

Strategic Foresight in NATO and Strategic Commands - An Analysis of Methodologies and Institutional Architecture

Original article

Received: 2025-07-25

Revised: 2025-08-01

Accepted: 2025-08-25

Final review: 2025-07-27

Peer review: 2025-08-20

Double blind

Keywords:

NATO, strategic forecasting, security environment, scenario planning, defence planning.

This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 License

Andrzej Jacucha¹, A-F

[ORCID !\[\]\(1f56542a42e2413e44a2b2023033aa2e_img.jpg\) 0000-0003-1013-6107](https://orcid.org/0000-0003-1013-6107)

A – Research concept and design, B – Collection and/or assembly of data, C – Data analysis and interpretation, D – Writing the article, E – Critical revision of the article, F – Final approval of article

¹ Department of the Security, Logistics and Management, Military University of Technology, Poland

Abstract

Objectives: This article examines NATO's approach to strategic forecasting within an increasingly complex security environment characterized by great power competition, technological transformation, and multidimensional threats. The research aims to assess NATO's methodological frameworks, institutional architecture, and temporal dimensions of strategic foresight capabilities.

Results: The analysis reveals a multi-layered institutional architecture spanning from NATO Headquarters' specialized units to Allied Command Operations (ACO) and Allied Command Transformation (ACT), each contributing distinct analytical capabilities. The 2023 Strategic Foresight Analysis identified seven key drivers and developed four generic scenarios ranging from "Fragmenting World" to "Pervasive Competition," utilizing input from eight hundred participants and AI-assisted horizon scanning tools.

Conclusions: NATO's contemporary approach to strategic foresight represents a system that emphasizes organizational adaptability over predictive precision. The Alliance has successfully developed a distributed institutional framework that leverages diverse analytical perspectives while mitigating organizational blind spots through temporal differentiation and capability-based planning methodologies. Rather than pursuing perfect prediction, NATO's strategic foresight focuses on building adaptive capacity to accommodate multiple potential futures across an increasingly complex security environment where military and civilian spheres are increasingly blurred.

Introduction

The North Atlantic Treaty Organization (NATO) operates within an increasingly complex and unpredictable security environment characterized by great power competition, technological transformation, and multidimensional threats. In this context, strategic forecasting has emerged as a critical capability for anticipating emerging challenges and informing adaptive response mechanisms. It is important to emphasise that NATO's strategic foresight, particularly its long-term approach, is not about predicting the future, but rather about preparing for a range of potential scenarios. It strengthens resilience and enables long-term planning in the face of uncertainty. While resilience requires both military capability and civilian preparedness, it is important to note that these two elements are not independent of each other.

This analysis examines NATO's approach to strategic forecasting, with particular emphasis on its methodological frameworks, institutional architecture, and temporal dimensions. Through assessment of NATO's forecasting practices, this research provides insights into how multinational security organizations manage uncertainty and prepare for complex future contingencies.

NATO's strategic forecasting activities are fundamentally oriented by the Alliance's 2022 Strategic Concept, adopted at the Madrid Summit. This document explicitly identifies three core tasks (1) collective defence, (2) crisis prevention and management, and (3) cooperative security that organize and prioritize NATO's forecasting efforts. The 2022 Strategic Concept's emphasis on 360-degree security and anticipatory threat identification has directly influenced the institutional architecture and methodological approaches employed in NATO's forecasting ecosystem, particularly through its identification of Russia as "the most significant and direct threat to Allies' security" and its recognition of China's growing influence as presenting systemic challenges to Euro-Atlantic security (NATO 2022 Strategic Concept, 2022).

1. Institutional Architecture for Strategic Forecasting

NATO's strategic foresight architecture includes a network of institutional actors, each contributing distinct analytical capabilities and temporal perspectives to the Alliance's understanding of future security challenges (Gaub, 2024). At the apex of NATO's forecasting architecture is the North Atlantic Council (NAC), which provides political guidance and sets

strategic direction for forecasting activities. However, the operational responsibility for strategic forecasting is distributed across specialized entities.

