia have been characterised by fostering close ties with all regional powers while avoiding antagonising any key stakeholders. The Chinese approach has been to engage everyone irrespective of their form of government or other socio-economic indicators. China taking credit for brokering diplomatic agreements between regional rivals, such as Saudi Arabia and Iran, signals its goal of being a leading player in West Asia. However, in recent months, the lack of taking a larger role in resolving regional tensions indicates a desire to prolong regional tensions and keep the US mired down in two theatres in Eurasia and West Asia. The signing of comprehensive strategic agreements and high-level visits by President Xi Jinping to countries like Saudi Arabia, the United Arab Emirates, and Iran have solidified the Chinese presence in West Asia.

Defence Cooperation

Increasing defence cooperation agreements and rising Chinese arms sales to the region highlight China's efforts to strengthen its defence ties in the region. However, the establishment of Chinese military bases in the Gulf remains speculative. There is an ongoing debate about whether China can serve as a net security provider in West Asia at the expense of the US.

While China's primary focus in the region is on economic engagement and non-interference, its growing role in regional diplomacy and defence cooperation agreements raises questions about its security role. Some argue that China's economic investments and diplomatic initiatives are essentially focused on reducing regional tensions, while others note future security ambitions in Chinese capacity building and presence in the region.

Economic Engagement

China's economic engagements in West Asia are extensive, encompassing energy trade, infrastructure investments, technological cooperation, and the Digital Silk Road initiative. The BRI serves as a key platform for China's infrastructure projects in the region by facilitating the construction of numerous ports, railways, and pipelines. Many of the Chinese investments are pitched as supporting the development goals of regional countries such as convergence with Saudi Arabia's Vision 2030 and other similar initiatives across West Asia. China's influence in West Asia also extends to new energy and high technology sectors. Chinese technological cooperation with West Asian countries spans various sectors, including telecommunications, renewable energy, artificial intelligence, and space. The establishment of data centres and the deployment of surveillance technologies in the Gulf underscore China's growing influence. Huawei has become a key player in West Asia's digital landscape. The company's partnerships with governments and businesses in the region have facilitated the deployment of cutting-edge technologies, contributing to economic development and connectivity.

China-Israel Relations

China's relations with Israel are shaped by a mix of strategic compulsions, economic interests, and geopolitical considerations. In the past, Israel supplied China with significant military technology, including upgrades for drones like the Harpy. However, due to increasing US concerns over China's military capabilities, Israel faced pressure to halt certain defence

collaborations, including the transfer of advanced drone technology. Despite large investments in Israel, China's stance during the conflict in Gaza has strained its relations with Israel.

China-Iran Relations

Notwithstanding Iran's caution regarding China's expanding influence, both countries have deepened their ties through initiatives such as the 25-year strategic agreement signed in 2021. Tensions were visible after the 09 December 2022 China-Gulf Cooperation Council (GCC) meeting in Riyadh, where the text of the joint statement made reference to the need for a "peaceful solution" to the "issue" of three Iranian islands claimed by the United Arab Emirates (UAE). This prompted a high-level visit within a week by a Chinese delegation led by Vice Premier Hu Chunhua. Chunhua stressed China's respect for Iran's territorial integrity and interests.

US Influence and Presence in the Region

The United States has historically played a dominant role in West Asia, particularly in matters of security, diplomacy, and economic interests. With its vast military presence, including military bases and naval fleets, the US has positioned itself as a key security guarantor in the region, ensuring the free flow of oil and maintaining stability. However, US influence in West Asia has faced challenges in recent years, particularly with the rise of China as a strategic competitor. The outcome of the US elections in November 2024 will influence policy decisions concerning the region, especially on the Israel-Hamas conflict. The Biden administration's stance on issues such as settlement expansion and the Iran nuclear deal has differed from that of the previous administration, impacting US-Israel relations and regional dynamics.

