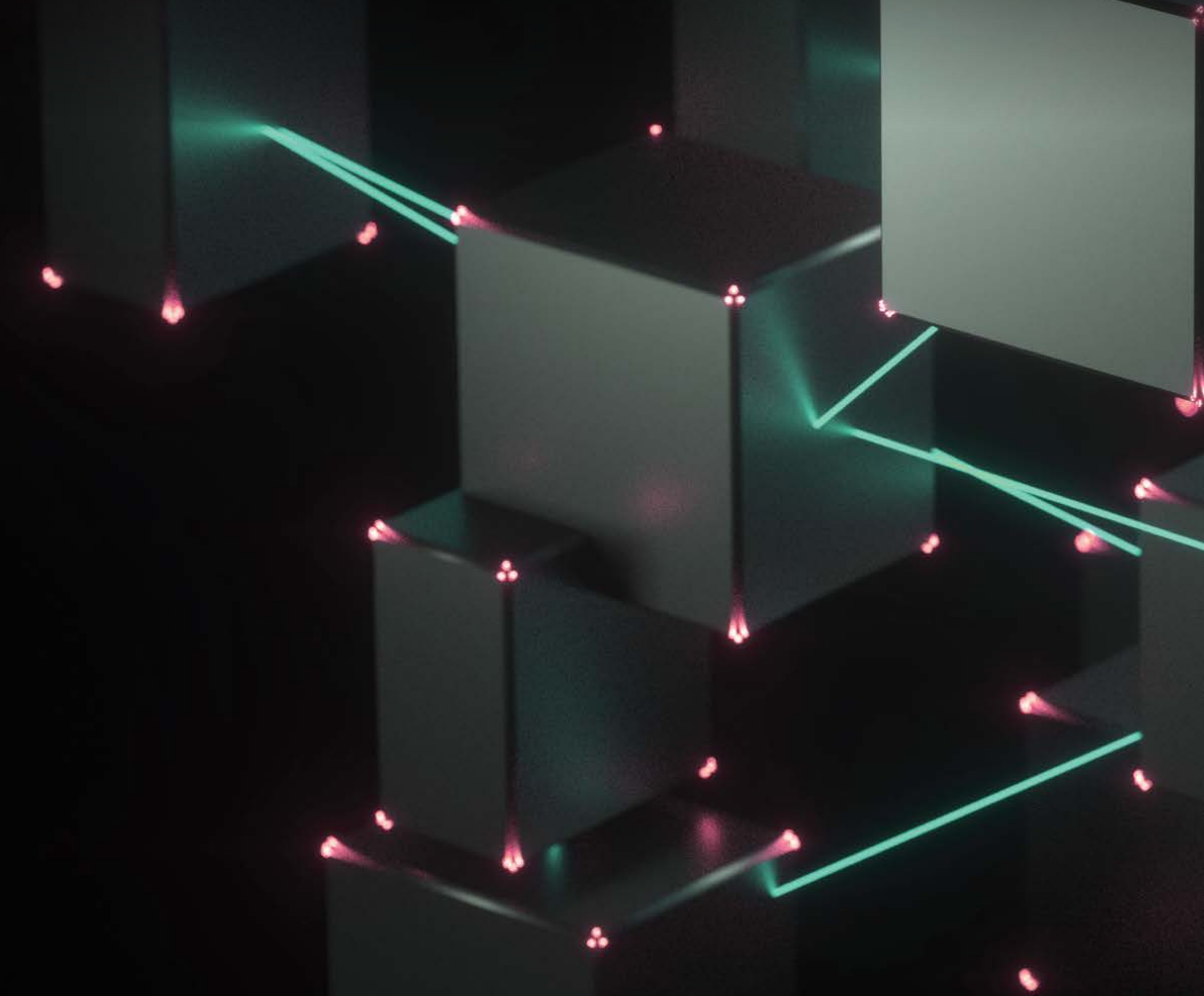
UNIVERSITY OF CAMBRIDGE

Bennett Institute for Public Policy Cambridge

AI & Geopolitics Project

Moving beyond competition: domain-specific approach for international AI framework

Aleksei Turobov
Diane Coyle
Verity Harding
AIxGEO



Navigation

Five-minute read
Read the **Executive summary** alongside Key messages from each section for a high-level overview of international AI policy framework and domain-specific cooperation opportunities.

15-minute read
Read the Executive summary, Introduction and Key messages from **Section 1 (International AI narratives)** and **Section 2 (Domain-specific AI policy framework)** with **Conclusion.**

Readers with an interest in international organisations' approaches
We recommend reading **Section 1 on International AI narratives,** covering perspectives from: United Nations, World Trade Organisation, OECD and NATO.

Readers with an interest in practical cooperation frameworks
We recommend reading **Section 2 on Domain-specific AI policy framework**, particularly:
Strategic complementarity and distributed resilience
Environmental policy & AI
Healthcare & AI
Education & AI
Agriculture & AI
Cybersecurity & AI

Readers with an interest in diplomatic engagement
We recommend reading **Section 2 on Domain-specific AI policy framework**, alongside the **Conclusion**.