The NATO HQ serves as the central hub for strategic foresight activities, with specialized units that provide comprehensive analytical support to Alliance decision-makers. These include the Policy Planning Unit at the Office of the Secretary General, which focuses on immediate policy considerations (International Staff, 2024). The Joint Intelligence Centre occupies a central position, indicating its role in current intelligence assessment and coordination across the temporal spectrum. The Awareness and Warning Branch within the Intelligence Production Unit plays a crucial role in providing timely intelligence to NATO leadership, particularly concerning strategic warning and potential threats. It is complemented by the Net Assessment Section at the Defence Policy and Planning Division, which conducts comparative strategic analysis of military capabilities and trends (NATO Organization, 2025). The SITCEN (Situation Centre) and Situational Awareness Integration Team are positioned in the medium-term horizon, reflecting their responsibility for monitoring and integrating situational developments that extend beyond immediate operational concerns (International Military Staff, 2024). Within NATO's Strategic Commands, the architecture divides between and Allied Command Operations (ACO) and Allied Command Transformation (ACT).

Allied Command Operations (ACO), headquartered at Supreme Headquarters Allied Powers Europe (SHAPE) in Mons, Belgium, complements ACT's long-term transformation focus with more operationally oriented forecasting. ACO's conducts comprehensive threat assessments and strategic warning functions that directly inform current operations and near-term contingency planning through its formalized Comprehensive Preparation of the Operational Environment (CPOE) methodology, which utilizes the PMESII - political, military, economic, social, infrastructure, and information, model for the CPOE. It may also consider the assessments of non-military and non-governmental organizations, the joint intelligence preparation of the operating environment (JIPOE) and the Joint Intelligence Estimate support (NATO Standard AJP-5 Allied Joint Doctrine for the Planning of Operations, 2019). Under ACO, SHAPE J5 (Allied Command Operations Overview, An Introduction to the Organisation and Responsibilities) PSA (Policy and Strategy Analysis) conducts strategic planning and policy analysis for military operations, while the NATO Strategic Direction-South Hub - provides regional strategic analysis and coordination for security challenges in North Africa, the Middle East, the Sahel, Sub-Saharan and adjacent areas.

Allied Command Transformation (ACT), headquartered in Norfolk, Virginia, serves as NATO's primary futures-oriented strategic command. Established during the 2002 Prague Summit as part of NATO's command structure reorganization, ACT was charged with driving the alliance's military transformation through anticipatory analysis of future security environments. ACT maintains primary responsibility for long-range forecasting and futures analysis, employing dedicated teams of military analysts, civilian researchers, and contracted subject matter and “a large network of industry, academia, military and civilian expertise in nations, in NATO agencies and NATO Centres of Excellence” (Allied Command Transformation, p. 1, 2024). It focuses on military transformation and future capabilities development, ensuring that NATO's strategic foresight capabilities evolve to meet emerging operational requirements.

Unlike ACT's transformation-focused forecasting, ACO's predictive analysis emphasizes operational applicability and tactical relevance. This difference manifests in contrasting methodological approaches, with ACO employing more intelligence-driven frameworks calibrated toward concrete warning indicators and shorter time horizons.

The complementary nature of ACO and ACT forecasting creates an essential balance between operational responsiveness and long-term adaptation within NATO's institutional architecture.

NATO's Science and Technology Organization (STO) provides specialized technological forecasting capabilities through its network of seven technical panels and three collaborative programs. The STO plays a particularly key role in assessing emerging and disruptive technologies with potential military applications. Its Technology Trends program systematically evaluates technological developments across domains ranging from artificial intelligence to biotechnology, assessing their potential impact on alliance security interests, and ensuring that emerging innovations are properly integrated into strategic planning considerations across all NATO structures (NATO Science & Technology Organization, 2023).

In 2021, NATO Defence Ministers endorsed “Foster and Protect: NATO’s Coherent Implementation Strategy on Emerging and Disruptive Technologies (EDTs)”. This is NATO’s overarching strategy to guide its relationship to EDTs, which focused on nine priority technology areas: artificial intelligence (AI), autonomous systems, quantum technologies, biotechnology and human enhancement technologies, space, hypersonic systems, novel materials and manufacturing, energy and propulsion, and next-generation communications networks (Emerging and disruptive technologies, 2025). Following the 2021 Brussels Summit, NATO's technological forecasting capabilities were substantially enhanced through the

establishment of the NATO Innovation Fund (investing €1 billion in dual-use technologies) (NATO Innovation Fund, 2025) and the Defence Innovation Accelerator for the North Atlantic (DIANA), which created a structured network of technology test centres and accelerator sites across the Alliance (Defence Innovation Accelerator for the North Atlantic, 2025).