Implications for India

The interplay between the United States, China, and regional actors in West Asia has profound implications for regional dynamics, shaping alliances,

rivalries, and geopolitical alignments. While the US retains significant military capabilities and diplomatic influence, China's economic expansion and non-prescriptive policies offer an alternative model of engagement that resonates with countries disillusioned with Western interventions. It is imperative for India to adopt a proactive and nuanced approach to safeguard its interests and capitalise on emerging opportunities. India also remains a significant buyer of oil with a large diaspora in the region. India can strengthen its regional influence by broadening its cooperation in sectors where it holds advantages, such as food security, pharmaceuticals, and cybersecurity. It is crucial to closely monitor China's activities on the island of Socotra.

Delegation from Institute for National Defense and Security Research (INDSR), Taiwan

Prepared by Dr. Sweta Kumari

VIF organised an interaction with the delegation from Institute for National Defense and Security Research (INDSR), Taiwan on 15th May, 2024. The delegation was led by Dr. Ming-Shih Shen, Acting Deputy Chief Executive Officer and Director, Division of National Security Research along with Dr. Chu-Chuan Lee, Research Fellow, National Security Research Division, INDSR; Dr. Chien-Yu Shih, Associate Research Fellow, National Security Research Division, INDSR; Dr. Yi-Suo Tseng, Associate Research Fellow, Cyber Security and Decision-Making Simulation Division, INDSR; Dr. Tsung-Han Wu, Assistant Research Fellow, Cyber Security and Decision-Making Simulation Division, INDSR and Col. Eric Tsau, Taipei Economic and Cultural Centre (TECC), New Delhi. From the VIF, Prof. Sujit Dutta welcomed the delegation and delivered the opening remarks. Dr Arvind Gupta, Director, VIF, Amb. Ashok Kantha, Lt Gen Rakesh Sharma, Dr. Gulshan Rai, Brig Vinod Anand, Capt. Anurag Bisen, Ms. Perna Gandhi, Mr. Anurag Sharma, Dr Sweta Kumari and VIF interns also participated in the discussion.

The meeting highlighted the increasing importance of India-Taiwan relations. The surmounting concerns vis-a-vis assertive nature of Chinese economic and military actions in the Indo-Pacific region were also deliberated. The need for like-minded countries to work together to address China's grey zone operations and economic coercion was also emphasised.

Supply Chain Resilience & Semiconductor and Chip Industry

- Supply chain resilience was suggested as a proposal to mitigate the risks of doing business in China and encourage countries to diversify their trade markets. The need to develop a new global value chain that lessens China's centrality was emphasised.
- The geopolitics of data flow and data manipulation was highlighted. The semiconductor industry and data-driven economic growth were emphasised, along with concerns about data control and restrictions on Chinese electric vehicles given the possibility of manipulation of data.
- There are concerns about China's chip exports and the spread of fake news regarding chip production. Chinese restrictions on elements critical to battery technology and vehicle development were outlined.

China's Brinkmanship

- China's recent activities against Taiwan indicate a change in the status quo and an increased risk for confrontation. It was pointed out that China is engaging in strategic brinkmanship and has a well-planned approach to geopolitical influence.
- The meeting discussed the need for like-minded countries to work together to address the escalating grey zone operations by China, particularly in the South China Sea and Taiwan Strait.
- The actions and intentions of the United States particularly regarding China were discussed. It was highlighted that China is gaining an advantage over the US in economic warfare and technological advancements.

Taiwan

- Taiwan's response to intrusions into its airspace and waters was addressed, noting that outer islands such as Kinmen are more

vulnerable to Chinese Coercion than Taiwan itself.

- There is a need to strengthen defence capability and adopt a more proactive response policy towards threats from mainland China.

India's Posture towards China

- India has taken a strong position in managing its border conflict with China, including deploying forces, building infrastructure, and preventing further incursions by Chinese forces.
- India has been cautious about permitting Chinese investments, introduced duties on imports such as solar panels, and focused on developing competencies in areas like chip design to reduce dependence on China.

