ISSN 2790-7139
E-ISSN 2958-082X

Journal of Aerospace & Security Studies

2025 | Volume IV

CASS
CENTRE for AEROSPACE & SECURITY STUDIES

© Journal of Aerospace & Security Studies

ISSN 2790-7139
E-ISSN 2958-082X

2025

The Journal of Aerospace & Security Studies (JASS) is the flagship publication of Centre for Aerospace & Security Studies (CASS) Islamabad and operates under the Creative Commons Attribution 4.0 International (CC BY 4.0) license, which permits users to read, download, copy, distribute, adapt, and reuse the content, provided appropriate credit is given to the original authors and the journal.

The views and opinions expressed are those of the authors and do not necessarily reflect the policy and position of CASS Islamabad or the Editorial Committee. Authors are responsible for the accuracy of data and citations. JASS upholds zero-tolerance plagiarism policy.

All correspondence pertaining to this document should be addressed to CASS, Islamabad through post or email on the following address:

Centre for Aerospace & Security Studies

cass.thinkers@casstt.com
Centre for Aerospace & Security Studies
+92 051 5405011
cassthinkers
cass.thinkers
@CassThinkers

Old Airport Road, Islamabad, Pakistan
www.casstt.com

Title Design & Layout:
Hira Mumtaz

ISSN 2790-7139
E-ISSN 2958-082X

Journal of Aerospace & Security Studies (JASS)

Volume IV

EDITOR-IN-CHIEF

Dr Usman W. Chohan

EDITOR

Dr Jehanzeb Masud

MANAGING EDITOR

Mashal Shahid

CASS
CENTRE for AEROSPACE & SECURITY STUDIES

EDITORIAL COMMITTEE

Patron-in-Chief

Air Marshal Javaid Ahmed, HI (M) (Retd)

Editor-in-Chief

Dr Usman W. Chohan

Editor

Dr Jehanzeb Masud

Managing Editor

Mashal Shahid

Graphic Designer/Curator

Hira Mumtaz

EDITORIAL BOARD

1. Dr Zia ul Haque Shamsi, Head of Department of Strategic Studies, National Defence University (NDU), Islamabad, Pakistan
2. Dr Syed Irtiza Ali Shah, Principal of School of Interdisciplinary Engineering & Sciences, National University of Sciences and Technology (NUST), Islamabad, Pakistan
3. Dr Iqbal Rasool Memon, Subject Matter Expert, National Aerospace Science & Technology Park (NASTP), Rawalpindi, Pakistan

ADVISORY BOARD

International

1. Dr. Sven Van Kerckhoven, Vice-Dean for Education, Brussels School of Governance (BSoG), Brussels, Belgium
2. Dr. Wang Xu, Associate Professor, Peking University, Beijing, China
3. Phillip Kingston, Visiting Professor, National Aviation University, Kyiv, Ukraine
4. Dr Asim Munawar, Project Lead & Senior Research Scientist, International Business Machines (IBM) Corporation, New York, USA

National

5. Prof. Dr. Shabana Fayyaz, Department of Defence & Strategic Studies, Quaid-i-Azam University (QAU), Islamabad, Pakistan
6. Prof. Dr. Zunera Jalil, Dean, National Cyber Security Academy, Air University, Islamabad, Pakistan
7. Prof. Dr. Imran Ihsan, Head of Department of Creative Technologies, Air University, Islamabad, Pakistan
8. Dr Vaqar Ahmed, Team Lead, AAWAZ-II – Independent Feedback & Monitoring, Foreign Commonwealth & Development Office (FCDO), Islamabad, Pakistan

FOREWORD

As a first step in grasping the contents of Volume IV of the *Journal of Aerospace & Security Studies* (JASS), it is important to note that the volume arrives at the terminus of a year that has been marked by heightened conflict and overt violence, accelerating technological change, geopolitical tumult, and widespread economic uncertainty. Yet the prevalence of these conditions only helps to reinforce the need for innovative and interdisciplinary scholarship that can illuminate emerging frontiers in aerospace, aviation, emerging technologies, kinetic conflict, hybrid warfare, economics, and geopolitics. These are the areas of research subsumed within the scope of JASS, and so the research that comprises this volume helps to address areas that warrant further research enquiry while speaking to the pressing challenges of our time. In Volume IV, JASS continues its burgeoning reputation of offering valuable research that bridges theoretical insights with practical policy implications. It is therefore a matter of pride for the Centre for Aerospace & Security Studies (CASS) Islamabad, which is closely tied to the journal, that Volume IV of JASS offers a compelling collection of research articles and book reviews that exemplify the journal's commitment to scholarly excellence and its broad thematic scope.

The research section of Volume IV brings together five articles that engage deeply with pressing issues in space security, regional defence architectures, geopolitical contestations, and national policy frameworks. Dmitry Erokhin's work on the future of space security demonstrates an innovative methodological approach that melds computational linguistics and scenario analysis, where he deploys natural language processing (NLP) to systematically analyse expert perspectives and thereby offer a forward-looking framework to the anticipation emerging risks in space security, while also considering policy dialogues around outer space governance. In the domain of regional defence and strategic studies, Mashaal Shahnawaz's work situates Seoul's evolving security infrastructure within the broader East Asian strategic

landscape, with particular attention to how integrated defence systems shape deterrence and alliance dynamics. Her analysis thus contributes to our understanding of how technological and doctrinal shifts influence regional balances of power.

Husnain Shehzad and Zubair Ahmed's work on Syria addresses geopolitical conflict through the lens of contemporary crises. In providing a comprehensive assessment of the Syrian conflict that interweaves political, economic, and security dimensions, their multidisciplinary approach underscores how protracted conflicts have become arenas for competing domestic and international interests, with implications for regional stability and great-power competition. Continuing the focus on national policy and structural evaluation, Urooj Saif and Laiba Tahir's work offers a meticulous review of Pakistan's new URAAN policy framework. Their article examines the coherence and effectiveness (and shortcomings therein) for policy architectures in advancing national priorities, providing critical insights into institutional design, governance mechanisms, and strategic outcomes relevant to Pakistan's ambitions for economic revival. Finally, Mustafa Bilal's work on astropolitics navigates the complex landscape of international alliances and rivalries in outer space. Bilal's article places particular emphasis on how states negotiate cooperation and competition in orbital and beyond-orbital activities, highlighting the multifaceted nature of astropolitics as both a domain of strategic collaboration and geopolitical contestation, thereby contributing to a global corpus on astropolitics as interdisciplinary research field with an inextricable aerospace bent.

Volume IV also features a thoughtfully curated book review section that complements the core research articles by situating significant contemporary scholarship within the journal's thematic ambit. Mustafa Bilal reviews *Unit X* and offers readers a critical lens into the exhaustive analysis that Kirchhoff and Shah undertook in their book, which succeeded as a deep dive into the US Department of Defense's innovation unit whose primary task was to merge the military bureaucracy's interests with the innovative zeal of Silicon

Valley. Zahra Niazi's review of *The Great Trade Hack* brings to light important intersections between trade, technology, and security in an era of heightened uncertainty, pointing to the follies of the extreme protectionist bent that the Trump 2.0 administration has adopted through tariffs and other anti-globalist measures as enumerated and analysed by Richard Baldwin. Umaima Ali's review of *Target Tehran* provides context on security challenges in the Middle East as perceived by Evyatar and Jeremy-Bob, while Shaheer Ahmad's engagement with *Next War* explores the imaginative and thought-provoking analysis by Antal with respect to the evolving character of military conflict and strategic competition.

The preparation of this volume owes much to the hard work of the editorial team, whose tireless efforts have brought this compendium to fruition. I am privileged to have supported them in my humble capacity as Editor-in-Chief, and to ensure that these standards persist in future volumes, which will allow JASS to bloom as an avenue of novel research that does justice to both the hard work of its contributors, as well as to CASS' reputation as a leading centre of national and international research.

Dr Usman W. Chohan

Editor-in-Chief

Journal of Aerospace & Security Studies

Table of Contents

Research Papers

1. Integrating NLP and Scenario Analysis for the Future of Space Security: A Structured Examination of Online Expert Discourse
   Dr Dmitry Erokhin 1
2. South Korea's Three-Axis Defence System: Impact on Regional Security
   Mashaal Shahnawaz 21
3. Syria: Battleground of 'Power, Politics and Economics'
   Husnain Shehzad & Zubair Ahmed 36
4. URAAN Pakistan: Evaluating the Policy Architectures
   Urooj Saif & Laiba Tahir 57
5. Astropolitical Alliances: Competition and Cooperation in Space
   Mustafa Bilal 78

Book Reviews

1. Unit X: How the Pentagon and Silicon Valley are Transforming the Future of War
   Reviewer: *Mustafa Bilal* 101
2. The Great Trade Hack: How Trump's Trade War Fails and the World Moves On
   Reviewer: *Zahra Niazi* 104
3. Target Tehran
   Reviewer: *Umaima Ali* 107
4. Next War: Reimagining How We Fight
   Reviewer: *Shaheer Ahmed* 109

RESEARCH PAPERS

Journal of Aerospace & Security Studies
2025 | Volume IV | pp.1-20

Integrating NLP and Scenario Analysis for the Future of Space Security: A Structured Examination of Online Expert Discourse

Dr Dmitry Erokhin

Abstract

This study conducts a scenario-based analysis of space security by integrating diverse perspectives from online media through advanced Natural Language Processing (NLP). Transcripts from 44 YouTube videos on space security are analysed including expert discussions, current news updates, and a diverse range of opinions to identify 14 key factors having an impact on the development of space security including international security environment, technological dependency, anti-satellite weaponry, space debris, governance, transparency, international cooperation, military organisation, commercial roles, cybersecurity, attack forms, commercial resilience, regulatory compliance, and space weather. Based on these factors, three scenarios of the future are developed: a Cooperative and Resilient Space Environment; a Fragmented and Vulnerable Space Domain; and a Chaotic and Hostile Space Environment. The stable future foresees strong international norms, robust cybersecurity, unified military organisation, and high commercial resilience, while the quasi-stable future reflects weakening international relations and governance. The unstable future is shaped by escalating geopolitical tensions, aggressive weaponisation, extreme debris, and severe space weather, leading to widespread disruption. This innovative methodology transforms unstructured online opinions into structured insights to guide policy and strategic decision-making.

Keywords: Space Security, Scenario-Based Analysis, Online Media Analysis, Natural Language Processing (NLP), Policy and Strategic Decision-Making.

Introduction

Space security has emerged as a critical area of study due to the increasing reliance on space-based assets for global communications, navigation, and defence systems.[1] The space domain faces multifaceted threats, including anti-satellite (ASAT) weapons, hypersonic technology, and cybersecurity risks to satellite systems. The rapid deployment of new space technologies introduces additional vulnerabilities to an already complex security environment. Addressing these challenges requires a comprehensive strategy encompassing deterrence, defence, global engagement, situational awareness, and responsive infrastructure.[2]

The increasing importance of space security extends beyond national borders, impacting international stability, economic prosperity, and technological progress.[3] As space becomes a contested domain, the risk of conflict has heightened due to geopolitical tensions and technological advancements. The threat of cyberattacks on space systems is a growing concern, with potential for novel attack scenarios that could catch defenders off guard.[4] Space systems are increasingly linked to societal resilience, necessitating their consideration in future planning.[5] The current volatile, uncertain, complex, and ambiguous (VUCA) environment in space operations presents unique challenges for both government and commercial entities.[6] Strategic foresight emerges as a crucial approach for navigating this uncertainty, enabling better decision-making and increasing resilience to disruption in the space industry. By systematically combining

1 Radosław Bielawski, "Space as a New Category of Threats to National Security," *Safety & Defense* 5, no. 2 (2019): 1–7; Jordan Plotnek and Jill Slay, "New Dawn for Space Security," in *Proceedings of the International Conference on Cyber Warfare and Security*, vol. 17, no. 1 (2022): 253–61 (Reading: Academic Conferences International Limited, 2022).

2 James D. Rendleman, "Strategy for Space Assurance," in *Space Strategy in the 21st Century*, 77–119 (London: Routledge, 2013).

3 Jahid Hasan Rana, Md Rakib, Joy Mondal, and Razon Ali, "Modern Security Dilemma: A Space Security Perspective for the Future World," *International Journal of Research and Innovation in Social Science* 8, no. 3s (2024): 1681–99.

4 Patrick Lin et al., "Outer Space Cyberattacks: Generating Novel Scenarios to Avoid Surprise," *arXiv preprint* arXiv:2406.12041 (2024), https://doi.org/10.48550/arXiv.2406.12041.

5 Liviu Mureşan and Alexandru Georgescu, "The Road to Resilience in 2050: Critical Space Infrastructure and Space Security," *The RUSI Journal* 160, no. 6 (2015): 58–66.

6 Sarah Georgin and Kara Cunzeman, "A Recent Study into the Future of Exploration," in *Proceedings of the AIAA SciTech 2024 Forum*, Orlando, Florida, January 8–12, 2024 (Reston, VA: American Institute of Aeronautics and Astronautics, 2024), paper 2174.

different values of critical factors, scenario planning allows for the anticipation of a range of possible outcomes. This approach not only helps to identify potential risks and vulnerabilities but also informs the development of robust strategies that can adapt to rapidly changing conditions.

Against this background, the aim of this study was to construct plausible scenarios of the future of space security. A scenario includes both the endpoint and the pathway or sequence of events leading to it.[7] To do that, 44 relevant YouTube videos on space security were identified, and their transcripts were extracted. Then, advanced Natural Language Processing (NLP) was applied to identify key factors influencing space security, and finally, three future scenarios were constructed based on a plausible combination of these factors. This approach allows capturing a wide array of perspectives and complements traditional stakeholder workshops or roundtables, which are, while invaluable, inherently limited by the number and diversity of participants.

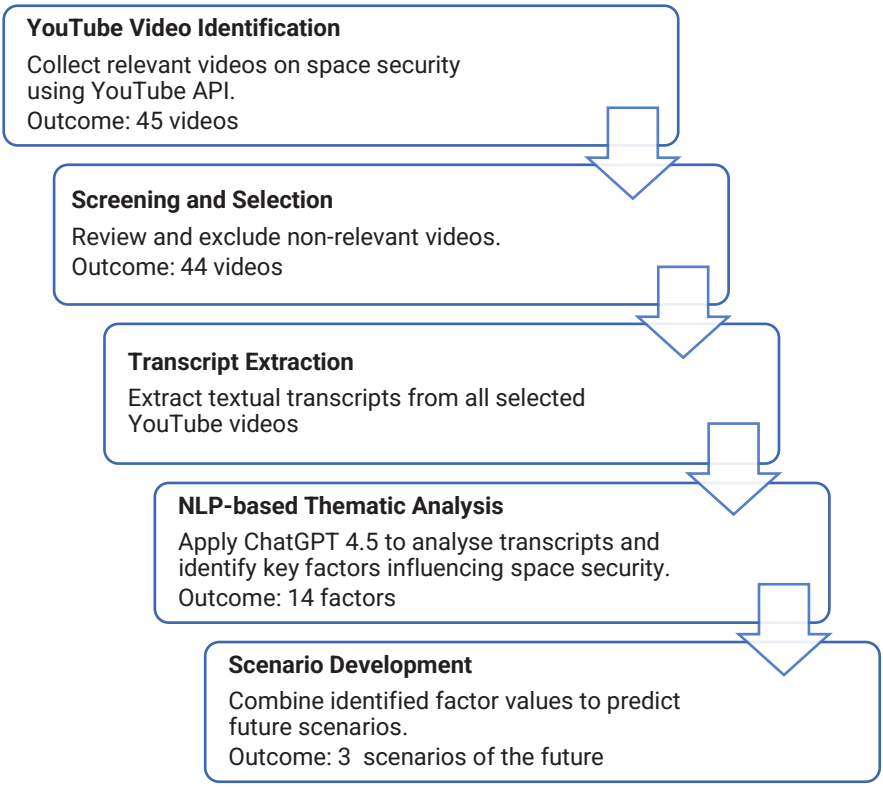
The future scenarios offer valuable insights into how different configurations of the identified factors might influence space security. By presenting these divergent futures, the study underscores the importance of proactive and adaptive policy interventions. The scenarios not only highlight potential risks but also serve as a basis for exploring the range of strategies that could mitigate these threats. This includes developing robust regulatory frameworks, investing in resilient cybersecurity infrastructure, fostering international cooperation, and ensuring that commercial innovations are integrated into a secure and sustainable space environment. The diverse perspectives captured from online media add a layer of depth to the analysis, ensuring that the scenarios reflect a realistic spectrum of opinions and expert insights.

Methodology

In this study, a multi-step methodology was employed to assess the factors impacting space security by leveraging online media sources and advanced NLP (see Figure I):

7 Hannah Kosow and Robert Gaßner, *Methods of Future and Scenario Analysis*, Studies 39 (Bonn: German Development Institute, 2008), https://www.idos-research.de/uploads/media/Studies_39.2008.pdf.

Figure I: Research Methodology Flowchart



Source: Author's own.

First, on 3 March 2025, relevant YouTube videos on space security were identified using the YouTube API, which initially provided 45 most relevant videos to the topic of space security. After closer analysis, 1 video was excluded as non-relevant, resulting in a final set of 44 videos. Most relevant in this context refers to videos that are most likely to appear when someone searches for this topic. All videos, along with short descriptions, are listed in the appendix. This extensive dataset provided a broad spectrum of online opinions, debates, and expert discussions, thereby offering a more comprehensive perspective than traditional stakeholder workshops or roundtables might yield.

Subsequently, the collected transcripts were analysed using ChatGPT 4.5. This advanced language model was utilised to identify key factors influencing space security and to determine the various values associated with each factor. The analysis involved processing the textual data to extract and classify themes related to space security. By automating this thematic extraction, the study

complements direct stakeholder engagement, capturing a richer diversity of opinions and insights from online content.

Based on the identified factor values, a series of plausible scenarios of the future were formulated. These futures are synthesised from different combinations of the values, resulting in detailed narratives that span from stable to unstable outlooks on the future of space security. This scenario-based approach enables the exploration of diverse potential futures and provides a structured framework for understanding the interplay between various factors. Consequently, this study contributes to a growing body of research in the emerging field of web mining applications for scenario building.[8]

Despite its strengths, the methodology has several limitations. The analysis is contingent upon the quality and representativeness of the YouTube video transcripts, which may embody inherent biases of the selected media sources. Furthermore, while ChatGPT 4.5 is a powerful tool for thematic extraction and value determination, it may not capture all the nuances that might emerge from direct stakeholder workshops. Finally, the futures generated are plausible constructs based on current data and assumptions and may not fully account for unforeseen technological or geopolitical shifts in the future.

Results and Discussion

Analysis of the transcripts identified a series of critical factors including the international security environment, technological dependency, anti-satellite (ASAT) weaponry, space debris, governance and international norms, transparency and trust, international cooperation, military organisation, commercial sector role, cybersecurity measures, forms of attack, commercial resilience, regulatory compliance, and space weather that collectively inform our understanding of potential scenarios of the future (see Table I for a comprehensive overview of the relevant factors and their potential values):

8 Victoria Kayser and Erduana Shala, "Scenario Development Using Web Mining for Outlining Technology Futures," *Technological Forecasting and Social Change* 156 (2020): 120086; Kim Young-jun, "A Public-Based Exploratory Approach to Technology Foresight: Text Mining and Scenario Planning" (PhD diss., Seoul National University Graduate School, Seoul, South Korea, 2020); Jieun Kim, Mintak Han, Youngjo Lee, and Yongtae Park, "Futuristic Data-Driven Scenario Building: Incorporating Text Mining and Fuzzy Association Rule Mining into Fuzzy Cognitive Map," *Expert Systems with Applications* 57 (2016): 3.

Table I: Factors Influencing Space Security and their Values

Factors	Factor Values			
Factor 1: International Security Environment	Stable (peaceful cooperation, established norms)		Deteriorating (current state, increased tensions and potential for conflict)	
Factor 2: Technological Development and Dependency	Low technological dependency (minimal satellite use)	Moderate technological dependency	High technological dependency (heavy reliance on space technology for communication, transportation, navigation, etc.)	Accelerated technological innovation (disruptive technologies and commercial initiatives rapidly changing the landscape)
Factor 3: Anti-Satellite (ASAT) Weaponry	Non-existent (no ASAT capabilities)	Limited ASAT capability	Extensive development and testing of ASAT weapons (destructive and non-destructive technologies)	Widespread operationalisation (actively deployed and tested by multiple nations, e.g., US, Russia, China)
Factor 4: Space Debris	Minimal debris environment	Moderate debris environment (occasional collisions and manageable risks)	High debris environment (significant risk of collision, frequent manoeuvres required)	Extreme debris environment (critical threat to space assets and astronauts, resulting from ASAT testing)
Factor 5: Governance and International Norms	Strong international norms and agreements (clear and robust regulations widely accepted)	Weak norms but existing informal understandings	Weak governance (few or inadequate regulations, limited international agreements)	No governance (absence of enforceable norms or legal frameworks, high potential for conflict)
Factor 6: Transparency and Trust	High transparency (clear communication of intentions and capabilities, strong international trust)	Moderate transparency (occasional miscommunications or misunderstandings)	Low transparency (ambiguous intentions, insufficient information sharing, rising tensions)	No transparency (significant misunderstandings, high potential for conflict escalation due to mistrust)
Factor 7: International Cooperation	Strong international cooperation (multilateral space security mechanisms)	Moderate cooperation (limited multilateral initiatives)	Limited international cooperation (mostly bilateral agreements, some diplomatic engagement)	Isolationism (countries acting independently, limited or no international cooperation)

Factor 8: Military Organisation and Governance	Unified military organisation (clear command structure and accountability, e.g., unified Space Force)	Fragmented military organisation (responsibilities distributed across multiple branches)	Adaptive governance (responsive, integrated civil-military-commercial governance)	Rigid governance (slow response, outdated regulations)
Factor 9: Commercial Sector Role	Minimal commercial involvement	Growing commercial involvement (commercial satellites supporting military operations and imagery)	Dominant commercial sector (heavy commercial presence driving innovation and security implications)	Regulatory mismatch (laws/regulations not keeping pace with commercial realities, gaps leading to vulnerabilities)
Factor 10: Cybersecurity Measures	High cybersecurity standards (robust encryption, secure ground stations, multi-GNSS receivers)	Moderate cybersecurity standards (partial implementation of security measures, vulnerabilities exist)	Low cybersecurity standards (insufficient security measures, high vulnerability to cyber-attacks, data breaches common)	
Factor 11: Forms of Attack	Direct kinetic attacks (ASAT missiles clearly detectable, attribution is easy)	Non-kinetic reversible attacks (jamming and cyber-attacks; attribution difficult, reversible, covert)	Mixed methods (combination of overt kinetic attacks and covert cyber operations)	
Factor 12: Commercial Sector Resilience	Strong international regulatory compliance (effective global licensing and enforcement, universal standards)	Moderate resilience (some measures in place but insufficient protection against targeted attacks)	Low resilience (minimal or no protective measures, highly vulnerable)	
Factor 13: International Regulatory Compliance and Enforcement	Strong international regulatory compliance (effective global licensing and enforcement, universal standards)	Moderate compliance (partial adherence, occasional breaches with some accountability)	Weak compliance (frequent breaches, limited enforcement, finger-pointing among parties, ineffective regulation)	
Factor 14: Space Weather (Natural Threats)	Stable space weather (minimal solar storms or natural disruptions)	Moderate space weather (occasional events, manageable impacts)	Severe space weather (frequent disruptive events causing significant confusion with man-made attacks)	

Source: Author's own based on factors and their values extracted from YouTube transcripts on space security.

The international security emerged as a foundational factor, ranging from stable conditions characterised by peaceful cooperation and established norms to a deteriorating environment marked by rising tensions and potential conflict. This factor is intrinsically linked with technological dependency, where an accelerated pace of innovation, while driving rapid advancements, also increases reliance on space-based assets critical to communication, navigation, and transportation. In futures where technological dependency is high, vulnerabilities in cybersecurity become more pronounced if corresponding protections are not simultaneously advanced.

ASAT weaponry represents another pivotal element. The transcripts detail a spectrum from limited capabilities where nations maintain modest and controlled ASAT options to widespread operationalisation, in which multiple nations actively deploy such weapons. The extent of ASAT deployment directly influences the physical security of satellites and contributes to the accumulation of space debris. The creation of space debris itself is a factor with values that range from minimal under effective mitigation measures to extreme, where aggressive testing and kinetic engagements generate hazardous levels of orbital debris that threaten both satellites and human activities in space.

The role of governance and international norms cannot be overstated. Strong international agreements and robust regulatory frameworks have the potential to keep space a peaceful domain. Conversely, weak governance or a complete lack of enforceable norms can foster an environment where unilateral actions and escalatory behaviours prevail. In parallel, transparency and trust are critical for maintaining stability; high levels of openness can deter hostile actions by clarifying intentions, while low or absent transparency may lead to misinterpretations and inadvertent escalations, particularly in the cyber realm.

International cooperation further influences the space security domain. A future scenario with strong multilateral cooperation will enable shared space situational awareness and coordinated responses to both kinetic and cyber threats. In contrast, isolationist policies reduce the capacity for collective defence and may lead to fragmented responses to emerging challenges. Similarly, the structure of military organisation ranging from unified and adaptive frameworks to fragmented or rigid governance plays a decisive role in determining how effectively threats are managed. A unified military organisation, such as a well-integrated Space Force, is better positioned to address both physical and cyber threats compared to a fragmented system where responsibilities are dispersed.

The commercial sector's role in space security has grown markedly, with a dominant commercial presence driving innovation and shaping new business

models. However, when commercial activity outpaces regulatory frameworks – a state described as regulatory mismatch – it can introduce vulnerabilities that may be exploited by cyber adversaries. Cybersecurity measures themselves vary from high standards, incorporating robust encryption and resilient ground systems, to low standards where insufficient protection leaves critical infrastructures exposed to cyber-attacks. The nature of potential attacks is also diverse, ranging from direct kinetic strikes, which are overt and highly escalatory, to non-kinetic reversible attacks like jamming and cyber intrusions that are covert and, in some cases, can be mitigated more readily.

Commercial sector resilience, defined by the ability of companies to implement advanced protections and recover from disruptions, further shapes the overall security posture. High resilience helps buffer the impact of attacks, whereas low resilience can lead to cascading failures across critical services. Additionally, international regulatory compliance and enforcement play a crucial role; strong global standards ensure accountability and adherence to rules, while weak compliance mechanisms can lead to frequent breaches and a breakdown in order. Finally, space weather introduces an element of natural uncertainty. Stable conditions allow for predictable operations, but severe space weather events can not only disrupt satellite functionality but also mimic or exacerbate the effects of deliberate cyber or kinetic attacks.

These factors form the basis for the three plausible scenarios of the future formulated in this study (see Table II for plausible combinations of factor values):

Table II: Plausible Combinations of Factor Values and Resulting Future Scenarios

Factors	Scenario 1: Cooperative and Resilient Space Environment	Scenario 2: Fragmented and Vulnerable Space Domain	Scenario 3: Chaotic and Hostile Space Environment
Factor 1: International Security Environment	Stable	Deteriorating	Deteriorating
Factor 2: Technological Development and Dependency	Accelerated technological innovation	High technological dependency	High technological dependency
Factor 3: Anti-Satellite (ASAT) Weaponry	Limited ASAT capability	Extensive development and testing of ASAT weapons	Widespread operationalisation
Factor 4: Space Debris	Minimal debris environment	Moderate debris environment	Extreme debris environment
Factor 5: Governance and International Norms	Strong international norms and agreements	Weak norms but existing informal understandings	No governance
Factor 6: Transparency and Trust	High transparency	Moderate transparency	No transparency
Factor 7: International Cooperation	Strong international cooperation	Moderate cooperation	Isolationism
Factor 8: Military Organisation and Governance	Unified military organisation	Fragmented military organisation	Rigid governance
Factor 9: Commercial Sector Role	Dominant commercial sector	Growing commercial involvement	Regulatory mismatch
Factor 10: Cybersecurity Measures	High cybersecurity standards	Moderate cybersecurity standards	Low cybersecurity standards
Factor 11: Forms of Attack	Non-kinetic reversible attacks	Mixed methods	Direct kinetic attacks
Factor 12: Commercial Sector Resilience	High resilience	Moderate resilience	Low resilience
Factor 13: International Regulatory Compliance and Enforcement	Strong international regulatory compliance	Moderate compliance	Weak compliance
Factor 14: Space Weather (Natural Threats)	Stable space weather	Moderate space weather	Severe space weather

Source: Author's own using plausible combinations of factor values.

Scenario 1: Cooperative and Resilient Space Environment (Stable)

In this envisioned future, international relations and technological innovation converge to create a secure, stable, and dynamic space environment. Nations operate within a framework of peaceful cooperation, underpinned by strong international norms and widely accepted regulations that ensure space remains a domain of shared prosperity and mutual trust.

Global stability is achieved through the steadfast adherence to established norms, with nations engaging in peaceful collaboration and transparent communication. High levels of openness regarding intentions and capabilities foster trust, enabling multilateral security mechanisms and shared space situational awareness to guide decision-making and collective action.

Accelerated technological advancements driven by disruptive commercial initiatives are seamlessly integrated into secure systems. This rapid innovation, coupled with the dominant role of a vibrant commercial sector, ensures that cutting-edge technologies are not only developed swiftly but also safeguarded against emerging threats. Companies have built robust systems, with advanced encryption and diversified support of global navigation satellite systems, that stand resilient against cyber threats and operational interference.

Defensive capabilities are calibrated with restraint: nations maintain modest, controlled anti-satellite options that avoid aggressive escalation. Simultaneously, effective debris-mitigation measures and responsible testing protocols have preserved a minimal debris environment in orbit, ensuring operational clarity and long-term sustainability of space assets.

The establishment of a unified military organisation exemplified by a well-integrated Space Force ensures clear command structures and accountability. This cohesive military governance complements strong international regulatory compliance and enforcement, whereby global licensing and universal adherence to space rules minimise potential conflicts and maintain order.

Space operations are further bolstered by high cybersecurity standards and resilient ground systems. In the event of conflicts, any offensive actions manifest primarily as non-kinetic, reversible cyber intrusions or jamming operations that are promptly detected and mitigated. Meanwhile, a stable space weather environment with minimal natural disruptions contributes to predictable and secure operational conditions.

This image of the future supports both global and regional strategic stability. Strong international norms, robust cooperation, and transparent communication lower the risk of misunderstandings and deliberate escalations. The existence of unified military governance, high regulatory compliance, and resilient commercial and cybersecurity systems ensure that space remains a predictable, secure environment, reducing incentives for arms races or regional power imbalances. Regional actors are included in multilateral frameworks, further reinforcing collective stability.