The NATO Defence College (NDC) in Rome represents academic component of NATO's strategic foresight, which functions as another critical node in NATO's forecasting architecture, providing academic analyses that maintain intellectual distance from immediate operational concerns compared to ACO. The NDC's strategic foresight role is characterized by its temporal orientation, with the Research Division producing research that looks two to five years ahead. This extended timeframe allows the NDC to focus on strategic-level analysis rather than tactical considerations, enabling it to explore questions about the evolution of international security dynamics (Gaub, 2024).

This architecture, with the main components presented in Table 1, ensures that NATO's strategic foresight capabilities cover immediate operational requirements, long-term strategic considerations, and technological innovation. This creates a comprehensive analytical framework that supports the preparedness of the Alliance across multiple time horizons and institutional perspectives.

Table 1. The Institutional Architecture of Strategic Foresight in NATO.

Lead Entity	Key function	Timeframe	Primary Focus
Allied Command Transformation (ACT)	Long-term transformational forecasting/foresight	-20+ years	Drivers and trends analysis, alternative futures.
Allied Command Operations (ACO)	Operational assessment	-5 lat	Intelligence analysis, indicators & warnings.
NATO HQ	Direct support to leadership, strategic directions	Different	Political-military-economic-social dimension.
NATO Defence College (NDC)	Academic analysis of structural trends	Medium to long term	Intellectual independence, conceptual exploration.
Science & Technology Organization (STO)	Emerging or disruptive technologies (EDT)	Different	EDT analysis, TRL Technology Readiness Level (TRL) assessment.

2. Methodological Frameworks

NATO employs multiple methodological frameworks for strategic forecasting, each calibrated to different temporal horizons and analytical objectives. Three frameworks have proven particularly significant in NATO's approach to strategic forecasting: the Strategic Foresight Analysis (SFA), the Framework for Future Alliance Operations (FFAO), and the Multiple Futures Project (MFP).

The Strategic Foresight Analysis represents NATO's most comprehensive and methodologically sophisticated long-range forecasting effort. Typically covering a 20-year horizon, the SFA employs a structured analytical process to identify trends, implications, and strategic challenges across political, human, technological, economic, and environmental domains. The SFA methodology begins with extensive environmental scanning across what NATO terms the "PMESII" domains—Political, Military, Economic, Social, Information, and Infrastructure. This scanning process draws upon intelligence assessments, open-source analysis, academic research, and inputs from both member and partner nations (Strategic Foresight Analysis 2023, 2024).

The SFA methodology is notable for its emphasis on trend interaction analysis rather than merely cataloguing isolated developments. It identifies drivers, political, human, technological, economic, and environmental trends, along with implications for the alliance. Rather than attempting to converge on a single most likely future, the SFA explicitly acknowledges fundamental uncertainty and focuses on identifying strategic challenges and opportunities that might emerge across multiple potential futures. This approach aligns with theoretical perspectives in forecasting literature that emphasize sense-making under conditions of deep uncertainty rather than probability-based prediction (Wilkinson et al., 2013).

The 2023 SFA presents the NATO Strategic Foresight to 2043 (Strategic Foresight Analysis 2023, 2024). This was developed by eight hundred participants in a series of workshops. The methodology involved scenario development and the use of artificial intelligence-assisted horizon scanning tools, as well as extensive dialogue with allied and partner countries, and external stakeholders in academia and industry.

The study identified and assessed drivers and trends, as well as their implications, which are presented in Figure 1.