India-Taiwan Relations

- There was a recognition of the potential impact of a crisis in the Taiwan Strait on India's security and strategic interests. It was highlighted that India's response would depend on the nature of the crisis.
- It was highlighted that there is a need to explore closer collaboration and consultation between India and Taiwan to increase deterrence and dissuade China from aggressive posture.
- The two countries should work towards intelligence sharing, repair and maintenance support. The relevance of the foundational agreements signed between India and the US was also deliberated.
- The discussion emphasised the economic and technology relationship between India and Taiwan as a means to build capacities and counter China's aggressive posture.
- There is a need to enhance India-Taiwan relationship, particularly in the economic and technology sectors. The potential collaborations with Taiwanese companies in the high-tech sector were emphasised.

The participants acknowledged the fragility of the global security situation and discussed the potential for economic conflicts rather than immediate military conflict.

There was mention of China's attempts to maintain stability and prevent provocation regarding Taiwan, as well as their efforts to bridge the technology gap with the United States. A wide range of issues in the Indo-Pacific region, including trade, military relationships, and India's defence relationships with Vietnam and the Philippines, were also highlighted.

Framework for Development, Deployment and Use of the Artificial Intelligence

Prepared by Shri Anurag Sharma

On 13 May 2024, the VIF 's Cyber Task Force hosted a brainstorming session on "Framework for Development, Deployment and Use of the Artificial Intelligence" in New Delhi, Bharat. As part of the task force, Director Dr Arvind Gupta, Lt Gen Ravi K Sawhney, Dr Gulshan Rai, AVM (Dr) Devesh Vatsa, Dr Jaijit Bhattacharya, Professor Manan Suri, Shri Brijesh Singh, Shri Kazim Rizvi, and Shri Anurag Sharma participated in the session.

Following Dr. Arvind Gupta's welcoming remarks, Dr. Gulshan highlighted in his opening speech that cyber technology is advancing rapidly. He noted the evolution from Web 2.0 to Web 3.0, a technology that integrates intensive AI capabilities in a three-dimensional framework. This advancement has introduced new services and capabilities and is poised to be one of the most significant technologies of the 21st century, revolutionizing national security and societal development.

AI deployment has become pervasive across various domains, from professional applications to entertainment, including tasks like movie dubbing, voice and audio mixing, defence systems, social media platforms, trading platforms, chatbots, and online media. Generative AI (Gen AI) is particularly noteworthy for its ability to create diverse content types such as text, images, audio, and synthetic data. AI systems now encompass sophisticated capabilities in reasoning and inference.

This rapid progress and widespread adoption of AI have the potential to

significantly transform sectors including healthcare, education, finance, agriculture, industry, climate change mitigation, communication, defence, and social development. According to a NASSCOM report, the global AI software and services market currently stands at approximately US\$100 billion and is projected to reach US\$300-320 billion by 2027. Investment in AI has surged globally, with around \$83 billion invested in 2023 alone. Gen AI is expected to constitute about 33% of the global AI market.

AI-driven Challenges

AI systems have also introduced new challenges & risks. AI systems influence human decision-making at multiple levels, from viewing habits to purchasing decisions, generating deepfakes images by mixing video and audio of reputed citizens, creating harmful and inaccurate content, misinformation, and war propaganda, creating nightmare scenarios where it becomes impossible to distinguish between credible and fake news, cyber security threats, social surveillances, biases, privacy breach etcetera.

Challenges of AI to National Security

The sophistication of AI systems has grown substantially in the past decade, particularly in the past few years. The complexity and proliferation of AI tools on the Internet have also boosted the adversaries and perpetrators. Adversaries are now using AI tools to compromise the ICT systems and launch significant-scale cyber-attacks that are complex, evasive, and faster, which could adversely affect electricity grids, water supply systems, and military equipment, thereby causing disruption of service impacting economic and National Security. AI algorithms can help delete Adversary's footprint.

Issues of AI

AI technology poses significant risks to society and humanity. Some of these are listed below:

- Automation-spurred job loss.
- Deepfakes.
- Privacy Violations.
- Socioeconomic inequality.
- Market Volatility.
- Weapons automatization.
- Uncontrollable self-aware AI.
- Financial frauds/ manipulations brought by AI algorithms.
- Loss of human Influences.

AI is in the early stage of development and deployment across sectors. However, AI's real impact and capability are still to be realised.