Scenario 2: Fragmented and Vulnerable Space Domain (Quasi-stable)

In this future, the global space domain is marked by fragmentation and heightened vulnerability. Nations depend heavily on space for essential services such as communication, navigation, and surveillance, yet rising geopolitical tensions and regional disputes increasingly put these critical assets at risk.

Amid a deteriorating international security environment, regional conflicts and escalating tensions create an atmosphere of uncertainty. Heavy technological dependency on space-based systems means that any disruption whether intentional or accidental can have far-reaching impacts on both civilian and military infrastructures. This environment amplifies the risks associated with the development and testing of anti-satellite weapons.

Multiple nations are actively expanding their ASAT programmes, pushing the boundaries of capability without fully operationalising these systems. As a result, the spectrum of potential conflict now includes both overt kinetic actions and covert cyber or jamming operations, complicating the challenge of attribution and response. The blend of these aggressive measures, against a backdrop of high dependency on space assets, creates a precarious balance, where a single misinterpreted action can spark wider escalation.

While space remains an essential domain, the orbital environment is not free from hazards. Occasional collisions and debris events have led to a moderate debris situation, indicating an upward trend in risks that, while still manageable, hint at potential future instability. This growing debris issue further complicates the safe and reliable operation of satellites and other space infrastructure.

The regulatory landscape in space is characterised by weak norms and patchy governance. Although informal understandings and some regulatory frameworks exist, enforcement is inconsistent, and accountability is sporadic. This fragmentation in international regulatory compliance is compounded by moderate

levels of transparency – frequent miscommunications and occasional information withholding undermine trust among nations and within the commercial sector.

The military organisation governing space assets is fragmented, with responsibilities spread across various services and agencies, making coordinated responses challenging in times of crisis. Similarly, while the commercial sector is expanding its role and influence in space, its integration with national security needs is still evolving. Cybersecurity measures within both domains are only moderately robust, leaving critical systems exposed to vulnerabilities and targeted attacks.

Adding to the complexity are natural factors such as occasional solar storms. These space weather events can cause disruptions that are easily mistaken for deliberate actions, further muddying the waters in an already uncertain environment. The convergence of these natural threats with human-induced challenges raises the stakes even higher, increasing the risk of misinterpretation and inadvertent escalation.

Here, strategic stability is mixed and fragile. Weakening international governance, patchy cooperation, and fragmented military organisations create opportunities for regional disputes to escalate or spill over into global instability. The high dependency on vulnerable space assets increases the risk of both intentional and accidental disruptions, while moderate transparency and enforcement gaps heighten the chances of miscalculation. Regional actors may pursue independent or competitive strategies, complicating global efforts to manage stability.

Scenario 3: Chaotic and Hostile Space Environment (Unstable)

In this grim, unstable future, the space domain has transformed into a theatre of chaos and open hostility. Escalating geopolitical rivalries and relentless brinkmanship have pushed international relations to a breaking point, where nations operate under a constant state of alert and distrust. Critical infrastructures on Earth now rely almost exclusively on space-based services, rendering them alarmingly vulnerable in an environment where no robust alternatives exist.

The widespread operationalisation of ASAT weapons marks a dramatic shift in military doctrine. Multiple nations have not only developed but also deployed these weapons as first-strike options, fundamentally altering the calculus of conflict. In this volatile setting, overt, destructive kinetic attacks have become the norm – visible, escalatory, and potentially catastrophic.

Aggressive testing and kinetic engagements have transformed the orbital environment into a hazardous debris field. This extreme level of space debris endangers all assets in orbit, amplifying the risks for both military and commercial systems. The collapse of international regulatory frameworks has left space as a free-for-all arena, devoid of any agreed-upon rules or effective governance.

Transparency has all but vanished, as intentions and capabilities remain shrouded in secrecy. Isolationism dominates, with nations acting independently and rarely engaging in multilateral cooperation. Rigid, outdated military structures further complicate rapid decision-making, impeding the ability to adapt to emerging threats. This combination of factors has fostered an environment where misinterpretations and unintended escalations are inevitable.

While the commercial sector continues to boom, it does so amid a regulatory mismatch that leaves companies highly exposed to exploitation and cyber-attacks. Low cybersecurity standards and insufficient protective measures mean that even minor disruptions can trigger cascading failures across critical systems. Vulnerability of these commercial entities exacerbates overall instability of the space domain.

Compounding the human-driven chaos are severe space weather events. Frequent, intense solar storms disrupt operations and further blur the lines between natural phenomena and hostile actions. These environmental challenges not only hinder operational stability but also serve as an additional source of confusion and tension.

Strategic stability is severely compromised in this future scenario. Widespread operationalisation of ASAT weapons, lack of governance, isolationism, and low transparency create an environment ripe for crisis and uncontrolled escalation. Both global and regional rivalries are likely to intensify, with nations acting unilaterally, often in ways that undermine predictability and deterrence. Vulnerability of the commercial sector and frequent severe space weather add further volatility, making both intentional and accidental destabilising events more likely.

Conclusion

The evolving security landscape of outer space, as revealed through this study, is not merely a set of disparate trends but an intricate system where technological, geopolitical, commercial, and regulatory dynamics interact. The scenario-based approach used here demonstrates that the trajectory of space security cannot be

reduced to linear progress or decline. Rather, it emerges from the interplay and feedback between diverse actors, innovations, and governance mechanisms.

A central insight from this research is that space security is fundamentally relational and interdependent vulnerabilities in one domain (such as cybersecurity or regulatory compliance) propagate rapidly and can be amplified by weaknesses in others (such as international cooperation or military governance). The three future scenarios (cooperative, fragmented, and chaotic) are not isolated endpoints but represent a spectrum along which the global community may shift, sometimes unpredictably, as a result of both deliberate policy choices and exogenous shocks (including severe space weather).

Importantly, this study foregrounds the critical role of regulatory and policy agility. The pace of commercial innovation and technological disruption in space far outstrips current governance frameworks, creating persistent gaps that adversaries may exploit. Therefore, the capacity of institutions to adapt, harmonise, and enforce norms, while actively engaging with the private sector and broader society, will increasingly define resilience of the space domain.

Rather than viewing these scenarios as fixed predictions, they should be understood as navigational tools by policymakers and stakeholders. Each clarifies how particular configurations of risk, cooperation, and governance may produce radically different outcomes. Ensuring a secure and sustainable future in space will require not only technical solutions and robust military deterrence but also the cultivation of trust, transparency, and shared stewardship across borders and sectors.

Ultimately, the findings affirm that the fate of space security will be shaped less by technological inevitabilities than by the choices made today – choices about cooperation, regulation, innovation, and inclusion of diverse perspectives in decision-making. Only through a genuinely integrated, adaptive, and anticipatory approach can humanity hope to secure the long-term benefits of space for all.

Appendix: YouTube Videos Analysed

Video Id	Video Title	Video Content
o77bcFdSbb4	'What is Space Security?'	Dr Jessica West explains why comprehensive governance is needed to ensure the peaceful use of outer space.
c5q5kGzwJqg	'Space Security: What are the Threats'	Todd Harrison discusses longstanding threats to space security and the importance of public awareness.
j6iE62jovMo	'Israel's Former Space Security Chief Claims Aliens Exist, And Trump Knows | NBC News NOW'	NBC News covers claims by Israel's former space security chief that the US has contacted extraterrestrials.
oyy3kX3-KLI	'PSSI Space Security Guest Lecture: Space and Irregular Warfare'	Dr John Klein gives a lecture on the relationship between space and irregular warfare.
worxslP7Jyw	'Space Security - Spacecast 10'	Dr Brian Weeden reviews global counterspace capabilities that could disrupt or destroy space systems.
cSS8BUBZPtY	'How To Make Space Security Work Understanding the Space Domain and Space Systems'	Panel explores how the technical nature of space shapes governance and legal approaches to security.
3CxuMio1NcU	'NBC News reports – Israel's Former Space Security Chief reveals Aliens exists and Trump knows'	NBC News reports on claims that aliens exist and the US government is aware of it.
i-hzZMRSXA4	'Chatham House 2025 | The Battle for Space: Security, Strategy & Survival'	The 2025 Space Security Conference tackles rising competition, conflict risks, and strategies for peace in space.
tf6JtxV1YHg	'21st Century Security in Space'	Video explains how space technology connects and supports global security across all domains.
0kZa2lrqzvo	'Space Security - in 60 seconds'	EU Special Envoy Marjolijn van Deelen summarises why space security matters to daily lives.
lt7hfyTmyfU	'How Space Force is simulating cyberthreats to protect US satellites | Vargas Reports'	NewsNation shows how Space Force simulates cyberthreats to prepare for future space conflicts.
gaTZjmxbVA8	'Challenges to Security in Space 2022'	DIA's 2022 report highlights growing threats from China and Russia to the security and stability of space.

uPhuGAe4lyY	'Chatham House 2025 | ESA's Dr Kai-Uwe Schrogl on Space Security & Cooperation'	Dr Kai-Uwe Schrogl discusses ESA's key role in maintaining peaceful, secure, and cooperative use of space.
urIOxlz6U3o	'SPACE FORCE: The Secret Orbit - Arms Race in Space | SpaceTime - WELT Documentary'	Documentary examines the rise of the U.S. Space Force and renewed arms race in space.
5rdwnPxuLpM	'Outer Space Security Conference 2022 Opening with Robin Geiss and Keynote with Izumi Nakamitsu'	The 2022 UNIDIR Space Security Conference explores the growing risks and governance challenges in outer space.
OaGBxMDmgbo	'Space Security is Your Problem, Too'	Panel discusses why space security concerns everyone, not just major powers, and the roles all sectors can play.
5aV2QWWQmlA	'2024 ASCEND: Space Security & Protection'	ASCEND 2024 focuses on safeguarding space infrastructure through collaboration and innovation.
Em7nsLzs9UA	'How Can Space Security Be Achieved: Past, Present, Future Efforts And Practical Measures For PAROS'	Panel reviews past and current initiatives for space security and lessons for future disarmament efforts.
v9uqNya5-dA	'Dual-use space assets and their impact on space security Outer Space Security Conference 2021'	Experts discuss how dual-use satellites create both opportunities and new risks for space security.
PzguPC6B6fc	'Regional Resilience–Japan's Space Security | The Space Policy Show Ep. 141'	Discussions with experts from Japan's Institute of Geoeconomics on the country's shifting defence posture, growing space partnerships, and importance of regional alliances for security and resiliency in the Asia-Pacific.
M5Kh7D1VPFs	'Thomas Jennewein at the UNIDIR 2018 Space Security Conference'	Thomas Jennewein discusses quantum encryption and the University of Waterloo's science satellite at the 2018 Space Security Conference.
DbavFRYnDig	'ORF-KC 2019 | Space Security'	Panel discusses rising threats from counter-space technologies, real-world incidents, and how nations and commercial actors respond, highlighting the need for dialogue to ensure a stable and sustainable space environment.
b27sv5pBqUw	'2024 ASCEND: Space Security & Protection'	The 2024 ASCEND conference brings together government, industry, and academia to address growing risks to space systems and develop solutions for secure, sustainable space use.

KPuSUk7wsgU	'International Space Security in 2018	Alexandra Stickings discusses the prospects for international space security in the year ahead.
CTiD0rmY99E	'Space Security'	Carnegie Endowment panel on how outer space opens the door to both competition and cooperation between nations.
WyntUBq5SpE	'7th Prague Space Security Conference (June 16-18, 2024)'	The PSSI Space Security Conference Series gathers senior experts from Europe, the US, and Asia to address pressing space security threats, foster strategic partnerships, and advance global stability in the space domain.
Zi346Oo6iNw	'60 Minutes: Satellite security targeted in space'	David Martin of CBS News discusses the dangers posed by newly developed ASAT weapons to national intelligence and communications.
zmg7GKXhFyw	'OS23 Panel III — Future Multilateral Space Sec. Initiatives | Outer Space Security Conference 2023'	Panel discusses how to build on past efforts and prepare for future multilateral space security initiatives.
-E4LsnPqEWg	'Assessing space security: Threat and response'	Brookings discussion about evolving space security threats and effective responses by the US and international community.
Uk5eeGVuMB8	'Former Israeli space security chief says aliens exist, humanity not ready'	Retired Israeli general and former space security chief Haim Eshed claims that Israel and the US have made secret contact with aliens from a 'Galactic Federation,' including alleged cooperation and an underground base on Mars.
hWypV0ElkNE	'What Threatens Space Security? Space Systems and Threat Vectors'	Panel explores the wide range of space security threats including physical, electronic, and cyberattacks from space or the ground.
umsreNQclw0	'Who Can Achieve Space Security? Diversity and Prevention of an Arms Race in Outer Space (PAROS)'	Panel discusses how regional perspectives, multi-stakeholder participation, and gender inclusion are vital for achieving peaceful and secure use of space and advancing PAROS.
sEp_orE7KHE	'Space security issues'	Ifri conference explores the geopolitical context and European efforts in space security, featuring discussions on space tracking, space debris, the EU-SST consortium, and industry perspectives.

_27pD_yZPm0	'2023 ASCEND: The Nexus of Space Security and Protection'	Lauren Smith of Northrop Grumman shares her vision for secure, safe, and open access to space for all at ASCEND 2023.
2T5-mGMhH0s	'OS23 Panel I — Mapping Space Threats, Risk and Challenges | Outer Space Security Conference 2023'	Panel provides an overview of the value of space assets and examines the various threats, risks, and challenges to space security posed by advancing technologies and hostile actors.
2KC67LjeJfo	'Russian Nuclear Weapons in Space? Here's What We Know- WSJ'	Wall Street Journal examines new intelligence on Russia's possible plans to deploy a nuclear weapon in space, its implications for satellites, and the historical context of nuclear detonations like Starfish Prime.
bLZNQMuFogc	'Cyber and Space Security: The New Battlefield | CGFS'	Creative Global Funding Services explores the rapidly evolving challenges and innovations in cyber and space security, highlighting emerging threats, advanced technologies, and the importance of global collaboration for future defence.
PU-mW941LtU	'Space Security: Space Crisis Dynamics Panel'	Panel discusses how the changing space environment and proliferation of counterspace capabilities have complicated crisis dynamics, deterrence, and decision-making, sharing insights from tabletop exercises that simulate space conflict scenarios.
mjv4pHb4wyk	'U.S. Space Force: Major Changes Ahead in Space Security'	The U.S. Space Force is undergoing major changes including restructuring and calls for increased funding to strengthen space security and build a more resilient space architecture.
98naJzVx8Pk	'The Nexus of Space Security & Protection'	Panel explores growing threats to space systems and highlights cybersecurity, partnerships, and new technologies for protecting vital space assets.
N_5SrZB8t4Y	'Protecting the Final Frontier: Cyber Space Security'	Space is the new frontier but is also exposed to cyber threats, making the security of space assets increasingly important.

8emmRJGrimI	'CYSAT 21: James Pavur Adventures in VSAT hacking: lessons for space security'	James Pavur, a Rhodes Scholar and Oxford PhD student, talks about the intersection of cyber-security and space technology, focusing on satellite communications.
Vppj5242Zw0	'2023 ASCEND: The Nexus of Space Security & Protection (Part 2)'	Todd Nygren of Aerospace Corporation discusses collaborative approaches to detecting, monitoring, and countering threats in space at ASCEND 2023.
JmwoDJD_ReE	'Big changes at Boeing Defense Space & Security'	Ted Colbert on Boeing's defence and space division.

Source: Author's own based on the 44 most relevant videos on space security by YouTube API.

Dr Dmitry Erokhin is a Research Scholar in the Cooperation and Transformative Governance Research Group of the Advancing Systems Analysis Program of the International Institute for Applied Systems Analysis in Laxenburg, Austria. Email: erokhin@iiasa.ac.at.

Journal of Aerospace & Security Studies
2025 | Volume IV | pp. 21-35

South Korea's Three-Axis Defence System: Impact on Regional Security

Mashaal Shahnawaz

Abstract

South Korea's Three-Axis (3K) Defence System is a conventional framework designed to resist North Korea's nuclear threat but risks destabilising the Korean Peninsula. This paper examines the system's evolution, its impact on North Korean security, and the potential for a regional arms race. Using a mixed-methods approach, it assesses South Korean military acquisitions, arms buildup trends, and their implications for regional security. The study concludes with policy recommendations, emphasising diplomatic engagement and arms control to ensure peace in the region.

Keywords: Three-Axis Defence System, 3K, Regional Security, South Korea, North Korea, Arms Race, Nuclear Escalation.

Introduction

The Korean Peninsula remains one of the most volatile security environments in the world, where historical animosities, nuclear brinkmanship, and shifting alliance patterns continue to challenge regional stability. The intensification of North Korea's nuclear weapons programme underscored by its 2003 withdrawal from the Non-Proliferation Treaty (NPT) and its first nuclear test in 2006 has reshaped South Korea's defence posture.[1] In response to growing public insecurity and repeated provocations from Pyongyang, Seoul introduced the Three-Axis (3K) Defence System following North Korea's fifth nuclear test in 2016.[2] The 3K System, composed of Kill Chain and Korea Air and Missile Defence (KAMD), and Korea Massive Punishment and Retaliation (KMPR), represents a significant departure from earlier deterrence strategies, relying on conventional military capabilities to counter a nuclear-armed adversary.

Despite increasing attention to military modernisation in the region, scholarly literature often centres on the broader United States (US)-China strategic rivalry or North Korea's proliferation trajectory, leaving a gap in the analysis of how new conventional defence frameworks like the 3K System reshape regional security dynamics. This study addresses that gap by assessing the evolving security architecture of the Korean Peninsula, focusing specifically on how the 3K System affects deterrence, arms competition, and alliance behaviour. Drawing on Andrew Cottey and Alyson J.K. Bailes' conception of regional security, which stresses the role of geographic proximity, shared identities, and institutionalised cooperation, this paper situates South Korea's defence posture within a context where no robust regional security regime or security community exists within the Korean Peninsula.[3] This institutional vacuum heightens the risk of escalation, especially as military cooperation deepens between South Korea, Japan, and the US, which North Korea interprets as an existential threat.

---

1 "Arms Control and Proliferation Profile: North Korea," Arms Control Association, last modified June 2024, https://www.armscontrol.org/factsheets/arms-control-and-proliferation-profile-north-korea.

2 Doyeong Jung, "Revitalized South Korean 'Three-Axis' System," *Council on Foreign Relations*, January 4, 2023, https://www.cfr.org/blog/south-koreas-revitalized-three-axis-system.

3 Alyson J.K. Bales and Andrew Cottey, "Regional Security and Cooperation in the Early 21st Century," *SIPRI Yearbook 2006: Armaments, Disarmament and International Security*, 2006, Accessed April 15, 2025, https://www.sipri.org/sites/default/files/YB06ch04.pdf.

By exploring these intersecting dynamics, this paper contributes to the emerging literature on East Asian security architecture. It underscores the importance of understanding how conventional force build-ups, in the absence of strong regional norms and institutions, may inadvertently fuel strategic instability in already fragile environments. This concern has become more pronounced as South Korea moved ahead with plans to establish a Strategic Command in 2024, consolidating operational control over its 3K system (pre-emptive strike, missile defence, and massive retaliation). At the same time, North Korean leader Kim Jong Un not only codified the country's nuclear posture[4] into its constitution but has also escalated rhetoric in 2025, calling for enhanced war preparedness and expanded weapons testing. Taken together, these parallel trajectories heighten the danger of miscalculation, where the reinforcement of conventional and nuclear capabilities on both sides deepens the security dilemma and undermines prospects for de-escalation.

Research Methodology

This study used a mixed-methods design, combining both qualitative and quantitative information. Primary data sources, such as official government statements and policy addresses, along with secondary materials including scholarly books, research papers, journal articles, and interviews, were analysed to explore the evolving security dynamics surrounding the Korean Peninsula and South Korea's 3K System. Quantitative analysis targeted the quantity of traditional military forces, military mobilisations over time, and South Korean defence expenditures prior to and after the system's implementation. Contextual and narrative analyses was undertaken to explore how past social, and cultural variables, propaganda, and language in official documents influenced perceptions of the two Koreas.

[4] Jung, "Revitalized South Korean 'Three-Axis' System."; Reuters, "Kim Jong Un North Korean Leader Orders Heightened War Preparations, says KCNA," March 7, 2024, https://www.reuters.com/world/asia-pacific/north-korea-leader-kim-jong-un-orders-heightened-war-preparations-kcna-says-2024-03-06/.

Theoretical Framework

Offensive Realism

Offensive realism, advocated by scholars like John J. Mearsheimer, posits that states harbour revisionist tendencies and seek to maximise power to ensure their survival. States believe that the accumulation of power reduces vulnerability and deters external threats. When benefits outweigh the risks, states are likely to adopt expansionist and aggressive policies. North Korea's quest for nuclear weapons, offensive military doctrines, and defiance of US interests in the region exemplify this behaviour.

Defensive Realism

Defensive realism, as supported by theorists like Robert Jervis, argues that states primarily aim to ensure security rather than maximise power. States favour maintaining the status quo through alliances, diplomatic engagement, and moderate defensive buildups. Cooperation enhances security and reduces conflict risks. South Korea's defensive posture, emphasis on alliances with the US and Japan, and development of the 3K System for deterrence illustrate defensive realist behaviour.

Regional Security Complex Theory (RSCT)

Formulated by Barry Buzan and Ole Wæver, Regional Security Complex Theory (RSCT) argues that states within a region have deeply intertwined security dynamics. Actions by one state—political, economic, or military—directly impact the security of others. The theory's concepts of securitisation and de-securitisation explain how states frame threats and manage them. The Korean Peninsula's fragile regional security illustrates how South Korea's 3K System creates a security dilemma for North Korea due to this interconnectedness.

Analysis

The South Korean 3K System has been launched to rival North Korea's growing military and nuclear arsenals. As a member of the NPT, South Korea cannot develop nuclear weapons of its own and has also been granted extended nuclear deterrence by its ally, the USA, as a security guarantee. Moreover, the 3K Defence System with its three different components is set to be a conventional defence system against a Nuclear Weapon State (NWS). However, there are chances that it could negatively impact the regional stability of the Korean Peninsula once fully operational.

Evolution of South Korea's Three-Axis System

In the aftermath of North Korea's fifth nuclear test in 2016, the South Korean government under then-President Park Geun-hye introduced the 'Three-Axis Defence System', aimed to resist North Korea's missile and nuclear threats. Another reason for the introduction of the defence strategy was to satiate the growing restlessness and feelings of insecurity felt by South Koreans. 71% of whom are of the view that South Korea should also manufacture its own nuclear weapons to combat the North's threat.[5] Commonly known as the '3K System', it employs a three-pronged conventional strategy utilising non-nuclear weaponry and tactics aimed at countering North Korea's nuclear arsenal. This strategy will employ all three branches of the South Korean military to retaliate to any threats posed by the North, therefore the full triad, i.e., Army, Navy and the Air Force will be employed for this purpose.[6]

After the Park Geun-hye regime, the next President, Moon Jae-in had a different approach to the North Korean nuclear threat. His government relied more on non-nuclear diplomacy and negotiations with North Korean Premier Kim Jong Un to ease tensions. It was during his term that the historic Korean Summit between the two Koreas took place in 2018, where a peace treaty was signed between the two sides. The Hanoi summit between US President Donald Trump and Kim Jong Un aiming to denuclearise the Korean Peninsula also took place during President Moon's presidency.[7] Due to President Moon's liberal policies, and resolve for peace between the two Koreas, developments on the 3K Defence System remained largely stalled during his tenure. His successor and the recently impeached South Korean President Yoon Suk Yeol on the other hand has had a conservative and hardliner stance towards North Korea. During his term in office, the South Korean Ministry of National Defense (MND) announced that they will be introducing a separate Strategic Command to administer the 3K System.[8] Previously, different branches of the military controlled various weapon systems separately by issuing separate orders for weapon operation. Under a unified

5 Toby Dalton, Karl Friedhoff, and Lami Kim, *Thinking Nuclear: Attitudes of South Korea on Nuclear Weapons* (The Chicago Council on Public Affairs, 2022), https://globalaffairs.org/research/public-opinion-survey/thinking-nuclear-south-korean-attitudes-nuclear-weapons.

6 Ibid.

7 Michael Fuchs, "The Second Trump-Kim Summit Perspectives from Japan, United States, and South Korea," *Centre for American Progress*, February 25, 2019, https://www.americanprogress.org/events/second-trump-kim-summit/.

8 Joe Saballa, "'Three-Axis' Defense System Strategic Command to be Created by S. Korea," *Defense Post*, July 7, 2022, https://www.thedefensepost.com/2022/07/07/south-korea-defense-system/.

Strategic Command, the tri-services will formulate a joint mechanism for giving orders and weapons deployment under the combined leadership of the three service chiefs within one unified unit. This will now make the execution of the defence system smoother and more efficient. President Yoon's tenure also saw greater weapons acquisition and partnership with the US in the military and technological domain. According to South Korea's Defense Acquisition Program Administration (DAPA), 6.99 trillion Korean Won (KRW) (approximately USD 5.27 billion) were allocated for the 3K System in FY2024, marking a 12% rise compared to 2023.[9] It included a total of 57 projects under the 3K System that included the second batch of KDX-III Sejong Daewang class destroyers, KSS-III Dosan Ahn Changho class series of diesel-electric attack and ballistic missile submarines, and a new Low-Altitude Missile Defence (LAMD) system.[10] The latter entered formal development in January 2025.[11]

Technology Developed under the 3K System

The 3K System consists of 3Ks: Kill Chain, Korea Air and Missile Defence (KAMD) and Korea Massive Punishment and Retaliation (KMPR).[12] The Kill Chain pre-emptive strike mechanism involves launching a precision attack aimed at neutralising North Korean ballistic or nuclear missile threats before they can be deployed. Supported by advanced detection, identification, and semi-autonomous decision-making systems, the Kill Chain aims to strike North Korean assets, including missile silos, within thirty minutes of threat detection.[13] However, the Kill Chain system does face a dilemma that under US-imposed missile restriction guidelines of 1979, South Korea cannot manufacture nor acquire rocket systems that have the capability to carry out geospatial intelligence activities.[14] Prior to 2021, the country relied on US military assets to monitor any North Korean movement or deployment. During President Moon's 2021 visit to the White house, these restrictions were scrapped, allowing South Korea to develop long-range ballistic missiles with a range greater than 800km and carry out reconnaissance

9 Jon Grevatt, "Funding by South Korea Increased for Three-axis Plan in 2024," *Janes*, March 11, 2024, https://www.janes.com/defence-news/news-detail/south-korea-increases-funding-for-three-axis-plan-in-2024.

10 Ibid.

11 Chae Yun-hwan, "S. Korea to Develop Iron Dome-like Interceptor Against N.K. Artillery by 2028," *Yonhap News Agency*, January 20, 2025, https://en.yna.co.kr/view/AEN20250120003500315.

12 Kim Eun-jung, "S. Korea Vows to Enhance Defense System Against N. Korean Missile Threat," *Yonhap News Agency*, October 23, 2023, https://en.yna.co.kr/view/AEN20231023003400315.

13 Jung, "Revitalized South Korean 'Three-Axis' System."

14 Ibid.

missions.[15] To enhance the Kill Chain's capabilities, South Korea has partnered with US-based SpaceX to deploy five surveillance satellites, with two already successfully launched into orbit.[16] These surveillance and reconnaissance capabilities will now allow the country to carry out precise, pre-emptive strikes against North Korean targets.

South Korea has also manufactured its indigenous 'Hyunmoo' series of ballistic and cruise missiles, featuring several variants such as the Hyunmoo-2B surface-to-surface ballistic missile with a range of 500 km and the Hyunmoo-4 low flying cruise missile with a range of 800 km.[17] Due to the 3K System being a combined forces strategy, the Kill Chain will also include the Republic of Korea Air Force (RoKAF)'s indigenous Cheongung II medium-range surface-to-air missile (M-SAM) system (maximum engagement range of around 40 km and altitude interception up to 15 km) and the Navy's KDX-III Aegis destroyer-based SM-2 missiles.[18]

The KAMD system constitutes a multilayered shield built to neutralise incoming North Korean missile attacks in case the Kill Chain pre-emptive strike component fails. Under a defensive KAMD, missiles can be launched at various altitudes to intercept incoming weapons. Patriot (PAC-2/PAC-3), developed in collaboration with the US, can intercept missiles in the lower altitude range suitable for terminal-phase interception. The Cheongung M-SAM/KM-SAM serves as a middle-tier defence with Block-1 intercepting at altitudes up to 15 km, and the Block-2 extending capability to 20 km. The L-SAM, a domestically developed upper-tier system, is designed for high-altitude interceptions around 40-60 km, filling the gap between SAM systems and the Terminal High Altitude Area Defense (THAAD) system. The US-deployed THAAD is supposed to cover the highest altitude layer (exceeding 100 km), intercepting missiles that penetrate lower tiers.[19] Together, these layers embody the principle of deterrence by denial, aiming to render enemy missile strikes highly unlikely to succeed by intercepting them at multiple stages.

---

15 Sang-Min Kim, "Missile Limits on South Korea lifted by U.S.," *Arms Control Association*, June 2021, https://www.armscontrol.org/act/2021-06/news/us-lifts-missile-limits-south-korea.

16 NBC News, "Second South Korean Spy Satellite Launched by SpaceX Amid Race with North," April 8, 2024, https://www.nbcnews.com/news/world/spacex-launches-south-koreas-second-spy-satellite-race-north-rcna146792.

17 Clint Work, "Navigation of South Korea's Plan for Preemption," *War on the Rocks*, June 9, 2023, https://warontherocks.com/2023/06/south-koreas-plan-for-preemption/.