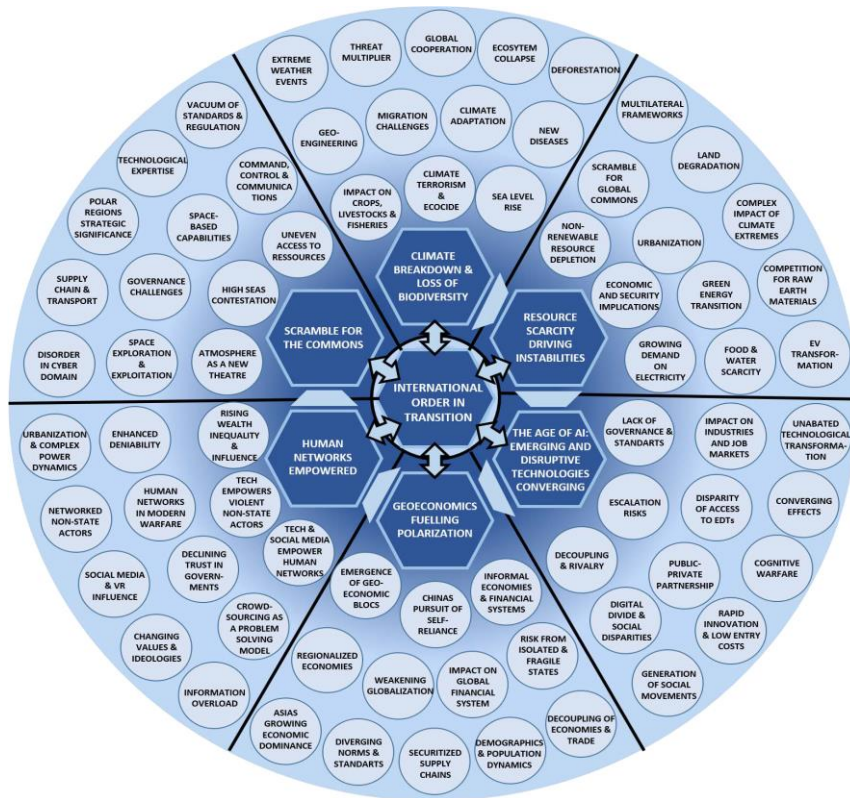


Figure 1. Trend radar for the Strategic Foresight Analysis
Source: (Strategic Foresight Analysis 2023, Figure 2, 2024)

The 2023 SFA methodology has been based on the Framework Foresight Model (as presented in Figure 2), which has been adapted for NATO's objectives

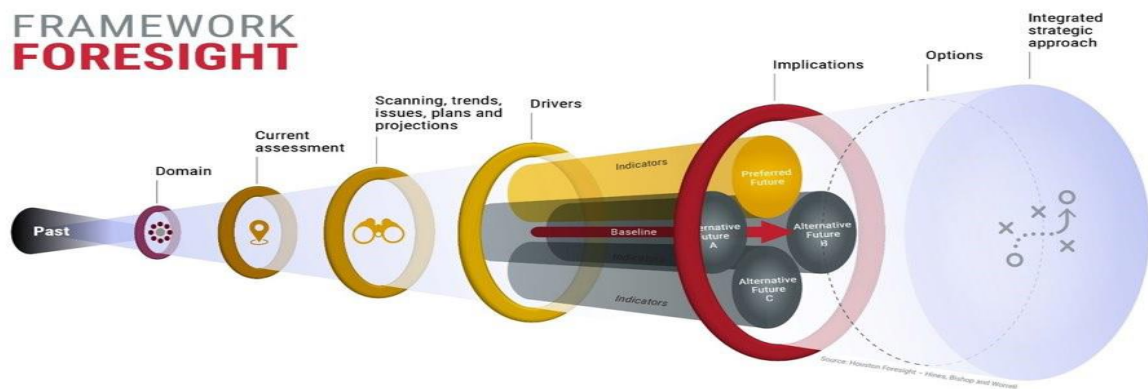


Figure 2. Framework Foresight Model
Source: (Strategic Foresight Analysis 2023, Figure 3, 2024).

The 2023 Strategic Foresight Analysis (SFA) used a framework of seven drivers to develop four generic scenarios (see Figure 1). These scenarios were designed to simplify matters while encouraging collaborative strategic thinking about various combinations of disruption levels and international cooperation.

The scenarios presented in Figure 3 range from 'Fragmenting World' (low disruption and low cooperation), which extends the conditions of the current Strategic Concept 2022, to 'Pervasive Competition' (high disruption and low cooperation), where structural shocks occur amid continued strategic competition. The 'Global Cooperation' scenario (high disruption, high cooperation) envisages competitors shifting towards collaboration in response to major disruptions. However, this was deemed improbable considering the current Russian aggression and Chinese assertiveness. The 'Better angels of our nature' scenario (low disruption, high cooperation) was dismissed as unrealistic due to the inevitability of increasing disruption and the absence of any signs of improved competitor attitudes.