Regulation of AI

AI, in its current form, is largely unregulated and unfiltered. AI algorithms learn from the extrapolation of data. If the developers of AI systems do not provide correct data, the resulting AI systems become biased and unfair and potentially create biases and inaccurate results. AI system influences human decision-making at multiple levels, from viewing habits, purchasing decisions, and political opinion deep takers to social values and can ignore the reality in front of us by creating biased scenarios. Therefore, given its reach and impact across sectors and user bases, there are growing considerations and social awareness to address the risks associated with AI and Web 3.0 technologies. There are growing questions about its ethical, moral and social applications. As a result, several countries and industry bodies are actively engaged in developing frameworks, both nature of promotional and regulatory, which include algorithmic decision-making. Priority is given to “Ethics” and fundamental principles and values associated with Artificial Intelligence.

Currently Published AI Frameworks

A considerable effort has been made globally, including in India, towards

evolving an approach for “Responsible AI”. Some of these efforts are listed below.

- **NIIT Aayog’s National Strategy for AI.** The document lists five critical areas of AI development. The National Strategy, released in 2021, is in two parts. Part I provides an approach to the development of AI. Part 2 describes the strategy for operationalising the principles outlined in Part I. The Economic Advisory Council to the Prime Minister has also released a working paper suggesting a “Complex Adaptive System Framework (CAS)” to regulate AI in India. The government of India has also sanctioned an “AI Mission” being executed by the Ministry of Electronic and Information Technology (MeitY). The “AI Mission” aims to develop AI and its appreciation in different sectors.
- **OECD AI Principles.** These are a set of principles that seek to promote human-centric AI. OECD has also released a report assessing the work undertaken by different governments worldwide in implementing OECD principles on AI.
- **G 20 AI Principles.** G-20 principles are primarily based on the principles and approach outlined and published by the OECD on AI.
- **EU Ethics Guidelines for Trustworthy AI.** The guidelines identify components of AI’s robust, trustworthy, lawful, and ethical aspects. The “AI Act” of the EU is primarily based on such guidelines.
- **EU-US TTC.** It is a joint roadmap for trustworthy AI and Risk management arising from AI. The roadmap is primarily based on OECD guidelines.
- **Global Partnership on AI Principles.** The Global Partnership on AI (GPAI) is a collaborative international initiative to promote the responsible development and utilisation of AI. GPAI brings together various stakeholders from around the world. India is a member of GPAI.

- **UNESCO Ethics of AI.** The UNESCO framework outlines several fundamental principles to guide the development and deployment of AI technologies.
- **United Nations Principles of Ethical Use of AI in UN.** The principles are derived from UNESCO ethics guidelines to ensure that UN deploy AI in the best interests of peoples it serves.
- **Framework by Countries.** Several Countries like Singapore, USA, Germany, Australia, UK, Japan and France have notified their “Strategic Plan for AI”.

Responsible AI- the Need of the Hour. Efforts worldwide have been extensive in establishing standards and frameworks, resulting in significant progress. Global guidelines on AI ethics have been published. However, current efforts primarily focus on managing AI risks for single stakeholders such as developers or algorithm creators. Given AI’s broad societal impact, it is crucial to systematically develop, deploy, and operationalize AI throughout its lifecycle. This approach ensures AI algorithms are trustworthy, safe, fair, and have positive outcomes for all stakeholders, including developers and users. A systematic framework will promote the development of AI systems based on ‘Responsible AI’ principles.

Need for Wider Discussion and a Road Map. The vision of positioning India as the world’s third-largest economy underscores the adoption of emerging technologies, including AI. Given that AI is still in its early stages of development and deployment, and its full impact has yet to be realised, there is a pressing need for extensive discussions to shape an approach and roadmap aligned with the core principles of “Responsible AI.” These principles aim to minimise the negative impacts and risks of AI systems across their lifecycle and effectively incorporate them into policy formulation and implementation across various sectors and disciplines, ensuring full interoperability.

This approach must be comprehensive, well-coordinated, and inclusive, fostering public-private cooperation, addressing employment challenges, and aligning with international frameworks. Broader discussions can facilitate the development of a systematic approach that explores new AI applications and establishes a comprehensive national strategy to ensure the safe, secure, and trustworthy development and deployment of AI.