18 Ibid.

19 Jung, "Revitalized South Korean 'Three-Axis' System."

The KMPR strategy functions as a decapitation-oriented counterforce strike to neutralise key North Korean leadership and command structures in response to any nuclear or non-nuclear first strike.[20] This falls under the concept of 'deterrence by punishment' or threatening severe consequences if any attack occurs to raise the cost of any offensive strike. In 2022, South Korea unveiled its Hyunmoo-V ballistic missile.[21] This is the centrepiece of the KMPR framework, intended as a massive retaliation asset targeting critical North Korean infrastructure. While estimates of its maximum range vary, some suggest it could reach up to 5,000 km with a lighter warhead. As part of the KMPR, multiple rocket launchers (K239 Chunmoo MLRS); the US Army Tactical Missile System (ATACMS) with a range of 300 km; GBU-28 bunker busters with a penetration range of 6 metres of concrete; and air-to-surface missile (AGM-84H/K SLAM-ER) with a range of 280 km; may also be utilised.[22] The 3K System will also utilise cyber warfare capabilities, space-based military capabilities, special forces units, together with US-provided military manpower and support, once fully integrated under South Korea's Strategic Command.[23]

North Korean Response to the 3K Defence System

On the other side, North Korean Premier Kim Jong Un has enshrined the country's nuclear policy in the official constitution. In a policy address delivered in January 2024, he asserted that South Korea should be regarded not as kin but as a foreign adversary and the number one enemy in case a nuclear war breaks out in the Korean Peninsula. He also declared that unification with the South was now no longer a viable policy option.[24] North Korea also tested a nuclear-capable underwater attack drone and carried out multiple cruise missile tests by firing the Pulhwasal-3-31 into the Sea of Japan.[25] The country tested its new surface-to-sea

20 Jung, "Revitalized South Korean 'Three-Axis' System."
21 Kwon Mee-yoo, "New Hyunmoo Missile Able to Destroy NK's Underground Facilities: Experts," *Korea Times*, October 4, 2022, https://www.koreatimes.co.kr/www/nation/2024/05/113_337198.html.
22 Ibid.
23 Work, "Navigation of South Korea's Plan for Preemption."
24 Hyunsu Yim, "North Korea's Kim Calls for South to be Seen As "Primary Foe", Warns of War," *Reuters*, January 16, 2024, https://www.reuters.com/world/asia-pacific/north-koreas-kim-calls-change-status-south-warns-war-2024-01-15/.
25 "North Korea Announces 'Underwater Nuclear Weapons System', Blasts US Drills," *Al Jazeera*, January 19, 2024, https://www.aljazeera.com/news/2024/1/19/north-korea-touts-underwater-nuclear-weapon-system-blasts-us-drills.

missile, the Padasuri-6, in February[26] and a month later conducted a hypersonic missile capable of attacking distant US targets.[27] In response to ROK's satellite programme with SpaceX, Pyongyang also launched its second surveillance satellite in May 2024 which was not successful and exploded mid-flight.[28] The satellite launch may have signalled Pyongyang's displeasure with Beijing, as Kim Jong Un pursues a 'new Cold War' strategy by strengthening ties with China and Russia, viewing Beijing's diplomacy with Seoul and Tokyo as potentially unsettling following the trilateral summit in Seoul — the first such meeting in more than four years.[29] These developments indicate that North Korea perceives the 3K Defence System as a significant threat to its security and even more so by the interplay of the US in the region and its support for the southern counterpart. Owing to the prevailing situation, there are high chances that any further South Korean advancements under the 3K System has the potential to instigate an arms race in the region.

Kim Jong Un might be prepared to go to any lengths to respond to his country's security needs and to defend it against any threats. Since this is a stance that the country has adopted many times before such as during the Yeonpyeongdo Island artillery bombing and the sinking of the Cheonan class torpedo boat. These incidents were claimed by South Korea to have been conducted by the North to protest against joint US-South Korea live military drills in the region.[30] Historical precedents suggest that North Korea is likely to pursue increased arms acquisition to counter South Korea's growing military capabilities. As of 2021, North Korea had the 4th largest military in the world and spent a quarter of its Gross Domestic Product (GDP) on its military. In comparison, South Korea's military is only half the size of the North, with 600,000 troops but it also hosts American troops on bases close to the Demilitarised Zone (DMZ) at Camp Casey and Camp Humphreys.

---

26 "North Korea's Kim Jong Un Oversees Test of New Surface-to-Sea Missiles," *Al Jazeera*, February 15, 2024, https://www.aljazeera.com/news/2024/2/15/north-koreas-kim-jong-un-oversees-test-of-new-surface-to-sea-missiles.

27 "North Korea Announces 'Underwater Nuclear Weapons System', Blasts US Drills."

28 Hyung-Jin Kim, Mari Yamaguchi, and Kim Tong-Hyung, "North Korean Rocket Carrying Its 2nd Spy Satellite Combusts Shortly After Launch," *AP News*, May 28, 2024, https://apnews.com/article/north-korea-missile-japan-28efd0f15318594fdcf5ec8f416c196b.

29 Hyung-Jin Kim and Huizhong Wu, "China Premier Agrees on Cooperation with Seoul, Tokyo but Issues Veiled Rebuke Against Their US Ties," *AP News*, May 27, 2024, https://apnews.com/article/south-korea-china-japan-trilateral-6afe4c3e280995a7fc16696edbd0a345.

30 Joseph S. Bermudez Jr., "The Yeonpyeong Island Incident, November 23, 2010," *38 North*, May 28, 2024, https://www.38north.org/2011/01/the-yeonpyeong-island-incident/.

Under the Special Measures Agreement (SMA), South Korea contributes USD 1 billion annually to support the stationing of US forces and related military assistance.

Historically, South Korea has maintained a smaller military force compared to North Korea, both in terms of troop numbers and military hardware.[31] However, this dynamic is shifting as South Korea, following the lifting of US-imposed missile restrictions, rapidly expands its missile arsenal, acquires more reconnaissance satellites, missile interceptor systems, electromagnetic pulse weapons and submarines. It also increased its defence budget by 4.5% in 2024, allocating 30% of the total budget for force modernisation, a separate budget has also been set aside for the 3K System.[32] This rapid force acquisition and modernisation is likely to deepen North Korea's security dilemma, as South Korea's expanding military capabilities and its strengthening alliance with the US and its allies is perceived as a direct threat in Pyongyang. The North could then respond by amping up its own arsenals, leading to an arms race and increasing mistrust, tensions and volatility in the Korean Peninsula. There are chances that the North may also look towards Russia to help increase its military capabilities. It is important to note that Pyongyang has already forged an arms deal with Moscow, supplying drones and missiles for its war in Ukraine, so mutual arms transfer under this deal is an option that cannot be ruled out.[33]

Nuclear Escalation Risks due to 3K System

South Korea's deployment of the 3K System significantly influences North Korea's nuclear strategy. By enhancing its capabilities to detect, pre-empt, and intercept North Korean missile threats, Seoul directly challenges the credibility of Pyongyang's nuclear deterrent. This dynamic has the potential to lower North Korea's nuclear threshold, as Pyongyang may perceive its strategic assets to be increasingly vulnerable to neutralisation. In response, North Korea could pursue

31 Mohammed H. Chughtai, "Infographic: North Korea, South Korea Missile Programmes Compared," *Al Jazeera*, September 16, 2021, https://www.aljazeera.com/news/2021/9/16/infographic-missile-programmes-north-korea-v-south-korea-interactive.

32 Daniel Darling, "4.5 Percent Rise for 2024 Defense Budget Planned by South Korean Government," *Defense Security Monitor*, September 1, 2023, https://dsm.forecastinternational.com/2023/08/29/south-korea-government-plans-4-5-percent-rise-for-2024-defense-budget/.

33 Kanishka Singh, "US, Partners Carry Condemnation of Arms Transfers between North Korea and Russia," *Reuters*, January 10, 2024, https://www.reuters.com/world/us-partners-condemn-arms-transfers-between-north-korea-russia-2024-01-09/.

vertical proliferation by expanding its Intercontinental Ballistic Missiles (ICBMS), Intermediate Range Ballistic Missiles (IRBMS), nuclear warheads, and nuclear armed submarines. Such advancements would accelerate efforts to operationalise a credible nuclear triad and secure assured second-strike capabilities, thereby counterbalancing the South's strengthening extended nuclear deterrence through its alliance with the US. This increase in the North's nuclear arsenal which is already considered a 'rouge' state could lead to miscalculations and mistrust in the Korean Peninsula. Any military drills, coupled with the North's already ambiguous nuclear policy has the tendency to be misinterpreted by South Korea, US, Japan and its allies.

This heightened sense of vulnerability on both sides undermines regional stability and increases the risk of nuclear escalation. Additionally, the integration of both offensive and defensive elements within the 3K System introduces strategic ambiguity. North Korea might not be able to accurately determine the South's intentions in a state of crisis, increasing the risks of accidental or pre-emptive use of force. Lastly, in order to offset South Korea's technologically advanced 3K System, the economically inferior North Korea might opt for asymmetric warfare tactics including cyber warfare and electronic warfare (EW) capabilities. This would make the strategic environment even more complex since the source of cyber-attacks are difficult to pinpoint leading to confusion and such attacks can impact a state's command and control (C2) structure as well as civilian infrastructure. The deployment of the 3K System increases the risk of nuclear escalation by keeping both Koreas in a persistent state of military alert.

Great Power Competition in the Korean Peninsula

After the culmination of the Korean War in 1953 and division of the two Koreas along the 38th parallel, major powers have maintained both direct and indirect influence on the Peninsula. Their continued presence has been aimed at reinforcing alliances with either the North or the South while managing tensions and preventing potential regional flare-ups.

North Korea continues to receive substantial support from Russia and China, with Iran increasingly involved, prompting some analysts to refer to this alignment as a new 'Axis of Evil 2.0' or the 'Axis of Upheaval'.[34] China and Russia remain North Korea's principal trading partners, with China contributing over 90% of the

[34] Andrea Kendall-Taylor and Richard Fontaine, "The Axis of Upheaval," *Foreign Affairs*, May 2, 2024, https://www.foreignaffairs.com/china/axis-upheaval-russia-iran-north-korea-taylor-fontaine.

country's trade volume.[35] China and Russia have both contributed to strengthening North Korea's military capabilities. Beijing's mutual defence treaty with Pyongyang provides political cover and potential military backing, while Moscow's arms trade agreement has deepened cooperation, with North Korea supplying weapons and even troops to support Russia's war in Ukraine.[36]

On the other hand, South Korea and Japan are supported by the US and its NATO allies. Both countries fall under the US' nuclear umbrella and Washington maintains active military presence in both countries with 28,500 US troops stationed in South Korea since 2023 to date.[37] All three countries as well as other members of NATO and the Quadrilateral Security Dialogue (QUAD) have engaged in arms transfers, joint military exercises and drills in the East and South China Sea as well as the larger Pacific and Indian Oceans. While such activities are largely aimed at countering China, North Korea interprets South Korea's expanding military partnerships as a direct threat to its own security. It is perhaps for this reason that the North claimed its nuclear weapons to be US-centric until recently when in 2024 Kim Jong Un stated that re-unification with the South was no longer possible and that the constitution should be amended to name South Korea the North's principal enemy instead.[38]

The US, being South Korea's long-standing ally has largely supported the 3K System and it is with their help that South Korea is creating a separate Strategic Command for the conventional defence system. Apart from North Korea, the US also faces another contender in the East Asian region - China. It is likely that in the future as South Korea develops the 3K System, both great powers clash over their support for their allies in the Korean Peninsula all the while juggling their own security threats that they face from each other.

China's role cannot be reduced to simply propping up North Korea as a counterweight. Beijing has its own security concerns regarding South Korea's 3K System, which it perceives as an encroachment near its borders and a potential tool for the US in any future US-China confrontation. The South's geographically proximate and technologically advanced missile defence capabilities heighten

35 Kendall-Taylor and Fontaine, "The Axis of Upheaval."
36 Ibid.
37 Emma Chanlett-Avery, Caitlin Campbell, and Christina L. Arabia, *Issues for Congress: South Korea-US Alliance*, (Congressional Research Service, 2023), https://crsreports.congress.gov/product/pdf/IF/IF11388.
38 Al Jazeera, "As Tensions Rise North Korea Warns US of Nuclear Retaliation," July 20, 2023, https://www.aljazeera.com/news/2023/7/20/north-korea-warns-us-of-nuclear-retaliation-amid-escalating-tensions.

Beijing's sense of vulnerability, reinforcing its opposition to such deployments. As a result, China's calculus is shaped not only by its commitment to prevent North Korea's isolation but also by its strategic imperative to counter US military influence in Northeast Asia.

It is, however, unlikely that Russia will actively engage in providing diplomatic or military support to North Korea as a proxy against the US and its allies. Since the country is already engaged in a war with Ukraine and might not have the financial and military resources to support North Korea. Together, these pressures risk transforming the Korean Peninsula into a theatre of intensified great-power competition, further destabilising an already fragile regional security environment.

Recommendations

In light of the findings, it is evident that while South Korea's Three-Axis (3K) Defence System addresses its security needs, it simultaneously increases the likelihood of regional instability, arms race dynamics, and nuclear escalation. Therefore, the first step towards maintaining long-term peace must be a structured return to inter-Korean diplomatic engagement. Confidence-Building Measures (CBMs) such as reactivating military hotlines is important to reduce miscalculations.

Some CBMs are showing signs of revival: South Korea's President has committed to restore the 2018 inter-Korean military agreement designed to suspend provocative activity.[39] Reopening joint economic initiatives like the Kaesong Industrial Complex and Mount Kumgang tourism zone (once emblematic of cross-Korean linkages) could reintroduce economic interdependence, thus dampening aggressive posturing.

This paper finds that North Korea's perception of an existential threat is intensified not only by the 3K System's capabilities, but by the growing US-South Korea-Japan military/security nexus. If these countries continue to integrate their missile defence, satellite, and command systems, the North is likely to further expand its nuclear and cyber arsenals. Future scenarios may include greater reliance on asymmetric warfare, or the institutionalisation of crisis-response protocols between China and North Korea, drawing new security lines in East Asia.

To preempt such escalatory trajectories, the US and its allies must reassess the cost-effectiveness of prolonged isolation and pressure strategies. As this study

[39] "South Korea's Lee to Restore Pact Halting Military Activity on North Korean Border," *Reuters*, August 15, 2025.

indicates, North Korea tends to respond to isolation with provocation, not restraint. Resuming multilateral nuclear negotiations, possibly through a revised Six-Party Talks mechanism could provide an off-ramp from nuclear competition.[40] A future scenario involving incremental arms control, mutual non-aggression guarantees, and phased sanctions relief, though ambitious, remains preferable to enduring standoffs or accidental war.

China, Russia, and the US will remain critical to determining the region's strategic equilibrium. Their actions in the Korean Peninsula will increasingly intersect with broader great power competition. To reduce regional volatility, these actors must pursue trilateral channels of communication and prevent the militarisation of Korean affairs from becoming a proxy for their own rivalry. A failure to do so risks turning Northeast Asia into a theatre of sustained confrontation.

By addressing both the structural causes of insecurity and the misperceptions fuelling threat escalation, the region can move towards strategic stability. Without such coordinated efforts, the continued development and deployment of systems like the 3K System will lock the Korean Peninsula and the broader Asia-Pacific into a cycle of provocation, and possible conflict.

Conclusion

In conclusion, the 3K Defence System reflects South Korea's evolving response to the growing threat posed by North Korea's nuclear and missile programmes. While it enhances deterrence through layered conventional capabilities, its deployment risks triggering unintended consequences such as regional arms races, strategic misperceptions, and destabilising military buildups. This dual impact underscores the complexity of security planning in a region where threat perceptions are deeply embedded and historically conditioned.

The analysis demonstrates that through the lens of offensive realism, North Korea's armament and reactive posture are consistent with efforts to maximise power for regime survival. Conversely, South Korea's 3K strategy aligns more closely with defensive realism emphasising deterrence and alliance-based security. The Regional Security Complex Theory (RSCT) further explains how tightly interwoven the actions and reactions of these states are, and how

40 Jayshree Bajoria and Beina Xu, "North Korea's Nuclear Program and the Six Party Talks," *Council on Foreign Relations*, September 30, 2013, https://www.cfr.org/backgrounder/six-party-talks-north-koreas-nuclear-program.

conventional military advancements can produce spirals of insecurity in the absence of regional institutions or mutual trust.

Ultimately, sustaining peace in the Korean Peninsula will require a shift from unilateral military solutions to coordinated diplomatic mechanisms that address underlying insecurities rather than amplify them.

Mashaal Shahnawaz is a scholar of Strategic Studies at the National Defence University (NDU), Islamabad. Her research interests include emerging technologies and warfare, and nuclear security issues.
Email: shahnawazmashaal@gmail.com.

Journal of Aerospace & Security Studies
2025 | Volume IV | pp. 36-56

Syria: Battleground of 'Power, Politics and Economics'

Husnain Shehzad & Zubair Ahmed

Abstract

This study explores the Syrian conflict's transformation into a prolonged proxy war, highlighting the interplay between internal vulnerabilities and external interventions, with three dimensions: power, politics, and economics and addressing a critical research gap in understanding the nexus of authoritarian governance, sectarian divides, and international intervention. The study uses a qualitative approach, which analyses academic research, policy reports, credible news sources, and conflict data. The findings indicate that the Assad regime's sectarian patronage system and elite-focused economic model fuelled dissent, while foreign powers exacerbated the conflict through competing agendas. Syria's war has claimed over 400,000 lives, displaced millions, shrunk GDP by 60 percent, and caused infrastructure losses estimated at USD 1.2 trillion. The study underscores the necessity for inclusive political processes, equitable economic reforms, and decentralised government to achieve sustainable peace and progress. It contributes to the discourse on proxy warfare and global rivalry, offering insights into the complexities of internal collapse compounded by international competition.

Keywords: Syria, Civil War, Proxy Agents, Intervention, Global Powers.

Introduction

Since 1970, the Assad dynasty has governed Syria. Hafez al-Assad came into power through a military takeover. Hafez managed Syria's sectarian environment. As a member of the Alawite minority, he empowered the Alawite community at the centre of the regime's political and military elite. His ruthless crackdown against the Muslim Brotherhood in Hama in 1982 resulted in hundreds of deaths, established his regime's intolerance of opposition and created authoritarian rule. In 2000, with Hafez's death, his son Bashar al-Assad took over the presidency, sparking optimism about political reforms and economic modernisation. However, his father's authoritarian structures and loyalist network weakened hopes for a more open Syria, leading to entrenched political repression and economic stagnation and the struggle to reform Syria's authoritarian framework. Time passed, and 2011 came, which proved to be the year of the Arab Spring. Sparked by Mohamed Bouazizi's self-immolation in Tunisia, it fuelled widespread uprisings that led to the toppling of leaders and destabilised six Arab League nations. Despite the demise of multiple countries, no true democracies emerged. Tunisia and Egypt faced instability, Libya saw NATO intervention, Bahrain crushed dissent, and Yemen's transition caused uncertainty.[1]

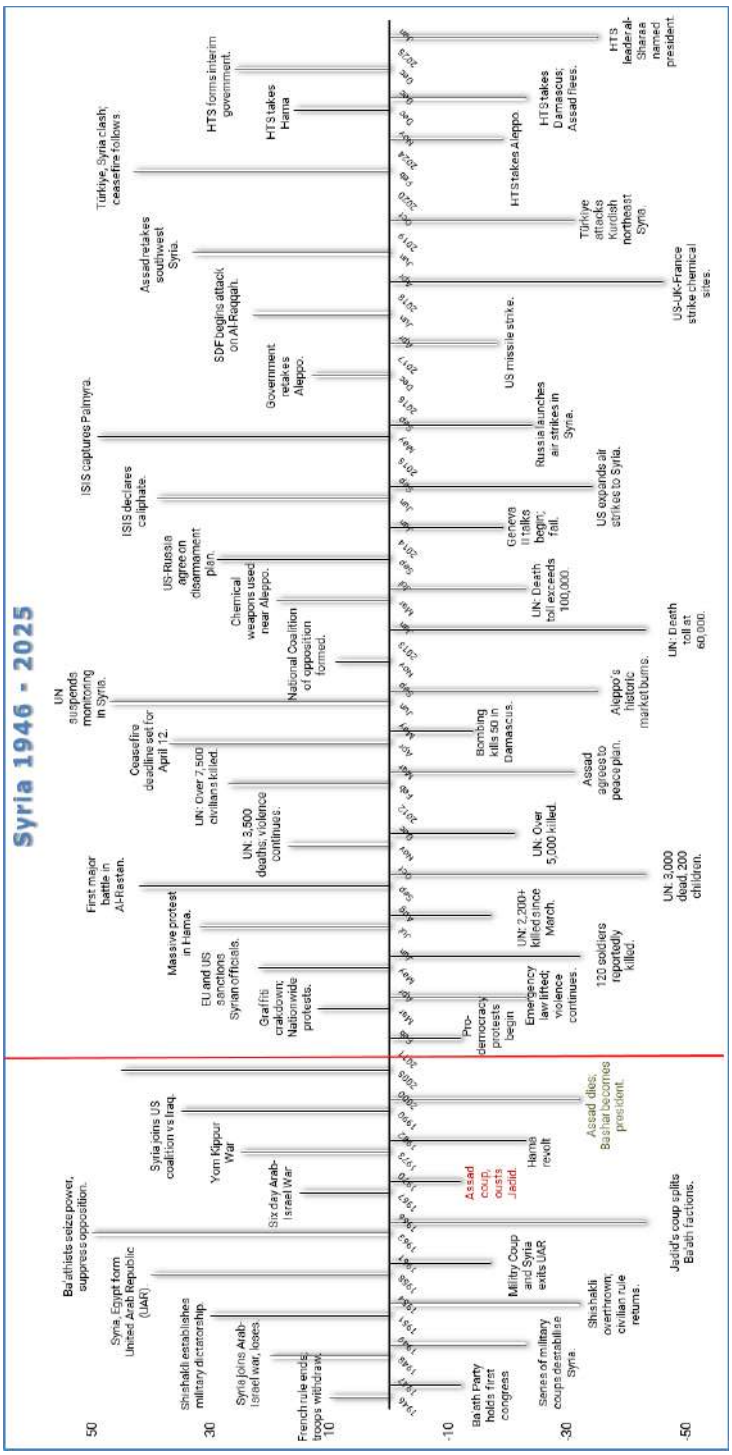
Protests erupted in Syria in January 2011 due to the Arab Spring movement. The uprising transformed into a nationwide rebellion in March 2011. The rebellion became highly complex, fuelled by proxy warfare between foreign powers. Syria turned into one of the deadliest conflicts in the Middle East. Various nations intervened to achieve their regional strategic targets and interests[2] (See Figure I):

---

1 Charlene Karina Lupita, "The Impact of Arab Spring on Middle East," *BINUS University,* Accessed April 12, 2025, ir.binus.ac.id/2018/12/06/the-impact-of-arab-spring-on-middle-east/; Al Jazeera, "Remembering Mohamed Bouazizi: The Man who Sparked the Arab Spring," December 17, 2020, aljazeera.com/features/2020/12/17/remembering-mohamed-bouazizi-his-death-triggered-the-arab; Abdallah Imam Haruna, "The Political Economy of the Violence in Syria: An Impact-Based Analysis," *European Journal of Humanities and Social Sciences* 1, no. 1 (2021): 41-51, doi.org/10.24018/ejsocial.2021.1.1.8; Times Now World, "Assad Dynasty Rule Ends in Syria: How A Family Ruled Sunni Nation For 50 Years," December 8, 2024, timesnownews.com/world/middle-east/assad-dynasty-rule-ends-in-syria-how-a-family-ruled-sunni-nation-for-50-years-article-116111820.

2 Jeffrey Martini, Erin York and William Young, *Syria as an Arena of Strategic Competition* (Santa Monica: RAND Corporation, March 2013), https://www.rand.org/pubs/research_reports/RR213.html; Marian Zuber and Samuel Sahel Moussa, "Arab Spring as a Background of Civil War in Syria," *International Conference Knowledge-Based Organization*, vol. 24, no. 1 (2018), pp. 245-251, doi.org/10.1515/kbo-2018-0038.

Figure I: Timeline of Syria 1946 – 2025



Source: Authors' illustration based on existing literature.
Note: The red line indicates the beginning of the Arab Spring waves in Syria.

Great powers mainly focus on dealing with other major powers, so they only step in to prevent civil wars when their strategic interests are at stake. Situations such as these are more likely to increase competition in a politically unstable area, although that area naturally needs regional cooperation for stability. During these circumstances, great powers favour opposing political factions while playing diplomatic games to conceal their hand. The vital strategic position of Syria between the Mediterranean Basin, Fertile Crescent, and Arabian Peninsula has established it as a dominant political force in the region and as a key trade hub while being an ideal strategic position for the military.

External powers have had different strategic goals in the Syrian conflict. The United States of America (USA) and Russia emphasised military presence as both nations supported opposing forces in the region to establish dominance, but China chose political and economic dominance. Intense sectarian tensions between Shiites and Sunnis grew even more severe because of this proxy conflict. The rise of substantial contestation against President Assad's government triggered instability, which in turn established a golden age for jihadist groups.[3]

This research investigates how external interventions alter fragile political-economic systems. It assesses the 360-degree economic and humanitarian catastrophe created by civil war. The study uses a triangular analytical framework to understand the Syrian conflict by linking the fragility of the regime, external intervention, and economic collapse as these are interconnected forces that exacerbate instability. It is argued that these dynamics create feedback loops that perpetuate conflict but could also lead to resolution, allowing a more comprehensive understanding of the Syrian battlefield as a case study of 'power, politics and economics.' The research also explores future hope for Syria's reconstruction and political stability. The study is significant because it provides insights into the evolving nature of proxy warfare and global rivalry in conflict zones. The study contributes to the existing literature by critically analysing Syria's war economy and transformation into a proxy battlefield.

[3] Barry R. Posen, "Civil Wars & the Structure of World Power," *Dædalus* 146, no. 4 (2017): 167-179. doi:10.1162/DAED_a_00467; Hussein Maklad, "Great Powers Competition in Syria," *Contemporary Arab Affairs* 15, no. 3-4 (2022): 54-77. doi.org/10.1525/caa.2022.15.3-4.54.

Methodology

The study adopts a qualitative methodology rooted in triangulation and thematic content analysis of geopolitical dynamics and governance failures and providing a comprehensive understanding of conflict influences.[4] Triangulation, based on academic literature, policy papers, credible news sources and conflict databases, helped construct a robust evidence base. Thematic content analyses identify patterns in internal governance failures, economic conditions and foreign interventions.[5] This approach ensures a comprehensive understanding of structural domestic factors and international geopolitical dynamics influencing the conflict.

Background: Torn by War

The Syrian unrest started in March 2011, when a group of teenagers in Deraa were arrested and tortured for spraying revolutionary graffiti. This event catalysed into widespread protests nationwide and reflected deep-seated grievances about corruption, economic inequality and authoritarian regimes. The government's violent crackdown and the lethal use of force, including firing on protesters, led to nationwide rebellion. On 2 December 2011, it was reported that Syria had entered into a civil war state, with over 4,000 dead and an increasing number of soldiers defecting to fight Assad's regime.[6]

The Deraa incident exposed the fragility of Assad's regime and the potential for national uprisings in highly controlled states. Escalation from protests to civil war demonstrates the regime's unwillingness to negotiate and the international community's inability to intervene effectively. 11,117 deaths were reported in the first 13 months of the war, with civilians suffering the most. Col. Riad al-Asaad led the Free Syrian Army (FSA), which included 15,000 low-level Sunni conscripts. The Battle of Aleppo in 2012 saw rebel forces gain control in some areas, including eastern parts of the city, and launched offensives in Damascus. Disparate rebel

4 Nilsen Aparecida Vieira Marcondes and Elisa Maria Andrade Brisola, "Análise por triangulação de métodos: um referencial para pesquisas qualitativas-Analysis by Methodological Triangulation: A Framework for Qualitative Research," *Revista Univap* 20, no. 35 (2014): 201-208. doi.org/10.18066/revunivap.v20i35.228; Mona Mohamed, Mohamed AF Ragab, and Amr Arisha, "Qualitative Analysis Methods Review," 3S Group, College of Business, Technological University Dublin (2016), doi.org/10.21427/D75Z25.

5 Aya Waleed Ahmed Arman, "External Interventions in Internal Conflicts: A Case Study of Yemen," *Humanities & Natural Sciences Journal* 4, no. 6 (2023): 26-33. doi.org/10.53796/hnsj463.

6 Elizabeth A. Kennedy and Frank Jordans, "UN: Syria Now in a Civil War," *NBC News*, December 2, 2011, nbcnews.com/id/wbna45514855.

brigades seized key cities, including Aleppo, throughout 2012. In early 2013, Assad's forces attacked rebel-held territory and tightened their grip on regime strongholds in the south. In August, rebels blamed the regime for a chemical attack outside Damascus that killed hundreds of people.[7] The FSA's composition revealed sectarian fissures within Syria's military institutions, with early violence disproportionately affecting civilians. Urban battlegrounds symbolise the war's destructiveness and the regime's determination to hold power.

Figure I provides a comprehensive view of the uprising and shows that with the beginning of the uprising, conflict rose across the country in the next two years. Mass displacement exacerbated demographic issues, putting pressure on neighbouring states and Europe and highlighted the global consequences of civil war.[8]

The UN Human Rights Office reported 306,887 civilian deaths in Syria from 2011 to 2021,[9] which also explains the intensity of war shown in Figure IV, with over half not documented by any group. The war resulted in over 400,000 deaths and the displacement of over 13 million people, with five million fleeing the border, causing a severe refugee crisis. Around half of Syria's pre-war population shown in Figure III required immediate aid. The war's devastation reshaped Syria's demographic, economic, and political landscape, leaving the nation in turmoil with lasting regional and global implications.

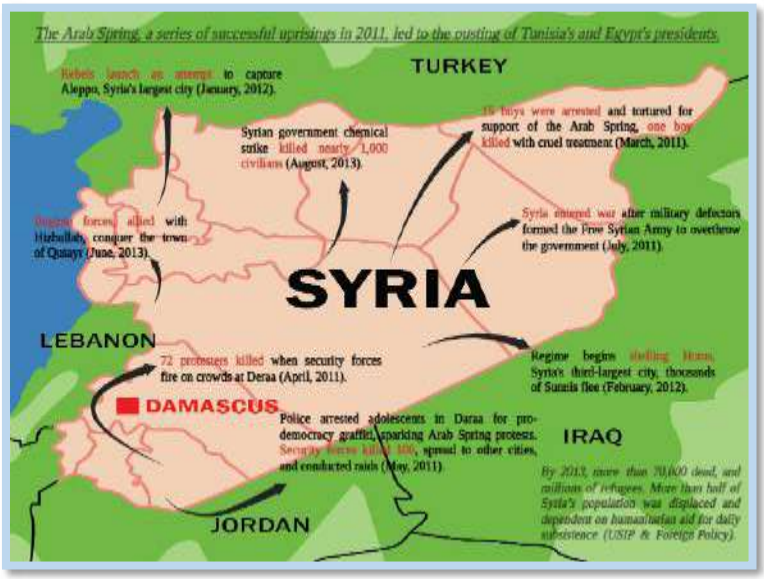
---

7 Al Jazeera, "Syrian Strikes on Aleppo 'Kill Dozens'," September 9, 2012, https://www.aljazeera.com/news/2012/9/9/syrian-strikes-on-aleppo-kill-dozens; Wilson Center, "Syria," Accessed March 10, 2025, https://www.wilsoncenter.org/syria.