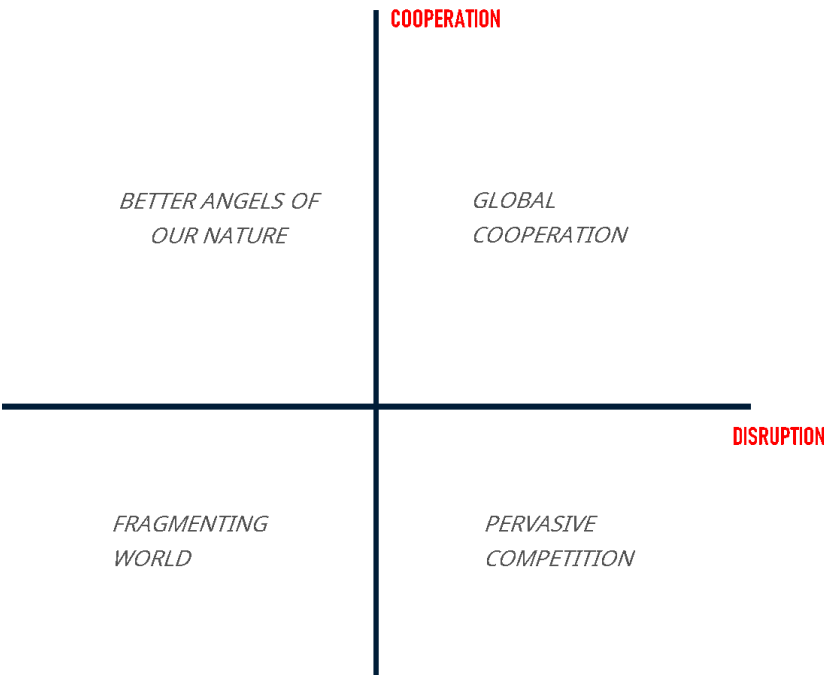


Figure 3. Four Worlds' generic future scenarios
Source: (Strategic Foresight Analysis 2023, Figure 24, 2024).

Building on the foundation provided by the SFA, the Framework for Future Alliance Operations (FFAO) translates broad geopolitical and technological trends into specific military implications. Where the SFA remains descriptive, the FFAO shifts toward more prescriptive analysis. The FFAO methodology centres on identifying what NATO terms "instability situations"—archetypal security challenges that might require alliance response within the forecasting timeframe. These instability situations serve as conceptual bridges between abstract trends and concrete military requirements (Framework for Future Alliance Operations, 2018). The FFAO process also develops "strategic military perspectives" that inform capability development priorities. These perspectives represent conceptual frameworks for understanding how military power might be employed in future operating environments. For instance, the 2018 FFAO articulated perspectives focusing on the changing character of conflict, asymmetric approaches, and the compression of operational levels. This methodology reflects NATO's recognition that strategic forecasting must generate actionable insights rather than merely abstract speculations about potential futures.

These methodological frameworks are supplemented by specialized analytical approaches focused on specific domains. For instance, NATO's technological forecasting employs structured technology assessment methodologies that evaluate potential military applications, readiness levels, and proliferation trajectories. These assessments employ standardized Technology Readiness Levels (TRLs) to create understanding of developmental maturity across diverse technological domains (Science & Technology Trends 2023-2043. Across the Physical, Biological, and Information Domains, Volume 2: Analysis, 2023).

The NATO STO has also developed specialised threat assessment methodologies that integrate intelligence from national services with open-source information. These methodologies use structured analytical techniques, such as Analysis of Competing Hypotheses (ACH), Key Assumption Checks and Devil's Advocacy, to mitigate cognitive biases and analytical pitfalls (Assessment and Communication of Uncertainty in Intelligence to Support Decision-Making, 2020).

3. Temporal Dimensions

NATO's strategic forecasting operates across multiple temporal horizons, each serving distinct planning functions and employing different methodological approaches. This temporal differentiation allows NATO to address immediate operational concerns while simultaneously preparing for longer-term structural transformations in the security environment.

In the short-term dimension (1-2 years), NATO's forecasting activities focus primarily on intelligence-driven operational assessments. These assessments aim to identify immediate threats and contingencies that might require alliance response within existing capability and force structure parameters. Short-term forecasting typically aligns with the annual cycles of NATO's Defence Planning Process (NDPP), providing intelligence support to operational planning and force generation activities (NATO Defence Planning Process, 2025).