Road Map for Development and Deployment of AI

The roadmap should prioritise the responsible and trustworthy use of AI, ensuring rigorous testing for effectiveness, privacy safeguards, prevention of biases, transparency, and workforce upskilling. It needs to offer a strategic national perspective with clear priorities and policies for AI development and usage. This should culminate in establishing an “AI Governance and Oversight Framework” that provides a systematic and equitable approach to foster innovation for societal and economic development while addressing AI-related concerns and risks. Coordination among various agencies is crucial for its successful implementation. The road map may address important elements including: -

- Accountability and integrity of platform and algorithm;
- Trusted development and deployment;
- Legal framework and Regulations;
- Incident reporting;
- Testing & assurance;
- Promote beneficial use of AI to enhance cyber security capabilities;
- Cyber defence and protection of critical infrastructure;
- Prescribe best practices and guidance for acquisition and operation of secure AI systems;
- Content provenance;
- Safety & alignment of R&D;
- Data quality;
- Capacity building and engagement with international bodies and groups.

The roadmap should be future-oriented, promoting the development of innovative AI applications that harness AI's potential to benefit the public and align with emerging international trends. This includes initiatives to upskill workers to meet the demands of evolving technological landscapes.

High-Level Stakeholders Group. A whole Government approach is needed to outline the road map and establish a comprehensive strategy. A high-level group of all stake holders including captains of the industry, users in the different economic sectors, Government and Academia needs to be set up to provide road map and governance framework.

Role of India's Judiciary in Promoting Sustainable Development

Prepared by Shri Anurag Sharma

On 22 May, VIF organized a Brainstorming Session on “Role of India’s Judiciary in Promoting Sustainable Development.” The meeting was chaired by the Director, Dr. Arvind Gupta. Justice Adarsh Kumar Goel, former Supreme Court judge and Chairperson of the National Green Tribunal (NGT) spoke at length on issues pertaining to, among other things, the constitutional and legal underpinnings of environmental protection in India, the current state of India’s environment, and the challenges faced by environmental protection in India. Following are the key highlights of discussions during the Brainstorming Session.

Environmental Protection in India: Constitutional and Legal Underpinnings

At the outset, it was highlighted that the judiciary in India plays a crucial role in interpreting and enforcing environmental laws, adjudicating disputes, safeguarding environmental rights, and shaping environmental governance. For instance, environmental protection is intricately linked with the Constitution of India, which includes several provisions such as: Article 14 (Right to Equality); Article 19(1)(g) (Fundamental Right to practice any profession or to carry on any occupation, trade, or business); Article 21 (Protection of life and personal liberty); Article 32 (Remedies for enforcement of fundamental rights); Article 48A (Protection and improvement of the environment and safeguarding of forests and wildlife); Article 51A(g) (Fundamental Duty to protect and improve the natural

environment, and to have compassion for living creatures); Article 253 (Legislation for giving effect to international agreements); and Article 226 (Power of High Courts to issue certain writs).

These constitutional provisions have facilitated the enactment of various environmental laws and regulations, including the Wildlife (Protection) Act, 1972; the Water (Prevention and Control of Pollution) Act, 1974; the Forest (Conservation) Act, 1980; the Air (Prevention and Control of Pollution) Act, 1981; the Environment (Protection) Act, 1986; the Biodiversity Act, 2002; the National Green Tribunal (NGT) Act, 2010; and the Compensatory Afforestation Fund Act, 2016.

Through landmark judgments on numerous cases, the Supreme Court of India has established principles relevant to environmental protection and sustainable development, including corporate environmental liability, sustainable development, polluter pays principle, burden of proof on developers or project proponents, and the public trust doctrine, among others.