8 CSIS, "Syria's Economic Collapse and Its Impact on the Most Vulnerable, 2021," *Center for Strategic and International Studies*, Accessed March 10, 2025, csis.org/analysis/syrias-economic-collapse-and-its-impact-most-vulnerable; Aleksandar Kešeljević and Rok Spruk, "Estimating the Effects of Syrian Civil War," *Empirical Economics* 66, no. 2 (2024): 671-703, link.springer.com/article/10.1007/s00181-023-02470-2; Global Financial Magazine, "Economy Wrecked by A Decade of War," Accessed March 10, 2025, gfmag.com/country/syria-gdp-country-report/.

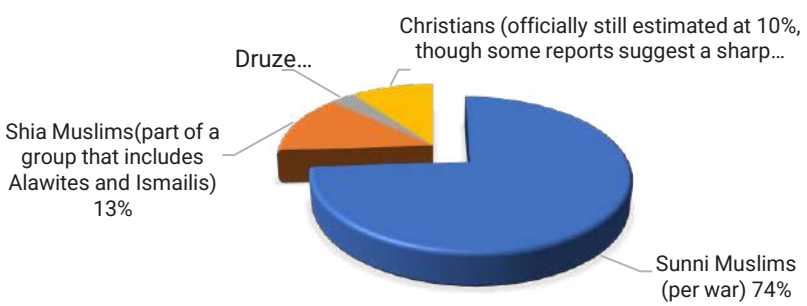
9 UN-OHCHR, "Behind the Data: Recording Civilian Casualties in Syria," United Nations Office of the High Commissioner for Human Rights, May 11, 2023, https://www.ohchr.org/en/stories/2023/05/behind-data-recording-civilian-casualties-syria.

Figure II: The Arab Spring: Precursor to the Civil War in Syria



Source: Authors' illustration from multiple sources.[10]

Figure III: Syria's Religious Demography

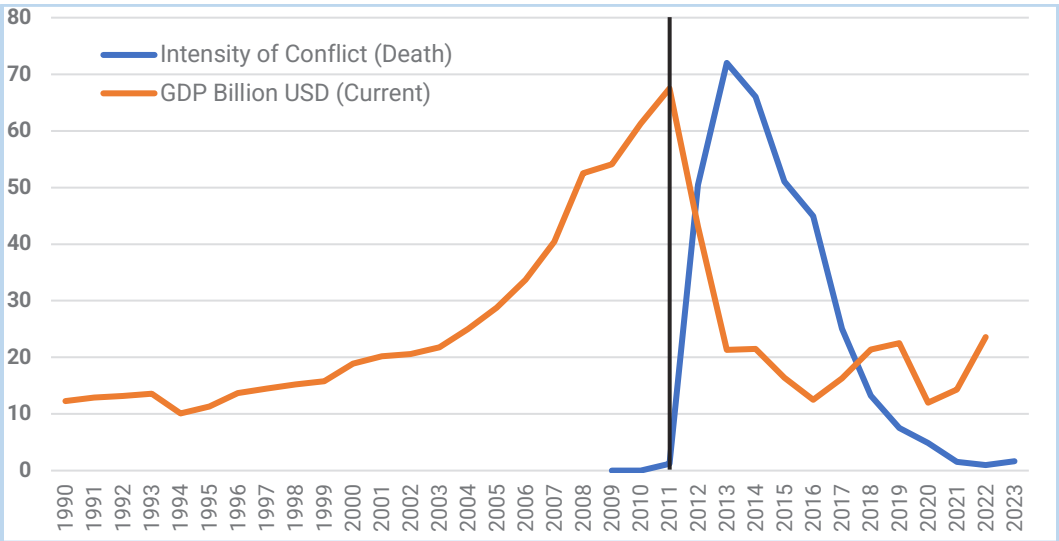


Source: Authors' own based on U.S. Department of State data.[11]

10 USIP, "Syria Timeline: Since the Uprising Against Assad," *United States Institute of Peace*, 2021, usip.org/syria-timeline-uprising-against-assad; Al Jazeera, "Syria's War Explained from the Beginning," April 14, 2018, aljazeera.com/news/2018/4/14/syrias-war-explained-from-the-beginning; Zuber and Moussa, "Arab Spring as a Background of Civil War in Syria."

11 U.S. Department of State, "2023 Report on International Religious Freedom: Syria," In *2023 Report on International Religious Freedom* (Washington, D.C.: U.S. Department

Figure IV: Battle-related Deaths



Source: Authors' own based on World Bank data.[12]

The War Economy

From an economic perspective, war economies can be categorised into classic war economies, which focus on war preparation and conduct, and informal war economies, which co-exist with armed violence. War economies dismantle formal structures, fuelling black markets, the informal economy, and violent resource control.[13]

Class relations in Syria have led to the state's decline, with the macroeconomic framework between 2000 and 2010 leading to misallocation of resources, wealth accumulation for the capitalist elite, and a decline in living standards for most Syrians. The ruling class embraced a Western neoliberal agenda, worsening social inequality and promoting political violence.

---

of State, June 2024), https://www.state.gov/reports/2023-report-on-international-religious-freedom/syria/.

12 World Bank, "Gross Domestic Product for Syrian Arab Republic (MKTGDPSYA646NWDB)," FRED, Federal Reserve Bank of St. Louis, Accessed April 28, 2025, https://fred.stlouisfed.org/series/MKTGDPSYA646NWDB.

13 Mark B. Taylor, *Conflict Financing: What's Wrong with War Economies?,* NOREF Report (Oslo: Norwegian Peacebuilding Resource Centre, May 2013), files.ethz.ch/isn/164674/738e4d8dd99cc71b53297ad29b01bae1.pdf.

In 2005, Syria adopted a national plan to shift from a centrally planned economy to a social market economy, but this led to a crony capitalist system that intensified social divisions and alleviated the middle class. Syria's 'social market economy' experiment fuelled rebellion, highlighting international policy's tendency to reinforce authoritarian regimes through punitive economic measures without considering internal power dynamics. Western sanctions were imposed on the Syrian regime, targeting government officials and state-owned institutions, but failed as the majority remained invested in the regime's survival.

Despite financial challenges and sanctions, the Syrian banking sector remained operational, with private banks using carry trade strategies to boost profitability. They borrowed government money at low interest rates and invested it in foreign assets. This resilience demonstrates how authoritarian governments maintain financial stability during crises. Economic sanctions hampered international investment and technology progress, while war halted national digital transformation ambitions.[14]

Low living standards, with poor households having more and younger members, fewer employment opportunities, and a higher poverty rate among public and informal sector workers, and also young unemployment, prevailed. However, no extensive literature explains poverty statistics at the government level before the crisis. The UN Economic and Social Commission for Western Asia reported decreased food and general poverty in 2009. However, these figures are doubtful due to droughts and reduced energy subsidies. The war caused a 54% economic loss in eight years, and the nation's Human Development Index ranking declined.

The 2011 Syrian conflict unleashed unprecedented violence and displacement, with physical capital being among the most devastating consequences. By 2020, the economic toll was estimated at approximately USD 1.2 trillion.[15]

---

14 Linda Matar, "Macroeconomic Framework in Pre-conflict Syria," In *Syria: From National Independence to Proxy War*, eds. Linda Matar and Ali Kadri (Palgrave Macmillan Cham, October 10, 2018): 95-113, doi.org/10.1007/978-3-319-98458-2_5; Samer Abboud, "Capital, Business Elites and the Syrian Uprising," In *Actors and Dynamics in the Syrian Conflict's Middle Phase* (Routledge, 2022): 279-300; Ibrahim Alnafrah and Sulaiman Mouselli, "Testing the External Shock Narrative of the Conflict on Transition Towards Knowledge Economy in Syria," *Journal of the Knowledge Economy* 15, no. 1 (2024): 958-991, doi.org/10.1007/s13132-023-01121-2.

15 Syrian Arab Republic and UNDP, S*yrian Arab Republic: Third National MDG Progress Report* (Damascus: State Planning Commission and United Nations Development Programme, 2010), https://undp.org/sites/g/files/zskgke326/files/publications/MDGR-2010-En.pdf;

Syria's oil output from mature fields sharply declined, dropping from a peak of 677,000 barrels per day (BPD) in 2002 to just 353,000 BPD by 2011 (according to the Barcelona Centre for International Affairs CIDOB, in 2011, only 327,000 BPD were produced).[16] However, the conflict led to a decline in oil production, plummeting to merely 97,000 BPD by 2021.[17] Concurrently, the financial sector witnessed significant disruptions. Bank deposits contracted rapidly, while the Syrian stock market suffered considerable losses. The Central Bank of Syria's reserves were around USD 18.5 to USD 20 billion in 2010, according to the International Monetary Fund (IMF) and World Bank, respectively, and dropped to USD 14 billion by the end of 2011, as reported by the IMF. Similarly, it was around USD 9 billion by 2013 according to the Barcelona Centre for International Affairs,[18] even US sources claimed USD 4 billion by 2013. By 2021, the Syrian pound had significantly depreciated, officially trading at more than 1,250 Syrian Pounds (SYP) per USD and informally at more than 3,000 SYP. The Syrian economy suffered a significant economic downturn due to a 300% inflation spike, negatively impacting employment and consumer purchasing power. The regime's resistance to reforms, infrastructure destruction, and physical capital loss contributed to the economy's fragility. Between 2011 and 2016, the GDP fell USD 51 billion short of the counterfactual, and reconstruction expenditure was estimated at USD 500 billion. The annual budget ballooned from USD 3 billion in 2012 to USD 10 billion in 2013.[19] The war economy model has worsened these dynamics by strengthening the authoritarian regime and neoliberal policies.

Jeanne Gobat and Kristina Kostial, "Syria's Conflict Economy," *IMF Working Paper No. 16/123* (International Monetary Fund, Washington, D.C., June 2016), imf.org/external/pubs/ft/wp/2016/wp16123.pdf; ; Forat Suliman, Homam Khwanda, and RV Ramana Murthy, "An Analysis of the Syrian Economy in the Era of Military Conflict, 2011-2020: The Perspective of Government and Economics," *Journal of Government and Economics* 11 (2023): 100082. doi.org/10.1016/j.jge.2023.100082.

16 Samer Hamati, *Les chiffres et le profil de la pauvreté antérieurs au conflit en Syrie*- Figures and Profile of Poverty Before the Conflict in Syria, *One Pager, no. 428* (Brasília: Centre international de politiques pour la croissance inclusive, September 2019), repositorio.ipea.gov.br/bitstream/11058/14917/2/fr_OP428FR_Les_chiffres_et_le_profil_de_la_pauvrete.pdf.

17 Layth Alkhani, *Syrian Oil Production 2006-2021*, PH240 course report (Stanford University, December 10, 2023), large.stanford.edu/courses/2023/ph240/alkhani2/.

18 Eckart Woertz, *Syria's War Economy and Prospects of Reconstruction*, Nota Internacional CIDOB 77 (Barcelona: CIDOB, September 2013), cidob.org/en/publications/syrias-war-economy-and-prospects-reconstruction.

19 Joseph Daher, *The Political Economy of Syria: Deepening Pre-War Orientations* (Beirut: Arab Reform Initiative, 2020); Harun Onder, *A Decade of War in Syria: The Economic*

The decrease in total investment rate from 20.5% of GDP from 2001 to 2010 to less than 8% of GDP from 2016 to 2020 indicates the performance of both the public and private sectors. Syria's trade flow was also adversely affected by sanctions and conflict interruptions by 65%. Exports fell by 70% between 2010 and 2015. Agricultural production experienced significant losses, with wheat production dropping 20% and livestock production, including cattle, sheep and goats, dropping by 30%, 40%, and 50%, respectively.[20]

As shown in Table I, the Syrian economy collapsed due to prolonged conflict, authoritarian control, and systemic underdevelopment. The regime's war economy and opposition to reforms led to corruption and cronyism, necessitating a political and economic overhaul to recover from decades of poor management and elite entrenchment.

Table I: Economic Collapse during Syrian War

	2011	2023
GDP	USD 67.5 Billion	USD 9 Billion
Annual Inflation	5.8%*	140% (1) **
Syrian Pound vs US Dollar	45-54 (2)	2,512 to 13,046 (2)
Unemployment	8.6%	13.5%
Youth Unemployment	21.3%	33.5%
Oil Production (barrels per day)	383,000 (3)	90,840 (3)

Source: Authors' own based on Syrian Center for Policy Research (1), exchangerates.org (2) and US Energy Information Administration (3) data. *November 2011-December 2023

Side, World Bank Working Paper (Washington, D.C.: World Bank, April 2022), thedocs.worldbank.org/en/doc/ebb9b060753b7019705d1dafe9fe2e35-0280032021/original/April-22-Harun-OnderA-Decade-of-War-in-Syria-The-Economic-Side.pdf; Reuters, "Exclusive: Syria Retains 26 Tons of Gold Reserves after Assad's Fall," December 16, 2024, reuters.com/markets/commodities/syria-retains-26-tons-gold-reserves-after-assads-fall-sources-2024-12-16/.

20 Navvar Saban, "Factbox: Iranian Influence and Presence in Syria," *MENASource* (Atlantic Council), November 5, 2020, atlanticcouncil.org/blogs/menasource/factbox-iranian-influence-and-presence-in-syria/; Vladimir M. Akhmedov, "The Syrian Revolution," In *Handbook of Revolutions in the 21st Century: The New Waves of Revolutions, and the Causes and Effects of Disruptive Political Change* (Cham: Springer International Publishing, 2022): 707-723; Ibrahim Alnafrah and Sulaiman Mouselli, "Testing the External Shock Narrative of the Conflict on Transition Towards Knowledge Economy in Syria," *Journal of the Knowledge Economy* 15, no. 1 (2024): 958-991, doi.org/10.1007/s13132-023-01121-2.

*** Total oil production of which 90% was controlled by US-backed Syrian Democratic Forces.

Tug of War

Civil wars have frequently turned into proxy battles by great powers, as shown in the US-Soviet operations in Vietnam and Afghanistan. The Syrian conflict evolved into a major geopolitical contest between the US and the Russian Federation, transforming what began as a domestic uprising into a theatre for great power rivalry. Both powers sought to assert influence over the regional balance of power, resulting in prolonged military entanglements and the erosion of established global alliances. Iran's strategic expansionism further compounded regional tensions, as Tehran leveraged the conflict to bolster its influence through proxy networks and support for the Assad regime.

Concurrently, China's growing economic and political presence in the region reflected a more restrained and non-interventionist posture, diverging from the overt militarised approaches of the US and Russia. Ramifications of the conflict extended beyond Syria's borders, reshaping the ideological and operational framework of the Ba'athist regime and destabilising regional dynamics.

Initiated in 2011 amidst the broader Arab Spring, the Syrian uprising led to a complex nexus of international sanctions, external military support for opposition groups, and intensified sectarian divisions. The country, hence, became a geopolitical flashpoint, drawing in both regional actors and global powers, thereby escalating the conflict's duration and severity.

The absence of a coherent and consistent US strategy contributed to uncertainty among regional allies and allowed adversarial actors such as Iran and Russia to consolidate their positions. The conflict functioned as a de facto proxy war: while Russia intervened militarily to preserve the Assad government and secure its strategic footholds, the US aimed to curtail the influence of both Russia and Iran, albeit through fragmented support to opposition forces. This asymmetry in strategic clarity and commitment further entrenched the conflict and weakened the prospects for a negotiated resolution. In fact, Washington's cautious approach to confronting the Assad regime directly reflected strategic risk aversion rather than disengagement. On the other hand, Russia provided unwavering support to Assad, utilising military aid and diplomatic influence to secure its interests.

Initially, Russia urged the West against military intervention in Syria without a United Nations mandate, citing international law. Then-Foreign Minister stated that Russia would not engage in war and warned against repeating past mistakes,

saying such intervention would violate international law. Saudi Arabia's stance had changed towards diplomacy with Assad.[21]

Before the intervention, Russia vetoed US resolutions three times and opposed intervention while asserting its role as a stabiliser; Moscow officially continued to call for 'no military intervention' against Syria. However, Syria strategically remained a key Russian arms importer and hosted Moscow's vital Mediterranean naval base. Russia's 2015 intervention in Syria intensified US-Russia tensions and diverted global attention from Ukraine. Moscow's military actions fortified Assad's regime, challenged Western influence and sought to curb Islamic extremism, reinforcing its geopolitical stature. Advocating a dual sovereignty model, the Kremlin manoeuvred to secure strategic interests and reinforce its great power status, counter Western dominance, and assert its non-Western identity, strengthening its alliance with Iran despite military frictions. Moscow expanded cooperation through diplomacy, jointly navigating post-war complexities. This intervention underscored Russia's ambitions to reshape global power dynamics, leveraging Syria as a strategic foothold while balancing diverging military and economic interests with regional and international actors.[22]

The Arab Spring exposed regional instability and prompted US engagement to safeguard its diplomatic, economic, and military interests. The emergence of ISIS (Islamic State of Iraq and Syria) and Iran's expansion, backed by Russia, challenged US-led security frameworks.

---

21 Alexei Anishchuk, "Russia Warns against Military Intervention in Syria," *Reuters*, August 26, 2013, reuters.com/article/world/russia-warns-against-military-intervention-in-syria-idUSBRE97P0G2/?utm; Tugce Varol Sevim and Merve Sune Ozel, "Rethinking Russian Mission in Syria," *European Scientific Journal* 9, no. 19 (2013); Nageen Ashraf, "Syria as a Shatter Belt and the Great Power Competition," *Margalla Papers* 26, no. 2 (2022): 28-38, doi.org/10.54690/margallapapers.26.2.111; Mohamed, Ragab and Arisha, "Qualitative Analysis Methods Review."; Kasım Ileri, "The Implications of Great Power Politics in the Decade Long Syrian Civil War," *İnsan ve Toplum* 14, no. 1 (2024): 1-23. doi.org/10.12658/m0714.

22 Seth G. Jones and Joseph S. Bermudez Jr., *The Evolution of Russian and Iranian Cooperation in Syria* (Washington, D.C.: Center for Strategic and International Studies, June 8, 2022), csis.org/analysis/evolution-russian-and-iranian-cooperation-syria; Greg Simons, "Russia as a Powerful Broker in Syria: Hard and Soft Aspects," *KnE Social Sciences* (2021): 418-432, doi.org/10.18502/kss.v5i2.8385; Ohannes Guekjian, "The Objectives of Russia's Military Intervention in Syria," *The Maghreb Review* 42, no. 3 (2017): 274-306, https://doi.org/10.1353/tmr.2017.0009.

With the rise of the Arab Spring, the US increased military and economic support to its allies to counter the influence of ISIS and Iran.[23] It was argued by analysts that the US should restrict its military interventions to three key regions: Europe, the Persian Gulf, and Northeast Asia, with emphasis on securing vital oil resources spanning from the eastern Mediterranean to the Arabian Sea.[24] Although Syria does not possess significant oil reserves, its geopolitical relevance lies in its connection to broader US security objectives and the imperative to counterbalance shifting regional power dynamics.

In 2012, then-US President Barack Obama articulated a 'red line' warning the Syrian government against the use of chemical weapons on civilians.[25] This threshold was tested with reported chemical attacks in Khalidiya, Homs in 2012, and more notably with sarin gas attacks in Eastern Ghouta and Moadamiyah in 2013. These incidents triggered international condemnation and heightened calls for intervention. Although debates persisted regarding the attribution and verification of the evidence, the US, along with Britain and France, maintained that the Syrian regime was responsible and advocated for punitive military action.[26]

In contrast, Russia advanced a diplomatic initiative, subsequently known as the 'chemical weapons for peace' plan, that aimed to dismantle Syria's chemical arsenal under international supervision. This move not only defused immediate tensions but also reinforced emerging international norms against the use of chemical weapons. China and Russia, meanwhile, highlighted the necessity of obtaining United Nations Security Council (UNSC) authorisation for any military

---

23 Antonio Perra, "From the Arab Spring to the Damascus Winter: The United States, Russia, and the New Cold War," *Contemporary Review of the Middle East* 3, no. 4 (2016): 363-386, doi.org/10.1177/2347798916664578; Ambassador (Ret.) James F. Jeffrey, statement before the Senate Armed Services Committee, U.S. Policy and Strategy in the Middle East, December 14, 2017, in *Senate Armed Services Committee Hearing on U.S. Policy and Strategy in the Middle East*, armed-services.senate.gov/imo/media/doc/Jeffrey_12-14-17.pdf; Dong Mingyang, "The Impact of Middle Eastern Turmoil on U.S. National Security: Causes, Consequences, and Countermeasures," *Advances in Economics, Management and Political Sciences* 133, no. 1 (2025): 55-60, doi.org/10.54254/2754-1169/2025.19681.

24 John J. Mearsheimer, "America Unhinged," *The National Interest* 129 (2014): 9-30. https://www.jstor.org/stable/44151042.

25 CNN, "Obama Warns Al-Assad Against Chemical Weapons, Declares 'The World is Watching," December 3, 2012, edition.cnn.com/2012/12/03/world/meast/syria-civil-war/index.html.

26 Yue Hanjing and Ying Zhu, "Great Power Game around the Chemical Weapons Attacks in Syria and the New Norm on Banning Chemical Weapons," *Scholars Journal of Economics, Business and Management* 7, no. 9 (2020): 304-312, doi.org/10.36347/SJEBM.2020.V07I09.004.

response, expressing concern over what they viewed as premature or potentially unsubstantiated evidence presented by Western powers.

The divergence in international approaches underlined deeper geopolitical fractures in normative debates about sovereignty, intervention, and the credibility of multilateral institutions in responding to security and humanitarian crises. In 2014, the US again conducted airstrikes and maintained troops in Syria against the Islamic State and al-Qaeda. However, the legal and strategic justifications for this intervention had become increasingly tenuous as the conflict had evolved to include Iranian-backed militias aligned with the Assad regime.

The US military's footprint in Syria caused risks of confrontation with pro-Assad forces, including Iran and Russia. Washington's position on Syria centred on four objectives: managing the humanitarian situation, reducing violence, sustaining pressure on IS by a continuous military presence in eastern Syria, and supporting Israel's right to self-defence.[27] Also, occupation and indirect control of Syria's eastern oil fields by US-backed Kurdish forces, combined with sweeping economic sanctions, represent a modern iteration of economic warfare aimed at regime containment and conditional political transformation.

During the Syrian conflict, private financing from Gulf-based businesses began supporting various Islamist brigades, often without direct state oversight. This informal funding network enabled external actors in the war economy that included international or Islamic non-governmental organisations, charities, and foundations, to operate with limited scrutiny, sometimes masking or enabling abusive practices under the guise of humanitarian or religious assistance.[28]

ISIS is reported to have received substantial financial support through foreign donations and private Gulf-based financiers, colloquially referred to as 'angel investors,' who facilitated domestic operations within Syria. Private donors in permissive financial jurisdictions such as Kuwait and Qatar played a key role in sustaining ISIS and other extremist groups. Saudi Arabia's promotion of a fundamentalist interpretation of Islam, coupled with its geopolitical rivalry with Iran, contributed to the proliferation of sectarian proxy conflicts across the

27 Tess Bridgeman and Brianna Rosen, "Still at War: The United States in Syria," *Just Security*, April 29, 2022, justsecurity.org/81313/still-at-war-the-united-states-in-syria/.

28 European Parliament, Directorate-General for External Policies, Policy Department, *The Financing of the 'Islamic State' in Iraq and Syria (ISIS),* In-Depth Analysis, IDAN/2017/603835 (Brussels: European Parliament, September 2017), europarl.europa.eu/RegData/etudes/IDAN/2017/603835/EXPO_IDA(2017)603835_EN.pdf.

region.[29] Qatar's role has drawn particular scrutiny. An interview conducted by Al Jazeera with Abu Muhammad al-Joulani, the leader of Syria's al-Qaeda-affiliated Jabhat al-Nusra, has been interpreted by some analysts as evidence of Qatar's attempt to project extremist actors as legitimate political entities, combining narratives of religious extremism with themes of governance and local stability. Furthermore, Qatar has reportedly paid substantial ransoms up to USD 1 billion, to secure the release of hostages held by extremist factions, including former al-Qaeda affiliates in Syria. While these actions may have been framed as humanitarian or diplomatic efforts, critics argue that such financial flows inadvertently legitimised and strengthened destabilising non-state actors.[30]

Iran's involvement in the Syrian conflict has been officially justified on the basis of national security imperatives, including the preservation of regional influence, protection of alliances, particularly with the Assad regime, and containment of Sunni extremist groups near its borders. Tehran has consistently maintained that its intervention was not driven by sectarian or ethnic motivations. However, competing narratives complicate this position. In 2018, the Israel Defense Forces (IDF) alleged that Iran's Supreme Leader, Ayatollah Ali Khamenei, had called for fighting in Syria to protect Shi'a holy sites, thereby framing the intervention in explicitly sectarian terms. A similar narrative resurfaced in 2025, when the news agency 'Iran International' reported that Iran's discourse around its involvement continued to emphasise the safeguarding of Shi'a Islamic shrines as a central rationale.

While such narratives may serve domestic and ideological purposes, they also suggest the intertwining of strategic, religious, and symbolic factors in shaping Iran's regional military posture. Iran perceived the removal of Assad as a threat and has provided military and financial assistance. Syria-Iran ties are unique, mixing ideological differences with shared objectives in opposing the US and Israel. Iran saw Syria as its gateway to the Arab world, which it used as clout in negotiations with Israel. Since 2000, the alliance has become stronger despite poor relations with Arab nations.

---

29 Eckart Woertz, *How Long Will ISIS Last Economically?*, Nota Internacional CIDOB 98 (Barcelona: CIDOB, October 2014), cidob.org/en/publications/how-long-will-isis-last-economically.

30 Osarodion Odosamamwen Izevbigie, "Roots and Goals of the State of Qatar's Contradictory Foreign Policy: Implications for U.S. National Security Interests," (Master's thesis, Missouri State University, 2019), https://bearworks.missouristate.edu/cgi/viewcontent.cgi?article=4473&context=theses.

Due to its belief that Syria's security was essential to its own, Iran sold military hardware and made economic investments to the country. Iran's military intervention shown in Figures V and VI began in late 2011, initially with financial aid, arms, and communication disruption. Iran used 'Husseiniat Scouts' to recruit Shi'a volunteers for its 'Protecting Shia Shrines' campaign. According to the IDF, by early 2012, Iran had deployed Quds Force operatives. Revolutionary Guards and Hezbollah fighters supported Assad's regime, peaking at 2,500 troops alongside 20,000 allied forces, strengthening Iranian-Russian military ties and securing 131 military sites by 2020. Iran's actions had profound implications for Middle Eastern security, affecting Hezbollah's capabilities, regional stability, and the interests of countries like the US, Türkiye, Saudi Arabia, and Israel.[31] The Geopolitical Intelligence Services AG reported that a decade of involvement in Syria cost Iran around USD 100 billion. Militia salaries were financed through the Islamic Revolutionary Guard Corps (IRGC) budget, which was estimated at approximately USD 7.6 billion.[32]

Türkiye launched the 'Euphrates Shield' military operation to prevent Kurdish-led forces from gaining territory along the border, fearing that their success fuelled domestic movements. Türkiye's engagement in Syria was to prevent the formation of a Kurdish political entity on its southern border, enhance regional influence through opposition backing, and create a buffer zone.[33]

On the other hand, Israel faced a complex situation in the Syrian civil war, balancing hostility towards Assad, Islamist fear, Hezbollah's increased combat role, and geopolitical risks with Russia and Iran, with limited strategies to deter threats.[34] So, with the collapse of Assad's rule, Israel imposed a 'preemptive intervention' policy against the new Syrian administration, destroying military infrastructure,

---

31 Abdullah H. Al-Moussawi, "Iran and the Syrian Crisis," *Journal of US-China Public Administration* 14, no. 3 (2017): 136-144, doi: 10.17265/1548-6591/2017.03.002; Ephraim Kam, "Iranian Military Intervention in Syria: A New Approach," *Strategic Assessment* 20, no. 2 (2017): 9-21, inss.org.il/wp-content/uploads/2022/12/fe-2484474937.pdf; Saban, "Factbox: Iranian Influence and Presence in Syria."

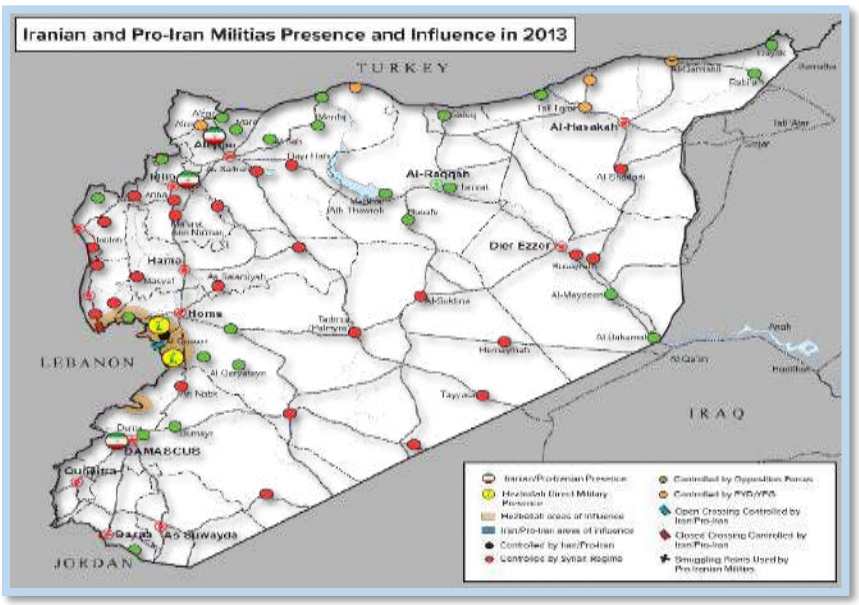
32 Amatzia Baram, "Iran's Stakes in Syria", *GIS Reports,* October 28, 2021, gisreportsonline.com/r/iran-syria/.

33 Sebastian Franzkowiak, "Only the Dead Have Seen the End of the War-How to Make Sense of Turkey's Involvement in Syria," In *Europe – Against the Tide*, eds. Matthias Waechter and Hartmut Marhold (Baden-Baden: Nomos Verlagsgesellschaft mbH & Co. KG, 2019): 147-58; Gencer Özcan and Soli Özel, "Turkey and the Syrian Crisis," In *The Struggle to Reshape the Middle East in the 21st Century*, ed. Samer S. Shehata (Edinburgh: Edinburgh University Press, 2023):129-53.