Medium-term forecasting (3-7 years) shifts focus on capability development planning and force posture adjustments. This temporal horizon aligns with NATO's capability delivery timelines and defence programming cycles. Medium-term forecasting aims to identify priority areas for joint capability enhancement and project required changes to NATO's force structure and disposition before emerging threats fully materialize (NATO Architecture Framework, 2020).

Long-term forecasting (8-20 years) expands the analytical aperture to encompass potential structural changes in the security environment. This temporal horizon aligns with NATO's strategic concept development cycles and major capability transformation initiatives. Long-term forecasting aims to anticipate technological inflection points, demographic shifts, resource constraints, and other structural factors that might fundamentally alter strategic calculations. Long-term forecasting relies heavily on methodologies like Strategic Foresight Analysis, multiple futures approaches, and morphological analysis that can accommodate greater uncertainty and potential discontinuities. These approaches expressly acknowledge that linear projections may break down over extended timeframes and that the nature of security challenges—not merely their manifestations—may transform (Strategic Foresight Analysis 2023, 2024).

NATO's temporal differentiation in strategic forecasting reflects theoretical perspectives on uncertainty in forecasting literature. As temporal distance increases, NATO shifts from more probabilistic approaches toward possibilistic methodologies that emphasize robustness across multiple potential futures rather than optimization for a single most likely outcome. This shift acknowledges the diminishing returns of precision-oriented forecasting beyond certain temporal horizons and the increasing importance of adaptive capacity rather than predictive accuracy.

Conclusions - Contemporary Evolution and Challenges

NATO's approach to strategic forecasting/foresight has evolved significantly in response to transformations in the security environment. Four developments have proven particularly consequential for NATO's forecasting practices: the return of great power competition, technological acceleration, climate security concerns, and the growing emphasis on societal resilience.

The return of great power competition has shifted NATO's forecasting focus from the asymmetric and non-state threats that dominated post-Cold War thinking toward more classical concerns with peer competitor dynamics. This shift has necessitated greater attention to military balance assessments, escalation dynamics, and conventional deterrence calculations that had received less emphasis during NATO's counterterrorism and crisis management phases. Contemporary forecasting increasingly examines potential competitor strategies, military modernization trajectories, and grey zone activities below the threshold of armed conflict.

Technological acceleration has significantly impacted NATO's forecasting methodologies. The proliferation of disruptive technologies with potential military applications—from artificial intelligence and autonomous systems to hypersonic weapons and biotechnology—has created new forecasting challenges. These technologies evolve rapidly, diffuse widely, and interact in complex ways that resist linear projection. In response, NATO has developed more sophisticated technology assessment frameworks and increased interaction between technical specialists and strategic analysts within its forecasting architecture.

NATO increasingly recognizes climate change as a threat multiplier that can exacerbate existing security challenges and create new ones through mechanisms ranging from resource competition to displacement of vulnerable populations. NATO's climate security forecasting examines both direct operational impacts (such as changing Arctic access or extreme weather effects on military infrastructure) and indirect strategic implications (such as climate-induced instability in vulnerable regions).

Most significantly, resilience through civil preparedness considerations have expanded NATO's forecasting beyond traditional military parameters to encompass critical infrastructure protection, supply chain security, and societal cohesion (Jacuch, 2024). This expansion reflects NATO's recognition that contemporary security challenges increasingly target civilian systems and social dynamics rather than merely military capabilities. Resilience-oriented forecasting examines potential vulnerabilities in energy networks, transportation systems, digital

infrastructure, and other civilian domains, including resilience to disinformation that might be exploited through hybrid approaches (Jacuch, 2022).

These evolutions reflect NATO's adaptation to an increasingly complex security environment characterized by multi-domain competition, rapidly evolving technologies, and blurred boundaries between military and civilian spheres. However, they also create significant forecasting challenges that NATO continues to grapple with.

NATO's contemporary approach to strategic forecasting represents a sophisticated attempt to navigate fundamental uncertainty through methodological pluralism, temporal differentiation, and institutional distribution of forecasting responsibilities. Rather than pursuing the chimera of perfect prediction, NATO increasingly emphasizes building organizational adaptability through rigorous scenario development and capability-based planning methodologies that can accommodate multiple potential futures.