Environmental Protection in India: The National Green Tribunal (NGT)

The National Green Tribunal (NGT) commenced operations on 4 July 2011, with its Principal Bench headquartered in New Delhi. To ensure accessibility across India, circuit benches have been established in Chennai, Bhopal, Pune, and Kolkata, reaching remote areas of the country. Under the NGT's jurisdiction, individuals seeking relief and compensation for environmental damage related to legislations listed in Schedule I of the National Green Tribunal Act, 2010 can approach the Tribunal. These statutes include the Water (Prevention and Control of Pollution) Act, 1974; the Water (Prevention and Control of Pollution) Cess Act, 1977; the Forest (Conservation) Act, 1980; the Air (Prevention and Control of Pollution) Act, 1981; the Environment (Protection) Act, 1986; the Public Liability Insurance Act, 1991; and the Biological Diversity Act, 2002.

The NGT has jurisdiction over all civil cases involving significant environmental questions, including the enforcement of environmental legal rights. From July 2018 to July 2023, the NGT received 15,132 new cases and disposed of 16,042 cases, including backlog cases. The expedited resolution of environmental cases was facilitated by various measures such as the use of video conferencing, special initiatives for disposing of older and complex cases, early identification of issues and scope in proceedings, establishment of joint committees, and technological advancements such as electronic service of notices, digital document filing requirements, and public accessibility to reports through websites.

Environmental Protection in India: Lingerin

Despite the dramatic growth in laws and regulations that are aimed at protecting the environment and the establishment of a special tribunal, challenges remain. For example, industrial accidents involving dangerous chemicals continue to occur with depressing regularity. India also faces a huge waste management problem. The country generates about 65 million tonnes of waste every year, and the vast majority of them end up in landfills. In all, there are about 3,084 such “garbage mountains” in India. Pollution also continues to pose serious risks to human health, economic assets, and the overall environment. For example, there are an estimated 351 polluted river stretches and 100 polluted industrial clusters in India. That includes 38 “critically polluted,” 31 “severely polluted,” and 31 “polluted” areas. There are also 134 “non-attainment cities” i.e. cities that exceeded the National Ambient Air Quality Standards (NAAQS) consecutively for five years. Illegal sand mining has also affected large parts of India adversely. The negative impacts of sand mining are not just ecological. It has led to direct loss of revenue for states and it also fuels corruption. Social evils such as bonded labour are also associated with illegal sand mining and its supply chains. A key reason for the persisting environmental problems is weak enforcement of environmental laws and regulations. Lack of awareness, commercial and vested interests, poor coordination

across government agencies, weak institutional capacity, inadequacy of technology, etc. have contributed to this compliance conundrum. There is an urgent need to usher in mindset change i.e. being more mindful of one's impact on the environment. That can lead to behavioural change such as changing consumption patterns (reuse and recycle) that are beneficial for the environment. Paradigm shift in administrative approach to change processes, consciousness of duty, systematic prioritization, community involvement and people participation, etc. can also have positive impacts on India's environment and hence its people.

Discussions

The Brainstorming Session elicited much discussion among participants. First, the concept of "Rights of Nature" as a tool for environmental protection was discussed. Rights of Nature aimed to bestow fundamental rights and safeguards upon ecosystems and natural entities within the environmental sphere. It encompassed a range of principles, advocating for the right of natural entities to flourish and seeking formal recognition of nature as a legal entity in its own right. However, it was argued that enforcement of such rights on behalf of nature could be problematic and that protection of the natural environment could be achieved even without conferring rights to them.

Second, mindset and behavioural changes at both individual and systemic levels were discussed. At the individual level, changes aimed at raising awareness of environmental issues should have been inculcated right from the school level. At the systemic level, environmental issues should have been made a top priority for governments and industries. To this end, relevant government departments should have pursued sensitisation and awareness activities on environmental protection, conducted training sessions, and organized exchange activities to address emerging environmental challenges. Such trainings and activities could have enhanced the understanding and responsiveness of professionals toward

environmental issues.

Finally, the need for effective utilisation of funds collected under Environmental Damage Compensation (EDC) was discussed. EDC was a tool under the “Polluter Pays” principle, where polluters paid costs for environmental damage caused. It was also based on the precautionary principle, ensuring that operators took appropriate actions to prevent environmental damage. EDC was collected by pollution control boards throughout India, but its effective utilization for restoring environmental damages remained a challenge. It was imperative to clarify the authority and powers of state pollution control boards in collecting and spending EDC.

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