34 Ariel (Eli) Levite, "An Israeli Perspective on Syria," *Carnegie Middle East Center* (Carnegie Endowment for International Peace), June 9, 2014, carnegieendowment.org/research/2014/06/an-israeli-perspective-on-syria?lang=en.

occupying new territories, and disarming southern Syria to establish a security zone. The policy aims to protect minorities, particularly Druze and Kurds, and prevent Syria from becoming a base for Türkish-backed Islamist movements. In the short-term, Israel aims to secure its borders under its 'forward defence' doctrine, while in the long-term, it seeks to keep the new Syrian regime weak and prevent Türkish influence from deepening.[35]

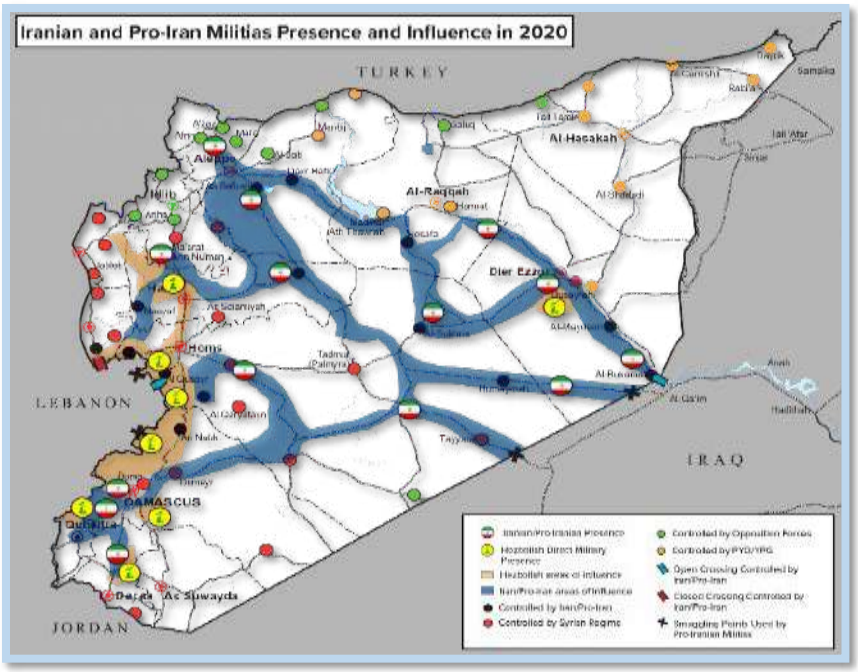
Figure V: Iranian and Pro-Iran Militias Presence in Syria (2013)



Source: Saban, "Factbox: Iranian Influence and Presence in Syria."

35 EPC, "Israel's Policy in Syria: Military Intervention and Reliance on Minorities," *Emirates Policy Center*, April 9, 2025, epc.ae/en/details/brief/israel-s-policy-in-syria-military-intervention-and-reliance-on-minorities.

Figure VI: Iranian and Pro-Iran Militias Presence in Syria (2020)



Source: Saban, "Factbox: Iranian Influence and Presence in Syria."

Hope After Rubble

The demise of the Assad administration in Syria in December 2024 represented a watershed moment in the country's history. The new government, led by Ahmad al-Sharaa (earlier known by his *nom de guerre* Abu Mohammad al-Jolani), is confronted with many difficulties. However, despite political division, economic suffering, and security threats, Syria's transfer to al-Sharaa offers a vital chance for renewal. On 13 March, al-Sharaa issued a constitutional declaration establishing 'Islam' as the country's religion and Islamic jurisprudence as the primary source of legislation during a five-year transition phase. The declaration calls for an independent judiciary, freedom of expression, media freedom, and protections for women's political, educational, and employment rights.

Restoring legitimacy and confidence will need a comprehensive reform plan and its execution. Credible transitional justice, inclusive political procedures, and an open election. This shift must be supported by an inclusive and holistic framework. The new administration is developing a comprehensive plan for Syria's

reconstruction. Syria's Minister of Economy and Industry has declared that this is the beginning of a difficult path.[36]

Syrians have exhibited resilience by adopting local survival solutions in the face of extreme violence, such as maintaining essential services in places like Damascus and Aleppo through solar energy, grassroots initiatives, and small businesses. However, the effectiveness of these solutions is doubtful owing to national difficulties that need cooperation and resources beyond local capacity. Syrian society's divided structure has weakened community trust, demanding inclusive administration to represent multiple political factions while avoiding alienation.

The international community needs to play an important role in Syria's rehabilitation[37] just as eagerly as great powers engaged in proxy warfare. Lifting restrictions on financial institutions and enabling international investment are crucial for maintaining stability. Empowering the commercial and civil sectors may increase trust and lessen government pressure.

Conclusion

The Syrian conflict began and escalated into one of the deadliest and most complex civil wars of the 21st Century. The Assad regime's authoritarian grip, which was rooted in sectarian loyalty and crony economic experiments, proved brittle in the face of public dissent and social inequality. The Arab Spring may have served as a catalyst, but the deeper fault lines were embedded in decades of socioeconomic mismanagement, class-based marginalisation, and political repression.

---

36 Tamer Qarmout, "Rebuilding Syria Requires Much More than Bricks and Mortar," *Al Jazeera*, December 22, 2024, aljazeera.com/opinions/2024/12/22/rebuilding-syria-requires-much-more-than-bricks-and-mortar; Bilal Mahli, *Syria's Post-Conflict Recovery: Challenges and Prospects for Reconstruction and Stability*, Policy Brief No. 22/25 (Rabat: Policy Center for the New South, April 11, 2025), https://policycenter.ma/sites/default/files/2025-04/PB-22-25%20(Bilal%20Mahli).pdf; United Nations Security Council, "Syria, April 2025 Monthly Forecast," *Security Council Report Monthly Forecast*, March 31, 2025, securitycouncilreport.org/monthly-forecast/2025-04/syria-78.php.

37 Sinan Hatahet, "Syria's Post-Assad Honeymoon Is Over. Now the Hard Work of State-Building Begins," *New Atlanticist*, January 23, 2025, https://www.atlanticcouncil.org/blogs/new-atlanticist/syrias-post-assad-honeymoon-is-over-now-the-hard-work-of-state-building-begins/.

The war's economic toll has been catastrophic, with over half of Syria's population displaced, a 60% contraction in GDP, and estimated infrastructure damage in the hundreds of billions.

Syria also became a proxy battlefield for global and regional powers seeking geopolitical dominance, each with divergent agendas, converting the country's soil into a theatre of competition. Beyond the Syrian borders, the conflict starkly warns that fragile states can become arenas for geopolitical confrontation, where domestic grievances are internationalised and prolonged by external interests. Syria requires political talks with civil society organisations, minorities, and displaced people. Long-term peace development and reconstruction projects need transitional justice and reconciliation principles. Local entrepreneurship can help develop unity. The government in Damascus should establish systems to strengthen social unity in the country. The new government, despite breaking from Assad's rule, is fragile and lacks broad inclusiveness, causing concerns about external alignment with Western and Israeli interests. Its limited engagement with minorities and political factions risks deepening internal divides.

International mediation tends to be most effective when it is initiated at early stages of civil unrest, where timely intervention can help prevent escalation into full-scale conflict. For such efforts to succeed, major powers must refrain from instrumentalising civil conflicts for their own political or strategic interests and instead commit to establishing clear normative boundaries that prioritise conflict resolution over geopolitical competition. Regional organisations should be empowered to mediate internal conflicts before they become internationalised. Resilience-based development models should prioritise inclusive economic reforms, equitable development, and social welfare over elite-centric neoliberalism. Conflict-sensitive sanctions should target regimes without paralysing civilian life; humanitarian carve-outs should be prioritised to avoid deepening suffering. Interpreting Syria's protracted conflict as a convergence of internal state collapse and external geopolitical competition offers a more holistic foundation for formulating effective policy responses and conflict mitigation strategies.

Husnain Shehzad is an MPhil Scholar at the School of Economics, Pakistan Institute of Development Economics, Islamabad. Email: <husnain.eco24@pide.edu.pk>.

Zubair Ahmed is a PhD Scholar at the School of Economics, Pakistan Institute of Development Economics, Islamabad. Email: <Zubair.Phdeco24@pide.edu.pk>.

Journal of Aerospace & Security Studies
2025 | Volume IV | pp. 57-77

URAAN Pakistan: Evaluating the Policy Architectures

Urooj Saif & Laiba Tahir

Abstract

URAAN Pakistan, launched under the 13th Five-Year Plan (2024–29), is a strategic policy initiative aimed at addressing Pakistan's persistent development challenges through a coherent, future-oriented framework. Branded by the government as the '5Es Framework': Exports; E-Pakistan; Environment & Climate Change; Energy & Infrastructure; and Equity, Ethics & Empowerment, the policy seeks to promote economic reforms, digital transformation, environmental resilience, and integrated national growth. Marking a departure from historically fragmented reform efforts, URAAN emphasises inter-sectoral coordination and long-term strategic planning. This paper evaluates the initiative's policy design through a qualitative, document-based methodology. It draws on policy design literature and Barry Buzan's multi-sectoral security framework to assess URAAN's internal coherence, institutional architecture, and strategic viability within Pakistan's socio-economic landscape. The analysis highlights notable strengths in the initiative's integrated vision and thematic coherence. However, it also identifies key gaps in institutional clarity, stakeholder engagement, and regulatory oversight mechanisms. These weaknesses could undermine implementation if left unaddressed.

Keywords: URAAN Pakistan, Policy design, Development planning, Institutional architecture, Inter-sectoral coordination.

Introduction

Pakistan's developmental trajectory has long been marked by paradox: immense potential hindered by systemic under-performance. Despite a youthful population, abundant resources, and a strategic location, past planning efforts such as the previous five-year plans, Vision 2010 and Vision 2025 struggled to drive structural transformation due to short-termism, fragmented implementation, and weak institutional coordination.

Launched under the 13th Five-Year Plan (2024–29), URAAN Pakistan represents a paradigm shift in national planning. It transitions from reactive crisis management to proactive, institutionalised development through a strategic framework centred on the novel 5Es: Exports, E-Pakistan, Environment & Climate Change, Energy & Infrastructure; and Equity, Ethics & Empowerment. These pillars are supported by enablers such as political stability, human capital development, governance reforms, and peace and security.[1]

URAAN aims to institutionalise continuity, coherence, and accountability through mechanisms like the National Economic Transformation Unit (NETU), promoting results-based management, inter-ministerial coordination, and agile implementation. It embraces inclusive consultation, data-driven policy-making, and citizen engagement through initiatives like the Champions of Reforms (COR) network to foster public trust and societal ownership.

With long-term goals of achieving upper-middle-income status by 2035 and becoming a top-ten global economy by 2047, URAAN aspires to strengthen institutionalised strategic planning for resilience, inclusive growth, and global relevance. This paper critically examines URAAN's design and implementation logic.[2]

The analysis of similar policy initiatives from other countries provides useful lessons for the policy makers in Pakistan. For instance, though Malaysia's *Vision 2020*[3] advanced industrial upgrading, education, and digital adoption, and achieved poverty reduction and export diversification; however, uneven regional

1 Ministry of Planning, Development and Special Initiatives, *URAAN Pakistan: National Economic Transformation Plan* (Islamabad: Ministry of Planning, Development and Special Initiatives, 2024), 17-18, https://pc.gov.pk/uploads/uraanpakistan_book.pdf.
2 Ministry of Planning, Development and Special Initiatives, *URAAN Pakistan*.
3 Mahathir Bin Mohamad, *Malaysian: The Way Forward (Vision 2020)* (Putrajaya: Government of Malaysia, 1991) https://policy.asiapacificenergy.org/sites/default/files/vision%202020.pdf.

outcomes and limited institutional reforms reduced inclusivity.[4] Vietnam's long-term plans, on the other hand, show how disciplined five-year sequencing and export orientation can sustain rapid transformation, while also highlighting risks from overreliance on external capital and environmental stress.[5] These cases suggest Pakistan should combine ambitious targets with stronger institutional capacity, phased sequencing, and fiscal realism to avoid uneven outcomes.

Research Methodology

This research adopts a qualitative approach, utilising document analysis and policy evaluation methods to assess the URAAN Pakistan strategy. The primary sources include the official URAAN documents, policy reports, and relevant academic literature. Data will be analysed using Barry Buzan's multi-sectoral security framework and Policy Design Theory to evaluate the coherence, institutional readiness, and socio-economic impact of the policy. The study uses qualitative policy analysis grounded in systematic document review.

Document selection:

We included URAAN and the National Economic Transformation Plan (NETP) documents, NETU/COR materials, recent government reports (2023–2025), peer-reviewed scholarship, and international policy analyses. The selection criteria was based on direct relevance to the five pillars, recency, and source credibility.

Coding process:

Documents were coded thematically against the five pillars and institutional categories using a codebook developed for consistency. Two independent coders cross-checked codes and resolved discrepancies through discussion, improving reliability.

Analytical framework:

The study integrates Barry Buzan's multi-sectoral security model (economic, environmental, societal, political, technological dimensions) with Policy Design

---

4 Tim Bunnell, "WHERE IS THE FUTURE? Geography, Expectation and Experience across Three Decades of Malaysia's Vision 2020," *International Journal of Urban and Regional Research* 46, no.5 (2022): 885-895, https://doi.org/10.1111/1468-2427.13105.

5 Ramla Khalidi, "Viet Nam's Significant Progress Takes Root in Strong Leadership, Long-Term Vision: UNDP," *UNDP*, October 31, 2025, https://www.undp.org/vietnam/blog/viet-nams-significant-progress-takes-root-strong-leadership-long-term-vision-undp.

Theory (instrument selection, sequencing, and feedback). This combined approach allows assessment of both securitisation language and operational design.

Early-Stage Implementation Evidence of URAAN Pakistan

Although URAAN Pakistan remains at an early stage of rollout under the 13th Five-Year Plan (2024–29), initial operational steps have been taken. NETU has started operationalising sectoral targets and provides quarterly progress updates to the Prime Minister's Office. By early 2025, three working groups (exports, digital transformation, and climate resilience) were convened to establish baseline indicators and identify institutional gaps.

The COR platform has initiated consultations with private sector actors, academia, and the diaspora; these produced policy notes on IT exports, skills development, and payment-gateway options that were forwarded to NETU. Sectoral signals include modest IT export growth in Q1–2025, preliminary Special Investment Facilitation Council (SIFC) investor commitments, and National Clean Air Policy (NCAP) pilot clean-air projects in Punjab and Sindh. However, delays in certain transport projects and unresolved renewable financing illustrate uneven implementation and underline the need for robust monitoring and sequencing.

Research Questions

1. How effectively does the URAAN Pakistan strategy align with Barry Buzan's multi-sectoral security framework?

2. How does Policy Design Theory inform the coherence and feasibility of URAAN's strategic objectives?

3. What are the potential barriers to achieving URAAN Pakistan's long-term development goals?

Theoretical Framework

Barry Buzan's Societal Security Approach

In evaluating the URAAN Pakistan strategy, Barry Buzan's societal security framework provides a useful lens for understanding the multidimensional threats to national stability and cohesion, particularly in the context of climate change, water scarcity, and food security. Buzan emphasises that societal security concerns the preservation of identity, autonomy, and cohesion of a society, extending beyond traditional security threats like military aggression to include

threats arising from internal challenges such as socio-economic inequalities, environmental degradation, and resource scarcity.[6]

Buzan's theory identifies five sectors of security: military, political, economic, societal, and environmental. In the case of Pakistan, URAAN's focus on sustainable development, climate change adaptation, water security, and agricultural reforms aligns with the societal and environmental sectors of security. These initiatives are intended to mitigate internal vulnerabilities, specifically societal fragmentation and environmental stress that could undermine Pakistan's social fabric.

Policy Design Theory and URAAN Pakistan

Policy Design Theory, as developed by Michael Howlett, emphasises the strategic formulation of policies through the deliberate selection of objectives, instruments, and institutional arrangements.[7] In contrast to models that focus solely on decision-making or execution, Policy Design Theory prioritises the formulation stage: the strategic process of developing policy solutions that are coherent, context-aware, and administratively viable. It aims to comprehend how decisions are made concerning the kinds of tools (e.g., regulations, incentives, and partnerships), target groups, institutional setups, and governance systems that align best with a society's development requirements. This theory offers an essential perspective for examining if policies are consistent internally, match institutional capacities, and react to the socio-political and economic environment in which they function.

From a Policy Design Theory perspective, URAAN Pakistan's institutional framework represents an ambitious endeavour to develop an inclusive and responsive policy structure. By emphasising coordination, inclusivity, accountability, and strategic policy implementation, the initiative establishes a solid basis for systemic change. Nonetheless, obstacles concerning institutional preparedness, participatory involvement, and instrumental consistency continue to be considerable. Determining if URAAN Pakistan can achieve its long-term objectives of sustainable economic development, better governance, and enhanced public welfare will depend on how well these issues are resolved. Howlett's explanation of Policy Design Theory offers a useful framework for

6 Barry Buzan, Ole Wæver, and Jaap de Wilde, Security: A New Framework for Analysis (Boulder, CO: Lynne Rienner Publishers, 1998), 7, 131–32.

7 Michael Howlett, *The Policy Design Primer: Choosing the Right Tools for the Job* (Abingdon: Routledge, 2019), 3–4.

grasping these complexities and assessing how well the institutional structure and the policy's intended outcomes coincide.

URAAN Pakistan 5Es Framework

URAAN Pakistan is built on a 5Es framework comprising five integral pillars:

Exports:

The 'Exports' pillar of the URAAN Pakistan strategy represents a decisive shift in national development thinking: from reactive crisis management to a securitised, future-oriented economic vision. Rooted in Barry Buzan's notion of economic security, this pillar frames export stagnation as a systemic vulnerability threatening Pakistan's autonomy in global trade.[8] According to Buzan, threats to economic structures, such as limited market access, weak industrial capacity, or global competitiveness, can constitute existential risks if left unaddressed.[9] In URAAN, the export agenda functions as a securitising move that elevates economic diversification and international integration to the level of national security imperatives.

At the core of this securitisation is a multi-dimensional recognition of threats. These include Pakistan's narrow export base, low-value product focus, compliance gaps with international standards, and the limited international orientation of large firms.[10] For example, URAAN explicitly identifies that 'many large firms in Pakistan primarily serve domestic markets,' limiting export expansion and resilience.[11] Such diagnostics mirror Buzan's concern with internal economic structures being insufficiently robust to withstand external pressures.

From a policy design perspective, as theorised by Howlett, the *Export* E in the 5Es reflects a transition from generic to targeted instrument choice. It comprises demand-side incentives (e.g. FDI attraction), supply-side measures (e.g. small and medium-sized enterprise [SME] formalisation, innovation support), and structural governance interventions (e.g. National and Provincial Export Plans).[12] The use of coordinated clusters, certification systems, and R&D commercialisation

8 Buzan, Wæver, and Wilde, *Security*, 25–26.
9 Buzan, Wæver, and Wilde, 32.
10 Ali Mufti and Imran Ali, "Export-led Growth: Policy Framework for Sustainable Development in Pakistan," *SSRN*, July 10, 2024, http://dx.doi.org/10.2139/ssrn.4890578.
11 "'Uraan Pakistan' Sets Uplift Benchmark," *The Express Tribune*, January 4, 2025, https://tribune.com.pk/story/2519918/uraan-pakistan-sets-uplift-benchmark.
12 Howlett, *The Policy Design Primer*, 12–14.

mechanisms reflects a coherent design structure aimed at improving implementation fidelity.[13]

Nevertheless, a number of inherent trade-offs and conceptual contradictions become apparent. First, while the document sets ambitious export targets: USD 25 billion in IT and USD 13 billion in agriculture, it does not sufficiently explain the institutional or infrastructural sequencing required to achieve these numbers.[14] Second, though it mentions enhancing 'compliance with international standards,'[15] there is no embedded metric to track progress in global certification or non-tariff barrier resolution. Third, URAAN acknowledges the dominance of 'small-scale, family-owned enterprises,' yet does not offer concrete timelines or legal reforms to support their scaling and formalisation.[16]

Moreover, Howlett's criterion of 'instrument calibration,' the fit between means and policy goals, remains partially underdeveloped. For instance, export-led industrial clusters are a sound mechanism in theory but require integrated infrastructure and cross-sectoral coordination, which is only briefly addressed in URAAN's governance section without operational clarity.

The export pillar of URAAN represents a securitised, policy-relevant articulation of economic development, aligning well with Buzan's security ontology and Howlett's instrument logic. Yet, its effectiveness hinges on institutional follow-through, implementation clarity, and periodic evaluative metrics. Without these, the securitisation move risks remaining discursive rather than structural.

Key Takeaway:

Without institutional reforms (tax, trade facilitation, SME formalisation) and investor confidence, export targets may be difficult to sustain; Key Performance Indicators (KPIs) should include export diversification index, SME export participation rate, and IT export dollar value.

---

13 Naveed Butt, "Pakistan's $60bn Export Target: Ministers Told to Craft Business Plans," *Business Recorder*, May 13, 2025, https://www.brecorder.com/news/40362412/60bn-export-target-ministers-told-to-craft-business-plans.

14 "Uraan Pakistan: Ahsan Iqbal Unveils Ambitious Plan to Elevate Exports and Digital Economy," *The Herald Today,* January 3, 2025, https://theheraldtoday.com/breaking-news/uraan-pakistan-boosts-exports-digital-economy.

15 Ministry of Planning, Development and Special Initiatives, *URAAN Pakistan*, 23.

16 Ministry of Planning, Development and Special Initiatives, 24.

E-Pakistan:

The E-Pakistan pillar of URAAN frames digital transformation as a matter of national security, consistent with Barry Buzan's expanded conception of security. Buzan argues that threats to technological capabilities, data sovereignty, or digital connectivity can undermine a state's structural resilience.[17] By positioning Information and Communication Technology (ICT) growth, including a 178 per cent export surge, as essential for future stability, URAAN engages in securitising discourse that elevates digital capacity to the level of existential priority.[18]

With 192–193 million cell subscribers and 135 million broadband users, Pakistan demonstrates significant digital penetration; yet, URAAN identifies gaps in digital infrastructure and skills that pose latent threats to economic and cybersecurity.[19] The formulation of digital deficits as security risks strengthens the stabilising narrative and primes public institutions for responsive action.

Employing Howlett's policy design lens, the E-Pakistan strategy exhibits a multi-instrumental approach featuring various tools. Infrastructure investment, vocational training programs, e-governance, cybersecurity measures, startup facilitation, and an Artificial Intelligence (AI) policy are outlined coherently. The inclusion of training, skill-building and freelancing centres further shows an interplay between capacity-building and market incentives tailored to URAAN's digital objectives.[20]

Nevertheless, some design shortcomings emerge. Howlett underscores the importance of achieving calibration through the alignment of policy instruments, actors, and goals. Yet URAAN sets ambitious targets such as USD 5 billion freelancing revenue and one unicorn start-up,[21] while failing to specify implementation actors, sequencing of infrastructure and skill programmes, or the institutional responsibilities tied to e-governance rollout. This weakens feasibility and hampers relational coordination across federal and provincial layers.

Furthermore, URAAN's scenario-based planning remains under articulated: it lacks systematic metrics for tracking digital resilience, for example, percentage of 5G adoption, cybersecurity incident rates, or AI integration across sectors. Wihtout

17 Buzan, Wæver, and Wilde, *Security*, 69–72.
18 Ministry of Finance, "Information Technology and Telecommunication" in *Pakistan Economic Survey 2022–23* (Islamabad: Ministry of Finance, 2023) https://www.finance.gov.pk/survey_2023.html.
19 Ministry of Planning, Development and Special Initiatives, *URAAN Pakistan*, 30.
20 Ministry of Planning, Development and Special Initiatives, 30-34.
21 Ministry of Planning, Development and Special Initiatives, 31.

these evaluative criteria, policy effectiveness cannot be monitored or improved, risking incomplete securitisation.

In addition, prioritising advanced digital technologies and AI involves significant trade-offs. It risks overshadowing the urgent need for comprehensive broadband access in rural areas, thereby underscoring a persistent tension between innovation and equity. Buzan underscores that securitisation must balance sectoral gains with broader public acceptance,[22] yet URAAN does not explicitly reconcile high-tech ambitions with inclusive rural service delivery.

Key Takeaway:

Long-term competitiveness depends on talent retention, regulatory clarity (data, cyber), and targeted investment in R&D and higher education.

Environment & Climate Change:

The Environment and Climate pillar of URAAN redefines ecological vulnerabilities as existential threats, an approach consistent with Barry Buzan's conceptualisation of environmental security. Buzan argues that climate-induced disruptions to economic, societal, or infrastructure systems constitute genuine security challenges capable of destabilising nations.[23] URAAN's emphasis on Pakistan's ranking among the most climate-vulnerable countries, along with quantified economic losses, engages in securitising discourse that justifies urgent, integrated policy action.

Pakistan ranked as the most affected country in the 2022 Climate Risk Index, reflecting record monsoon rainfall and glacial floods that claimed over 1,700 lives and caused an estimated USD 30 billion economic loss.[24] Such framing elevates environmental hazards beyond developmental concerns, elevating adaptation and mitigation into the core of national security planning.

Howlett's Policy Design Theory underscores the need for clearly calibrated instruments to confront such systemic threats. URAAN outlines eight strategic priorities, including water security, climate finance, adaptation, and disaster risk management, along with major initiatives like NCAP 2023, REDD+, IFRM, and a

22 Buzan, Wæver, and Wilde, *Security*, 63-66.
23 Buzan, Wæver, and Wilde, 108.
24 Lina Adil, David Eckstein, Vera Kunzel, and Laura Schafer, *Climate Risk Index 2025: Who Suffers Most from Extreme Weather Events?* (Bonn: Germanwatch e.V., 2025), 11, https://www.germanwatch.org/sites/default/files/2025-02/Climate%20Risk%20Index%202025.pdf.

National Climate Finance Strategy mobilising USD 348 billion.[25] The multiplicity of policy tools reflects comprehensive design, yet their coherence depends on sequencing and metrification.

Trade-offs and tensions arise when initiatives compete for resources or lack quantification. For example, URAAN signals 81 per cent $PM_{2.5}$ emissions reduction by 2040 under NCAP 2023[26] but omits interim benchmarks or monitoring frameworks. Moreover, using Howlett's framework, one can identify only a partial calibration of policy instruments. The water security targets are concrete (10 MAF storage, 33 per cent conveyance loss reduction),[27] yet the framework lacks assigned agencies or funding clarity. This gap undermines the coherence and feasibility of implementation.

Buzan emphasises the importance of audience acceptance in securitisation. URAAN's disaster risk finance and integrated flood management, such as NFPP-IV and early warning systems, may gain traction among provincial actors due to flood experience, yet gaps remain. The disaster management authorities in Pakistan suffer from jurisdictional overlap, duplication of responsibilities, and coordination at all levels.[28] Without explicit roles for National Disaster Management Authority (NDMA), provincial disaster management units, and line agencies, institutional uptake is uncertain.

To strengthen both securitisation and design, URAAN must embed evaluative criteria: annual air quality indices, flood event recurrence intervals, water-use efficiency metrics, carbon finance disbursement rates, and adaptation fund allocation tracking. These would create feedback loops, enabling recalibration of instruments mid-course and ensuring securitisation moves translate into measurable resilience outcomes.

Key Takeaway:

Ambitious mitigation/adaptation targets require strengthened provincial execution capacity and measurable environmental indicators (air-quality, water storage, climate finance disbursement).

---

25 Ministry of Planning, Development and Special Initiatives, *URAAN Pakistan*, 39.

26 Ministry of Climate Change, *National Clean Air Policy (NCAP) 2023: A Roadmap for Improving Air Quality in Pakistan* (Islamabad: Government of Pakistan, 2023), 9, https://mocc.gov.pk/SiteImage/Misc/files/NCAP%20(28-02-2023)%20v1.pdf.

27 Ministry of Planning, Development and Special Initiatives, *URAAN Pakistan*, 42.

28 Ikram Shah et al., "Institutional Arrangement for Disaster Risk Management: Evidence from Pakistan," *International Journal of Disaster Risk Reduction* 51 (2020): https://doi.org/10.1016/j.ijdrr.2020.101784.

Energy & Infrastructure:

The Energy & Infrastructure pillar of URAAN frames systemic inefficiencies and structural fragilities in energy, mobility, and mineral sectors as existential threats, offering a framing of national vulnerabilities in line with Buzan's concept of structural security. URAAN reveals that although Pakistan has installed approximately 46,605 MW of generation capacity, over 55 per cent remains idle due to operational inefficiencies and circular debt.[29] These structural deficiencies pose threats both to economic stability and social welfare.

From a securitisation perspective, dependency on imported fossil fuels (50 per cent of consumption),[30] and the growing circular debt estimated at PKR 2.4–2.6 trillion,[31] are characterised as existential vulnerabilities requiring extraordinary reform. This narrative elevates systemic reform to a security imperative, mobilising political will for deep structural change.

Using Howlett's policy design lens, URAAN lays out a multi-layered strategy involving three sectors: energy, transport infrastructure, and minerals, with detailed instrument types including pricing reforms, network upgrades, foreign-financed pipelines (e.g., TAPI, Iran–Pakistan), and regulatory reforms. This reflects a well-curated policy mix spanning infrastructure, finance, and regulation.

Despite progress, coherence remains a concern. Key energy objectives such as increasing the share of renewables above 12 per cent and reducing primary energy consumption by 9 MTOE lack clearly defined sequencing, budget allocations, and designated governance responsibilities. Transport targets like increasing railway share from 5 to 15 per cent and 8 to 25 per cent for freight transport[32] depend heavily on mega-projects (Main Line-1 [ML-1] under China-Pakistan Economic Corridor [CPEC]) that have stalled due to financing and implementation delays.[33]

---

29 Ministry of Finance, *"Energy" in Pakistan Economic Survey 2024–25* (Islamabad: Ministry of Finance, 2025), 29, https://finance.gov.pk/survey/chapter_25/Highlights.pdf.

30 Afia Malik, *Managing Energy Imports to Save Foreign Exchange Reserves* (Islamabad: Pakistan Institute of Development Economics, 2023), 2, https://pide.org.pk/research/managing-energy-imports-to-save-forex-reserves/.

31 Khaleeq Kiani, "Circular Debt over Rs 2.6 Tr, Surpassing Govt Commitments," *Dawn*, May 20, 2024, https://www.dawn.com/news/1834574.