NATO's approach to strategic forecasting reflects both the requirements of a multinational security alliance and broader evolutions in forecasting methodology. Through its distributed institutional architecture, NATO leverages diverse analytical perspectives while mitigating the risk of organizational blind spots. Through its methodological pluralism, NATO balances quantitative and qualitative approaches, accommodating both probabilistic assessment of near-term developments and possibilistic exploration of longer-term structural transformations. Through its temporal differentiation, NATO addresses immediate operational concerns while simultaneously preparing for more fundamental changes in the security environment.

References

- Jacuch A., The blurred lines of peace and war — An analysis of information operations used by the Russian Federation in CEE, *Journal of Slavic Military Studies*, Routledge, 2022. <https://doi.org/10.1080/13518046.2022.2139071>
- Jacuch A., Defending Europe: Strengthening resilience through civil preparedness, *Politeja*, 21(6(93)), Jagiellonian University, 2024. <https://doi.org/10.12797/Politeja.21.2024.93.11>
- Wilkinson A., Kupers R., Mangalagiu D., How plausibility-based scenario practices are grappling with complexity to appreciate and address 21st century challenges, *Technological Forecasting and Social Change*, 80(4), 699–710, 2013. <https://doi.org/10.1016/j.techfore.2012.10.031>

Internet Sources

- Allied Command Transformation (2024) *NATO Website*. Available at: https://www.nato.int/cps/en/natohq/topics_52092.htm

Assessment and Communication of Uncertainty in Intelligence to Support Decision-Making, AC/323(SAS-114)TP/928, STO Technical Report TR-SAS-114 (2020). Available at: <https://apps.dtic.mil/sti/trecms/pdf/AD1183706.pdf>

Defence Innovation Accelerator for the North Atlantic (DIANA) (2025) NATO Website. Available at: https://www.nato.int/cps/en/natohq/topics_216199.htm

Emerging and Disruptive Technologies (2025) NATO Website. Available at: https://www.nato.int/cps/en/natohq/topics_184303.htm

Framework for Future Alliance Operations (2018) NATO Website. Available at: https://www.act.nato.int/wp-content/uploads/2023/06/180514_ffao18-txt.pdf

Gaub, F. (2024) *About Research Division*, NATO Defence College. Available at: <https://www.ndc.nato.int/research/about-research-division/> International Military Staff (2024) NATO Website. Available at: https://www.nato.int/cps/en/natohq/topics_64557.htm

International Staff (2024) NATO Website. Available at: https://www.nato.int/cps/en/natohq/topics_58110.htm

NATO Standard AJP-5 Allied Joint Doctrine for the Planning of Operations, Edition A Version 2 (2019). Available at: https://www.coemed.org/files/stanags/01_AJP/AJP-5_EDA_V2_E_2526.pdf

NATO 2022 Strategic Concept (2022) NATO Website. Available at: <https://www.nato.int/strategic-concept/>

NATO Architecture Framework, Version 4, Enclosure 1 AC/322-D(2018)0002-REV1 (2020) NATO Website. Available at: https://www.nato.int/nato_static_fl2014/assets/pdf/2021/1/pdf/NAFv4_2020.09.pdf

NATO Defence Planning Process (2025) NATO Website. Available at: https://www.nato.int/cps/en/natohq/topics_49202.htm

NATO Innovation Fund (2025) NIF Website. Available at: <https://www.nif.fund/about/>

NATO Organization (2025) NATO Website. Available at: <https://www.nato.int/cps/en/natohq/structure.htm>

NATO Science & Technology Organization (2023) NATO Science & Technology Organization Website. Available at: <https://www.sto.nato.int/Pages/organization.aspx>

Science & Technology Trends 2023–2043. Across the Physical, Biological, and Information Domains, Volume 2: Analysis (2023) NATO Science & Technology Organization Website. Available at: https://www.nato.int/nato_static_fl2014/assets/pdf/2023/3/pdf/stt23-vol2.pdf

SHAPE/ACO Digital Media (2022) *Allied Command Operations Overview, An Introduction to the Organisation and Responsibilities*. Available at: https://shape.nato.int/resources/3/website/shape_overview_21.pdf

Strategic Foresight Analysis 2023 (2024) Allied Command Transformation Website. Available at: https://www.act.nato.int/wp-content/uploads/2024/05/SFA2023_rev2.pdf