32 Ministry of Planning, Development and Special Initiatives, *URAAN Pakistan*, 51.

33 Shahbaz Rana, "Govt Seeks to Negotiate Loan Terms," *The Express Tribune*, November 8, 2024, https://tribune.com.pk/story/2508157/govt-seeks-to-negotiate-loan-terms.

This points to a mismatch between policy ambition and calibrated instrument design.

Trade-offs are particularly evident in the energy transition: while promoting coal can reduce foreign exchange pressures, it may undermine environmental objectives. This tension is acknowledged within the Energy pillar, yet URAAN fails to fully integrate in policy coherence. Buzan warns that securitisation without societal buy-in or institutional clarity leads to securitisation failure; URAAN does not fully align provincial capacities with national objectives.

To remedy this, URAAN must embed measurable benchmarks, specify responsible agencies (e.g., NEPRA, PPIB, Provincial DISCOs), and sequence interventions so that financial and regulatory reforms precede infrastructure build-out. Furthermore, establishing public–private partnerships (PPPs) e.g., coal utilisation, ML-1, under transparent contracts can enhance policy design fidelity and reduce risk.

Integrating additional renewable generation and modernining transmission will require clearly disaggregated capital (CAPEX), recurrent (OPEX) estimates and a sequencing plan. Costing should distinguish: (a) generation (utility-scale and distributed renewables), (b) grid upgrades and storage, and (c) energy efficiency investments. Financing options include government budget allocations, concessional multilateral finance, private investment via SIFC and PPPs, and green bonds. Prior reforms: tariff rationalisation, transparent procurement, and strengthened regulator capacity (NEPRA), should precede large procurement to improve bankability. Concrete milestones should be assigned with quarterly expenditure reporting to NEPRA, PPIB, and provincial DISCOs.

Key Takeaway:

Financial realism, tariff and regulatory reform, and phased investment sequencing are essential to make renewable and infrastructure targets bankable.

Equity, Ethics & Empowerment:

In the Equity, Ethics & Empowerment (EEE) pillar, URAAN adopts a securitising logic by presenting deficits in human development as systemic risks to socio-economic resilience. Drawing on Barry Buzan's framework, which extends security concerns to societal capacity and human welfare,[34] URAAN casts stagnating HDI

[34] Buzan, Wæver, and Wilde, *Security*, 85-88.

rankings, rapid population growth, and rural inequality not simply as developmental challenges but as threats to resilience and sovereignty.

For instance, URAAN identifies Pakistan's annual population growth rate of 2.55 per cent adding nearly 5 million people each year, as a destabilising factor that strains public services and infrastructure.[35] This narrative escalates beyond demography, framing it as serious governance challenge requiring urgent but feasible policy attention.

From a policy design standpoint, however, URAAN's ambitious agenda, including reforms in education, healthcare, family planning, social protection, Technical and Vocational Education Training (TVET), and women empowerment, necessitates precise calibration of instruments, sequencing, and accountability. URAAN's strategic targets, like creating 1.5 million jobs annually, raising universal health coverage by 12 per cent, or cutting maternal mortality by 35 per cent demonstrate clarity in desired outcomes.[36]

Despite this, URAAN lacks detailed design mechanisms. Howlett emphasises the need for blueprinting instruments to match goals, specifying resource allocation, actors, and evaluation systems. URAAN, for example, announces intent to expand TVET, but omits a baseline of current enrolment, institutional budgets, or the nature of PPPs driving vocational training.

Trade-offs emerge sharply. URAAN commits to increased healthcare access in rural zones while also aiming to create 1.5 million jobs. Absent clarity on financing, whether funds are diverted from social protection, public health investments, or infrastructure, the coherence of these ambitions is questionable. Buzan warns that securitising social issues without instrument clarity can generate public scepticism and implementation inertia.[37]

Scaling TVET, primary health, and family planning requires a phased costing framework (per-student/per-facility unit costs), targeted pilot roll-outs in high-need districts, and clear recurrent financing plans. Financing may combine reallocated budget lines, provincial conditional grants, donor programs, and PPPs for vocational training centres. Assign the School Education Departments, Health Ministries, and Population Welfare departments explicit KPIs (enrolment, completion, coverage) and quarterly performance reporting. Link resource disbursement to measured outputs to ensure accountability.

35 Ministry of Planning, Development and Special Initiatives, *URAAN Pakistan*, 57.
36 Ministry of Planning, Development and Special Initiatives, 60.
37 Buzan, Wæver, and Wilde, *Security*, 87-88.

Key Takeaway:

Commitment must be matched with budget realism and accountability mechanisms to convert targets into access, employment, and improved human development outcomes.

Institutional Framework of Policy

The institutional framework of URAAN Pakistan, articulated through the National Economic Transformation Plan (NETP) 2024–29, offers a structured approach to policy implementation with a goal of achieving sustainable economic growth and human development. The National Economic Transformation Unit (NETU) serves as a central coordinating body housed within the Ministry of Planning, Development and Special Initiatives. NETU constitutes a liaison between the Prime Minister's Office, the federal and provincial governments, and broader civil society to ensure coherent planning, cross-sectoral collaboration, and policy execution.[38] The transformation roadmap developed under NETP breaks the five-year plan into annual sectoral targets, clearly assigning responsibilities to ministries and provincial administrations. The KPIs are used to symmetrically track progress, and are evaluated on a quarterly basis. These evaluations are reported to the Prime Minister and reviewed by a high-level steering committee, ensuring top-level oversight and institutional accountability. With this structure, fragmented governance models give way to a system with quantifiable results, regular feedback loops, and data-driven decision-making.

A critical enabler of this institutional reform agenda is the Champions of Reforms (COR) network, which institutionalises citizen participation by integrating voices from the private sector, academia, civil society, and the global Pakistani diaspora into policymaking processes. COR embodies the vision of a 'Team Pakistan,' creating a formal mechanism through which professionals contribute expertise and provide policy feedback to public institutions.[39] Coordinated by NETU, this platform serves as a two-way channel: it informs citizens about government initiatives and reforms while enabling bottom-up input that enhances policy legitimacy, relevance, and public trust. Through COR, the URAAN initiative seeks to rebuild the state-society contract, especially in historically underrepresented or underserved communities, by making governance more participatory and transparent. This deliberate inclusion of citizens in the reform ecosystem helps reduce the democratic deficit, increases institutional responsiveness, and supports a more agile and people-centric state structure.

38 Buzan, Wæver, and Wilde, 66
39 Buzan, Wæver, and Wilde, *Security*, 67

The institutional framework is strategically directed by the 5Es Framework, which emphasises five fundamental development pillars: Exports, E-Pakistan, Environment & Climate Change, Energy & Infrastructure, and Equity, Ethics & Empowerment. Each pillar is implemented through inter-ministerial collaboration and is associated with measurable targets that correspond with national priorities. For instance, the E-Pakistan initiative is designed to improve digital infrastructure and regulatory efficiency, while reforms in exports aim to enhance productivity and market access for domestic industries. The agenda for Energy & Infrastructure focuses on investing in renewable energy, modernising transportation, and exploring innovative financing for development. Social inclusion is promoted through increased investments in education, skill development, and social protection, with the goal of doubling education expenditure (from 2.1 to 4 per cent of GDP) and improving access to healthcare and housing. These initiatives are further supported by cross-cutting enablers such as political stability, peace and security, and human capital development, which are acknowledged as essential for achieving institutional effectiveness and long-term success.

In parallel, URAAN's policy framework utilises key transformation drivers to expedite reform. These drivers include the Special Investment Facilitation Council (SIFC), which aims to attract USD 29 billion in strategic investments from Gulf nations and other partners, concentrating on vital sectors such as agriculture, mining, IT, and energy. The revamped CPEC 2.0 enhances these initiatives by establishing five specialised corridors: Growth, Livelihood Enhancement, Innovation, Green, and Opening-up, each intended to stimulate regional development and technological progress. Looking to the future, the *Pakistan Centennial 2047 Lab* functions as a policy think tank and innovation centre committed to long-term strategic planning, steering the nation's evolution into a regional economic and technological leader by its centennial anniversary.

Through the incorporation of these strategic tools within the comprehensive URAAN framework, Pakistan is establishing a foundation for governance focused on outcomes, inclusive development, and preparedness for the future. Collectively, these reforms foster a culture of performance, accountability, and citizen participation, providing a feasible route to realise Vision 2047 and enhancing the state's ability to effect meaningful changes in the lives of its citizens.

Analysis of Institutional Policy using Policy Design Theory

Application of Policy Design Theory to the institutional framework of URAAN Pakistan, specifically through the NETP 2024-29, NETU, and the COR network, facilitates a comprehensive understanding of the policy's structural integrity, inclusiveness, and its capacity to tackle Pakistan's economic and governance

issues. This theory underscores the significance of aligning policy instruments with target demographics. The COR network exemplifies this by engaging a variety of stakeholders, including the private sector, academic institutions, and the diaspora, who actively participate in the feedback and design process. This engagement enables the URAAN framework to formulate policies that are more legitimate, socially accepted, and feasible for implementation. The plan's integration of overarching themes such as digital transformation (E-Pakistan), social inclusion, and climate resilience illustrates the application of integrative design, another key principle of the theory, which seeks to harmonise various instruments and sectors towards a unified developmental vision.

Policy Design Theory highlights the necessity of establishing clear feedback mechanisms and accountability structures within the policy design to ensure adaptability and evolution based on real-world results.[40] In the context of URAAN Pakistan, the implementation of KPIs to track sectoral advancements serves as a tool for ongoing evaluation of the implementation process. However, despite the presence of regular monitoring systems, concerns arise regarding the ability of institutional actors at provincial and local levels to effectively interpret and respond to these KPIs. Policy Design Theory emphasises that the timely adaptation of policies informed by performance data is essential for the attainment of long-term objectives. In this case, URAAN's institutional framework might benefit from stronger mechanisms that facilitate continuous policy learning and adaptation, particularly at lower levels of government.

Yet, from a Policy Design Theory perspective, URAAN highlights certain aspects where the coherence of design may be questioned. Although the institutional ambition is evident, issues such as the lack of clearly defined budget allocations for reform, insufficient inter-ministerial coordination in the initial phases, and limited provincial involvement during the formulation process raise doubts about instrumental consistency and administrative preparedness, critical factors in policy design analysis.[41] Furthermore, the absence of a published monitoring and evaluation (M&E) framework and baseline indicators undermines the feedback loop that is vital for adaptive design.

In sum, Policy Design Theory provides a comprehensive framework for rigorously evaluating the structure of URAAN Pakistan, enabling an assessment not only of the objectives being pursued but also of the intentionality and effectiveness of the

---

40 Michael Howlett, *Designing Public Policies: Principles and Instruments*. 2nd ed. (New York: Routledge, 2019), 8-13.

41 Michael Howlett and Ishani Mukherjee, "Policy Design and Non-Design: Towards a Spectrum of Policy Formulation Types," *Politics and Governance* 2, no. 2 (2014): 57-71, https://doi.org/10.17645/pag.v2i2.149.

design process. It aids in determining whether the policy mix, mechanisms for stakeholder engagement, and institutional arrangements are appropriate for achieving the transformative objectives of inclusive growth, innovation, and governance reform.

Challenges in Policy Design

The NETP (2024-29) of URAAN Pakistan encounters significant obstacles in policy design and formulation that may hinder its effectiveness. A major concern is the inconsistency among policy instruments and insufficient coordination across sectors. The 5Es Framework: encompassing exports, E-Pakistan, energy, environment, and equity, necessitates cohesive planning among various ministries and agencies. However, existing policies are deficient in operational guidelines, legal structures, and explicit inter-ministerial protocols. The responsibilities of NETU, the coordinating entity, are not clearly defined, and there is a lack of strategy to align federal initiatives with provincial development frameworks, especially in areas constitutionally devolved, such as education, health, and local governance. This fragmentation undermines the integration that the 5Es Framework seeks to accomplish.

Institutional readiness poses another significant challenge. Numerous organisations responsible for implementing URAAN, including NETU and sectoral ministries, do not possess clear mandates, sufficient budgets, or adequate human resource capacity. There has been minimal investment in capacity-building, rendering these entities unable to handle complex reform initiatives. This disconnect between policy aspirations and institutional capabilities hinders progress and jeopardises the realisation of URAAN's objectives.

Additionally, the policy design process exhibits deficiencies in stakeholder engagement. Consultations with stakeholders like provincial governments, academia, and the private sector occurred post-policy announcement, restricting the variety of insights during the drafting phase. Furthermore, the absence of a robust M&E framework raises concerns regarding accountability and progress tracking. For URAAN to succeed, it must enhance coordination, bolster institutional capacity, involve stakeholders early in the process, and establish a comprehensive M&E system.

Monitoring and Evaluation (M&E) Framework

To strengthen accountability, URAAN requires a structured M&E system. This should include baseline indicators for each of the five pillars, quarterly reporting cycles, and annual performance reviews. KPIs, such as export diversification ratios, renewable energy share, broadband penetration, and health coverage expansion, must be assigned to specific agencies. Independent audits and citizen feedback via the COR can enhance credibility. Such a framework ensures adaptive policymaking, enabling course correction and evidence-based progress tracking.

Assessing the Policy Effectiveness of URAAN Pakistan

URAAN Pakistan represents an integrated development framework designed to overcome the country's systemic socio-economic, institutional, and environmental challenges. The following key dimensions offer a comprehensive lens to assess the effectiveness and implementation capacity of the initiative:

Institutional Coherence

One of the major weaknesses in Pakistan's past development strategies has been fragmented governance and weak inter-ministerial coordination.[42] URAAN addresses this through the establishment of NETU, which serves as a centralised body to harmonise efforts across federal, provincial, and sectoral levels. By promoting clear institutional mandates, performance monitoring, and result-based accountability, URAAN aims to build institutional coherence critical for policy implementation.[43]

Economic Competitiveness

Pakistan has historically relied on low-value, export-dependent sectors, leaving its economy vulnerable to external shocks and limiting global integration.[44] URAAN responds by prioritising export diversification across high-value sectors such as IT, agriculture, minerals, and services. Through the E-Pakistan pillar, the strategy seeks to build a knowledge-based, digitally empowered economy, enhance

42 OECD, *Policy Coherence for Sustainable Development 2018: Towards Sustainable and Resilient Societies* (Paris: OECD Publishing, 2018), 18, https://doi.org/10.1787/9789264301061-en.

43 OECD, 11.

44 World Bank, *Pakistan Development Update: Fiscal Impact of Federal State-Owned Enterprises* (Washington, DC: World Bank, 2024), 15-18, https://thedocs.worldbank.org/en/doc/140b30353b40dbb294cca42bcb86529a.

innovation, attract foreign investment, and integrate Pakistan into global markets, thus improving overall economic competitiveness and resilience.

Social Inclusion and Equity

Deep-rooted socio-economic inequalities, gender disparities, and exclusion of marginalised communities have undermined national cohesion. URAAN introduces targeted interventions in education, healthcare, skill development, and economic empowerment to integrate marginalised communities and promote inclusive development. By expanding access to social services and promoting inclusive growth, the initiative aligns with global development standards and fosters greater social stability.

Environmental Sustainability and Climate Resilience

Environmental degradation, water scarcity, food insecurity, and climate change pose serious risks to Pakistan's socio-economic stability.[45] URAAN integrates climate action across its development pillars by promoting renewable energy, modernising water infrastructure, and implementing climate-smart agriculture. It emphasises resource management and climate adaptation, recognising that long-term development is unattainable without environmental sustainability and disaster resilience.[46]

Policy Continuity and Responsiveness

Frequent political transitions and policy discontinuities have historically disrupted reform implementation in Pakistan.[47] URAAN's design incorporates institutional mechanisms, including quarterly performance reviews, stakeholder engagement platforms like the COR, and clear KPIs to ensure sustained progress beyond electoral cycles. Additionally, the strategy emphasises adaptive governance,

45 Buzan, Wæver, and Wilde, *Security*, 22.

46 Asian Development Bank (ADB), *Pakistan: Climate Risk Profile* (Washington, DC: ADB, 2021), 26, https://www.adb.org/sites/default/files/publication/700916/climate-risk-country-profile-pakistan.pdf.

47 Sakib Sherani, *Institutional Reforms in Pakistan: The Missing Piece of the Development Puzzle* (Islamabad: Institute of Development Initiatives, 2017), 1-3, https://library.fes.de/pdf-files/bueros/pakistan/13947.pdf.

allowing policies to evolve in response to socio-economic shifts and global uncertainties,[48] such as global oil prices and geopolitical tensions.[49]

Through these interconnected mechanisms, URAAN Pakistan seeks to correct structural deficiencies, promote inclusive development, and build national resilience, offering a credible pathway to achieving Pakistan's long-term development aspirations.

Conclusion

URAAN Pakistan represents an ambitious recalibration of national development strategy, seeking to institutionalise policy coherence, economic revitalisation, and societal resilience through the 5Es framework. The initiative aligns conceptually with Barry Buzan's multi-sectoral security framework by framing economic underperformance, digital exclusion, environmental degradation, and human development deficits as existential threats requiring securitised policy responses. Furthermore, URAAN exhibits an overt application of Policy Design Theory, demonstrating deliberate efforts to align objectives, instruments, and institutional arrangements.

However, the critical assessment reveals notable design inconsistencies and institutional vulnerabilities that question the initiative's feasibility. Despite the securitisation of development pillars, URAAN's operationalisation suffers from gaps in instrument calibration, ambiguous sequencing of reforms, and insufficient metrics to track progress. This disconnect raises concerns about whether the securitising discourse will translate into tangible resilience, or remain aspirational.

In terms of institutional architecture, while NETU and the COR network introduce promising mechanisms for coordination and societal participation, their effectiveness remains contingent on provincial integration, fiscal clarity, and capacity building, areas that remain underdeveloped in the current design. The limited involvement of provincial stakeholders during formulation, coupled with undefined resource allocation, undermines administrative preparedness and

---

48 Prime Minister's Office, *Institutional Reforms in the Federal Government: August 2018-August 2021*, Vol. I (Islamabad: Prime Minister's Office, 2021), 3-4, https://ishrathusain.iba.edu.pk/pdf/icr-volume-i.pdf.

49 Mian Ahmad Naeem Salik, *Uraan Pakistan: A Five-Year Economic Transformation Plan*, (Islamabad: Institute Of Strategic Studies Islamabad, 2025), 5, https://issi.org.pk/issue-brief-on-uraan-pakistan-a-five-year-economic-transformation-plan/.

threatens the viability of policy implementation, particularly in constitutionally devolved sectors such as health, education, and local governance.

Contradictions also persist within the framework itself. Ambitious targets for exports, renewable energy, and digital transformation stand in contrast with Pakistan's constrained fiscal space and limited institutional capacity. Centralised oversight through NETU promises coordination but risks undermining provincial autonomy. Likewise, the emphasis on rapid technological adoption may deepen rural–urban divides if equity and inclusivity are not prioritised. These tensions illustrate the gap between aspiration and implementation that must be addressed for URAAN to achieve credibility. By integrating evidence-based policymaking, robust M&E systems, and participatory governance, URAAN can evolve into both a national framework and an internationally relevant model for strategic development.

Urooj Saif is pursuing an MPhil in International Relations and works in Development Communication at the Ministry of Planning, Development and Special Initiatives. Email: uroojsaif01@gmail.com.

Laiba Tahir holds a BS in Economics and works in Development Communication at the Ministry of Planning, Development and Special Initiatives. Email: laibatahir011@gmail.com.

Journal of Aerospace & Security Studies
2025 | Volume IV | pp. 78-97

Astropolitical Alliances: Competition and Cooperation in Space

Mustafa Bilal

Abstract

The Artemis Accords and the International Lunar Research Station (ILRS) herald the emergence of astropolitical alliances spearheaded by the United States (US) and China. This working paper explores the formation of these alliances and their astropolitical implications. A thematic analysis of Western and Chinese sources examines the narratives surrounding both alliances, as well as the commercial interests, security imperatives, and geopolitical factors that influence states' decision-making to join either alliance. The paper views these alliances through the theoretical lenses of liberalism, realism, and constructivism, providing a holistic reflection on how cooperative aspirations, competitive tensions, and normative considerations have shaped alliance formation. Drawing on a comparative analysis, the study posits that while intra-alliance relations are based on cooperation, geopolitical competition arising from Sino-US tensions impedes inter-alliance collaboration. Consequently, these alliances are evolving into competing frameworks that seek to dictate norms of space governance. Notably, the paper explores how these alliances navigate legal ambiguities and challenge the egalitarian ethos of the foundational space treaties. The paper discusses whether member states can prevent the escalation of tensions between these alliances and establish cooperative linkages. The findings suggest that the current trajectory of these alliances signals a bifurcated global space order. The conclusion proposes pragmatic multilateral space governance recommendations to ensure collaborative, sustainable, and peaceful utilisation of space.

Keywords: Astropolitical Alliances, US, China, Competition, Cooperation, Outer Space Treaty

Introduction

Inter-state competition and cooperation in space have been in constant tension since the advent of the global space age. Space became a political domain during the Cold War, from 1957 to 1991, when states continued their space partnerships with competing ideological systems across the Iron Curtain. The Cold War era saw limited space cooperation (e.g., the Apollo–Soyuz mission in 1975), but intense rivalry often underpinned nationalistic space endeavours. Since the end of the Cold War, scholars have noted an increase in examples of international space collaboration. The International Space Station (ISS), which involves the National Aeronautics and Space Administration (NASA), Roscosmos, European Space Agency (ESA), and others, is frequently cited as a model of post–Cold War space partnerships.

However, the cooperative equilibrium post-ISS fractured with the 2015 US Commercial Space Launch Competitiveness Act, which legitimised private celestial resource extraction. This unilateral move by the US destabilised multilateral governance by directly contradicting the principles of the Outer Space Treaty (OST) which viewed space as the 'province of all mankind.'[1] The 1979 Moon Agreement had similarly attempted to institutionalise equitable resource sharing but garnered minimal adherence. This is because the OST and the Moon Agreement were underpinned by an idealistic vision of space exploration, which was fundamentally at odds with the rapid rise in private space actors with competing commercial interests.[2] States and corporations are now vying for lunar resources (e.g., helium-3, water ice) and strategic positioning at the resource-rich Lunar South Pole.[3]

From the first human spaceflight in 1961, space has thus transformed into a domain where economic opportunities, technological innovations, and military dominance converge.[4] The politics of space, or astropolitics, is therefore broadly

1 United Nations Office for Outer Space Affairs, "RESOLUTION ADOPTED BY THE GENERAL ASSEMBLY," December 19, 1966, https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html.

2 Madi Gates, "Houston, We Have a Problem: International Law's Inability to Regulate Space Exploration", *NYU JILP (blog)*, January 2, 2025, https://nyujilp.org/houston-we-have-a-problem-international-laws-inability-to-regulate-space-exploration/.

3 Almudena Azcárate Ortega, "Artemis Accords: A Step Toward International Cooperation or Further Competition?" *Lawfare*, December 15, 2020, https://www.lawfaremedia.org/article/artemis-accords-step-toward-international-cooperation-or-further-competition.

4 Santiago Rementeria, "Power Dynamics in the Age of Space Commercialisation," *Space Policy* 60 (2022) https://doi.org/10.1016/j.spacepol.2021.101472.

understood as the study of the influence of terrestrial politics on states' economic, technological, and military activities in space.[5] Since the end of the Cold War, the international space club, which was once quite exclusive, has now significantly expanded to nearly 80 national space agencies globally.[6] Dozens of states play an active role in space politics and are now joining astropolitical alliances that seek to advance shared norms and goals in space exploration.[7] US leads the Artemis Accords, whereas China spearheads the International Lunar Research Station (ILRS) along with Russia as a supporting partner.[8] The global framework of space governance has remained essentially unchanged for over 50 years. However, it is now being challenged by these alliances which have started forming only in the past 5 years.

Against this backdrop, the Artemis Accords and ILRS have crystallised as competing astropolitical alliances driven by three intertwined forces: geopolitical rivalry (e.g., the Wolf Amendment barring U.S.-China cooperation), economic imperatives (trillion-dollar lunar mining prospects), and normative contestation (reinterpreting OST provisions to suit alliance objectives). Artemis Accord promotes the commercialisation of space through entities like SpaceX, while ILRS champions state-led development under China's vision of a 'shared destiny' in space. This bifurcation risks fragmenting space governance into exclusionary spheres of influence. The OST's foundational vision would also be undermined as the US heads back to the Moon with its Artemis allies.[9] Similarly, China plans to establish a long-term lunar presence along with its ILRS partners. Consequently, this paper addresses five critical questions: how have these alliances emerged as competing blocs; the factors driving state alignment; the interplay of competition and cooperation within and between alliances; their implications for global space governance; and whether member states can avert a bifurcated space order.

These five questions confine the scope of the paper to exploring various themes related to astropolitics and international space cooperation. Notably, it does not

5 Seyedmohammad Seyedi Asl, "ASTROPOLITICS AND USA-CHINA'S NEW GEOPOLITICAL RIVALRY AREA", *AUSTRAL: Brazilian Journal of Strategy & International Relations* 13, no. 26 (2024):52-71, https://doi.org/10.22456/2238-6912.140840.

6 Asl, "ASTROPOLITICS AND USA-CHINA'S NEW GEOPOLITICAL RIVALRY AREA," 56.

7 Francisco Del Canto Viterale, "Global Power Dynamics in the Contemporary Space System," *Systems* 13, no. 4 (2025) https://doi.org/10.3390/systems13040276.

8 Francisco Del Canto Viterale, "Global Governance of the Space System: A Multilevel Governance Analysis," *Systems* 12, no. 9 (2024) https://doi.org/10.3390/systems12090318.

9 Mariel Borowitz, Althea Noonan, and Reem El Ghazal, "U.S. Strategic Interest in the Moon: An Assessment of Economic, National Security, and Geopolitical Drivers," *Space Policy* 69 (2024) https://doi.org/10.1016/j.spacepol.2023.101548.

engage with the technological, technical, logistical and ethical implications of establishing lunar bases and resource extraction, which are beyond the scope of discussion. The findings suggest that these alliances risk replicating terrestrial competition over critical mineral resources. Nonetheless, they will significantly influence the next era of space exploration, where the promise of progress will intersect with the peril of terrestrial conflicts being projected into the cosmos. The rationales influencing the membership of states in either alliance highlight how astropolitics has been shaped by cooperative noble ideals and competing national interests since the start of the global space age.

Theoretical Framework

The formation of astropolitical alliances has sparked several theoretical debates within the field of international relations (IR) scholarship. However, any specific theory will have limited explanatory power to examine all aspects relevant to this paper. This limitation stems from the interplay between competition, cooperation, and normative reconstruction in space governance which exceeds the scope of any single theoretical paradigm. Hence, the analysis of alliance formation and evolution necessitates a multidimensional theoretical approach. By integrating neorealist, neoliberal institutionalist, and constructivist perspectives, this analysis reveals how material power dynamics, institutional frameworks, and discursive legitimisation position the Artemis Accords and ILRS as competing frameworks.

At its core, the paper applies Neorealism, which offers the most appropriate theoretical lens to view the formation of astropolitical alliances.[10] This is evident in how structural compulsions stemming from Sino-US tensions contribute to enduring competition in an anarchic international system.[11] Thus, from a realist perspective, the Accords and ILRS are tools for power projection in the cosmos. Fundamentally, realist scholars would frame the formation of these alliances as a zero-sum game where controlling critical lunar resources and territories is a strategic imperative for both the US and China. In this context, the Artemis Accord's exclusion of China, as stipulated in the Wolf Amendment, can be theoretically interpreted as a containment strategy aimed at ensuring US

10 Fikri Haikal Akbar, Abubakar Eby Hara, and Honest Dody Molasy, "Competition Among Spacefaring States in the Exploration of 'Terra Nulius' in Outer Space: A Neorealist Approach," *Astropolitics* 21, no. 2–3 (2023): 206–13, https://doi.org/10.1080/14777622.2023.2280019.

11 Asma Rashid and Nigham Fatima, "The Great Game of Space: Space Political Adventurism and Battle for Superpower Status Beyond the Horizons", *NUST Journal of International Peace & Stability* 7, no. 2 (2024): 15–29, https://doi.org/10.37540/njips.v7i2.171.

hegemony on the Moon and beyond.[12] It is also aligned with the narratives of US officials, who claim that China has 'ambitions to occupy resource-rich areas on the Moon.'[13] Similarly, realists would view the ILRS as a counterbalancing alliance aimed at preventing US lunar hegemony. The resulting Sino-US lunar competition mirrors realist Cold War-era astropolitics.

However, while realist theory explains how states bandwagon with the US or China to secure their national interests, realism alone cannot explain why certain states pursue dual membership or why institutionalised cooperation persists within alliances despite astropolitical tensions. This is where neoliberal institutionalism provides critical insight: both alliances establish rule-based frameworks that reduce transaction costs and enable collective gains through standardised operations. Liberal theories would also focus on the potential of space diplomacy through cooperative astropolitical frameworks.[14] For instance, as stated in the introduction, the collaborative success of the ISS over the past two decades underscores how institutionalised cooperation between great powers (the US and Russia) can persist despite contentious terrestrial geopolitics.[15] In this context, the liberal institutionalist view would be that these alliances could collectively resolve disputes regarding space governance. Although, going by the neoliberal argument, while the Artemis Accords support intra-alliance inclusion and collaboration, the coalition remains fundamentally exclusionary from an inter-alliance perspective (it excludes China and its allies).

A Constructivist perspective departs from strictly realist or liberal analyses of competition and cooperation to study how alliances are formed through speech and discourse. It highlights how these alliances establish new norms in space governance by reinforcing competing narratives that validate their leadership

12 Paul J. Bolt, "American Sanctions on China's Space Program: Effective Economic Statecraft?" *Space and Defense* 15, no. 1 (2024): 18-34, https://doi.org/10.32873/uno.dc.sd.15.01.1037.

13 Bryan Bender, "'We Better Watch out': NASA Boss Sounds Alarm on Chinese Moon Ambitions," *POLITICO*, January 1, 2023, https://www.politico.com/news/2023/01/01/we-better-watch-out-nasa-boss-sounds-alarm-on-chinese-moon-ambitions-00075803.

14 Mai'a K. Davis Cross and Saadia M. Pekkanen, "Introduction. Space Diplomacy: The Final Frontier of Theory and Practice", *The Hague Journal of Diplomacy* 18, no. 2-3 (2023): 193-217, https://doi.org/10.1163/1871191x-bja10152.

15 Seanna Pieper-Jordan, "The International Space Station: Peaceful Common Ground for Adversaries," (presentation, UM Graduate Student Research Conference, University of Montana, MT, February 24, 2023) https://scholarworks.umt.edu/gsrc/2023/326/8/.

claims.[16] Thus, constructivism offers nuanced insights into how the two alliances justify their respective space governance systems through discourse. The Artemis Accords, for example, are deemed essential for a 'rules-based' astropolitical order by the US State Department.[17] Promoting this rules-based order narrative reinforces informal binaries with China, whose vision for a 'shared destiny for humanity' also challenges Western dominance in space.[18] This theoretical integration underscores how material interests, institutional designs, and ideational contestation continuously interact, reinforcing fragmentation while creating openings for cooperation in space. It thus captures the intricate reality of 21st-century astropolitics, a field where power and principles converge to reshape humanity's exploration of the cosmos.

Methodology

A qualitative methodology was adopted, considering it is well-suited to explore the interplay between competition and cooperation in space by leveraging its strength in examining nuanced astropolitical dynamics. The paper employed a comparative case study approach. It facilitated the analysis of the formation of both alliances as well as their implications for the framework of global space governance. The comparative approach also enabled the identification of converging and diverging aspects, such as competition over lunar resources and contrasting interpretations of compliance with the OST. Data was gathered from secondary sources comprising treaty texts, policy documents, books, research articles, online publications, and reputable media outlets. Key themes about astropolitical alliances, soft power projection, global space governance, competition and cooperation in space were extracted from the study using a thematic analysis. To mitigate bias, media narratives were balanced across Western and Chinese sources by presenting both perspectives.

16 Scott Pace, "U.S. Space Policy and Theories of International Relations: The Case for Analytical Eclecticism", *Space Policy* 65 (2023) https://doi.org/10.1016/j.spacepol.2022.101538.

17 Zhanna L. Malekos Smith, "Empowering the Artemis Accords Coalition for Peace and Stability," Carnegie Council for Ethics in International Affairs, March 6, 2024, https://www.carnegiecouncil.org/media/article/empowering-artemis-accords-coalition-peace-stability.

18 Xiaodan Wu, "The International Lunar Research Station: China's New Era of Space Cooperation and Its New Role in the Space Legal Order," Space Policy 65 (2023) https://doi.org/10.1016/j.spacepol.2022.101537.

Data was drawn from five categories of secondary sources:

- Primary Documents: Treaty texts (OST, Artemis Accords, ILRS Charter) and policy statements from NASA and China National Space Administration (CNSA).
- Scholarly Publications: Peer-reviewed articles with 'astropolitics,' 'space governance,' or 'lunar exploration' keywords (2020–2025).
- Institutional Reports: Publications from United Nations Office for Outer Space Affairs (UNOOSA), Secure World Foundation, and space agencies.
- Media Analysis: Coverage from reputable space-focused outlets in the West (e.g., SpaceNews, Space.com) and in China (e.g., Global Times, APSCO bulletins) that report on alliance developments.

Literature Review

Astropolitics is dominated by great-power dynamics, according to recent research. For example, Morin and Tepper's structural-power analysis reveals that the US, through its extensive commercial space industry and international partnerships, has successfully globalised its preferred norms.[19] In contrast, China's capabilities have not yet translated into equivalent normative influence in space governance. Such findings underscore that power asymmetries and strategic competition increasingly shape astropolitics. For instance, Johnson-Freese and Weeden apply Elinor Ostrom's common-pool-resource principles to space, noting that near-Earth orbit is an increasingly 'crowded, congested and contested environment' at risk of conflict.[20] Overall, literature views space as a global commons that remains subject to geopolitics, being both a domain for competition and cooperation.

However, some gaps remain. Notably, scholarship mainly considers cooperation as diffusion (through treaties, agencies, and bilateral projects) rather than explicitly examining alliances or coalitions. The concept of 'astropolitical alliances' remains under-theorised, partly because it is a relatively recent phenomenon as noted earlier. Thus, there is a lack of systematic analyses of how formalised space coalitions (like Artemis or ILRS) alter state incentives, strategic alignments, and the evolution of space law. This research paper aims to fill these gaps. By exploring how these coalitions affect cooperation (by offering cooperative missions) as well as competition (by establishing blocs and normative

19 Jean-Frédéric Morin and Eytan Tepper, "The Empire Strikes Back: Comparing US and China's Structural Power in Outer Space," Global Studies Quarterly 3, no. 4 (2023) https://doi.org/10.1093/isagsq/ksad067.

20 Joan Johnson-Freese and Brian Weeden, "Application of Ostrom's Principles for Sustainable Governance of Common-Pool Resources to Near-Earth Orbit", Global Policy 3, no. 1 (2012): 72-82, https://doi.org/10.1111/j.1758-5899.2011.00109.x.

divergence), it places 'astropolitical alliances' at the intersection of the three major IR theories i.e. neorealism, realism, and constructivism. This offers a novel integrated theoretical framework to the discussion of space governance and astropolitics.

Contemporary Astropolitical Alliances

The Artemis Accords and the International Lunar Research Station (ILRS) initiative can be seen as nascent 'alliances' in space: agreements that commit signatory states to common exploration programs and principles. For example, the Artemis Accords articulate principles (e.g. peaceful purposes, transparency, resource sharing) intended for all participants but exclude China and Russia. In contrast, China presents the ILRS as an 'open facility on the lunar surface,' emphasising 'sufficient discussion, joint construction and international sharing' of lunar infrastructure. Chinese discourse frames the ILRS as an 'international cooperation platform' that seems explicitly more inclusive compared to the Artemis Accords.

Official statements (translated by Chinese media) emphasise that 'outer space is not an arena of competition among countries, but an important sphere for cooperation and win-win'. China's foreign ministry spokesperson has also underscored that the peaceful exploration of space 'is a common cause of all mankind' and that China is 'committed to peaceful use of outer space' through broad partnerships.[21] This cooperative framing echoes President Xi Jinping's stated vision that 'global governance of outer space shall be guided by the philosophy of a community with a shared future.' In other words, official Chinese discourse portrays the ILRS as an inclusive, multilateral vision i.e., the 'shared future' paradigm for humanity's future in space.

There is also a sharp divergence between the two alliances regarding space infrastructure development. The Artemis Accords champion a commercial model grounded in neoliberalism, which prioritises commercial participation. This is evident by the critical role that SpaceX Starship is set to play in lunar landings and the subsequent construction of the planned lunar installations.[22] While this would

21 Ministry of Foreign Affairs of the People's Republic of China, "Foreign Ministry Spokesperson Lin Jian's Regular Press Conference on October 28, 2024," Updated October 28, 2024, https://www.mfa.gov.cn/eng/xw/fyrbt/202410/t20241028_11517200.html

22 Lee Mohon,"NASA, SpaceX Illustrate Key Moments of Artemis Lunar Lander Mission," NASA, November 20, 2024, https://www.nasa.gov/directorates/esdmd/artemis-campaign-development-division/human-landing-system-program/nasa-spacex-illustrate-key-moments-of-artemis-lunar-lander-mission/.

be a massive boost for the space economy, it would establish a monopoly in space exploration for firms like SpaceX. Conversely, the ILRS could prioritise state-driven efforts, directing space infrastructure development that is likely aligned with the centralised government systems in both China and Russia.

Artemis Accords

The US initiated the Artemis Accords in October 2020 based on the Artemis Programme, which envisions human settlement on the Moon.[23] According to NASA administrator, Jim Bridenstine, Artemis is planned to be the most diverse and broadest international human spaceflight programme. The Artemis Accords will be crucial for establishing an astropolitical alliance that drives the Artemis programme forward.[24] They propose a shared roadmap and non-binding framework for space exploration by formulating standard guidelines and best practices for activities carried out in orbit, on the lunar surface and subsurface, on Mars, comets, and asteroids. Fundamentally, the Artemis Accords are grounded in 10 key cooperative principles: Peaceful Purposes; Transparency; Interoperability; Emergency Assistance; Registration of Space Objects; Release of Scientific Data; Protecting Heritage; Space Resources; Deconfliction of Activities; and Orbital Debris and Spacecraft Disposal. As of November 2025, there are 60 signatories.[25]

International Lunar Research Station (ILRS)

A year after the Artemis Accords were announced, the International Lunar Research Station (ILRS) was jointly initiated by China's National Space Administration (CNSA) and Russia's state space corporation, Roscosmos.[26] As the name implies, the ILRS is planned to be a research outpost on the Moon manned by humans, similar to the scientific research facilities in Antarctica. The basic facility of the ILRS will be built on the Lunar South Pole and is expected to be

23 "Artemis Accords," NASA, accessed April 20, 2025, https://www.nasa.gov/artemis-accords/.

24 "International Participation in Artemis – An Update from NASA," U.S. Department of State, October 13, 2020, https://2017-2021.state.gov/briefings-foreign-press-centers/international-participation-in-artemis-an-update-from-nasa/.

25 "Artemis Accords: Principles for Cooperation in the Civil Exploration and Use of the Moon, Mars, Comets, and Asteroids for Peaceful Purposes," U.S. Department of State, accessed April 20, 2025, https://www.state.gov/bureau-of-oceans-and-international-environmental-and-scientific-affairs/artemis-accords.

26 "JOINT STATEMENT Between CNSA And ROSCOSMOS Regarding Cooperation for the Construction of the International Lunar Research Station", CNSA, April 29, 2021, https://www.cnsa.gov.cn/english/n6465668/n6465670/c6811967/content.html.

operational by 2035, with an expanded version by 2040.[27] The ILRS has outlined eight key cooperative principles: equality; mutual benefit; peaceful utilisation; openness and win-win cooperation; inclusive participation; shared development; international scientific exchange; and shared access for all interested partners.[28] Seventeen states (13 public announcements), international organisations, and over 50 global research institutions have joined the ILRS.[29]

Astropolitics and Alliance Membership

China and the US are actively recruiting members for their respective astropolitical alliances globally; it took three years for South Asian states to become signatories to either of these alliances. India became a signatory to the Artemis Accords in June 2023.[30] The same year, Pakistan joined China's ILRS in October.[31] India's decision to embrace the Artemis Accords was geopolitically significant because, for years, it had advocated for a multilaterally negotiated, legally binding framework for global space governance.[32] India's membership could be rationalised based on years of deepening cooperative relations with the US across all domains; however, the case of Bangladesh was more surprising.

In April 2025, Bangladesh joined the Artemis Accords, with the signing ceremony symbolically taking place in the capital, Dhaka. The acting administrator of NASA, Janet Petro, reflected on the agreement by implying that the Artemis Accords

---

27 Deng Xiaoci, "China Advances Planning of International Lunar Research Station, on Track to Implement Chang'e-7, Chang'e -8 Lunar Probe Missions: Chief Designer", Global Times, April 23, 2025, https://www.globaltimes.cn/page/202504/1332711.shtml.

28 "International Lunar Research Station (ILRS) Guide for Partnership," CNSA, June 16, 2021, https://www.cnsa.gov.cn/english/n6465652/n6465653/c6812150/content.html.

29 "CNSA: International Lunar Research Station Attracts More Partners", CHINA SCIO, 24 April 2025, http://english.scio.gov.cn/chinavoices/2025-04/24/content_117841556.html.

30 Claire A. O'Shea, "NASA Welcomes India as 27th Artemis Accords Signatory," NASA, June 23, 2023, https://www.nasa.gov/news-release/nasa-welcomes-india-as-27th-artemis-accords-signatory/.

31 Huaxia, "Pakistan, Belarus Join International Lunar Research Station Program", Xinhuanet, October 25, 2023, https://english.news.cn/20231025/197ca42b8ae24ed6b1b4e5fba949fdbc/c.html.

32 Rajeswari Pillai RAJAGOPALAN, "India-US Space Cooperation Gets a New Fillip | Asia-Pacific Leadership Network", APLN, September 11, 2025, https://www.apln.network/news/member_activities/india-us-space-cooperation-gets-a-new-fillip.

would determine the future of space exploration.[33] This development was a setback for China, as it had a long-standing space partnership with Bangladesh since 2006 and had become a founding member of the Asia Pacific Space Operation Organisation (APSCO), an international governmental organisation headquartered in Beijing, which was established to promote multilateral space cooperation.[34] Therefore, the fact that Bangladesh signed on to the Artemis Accords over the ILRS underscores that even some of China's traditional space allies are more attracted to the US' vision regarding the future of space exploration.[35]

It is noteworthy that several countries from the Global South are also signatories to the Artemis Accords, despite China's international campaigning primarily focusing on recruiting countries from the Global South to join the ILRS.[36] China has also established the ILRS Cooperation Organisation with the primary mandate of promoting international space cooperation and attracting states to participate in the ILRS.[37] Furthermore, China has multiple regional space corporation forums in Africa, Asia, and Latin America.[38] However, despite undertaking numerous initiatives to increase ILRS membership, it appears that the ILRS has yet to achieve the international buy-in that the Artemis Accords have.

The Artemis Accords crossed the astropolitical rubicon when the alliance acquired more than 50 member states in 2025, surpassing China's publicly stated goal of partnering with 50 states on the ILRS. Mike Gold, a former NASA official who played a key role in formulating the Artemis Accords, noted that obtaining more than 50 signatories was a significant milestone, as a majority of members in the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) had joined, which would enhance the normative influence of the Artemis Accords over

33 Jennifer M. Dooren, "NASA Welcomes Bangladesh as Newest Artemis Accords Signatory," NASA, April 8, 2025, https://www.nasa.gov/news-release/nasa-welcomes-bangladesh-as-newest-artemis-accords-signatory/.

34 "The People's Republic of Bangladesh", APSCO, accessed April 20, 2025, http://www.apsco.int/html/comp1/content/Bangladesh/2018-06-25/14-146-1.shtml.

35 Morin and Tepper, "The Empire Strikes Back."

36 "China to Include More African Members in its Lunar Research Program in Latest Effort to Boost South-South Cooperation," Global Times, September 5, 2024, https://www.globaltimes.cn/page/202409/1319316.shtml.

37 "Lunar Space Cooperation Initiatives," Secure World Foundation, January 29, 2025, https://www.swfound.org/publications-and-reports/lunar-space-cooperation-initiatives.

38 Deng Xiaoci, "China Facilitates Developing Nations to Learn about Space Exploration," Global Times, April 24, 2024, https://www.globaltimes.cn/page/202404/1311203.shtml.

non-signatories.[39] A leading US space official argued that the increasing membership of the Accords was a testament to the recognition and international acceptance of their values and principles.[40] However, in April 2025, China's chief designer of its lunar exploration programme, Wu Weiren, hinted at US interference with Beijing's efforts to cooperate with Europe and other foreign partners in space programmes. [41]

Factors Influencing Alliance Membership

The decision of the states to align with astropolitical alliances has been influenced by multifaceted considerations. Generally, the choice between joining either coalition has not been determined by idealistic notions of space exploration, but rather it has reflected deeper geopolitical and economic imperatives. In the case of the Artemis Accords, it can be argued that states have joined this alliance to pursue three core objectives. Firstly, they have been attracted by the promise of becoming integrated into the Western supply chains of space infrastructure, which is dominated by the massive commercial space sector in the US. Secondly, they have signed on to secure a favourable position in the future space economy by being able to engage in lunar resource extraction.[42] Thirdly, for traditional US allies, enhancing space cooperation became an extension of conventional defense partnerships.[43] Conversely, states that have joined the ILRS have partly done so from a position of geopolitical resistance to US hegemony. For example, in the case of Russia, it provides an opportunity to transition away from its participation in the ISS and divert resources to the ILRS. Other member states have viewed participation in the ILRS as an opportunity to acquire access to advanced space

---

39 Marcia Smith, "Gold: With 52 Members, Artemis Accords Now Represent Global Consensus", Space Policy Online, Updated December 21, 2024, https://spacepolicyonline.com/news/gold-with-52-members-artemis-accords-now-represent-global-consensus/.

40 Roxana Bardan, "Artemis Accords Reach 50 Signatories as NASA Welcomes Panama, Austria'," NASA, December 11, 2024, https://www.nasa.gov/news-release/artemis-accords-reach-50-signatories-as-nasa-welcomes-panama-austria/.

41 Eduardo Baptista, "China Lunar Chief Accuses US of Interfering in Joint Space Programmes with Other Nations," Reuters, April 23, 2025, https://www.reuters.com/business/media-telecom/china-lunar-chief-accuses-us-interfering-joint-space-programmes-2025-04-23/.

42 Swaim Prakash Singh, "Why Nations are Rallying Behind the Artemis Accords", CAPSS India, December 23, 2024, https://capssindia.org/why-nations-are-rallying-behind-the-artemis-accords/.

43 Christopher Newman, "Artemis Accords: Why Many Countries Are Refusing to Sign Moon Exploration Agreement," The Conversation, October 19, 2020, http://theconversation.com/artemis-accords-why-many-countries-are-refusing-to-sign-moon-exploration-agreement-148134.

capabilities from China and reinforce historic space ties, as in the case of Pakistan.

Alliance Membership and Dependency Risks

The implications for states in joining either alliance are not limited to acquiring technological or economic benefits; there is also the risk of creating long-term dependencies that will adversely affect the strategic autonomy of member states. For instance, states may gain access to the US space infrastructure by joining the Artemis Accords. However, the interoperability standards for communication protocols or docking systems could keep them tethered to the US. It could lead to path dependencies limiting flexibility in future space operations. This predicament is underscored by how European states have become heavily dependent on the Artemis programme to help fulfil their lunar ambitions.[44]

Many Artemis partners lack indigenous capabilities for lunar landing or orbiting. Hence, European partners, such as Italy and the UK, are investing heavily in NASA-led lunar gateway projects; their upcoming lunar modules are designed for exclusive integration with Artemis infrastructure. The Artemis Accords also require members to align their space policy, operational safety zones, and data-sharing practices with US-authored frameworks. This has already led to harmonisation of national space regulatory environments (e.g., Australia's updated Space Activities Act and Luxembourg's space mining regime), orienting them toward US legal and operational precedents.

Furthermore, the Artemis Accords include countries such as Luxembourg, the UAE, and Romania, whose national space budgets are less than 2 per cent of NASA's annual budget. For instance, NASA's annual budget for Artemis is more than ten times the United Arab Emirates' (UAE) National Space Fund, which is 820 million USD.[45] This stark disparity means that smaller Artemis signatories are highly dependent on NASA for launch opportunities, lunar mission seats, and data access etc. Meanwhile, partners of the ILRS could encounter similar difficulties and trade-offs. They could face restricted access to Western space technology and potentially face secondary sanctions on their collaborative space projects with China or Russia. Hence, establishing space partnerships with the ILRS could make it harder for developing states to participate in Western space projects and vice

44 Peggy Hollinger and Clive Cookson, "Europe"s Moon Plans at Risk as Trump Team Reviews Nasa's Artemis Project", Financial Times, February 20, 2025, https://www.ft.com/content/e14e3a07-3b5f-447e-a190-04955bb71dae.

45 Murdo Morrison, "How UAE Is Making the Case for Space", Flight Global, November 13, 2023, https://www.flightglobal.com/aerospace/how-uae-is-making-the-case-for-space/155803.article.

versa. Therefore, states face a dilemma when signing on to either alliance because their membership would require them to choose between only one of two options that might not best serve their foreign policy interests.

Fragmented Astropolitical Order

Most states have not signed both accords; joining one alliance often means conforming to that group's rules and risking exclusion from the other. As of July 2025, only seven countries had formal memoranda or partnership agreements with both groupings, and none have engaged in parallel deep-technology development with either alliance due to divergent technology and IP standards, as well as mutual exclusivity clauses in several agreements. As noted in the preceding section, the Artemis Accords' standardisation and the US Wolf Amendment bar bilateral cooperation between NASA and Chinese institutions.

So, once a state becomes embedded in the Artemis network, its institutional and commercial partners would face legal roadblocks when engaging with ILRS-related Chinese or Russian ventures. This underscores that participation in one alliance can institutionally constrain access to rival alliances' technologies or data, as formal agreements and national legislation prohibit dual engagement. A 2025 RAND report reinforces this viewpoint by noting how such commitments create path dependencies that diminish member states' ability to pursue alternative space partnerships or technological standards independently.[46]

It is noteworthy that US officials have stated that there are no inherent restrictions preventing any state from participating in the ILRS and signing the Artemis Accords simultaneously.[47] On paper, the Artemis Accords and the ILRS charters are not mutually exclusive. Instead, they stress absolute gains arising from international space cooperation. Except for the principle of transparency, the guidelines in both frameworks are broadly consistent. Some observers in the international community thereby hold an optimistic perspective regarding the possibilities of inter-alliance cooperation.

Such optimism was substantiated in December 2024 when Thailand became the first state to participate in the ILRS while also being a signatory to the Artemis

46 Daniel M. Gerstein and Erin N. Leidy, Emerging Technology and Risk Analysis: The Space Domain and Critical Infrastructure (Santa Monica, California: RAND, 2025) https://www.rand.org/pubs/research_reports/RRA2875-1.html.

47 Jeff Foust, “Artemis Accords Lift Off”, The Space Review, June 17, 2024, https://www.thespacereview.com/article/4812/1.

Accords.[48] A few other states have opted for hedging approaches to deal with this increasing astropolitical polarisation. The UAE has adopted a multidimensional space strategy by engaging with both frameworks at the national and sub-national levels.[49] However, hedging faces uncertainty regarding its sustainability, as the Sino-US space competition continues to intensify, which has reduced the prospects for significant inter-alliance cooperation in the future.[50]

Consequently, it is challenging for member states in both alliances to enhance bilateral space cooperation due to overarching structural constraints. For instance, India and Russia had a robust space partnership, and Russia even trained Indian astronauts. However, India had to forego two decades of space cooperation with Russia when it joined the Artemis Accord.[51] Similarly, Europe and China have frequently collaborated on space projects. The latest example is the European scientific devices integrated into China's Chang'e-6 lunar mission; there have also been several joint astronaut training programs between the Chinese and European Space agencies.[52]

However, Karl Bergquist, Head of the European Space Agency's (ESA) International Relations Department, stated last year that rising geopolitical tensions are hindering future space cooperation between China and the ESA.[53] These tensions have stemmed from US efforts to convince allies to roll back space cooperation with China, just as it barred them from establishing technological partnerships, as evident by the geopolitics of 5G.[54] As a result of US pressure and rising sanctions

48 Roxana Bardan, "NASA Welcomes Thailand as Newest Artemis Accords Signatory," NASA, December 16, 2024, https://www.nasa.gov/news-release/nasa-welcomes-thailand-as-newest-artemis-accords-signatory/.

49 Andrew Jones, "Emirati University Signs up to China's Moon Base Project," SpaceNews, November 20, 2023, https://spacenews.com/emirati-university-signs-up-to-chinas-moon-base-project/.

50 Aaron Bateman, "The Prospects for United States–China Space Cooperation are Limited," Bulletin of the Atomic Scientists, June 12, 2023, https://thebulletin.org/2023/06/the-prospects-for-united-states-china-space-cooperation-are-limited/.

51 Ajey Lele, "India and the Artemis Accords: Need to Tread Cautiously," National Security 6, no. 4, (2023):235-51, https://doi.org/10.32381/NS.2023.06.04.1.

52 Chi WANG and Quanlin FAN, "Review of 2024 Global Space Science Activities," Science & Technology Review 43, no. 1 (2025): 32-46, http://www.kjdb.org/EN/10.3981/j.issn.1000-7857.2024.12.01769.

53 Andrew Jones "ESA-China Moon Cooperation Could End with Chang'e-6," SpaceNews, June 12, 2024, https://spacenews.com/esa-china-moon-cooperation-could-end-with-change-6/.

54 Mustafa Bilal, "5G Geopolitics: Securitisation, Sino-US Contention and Technological Dependence for Developing States," Journal of Aerospace & Security Studies III

on China and Russia, Karl Bergquist emphasised that it might become 'impossible' for ESA to cooperate with China on the ILRS.[55]

Consequently, states now face diminishing opportunities to opt for multivector space cooperation with the US and China, as astropolitical divisions continue to become more rigid over time. Consequently, the formation of astropolitical alliances would create new technological barriers, resulting in standard inconsistencies, incompatible lunar habitats, divergent resource extraction technologies, and independent communication and technological ecosystems on the moon, which would create additional challenges for joint mission operations and emergency response coordination.

Astropolitical Alliances and Tensions with the OST

The Outer Space Treaty (OST) is the bedrock of international space law, which has survived periods of contentious geopolitical strife. However, the rapid commercialisation of space over the past five years and the formation of astropolitical alliances present the greatest challenge to the treaty, which has stood the test of time over the past 50 years. This challenge stems from the fact that the provisions of the OST regarding resource extraction and territorial claims on celestial bodies are now being questioned as the feasibility of space mining has increased.[56]

Additionally, the legal framework of the Artemis Accords is both adaptive and subversive. Although the Artemis Accords affirm compliance with the OST, they reinterpret the treaty's prohibition on appropriating celestial resources by establishing provisions for resource extraction.[57] Consequently, the accords have been criticised for undermining the Global Commons ethos of the OST.[58] China

(2024): 97-121, https://www.jassjournal.casstt.com/wp-content/uploads/2025/01/4-Mustafa-Bilal-Geo-Pol-5G-JASS-Vol3-HM1-ED-SSA-WEB.pdf.

55 Jones, "ESA-China Moon Cooperation Could End with Chang'e-6."

56 Alexia Armstrong, "Equity in the Space Frontier: The Laws of Commercial Space Mining, and Solutions for Common Benefit and Sustainability," Canadian Bar Association, September 11, 2024, https://www.cba.org/sections/air-and-space-law/resources/equity-in-the-space-frontier-the-laws-of-commercial-space-mining-and-solutions-for-common-benefit/.

57 Inesa Kostenko, "Artemis Accords and the Future of Space Governance: Intentions and Reality," Advanced Space Law 8, (2021): 40-50, https://doi.org/10.29202/asl/8/4.

58 Kiran Mohan Vazhapully, "Space Law at the Crossroads: Contextualizing the Artemis Accords and the Space Resources Executive Order", OpinioJuris, July 22, 2020,

and Russia have vehemently argued against the Accords for violating the treaty's spirit.[59] Yet, their non-binding framework, combined with the rate at which states are signing on to them, suggests a normative shift towards customary international law to normalise the extraction and ownership of celestial resources.

Section 11 of the Accords envisions the establishment of safety zones, which would be exclusive areas surrounding operational sites, designed to prevent interference during the extraction of resources or the conduct of scientific experiments. What is concerning is how contentious safety zone provisions could paradoxically also lead to inter-alliance conflict. While these provisions are deemed operational necessities, they can be used to justify the acquisition of territorial control. A prominent historical precedent exists regarding how peaceful naval exclusion zones can incite conflict over water resources.[60] This highlights the risk of inter-alliance conflict over lunar resources in the absence of a consensus on the rights to lunar resources.

Thus, the competing interpretations of the OST could create a legally grey area where both alliances could proceed with competing plans for extracting lunar resources. The risk of conflict is further exacerbated by the fact that both alliances are targeting the establishment of bases on the resource-rich Lunar South Pole to ensure long-term space operations by extracting Helium-3 and water ice.[61] However, the region could become a lunar flashpoint, drawing parallels with the geopolitical contestation over resource-rich terrestrial flashpoints, such as the South China Sea.[62]

Lastly, while the Artemis Accords and ILRS emphasise environmental sustainability in space, neither framework has sufficient safeguards to reduce the

---

https://opiniojuris.org/2020/07/22/space-law-at-the-crossroads-contextualizing-the-artemis-accords-and-the-space-resources-executive-order/.

59 Almudena Azcárate Ortega, "Artemis Accords: A Step Toward International Cooperation or Further Competition?" Lawfare, December 15, 2020, https://www.lawfaremedia.org/article/artemis-accords-step-toward-international-cooperation-or-further-competition.

60 Andrew Jones, "'We're in a Space Race.' NASA Chief Says US 'better watch out' for China's Moon Goals," Space.com January 5, 2023, https://www.space.com/nasa-bill-nelson-china-space-race-moon.

61 Doaa Abdel-Motaal, "Deconflicting Activities in New Frontiers: The Moon versus Antarctica", The Strategist, August 8, 2024, https://www.aspistrategist.org.au/china-could-stake-a-claim-on-the-moon-just-look-at-what-its-doing-in-antarctica/.

62 Matthew Gross, "The Artemis Accords: International Cooperation in the Era of Space Exploration," Harvard International Review, 27 January, 2023, https://hir.harvard.edu/the-artemis-accords/.

environmental consequences of commercial lunar activities. Mining operations planned for lunar resources could create dust storms by disturbing the sensitive balance of lunar regolith. Expanding commercial activities on the Moon could also create obstacles to ongoing civil scientific research due to the lack of a worldwide agreement on ethical rules for extracting lunar resources. If commercial interests surpass environmental protection, the Moon will become a replica of terrestrial ecological degradation.

Establishing a Pragmatic Space Governance Framework

Broad international acceptance has not occurred for purely idealistic space governance frameworks, such as the Moon Agreement. A pragmatic balance should be struck between commercial space interests and the principles of equity and justice. Space governance needs a sustainable and equitable model to replace the emerging framework, which could be highly exploitative. To this end, the established global commons principle could form the conceptual basis for establishing an institutional oversight body. This could take the shape of governance structure modelled after the Antarctic Treaty System and the International Seabed Authority, which manage global commons such as Antarctica and the seabed. By enabling open resource licensing, this body could promote pragmatic lunar mining practices rather than idealistic norms.[63]

Moreover, both China and the US should negotiate on cooperative procedures regarding the size, scope, nature, and dispute settlement measures related to the controversial safety zones.[64] To this end, middle powers and regional space agencies should also utilise their diplomatic leverage to mediate between China and the US and advocate for a pragmatic space governance framework. They could also work to establish common technical standards between alliances while promoting scientific partnerships.[65]

---

63 Thomas Lord, "The Antarctic Treaty System and the Peaceful Governance of Antarctica: The Role of the ATS in Promoting Peace at the Margins of the World," The Polar Journal 10, no. 1 (2020): 3–21, https://doi.org/10.1080/2154896X.2020.1757821.

64 Mingyan Nie, "Legal Measures to Preserve Lunar Security and Safety in the Context of China–US Competition to the Moon: An Appraisal from China's Perspective", Leiden Journal of International Law (2025): 1–23, https://doi.org/10.1017/S0922156525100277.

65 Adrian Flynn, "Star-Bound and Star-Crossed: A Path to U.S.-China Space Cooperation Through Science Diplomacy," Astropolitics 22, no. 1–2 (2024): 43–68, https://doi.org/10.1080/14777622.2024.2368599.

Similarly, states that enjoy cordial relations with China and the US could diplomatically strive to establish a shared working group between the two alliances to prepare for joint rescue missions under the Rescue Convention.[66] Such initiatives could help foster trust and cooperation between the two partnerships while clearing misperceptions. However, to achieve such aspirational goals, states in both alliances must view space as the final frontier of international cooperation, not just of competition.

Conclusion

The formation of astropolitical alliances marks a fundamental shift in space governance, where the interaction of institutional structures, power struggles, and normative competition will determine humanity's future in space. The study underscores that the Artemis Accords and ILRS are competing frameworks in which material interests (realism), cooperative mechanisms (liberalism), and legitimising narratives (constructivism) dynamically converge.

The Artemis framework establishes neoliberal institutional pathways that bind partners through technological dependencies, as evidenced by Europe's reliance on Artemis infrastructure, while also advancing US strategic dominance through exclusionary practices, such as the Wolf Amendment. On the other hand, the ILRS positions itself as an anti-hegemonic alternative by utilising China's 'shared destiny' discourse. The conflict between structural power constraints and institutional flexibility is reflected in the increasing astropolitical bifurcation, even as middle powers like Thailand and the UAE try hedging strategies.

The breakdown of the fundamental norms of the Outer Space Treaty also demonstrates this synthesis. The provision of safety zones by Artemis, a practical operational solution (liberal institutionalism), also permits de facto territorial control (realist power projection), which is normalised by the discursive reinterpretation of the extraction of celestial resources (constructivist norm). This could create a precarious legal environment where conflicting interpretations could intensify into conflict, especially at the resource-rich Lunar South Pole, which is targeted by both alliances as a strategic landing zone.

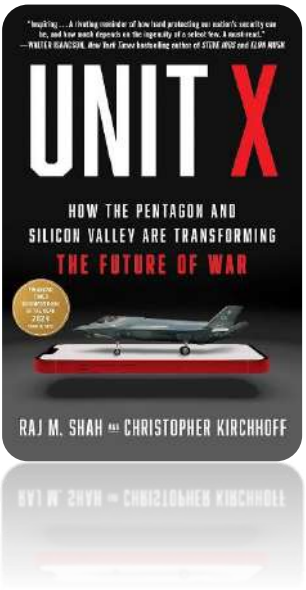
66 Dan Hart, "The Case for the United States and China Working Together in Space," Atlantic Council, August 14, 2024, https://www.atlanticcouncil.org/blogs/new-atlanticist/the-case-for-the-united-states-and-china-working-together-in-space/.

Looking ahead, there are several possible trajectories for the future of astropolitical alliances. Incompatible technical standards and flashpoints such as the Lunar South Pole could lead to a bifurcated astropolitical order if competition for lunar resources intensifies. However, if middle powers mediate resource-sharing models inspired by the Antarctic Treaty, a pragmatic coexistence could emerge.

Mustafa Bilal holds a BS in International Relations and is a Research Assistant at the Centre for Aerospace and Security Studies (CASS), Islamabad. His areas of research are Astropolitics and Technopolitics.
Email: bilal.mustafa@casstt.com

Book Reviews

Journal of Aerospace & Security Studies
2025 | Volume IV | pp. 101-103



Raj M. Shah and Christopher Kirchhoff, *Unit X: How the Pentagon and Silicon Valley are Transforming the Future of War* (California: Scribner, July 2024), pp. 336.

Reviewed by Mustafa Bilal

Unit X is co-authored by Raj M. Shah and Christopher Kirchhoff, both seasoned American national security officials. In the book, they cast themselves as a high-tech Special Forces group waging an internal battle against the world's largest and most entrenched bureaucracy: the Pentagon. The book gives a frontline perspective of the battle between 21st Century Technology and 20th Century bureaucracy.

But why did the leaders of Unit X decide to take on a leviathan like the Pentagon?

Shah and Kirchhoff warn in the introduction that the technological edge of the United States (US) military has been crumbling (p.13). They argue that decades of suffocating red tape, over-reliance on slow-moving defence contractors, the 'primes', and a total cultural disconnect from Silicon Valley's innovation engine has left a big technological chink in the armour of US (pp.15-17). Consequently, the authors write that the US 'might very well suffer an outright defeat' against China in a potential conflict (p.14).

The panacea to avert this catastrophe? Unit X or the Defence Innovation Unit Experimental!

Unit X was envisioned by U.S. Defense Secretary Ash Carter to inject Silicon Valley's agile DNA into the 'clogged arteries' of the Department of Defense (DoD). The authors refer to this as 'hacking the Pentagon', and this book is their raw, boots-on-the-ground report.

The strength of the book's narrative is insider access as Shah and Kirchhoff take the readers into the trenches alongside them. The opening chapters pull readers straight into the heart of the Pentagon's bureaucratic maze, exposing hurdles like 'zeroisation': a process where junior congressional staffers can wipe out the budget of entire programs like Unit X with a single pen stroke (p.34). The authors paint a striking image of U.S. Air Force crews in Qatar juggling life-or-death midair refuelling missions

tracking aircraft not with cutting-edge tech, but with pucks on a whiteboard (p.56). They go on to share stories of scrappy startups like Capella Space, whose revolutionary ideas are quietly derailed by entrenched Pentagon gatekeepers (p.88).

Shah and Kirchhoff recount how Unit X took on the system and found the system hit back even harder. Yet, through the team's ingenuity and grit, they managed to notch key victories. Among them was their use of creative legal workarounds like the 'Other Transaction Authority,' which allowed them to sidestep the Pentagon's notoriously sluggish procurement quicksand (p.100).

Structurally, the book thus reads like a mission log: near-death budget cuts, then hard-fought victories. But this 'next mission' pacing sidelines deeper questions in the individual chapters, like whether startups can truly compete with the 'primes' or what happens when commercial technology is weaponised?

The book has several key takeaways. First, the Pentagon exposé goes into brutal detail, which offers an illuminating account of institutional paralysis. Second, the cultural divide: Pentagon Brass saw Valley engineers as naive; the engineers saw the Pentagon as technologically backwards and morally shady. Bridging that gap was half the victory for Unit X by facilitating 'cultural exchanges' between the Pentagon and Silicon Valley (p.171). Third, China is repeatedly portrayed as an existential threat to the US (*China is mentioned 225 times in the book*). The authors club China's 'civil-military fusion' strategy with criticism of authoritarian systems, while ironically advocating for the same strategy to be emulated in the US to leverage its 'unique advantages' (p.170). Fourth, the Russo-Ukrainian war validated Unit X's foresight: commercial satellites tracking Russian tank movements, AI-powered targeting systems, and swarms of low-cost drones overwhelming traditional military hardware; precisely the kind of warfare the team had long warned was coming (pp.189-206).

But where does the book stumble?

The insider view, while insightful, is also the book's blind spot. The authors make a case for radical reforms in the Pentagon. But their case is one-sided as the readers are only locked into their perspective, whereas voices from the 'threatened' defence contractors, ethically uneasy Silicon Valley folks, or resistant Pentagon factions, get flattened into caricatures, like the 'two small-minded appropriations staffers' - Evelyn and Ed (p. 217). Moreover, while the authors mention Silicon Valley's post-Snowden protests and Google's Project Maven revolt, their dismissal of ethically concerned engineers as 'hopelessly naïve' (p.117) dodges the real debate about autonomous weapons and Big Tech's entanglement in modern warfare made even more urgent by the AI-enabled devastation witnessed in Palestine. Moreover, the book does not address how warfare would 'transform' when AI and drone swarms become mainstream, as demonstrated by Ukraine's Operation Spiderweb.

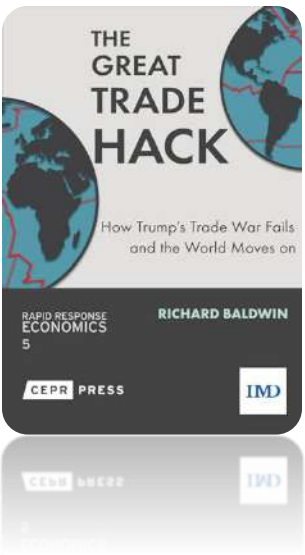
Relatedly, while repeatedly stressing the argument that beating China demands disruptive innovation and public-private partnerships (PPPs), the authors obsess over how to get the latest technology into the hands of the Pentagon, burying deeper questions like how to go about controlling it in the age of algorithmic war. Controversial defense-tech unicorns like Palantir and Anduril also frequently share the spotlight in the book, but again, the focus of the authors stays on adopting tech, not exploring its dark side.

Silicon Valley also gets a free pass on controversies over monopolistic practices and data privacy; these issues are glossed over. Rather, the book is heavy on tactical operational details like maritime domain awareness by saildrones (pp.110-114). Overall, the authors soft-pedal Silicon Valley's flaws, sometimes oversell its victories, and sidestep the ethical grenades they toss. As one critic quoted in the book warned, we still need 'hardcore production of serious weaponry' (p. 202). While the authors explore this tension, they again do so without incorporating opposing perspectives (pp. 200-204).

Nonetheless, despite its shortcomings and rather one-sided picture, *Unit X* is essential reading, especially for those interested in defence technologies, entrepreneurship, and organisational reforms. The book forces the readers to stare into the abyss, the so-called Pentagon's 'valley of death', which is the final resting place for technological prototypes that never make it to deployment because of outdated bureaucratic procedures and processes (p.17). The authors shed light on just how deep the valley is, leaving readers with two concerning questions for international security: can the US weld steel to silicon fast enough, and ethically enough? And will this innovation prevent global conflict… or ignite it? (p.205). With the world on edge, we may find out sooner than we would like.

Mustafa Bilal is a Research Assistant at the Centre for Aerospace & Security Studies (CASS), Islamabad. He has done his BS in International Relations from the National Defence University (NDU), Islamabad. His research interests include technopolitics, astropolitics, military aviation and warfare. Email: <bilal.mustafa@casstt.com>.

Journal of Aerospace & Security Studies
2025 | Volume IV | pp.104-106



Richard Baldwin, *The Great Trade Hack: How Trump's Trade War Fails and the World Moves On* (Paris and London: CEPR Press, 2025).

Reviewed by Zahra Niazi

At a time when the United States' tariff policies dominate global economic discourse, Richard Baldwin's *The Great Trade Hack: How Trump's Trade War Fails and the World Moves On* offers a timely and incisive analysis of these policies and their consequences. A distinguished economist and professor at the International Institute for Management Development (IMD) Business School, Baldwin argues that US President Donals Trump's tariff-driven 'Great Trade Hack' is not a strategic economic policy but a grievance-fuelled assault on the global trade system, rooted in a myth of American victimhood (pp. 5-13) – a concept unfamiliar to many.

Baldwin suggests that Washington's protectionist stance, driven by the 'Grievance Doctrine', seeks to frame the US not as a waning empire but as a powerful nation wronged by a biased global trade system (pp. 5-13). According to this grievance-driven view, the US globalist elite created a system that included institutions like the World Trade Organization (WTO), and trade agreements such as the North American Free Trade Agreement (NAFTA), enabling foreign competitors to exploit the US, with the burden falling on its middle class. Foreign companies restricted market access, manipulated exchange rates to undermine the country's export sales, and stole intellectual property to gain a competitive advantage.

The author, however, contends that while protectionism may project an image of decisive policymaking, the tariffs imposed under President Trump will be ineffective in addressing the challenges faced by the middle class (p. 56). While these measures may offer some benefits to workers in goods-producing sectors, fewer than 10 percent of middle-class Americans are employed in such industries. Tariffs do not affect the service sectors where the vast majority of workers – nurses, teachers, office staff, retail managers, information technology (IT) professionals, and restaurant staff – are employed. According to Baldwin, US protectionism prevails not because tariffs work economically but because they succeed politically (p. 32).

Moreover, the author contends that while President Trump rightly recognises the urgent need for reindustrialisation, especially in strategically critical sectors, relying on

tariffs alone is insufficient to achieve this objective (pp. 33-46). Tariffs alone cannot resolve underlying macroeconomic imbalances, as they do not increase national savings or reduce excessive consumption and investment. While recessions may temporarily narrow trade deficits by suppressing demand, such adjustments are typically painful and short-lived. Moreover, tariffs do not substitute for a coherent industrial strategy: they neither coordinate private investment nor support workforce development or the creation of infrastructure and innovation ecosystems. Historical evidence shows that import substitution, when pursued without such strategic planning, often leads to economic stagnation rather than genuine industrial renewal. The US trade deficit stems from a fundamental macroeconomic imbalance: the nation consumes more than it produces.

The author further emphasises that Trump's tariffs have triggered a gradual yet significant change in how the global trade system works (p. 77). The US, once the principal architect and leader of the global financial system, has become merely one among many influential players. For the first time, the US broke major WTO rules (trade without borders) purposefully and forcefully. This shift was epitomised by the April 2018 tariffs on steel and aluminum, imposed under dubious 'national security' grounds.

The rules-based trading system faces major threats in the absence of a clear global leader at the helm. Its survival now depends on collective action with nations forming informal, flexible coalitions to respond as needed. Examples such as the European Union's Multi-Party Interim Appeal Arrangement addressing the WTO appellate body's paralysis or Japan's rescue of the Trans-Pacific Partnership shows that determined coalitions can help provide stability to the system. Baldwin underscores that although the US accounts for only about 15 per cent of global trade, the remaining 85 per cent, comprising other nations, can uphold the rules-based trading system simply by continuing to abide by its principles (p. 86).

The Great Trade Hack is among the earliest to examine US protectionism after the unfolding of tariff policies under a second Trump Administration. Baldwin approach of looking at this issue through the Grievance Doctrine offers a perspective that is original, distinctive, and thought-provoking. However, the reader is occasionally left seeking deeper explanations. If these protectionist policies are rooted in this doctrine and persist due to political success, why do many Americans oppose them? Recent polls clearly indicate that a majority disapprove. After all, free trade policies have benefited the US middle class in numerous ways, e.g., by enabling access to a broader range of goods at lower prices, boosting real wages, and increasing the purchasing power of households. On the other hand, studies have found that US import tariffs have led to a statistically significant increase in consumer good prices. According to Paul Krugman, a renowned American New Keynesian economist, it is unrealistic to expect US businesses not to pass the costs of tariffs on to the consumers through price increases. Moreover, if these tariffs are an offshoot of the Grievance Doctrine,

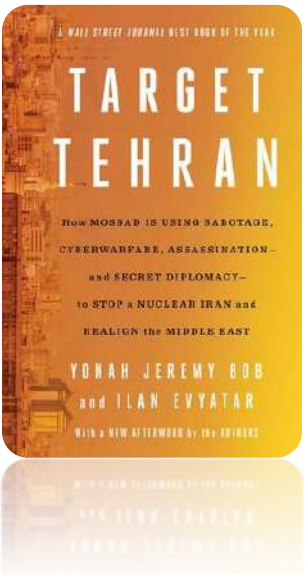
their temporary nature remains unexplained. Addressing such contradictions by including more supporting evidence, for instance, key speeches by President Trump or first-hand public opinion, would have strengthened Baldwin's argument and made his analysis more persuasive.

The strength of Baldwin's analysis lies in his clear and pragmatic proposal for moving forward, reflecting both urgency and cautious optimism. He calls for adaptation, urging global leaders to protect multilateralism by respecting established rules, adopting the path of negotiation, choosing patience over provocation, and fostering collaborative liberalism in an era where hegemonic liberalism appears to be over (pp. 96-7).

The Great Trade Hack is a vital read for policymakers, scholars, and citizens alike, particularly those interested in alternative explanations beyond mainstream interpretations. However, adherents of the notion that free trade benefits domestic consumers may find Baldwin's central argument unconvincing. Deeper and more nuanced analysis could strengthen the discussion by addressing these contradictions with additional supporting evidence.

Zahra Niazi is a Research Associate at the Centre for Aerospace & Security Studies (CASS), Islamabad, Pakistan. Her research interests span Sustainable Development, Peace and Development, and Development Economics. She has contributed to high-impact journals, including in the Environment, Development and Sustainability. She holds a Master's degree in Development Studies, with a specialisation in Peace, Conflict, and Development, from the National University of Sciences and Technology (NUST), Pakistan.
Email: <niazi.zahra@casstt.com>.

Journal of Aerospace & Security Studies
2025 | Volume IV | pp. 107-108



Ilan Evyatar and Yonah Jeremy Bob, *Target Tehran* (New York: Simon & Schuster, 2023).

Reviewed by Umaima Ali

The four essential elements of Mossad's strategy are: leadership assassinations, intelligence operations, cyber warfare, and physical attacks. *Target Tehran* provides an account of how this Mossad strategy has evolved. Ilan Evyatar and Yonah Jeremy Bob, veteran Israeli journalists with reliable sources in Israel's security establishment, have authored the book. This detailed study explores how Mossad shifted from intelligence gathering to operational warfare. Yet, after years of cyberattacks, assassinations, and covert missions, Israel maintained that Iran's nuclear programme was still advancing, a claim that renders the efficacy of those efforts open to question.

Due to mounting Israeli insecurity over Iran's nuclear ambitions, Mossad chief David Barnea and Prime Minister Naftali Bennett adopted a Cold War-style strategy of 'death by a thousand cuts,' intensifying covert operations that included cyberattacks, drone strikes, and intelligence-led sabotage. Ironically, even as Iran agreed to curb its military nuclear enrichment efforts under the 2015 Joint Comprehensive Plan of Action (JCPOA), continuing only its civilian programme under international monitoring, Israel's sense of threat deepened. Rather than being reassured by the agreement, Israeli leadership became more alarmed, leading to concerted efforts to pressure the United States (US) into withdrawing from the JCPOA. This climate of heightened insecurity culminated under Mossad Chief Yossi Cohen and Prime Minister Benjamin Netanyahu in one of the most audacious intelligence operations in recent history: the extraction of Iran's secret nuclear archive from a warehouse in Tehran.

The authors detail Mossad's intelligence operation carried out in 2018 to steal Iran's nuclear documents. Mossad agents entered Tehran and stole physical archives from a heavily guarded facility by using advanced techniques, including cyber-warfare and blowtorches, to open safes containing the sensitive material. For nearly six-plus hours, Mossad agents worked inside the facility, loaded the data onto trucks and smuggled it out of Tehran without being detected. This was a true espionage heist not a mere thumb drive extraction, but a daring operation that stunned even seasoned intelligence observers. The success of the mission reinforced the global perception that Iran was covertly enriching uranium for military purposes. Capitalising on the momentum and narrative shift, the Israeli leadership effectively influenced then-

President Donald Trump to withdraw the US from the JCPOA, unravelling a key diplomatic agreement.

But Mossad's influence extends beyond its operations within Iran. The book also outlines a broader regional strategy, which includes using neighbouring countries to gain access to intelligence. The Abraham Accords mark a significant shift in Middle Eastern alliances and represent the most substantial challenge to Iran's regional aspirations to date. Here, the authors also explore Mossad's global strategy, which includes deep collaboration with Western intelligence agencies such as the CIA.

In the end, the authors present a hypothetical scenario of a full-scale Israeli military strike on Iran's nuclear infrastructure. It is a carefully planned, multi-wave attack that includes stealth jets, bunker-busting bombs, cyberwarfare, and drone swarms. According to the authors, 'the destruction of dozens of Iranian nuclear sites, the casualties, the revenge attacks—for now, all of this is an imagined scenario'; however, the twelve-day June 2025 Iran-Israel war has brought this scenario closer to reality. Although the actual events did not fully align with what the authors presented, particularly Netanyahu's anticipated declaration, 'This morning, we removed an existential threat to the state of Israel,' the conflict largely echoed the hypothetical strategy outlined in the book.

The authors conclude that Israel is unwavering in its resolve, with Mossad promising that Iran will never acquire nuclear weapons. This last pledge sums up the basic contention of the book: Israel's most valuable weapons in an unsolved existential battle continue to be clandestine intelligence activities.

Target Tehran combines geopolitical analysis with journalistic reporting. The authors situate clandestine activities within the broader context of larger geopolitical goals, presenting them in vivid, dramatic detail. The book's chronological arrangement guarantees narrative clarity, but the data of operations conducted cannot be verified. Moreover, the authors primarily ignore the moral challenges of sabotage and targeted assassinations and only highlight the existential stakes Israel sees in the Iran conflict for an audience concerned with realpolitik and national security. It would also be naïve to assume that the book and its narrative are an independent work and have no involvement of the Israeli establishment. Mossad's promise that Iran will never get a nuclear weapon is a policy statement rather than mere rhetoric. The book serves as a reminder that intelligence services, not armies or diplomats, are often the first and last lines of defence in today's complex geopolitical landscape.

Umaima Ali's research interests include techno-politics, with a focus on the aerospace industry. Her current work explores the impact of privatisation on geopolitics and warfare. She holds an MPhil degree in Defence and Strategic Studies from the Quaid-i-Azam University, Pakistan. Email: <umaimaali128@gmail.com>.

Journal of Aerospace & Security Studies
2025 | Volume IV | pp. 109-111

John Antal, *Next War: Reimagining How We Fight* (Havertown, PA: Casemate Publishers, 2023).

Reviewed by Shaheer Ahmad

'The only thing harder than getting a new idea into the military mind is to get an old one out.' Captain Basil H. Liddell Hart's ageless maxim is relevant in the contemporary milieu where orthodox military minds are hitched to antiquated philosophies of war. *Next War: Reimagining How We Fight,* by veteran Colonel John Antal, dispels this notion by offering a cursory glance at the changing dynamics of warfare. Drawing on the analysis of contemporary conflicts—the Nagorno-Karabakh conflict, the Israel-Hamas War, and the Russia-Ukraine War—Antal's argument pivots around the central theme of how to survive and prevail on the contemporary battlefield. He argues that Multi-Domain Operations (MDO) are key to influencing combat operations in these conflicts. It is therefore crucial to reimagine conventional warfighting patterns, rather than being infatuated with outdated operational ideas.

In his 16-chapter treatise, Antal sketches 13 tactical engagement accounts from the American Revolution to the ongoing Russia-Ukraine War. He identifies nine disrupters that are catalysing a shift in modern warfare. While discussing ongoing conflicts, Antal points out how advancements in modern sensor and network technologies have made the battlefield more transparent where nothing can go undetected (p.43). Based on these assumptions, he emphasises the role of robust network systems and precision strikes in future warfare.

The author highlights the exponential increase in the tempo of war due to rapid advancements in AI and quantum realms, which impedes the adversary's chance of exploiting battlefield advantages (pp. 113-115). For this, he has cited useful examples from the Nagorno-Karabakh conflict where Azerbaijani forces swiftly defused Armenia's terrain advantage by employing the playbook of mobilising first, striking first, achieving air dominance, and subsequently deploying precision strikes and loitering munitions. Drawing on this illustration, Antal warns the US policymakers that China could follow this pattern while pursuing its mission to retake Taiwan (pp. 324-327).

Furthermore, Antal illustrates the use of drones in the Nagorno-Karabakh conflict and the Russia-Ukraine War. He describes how drones, particularly loitering munitions, are

tactically handicapping legacy battle systems. With breakneck speed and long endurance, drones are capable of moving with agility and staying airborne for extended periods. This provides the combatant a pivotal edge in situational awareness and hit multiple target vectors simultaneously. In the chapter *The Super Swarm,* Antal intermingles military fiction with a real-time fight between Russia and Ukraine. He documents the helplessness of Russia's Black Sea fleet, particularly sinking of the flagship vessel *Moskva* at the hands of miniature drone swarms (pp. 157-171).

In the book's second section, the author emphasises the transcendence of communication to execute joint operations and conduct cross-domain manoeuvres. Depriving the enemy's communication channels can diminish its capability to move and strike effectively. Antal cites Russia's Distributed Denial of Service (DDOS) attacks on Ukraine's Internet Service Provider Triolan, culminating in an effective takedown of broadband services. Even with this preliminary success, Ukraine's resilience remains intact. Here, the author cites the example of Elon Musk's next-generation satellite grid 'Starlink', which has enabled Kyiv to target Russia's high-value assets (pp. 222-224).

However, the most edifying part of the book is the discussion on the vulnerability of command posts in high-tech conflicts. Antal states that crippling command and control (C2) is the crux of modern warfare. This makes the battalion, brigade, and division level command posts a priority target on the enemy's 'to-do list.' To avoid being caught as a sitting duck, commanders must adopt new tactics, techniques, and procedures (TTP) to guard these posts from the enemy's high-end capabilities such as drones and loitering munitions. Here, Antal proposes 18 rules that he believes are critical to the survivability of command posts in contemporary and future conflicts (pp. 283-296).

Antal's ability to capture the nuances of complex concepts and operational frameworks augments the book's analytical tone. What makes the work stand out is its clarion impression, enabling a layman to grasp the key disrupters that could alter the risk calculus on the modern battlefield. Most importantly, the author proposes a shock and awe-style framework by merging all the key disrupters to inflict operational and organisational paralysis on adversary forces. In other words, Antal's playbook aims to achieve strategic surprise by rendering the adversary powerless through the scope and magnitude of one's actions.

On the other hand, there are a minefield of deficiencies that impact the overall narrative of the book. While presenting a blueprint for future warfare, there is no mention of competing arguments that reinforce the potency of traditional modes of war. The ongoing Ukraine war has reinforced the return of the war of attrition, requiring the deployment of superior resources by both sides. Prolonged campaigns, trench warfare, and mounted assaults on fortified defences have resulted in substantial human toll on both sides. This depicts the shortcomings of the role of technology in

minimising the risk to human lives. Moreover, since the book came out in 2023, it misses the fusion of human intelligence with high-tech solutions, as demonstrated in Ukraine's 2025 'Operation Spider Web' and the Iran-Israel conflict, in evaluating the impacts of cutting-edge technologies. These areas may be included in a new edition. While advocating swift and decisive victories through high-tech solutions like in 'Operation Desert Storm' (p.81), Antal also overlooks that the premature conclusion of this conflict contributed to the necessity for another campaign, 'Operation Iraqi Freedom,' in 2003. Moreover, he described the 11-day Israel-Hamas conflict as a triumph of AI systems, which helped minimise Israeli casualties. However, the ongoing human casualties, death, and destruction in Gaza temper this prognosis. Another notable gap in Antal's analysis is his instinctive reaction to rapid technological advancements. The overemphasis on AI, unmanned systems, and other technologies undermines the potency of legacy firepower systems. According to a *Forbes* commentary on the Russia-Ukraine War, artillery remained the main source of battle damage, with Russia firing 10,000 rounds per day, followed by Ukraine firing 2,000 rounds per day. This contradicts conventional wisdom, which presents AI, unmanned systems, and other technologies as alternatives to traditional firepower systems.

Overall, Antal's research provides a gripping account of how any military should fight future wars. By discussing the role of disrupters and key technologies, he provides a well-argued thesis for defence and security professionals, practitioners, and scholars of military strategy. However, overemphasis on technologies, lack of engagement with competing perspectives, and oversimplification of key concepts undermine Antal's analysis of the changing character of warfare. Addressing these shortcomings in a subsequent volume would render the study more holistic on the future of warfare.

Shaheer Ahmad is a Research Assistant at the Centre for Aerospace & Security Studies (CASS), Islamabad, Pakistan.
Email: <ahmed.shaheer@casstt.com>.

ISSN 2790-7139
E-ISSN 2958-082X

CONTRIBUTION GUIDELINES

Journal of Aerospace & Security Studies

Research scholars/practitioners are invited to submit **original, unpublished manuscripts that are not under consideration for publication elsewhere** to the annual Journal of Aerospace & Security Studies (JASS).

Submission Criteria

- Articles should be between 5000-7000 words, inclusive of an abstract of 150-200 words, 5-6 key words, and footnotes.
- Reviews of recent books by scholars of standing in aerospace, security, or related fields should be approximately 1000 words.
- *Citation Format:* Chicago Manual of Style 17th Edition (Full Note)

Scope of Journal

Primary Themes

- Aerospace and Emerging Technologies
- Security and Defence Strategies
- Cyber and Space Security

Secondary Themes

- International Relations
- Political Economy

Review Process

1. Only original and unpublished papers are accepted for consideration.
2. All submissions undergo initial Desk Review, where they are screened using a similarity detection software. Referenced/cited content should not exceed 19% of the paper. The Journal has zero tolerance for plagiarism.
3. Submissions meeting the journal's scope and quality criteria will undergo a minimum of two double-blind peer reviews. During this stage, articles may not be approved for publication by the referees. However, if they are found suitable for the Journal, reviewers may recommend either major or minor changes in the manuscript. The revision process might comprise multiple rounds. Peer review timelines vary depending on reviewer availability, area expertise and responsiveness.

Submission Procedure

JASS does not have submission, publication or Article Processing Charges (APCs). It offers no waiver support. Author(s) are required to email soft copies in MS Word format, along with their 30-word introduction, complete contact details, and electronically signed Authorship, Conflict of Interest & Originality Declaration form (downloadable from website).

Deadline:

Rolling Submissions. End of February & End of August.

Authors of published articles are given a modest honorarium.

Submission Email: **jass.journal@casstt.com**

Note: : CASS Islamabad holds the right to reject a submission at any stage from being published.

Journal of **Aerospace & Security Studies (JASS)**

The Journal of Aerospace & Security Studies (JASS) is an annual, peer-reviewed scholarly publication advancing strategic thinking at the nexus of technology, security, and policy. As the flagship publication project of the Centre for Aerospace & Security Studies (CASS) Islamabad, JASS delivers a high-impact platform for rigorous, future-facing research and follows a robust double-blind peer review policy. Its primary focus spans aerospace and emerging technologies, security and defence strategies, and cyber and space security, while also engaging critically with international relations and political economy. The Journal is published in both print and digital formats (ISSN 2790-7139; eISSN 2958-082X) once a year and aims to shape informed debate, influence policy discourse, and set the benchmark for innovation-led AeroSec scholarship.

Vision

To publish high quality, original and innovative research that showcases CASS' work as well as encourages scholars to explore aerospace and security issues from a multidisciplinary, policy-driven lens.

Aim

To become a leading voice from Pakistan on aerospace and security issues.

Scope

Primary Themes

- Aerospace and Emerging Technologies
- Security and Defence Strategies
- Cyber and Space Security

Secondary Themes

- International Relations
- Political Economy

CENTRE FOR AEROSPACE & SECURITY STUDIES, ISLAMABAD
Independence. Analytical Rigour. Foresight

Old Airport Road, Islamabad, Pakistan
+92 051 5405011
www.casstt.com
cass.thinker@casstt.com

Centre for Aerospace & Security Studies
cassthinkers
@CassThinkers
cass.thinkers