Policymakers seeking immediate action items
We recommend focusing on:
Executive summary
Key Messages from each section
Case-based cooperation examples
Conclusion

Contents

Executive summary

As Artificial Intelligence (AI) transforms from an emerging technology into a defining force in international relations, policymakers face a critical choice: allow AI development to accelerate global fragmentation or create practical pathways for international cooperation.

This Policy Paper, drawing on a comprehensive analysis of 714 international policy documents from the United Nations (UN), World Trade Organization (WTO), Organisation for Economic Co-operation and Development (OECD) and North Atlantic Treaty Organization (NATO), demonstrates how specific domains of AI development offer immediate opportunities for transforming strategic competition into productive collaboration.

Key findings

1. Beyond competition

- The prevailing zero-sum narrative around AI development threatens both innovation and international stability
- Traditional policy approaches become increasingly inadequate as AI technology rapidly evolves and spreads
- Domain-specific cooperation offers practical pathways for immediate progress while respecting national interests

2. Institutional complementarity

Analysis across major international organisations (UN, NATO, WTO, OECD) demonstrates:

- Natural alignment rather than conflict in regulatory approaches
- Complementary frameworks for responsible innovation
- Ready mechanisms for practical implementation
- Opportunities for coordinated action

3. Priority domains

Five strategic areas emerge where cooperation delivers clear benefits while minimising security concerns:

- Agricultural development: addressing food security and development
- Educational technology: enhancing learning while respecting sovereignty
- Cybersecurity: converting shared vulnerabilities into collaboration frameworks
- Environmental monitoring: leveraging shared climate challenges
- Healthcare innovation: combining technical advancement with universal access

Our evidence-based approach offers policymakers concrete mechanisms for advancing both domestic innovation and growth and international stability. Rather than requiring comprehensive agreement on broad principles, domain-specific cooperation will enable progress through demonstrated practical achievements.

The evidence demonstrates three key pathways for immediate action:

1. **Institutional alignment**

- Leverage existing frameworks for rapid implementation
- Build on demonstrated successes in specific domains
- Create positive feedback loops for expanding cooperation

2. **Strategic benefits**

- Maintain autonomy in sensitive areas while advancing shared interests
- Scale successful approaches to more challenging domains

3. **Risk mitigation**

- Address security concerns through established frameworks
- Maintain technological competitiveness while enabling collaboration
- Balance innovation with necessary safeguards

The growing complexity of AI challenges transforms competition into cooperation, which is not only desirable but essential for international stability. As powerful AI models become accessible to non-state actors without significant infrastructure requirements, the technology's spread creates security challenges that transcend national boundaries. This fundamental shift in access demands sophisticated international cooperation frameworks.

Nations that combine technical expertise, balanced governance approaches, and diplomatic networks can serve as honest brokers, transforming theoretical opportunities into practical achievements. Through careful case selection and sophisticated diplomatic engagement, we can begin transforming AI from a source of international tension into a catalyst for productive cooperation.

The path forward lies not in choosing between competition and cooperation but in identifying and pursuing opportunities where collaboration clearly benefits all actors. Through careful case selection and sophisticated diplomatic engagement, we can transform AI from a source of international tension into a catalyst for productive cooperation. The growing complexity of AI challenges makes this transformation not just desirable but essential for maintaining international stability and prosperity.

Introduction

Key messages

- Current zero-sum AI narratives risk international stability
- Evidence shows there are opportunities for collaborative frameworks
- Domain-specific approach offers a practical path forward

In recent years, artificial intelligence (AI) has evolved from a promising technology into a critical element of global power dynamics, with the United States and China as primary contenders. Geopolitical competition is increasingly framed as an "AI Cold War," a term reflecting the perception of AI as a zero-sum game where one nation's progress inherently undermines the other's position. On top of this, all global actors and international organisations see AI as a vital component of national and international security. This challenge becomes particularly critical as AI capabilities spread beyond traditional power centres, creating security implications that transcend national boundaries and demand collaborative responses.

The international response to this challenge has evolved into a rich ecosystem of governance approaches, each contributing distinct yet potentially complementary frameworks. At the forefront of global policy coordination, the OECD has established its AI Observatory,[1] pioneering principles of accountability and transparency that now influence policy development across more than 70 countries. This work creates a foundation for evidence-based policymaking while facilitating international alignment on key governance principles.

Building on this foundation, UNESCO has advanced a human rights-centred approach through its 2021 Recommendation on AI Ethics, explicitly connecting AI governance to sustainable development and human welfare goals. This framework finds practical expression through the United Nations AI Advisory Body,[2] which balances innovation imperatives with security concerns and development priorities, positioning the UN system as a crucial mediator in managing global AI risks.

Similarly, the World Trade Organization emphasises AI's pivotal role in global trade and advocates for standardised policies that address its impact on customs and data. Meanwhile, NATO's AI strategy takes a security-focused approach, emphasising explainability, legality, and reliability to ensure safe AI adoption across allied defence systems with a commitment to technological advancement and defence integrity.

The European Union's (EU) AI Act (2024) is a pioneering regulatory model that categorises AI applications by risk levels, implementing rigorous standards for high-risk systems while banning harmful uses, such as social scoring. The EU's approach prioritises human rights and safety and aims to establish a global benchmark for responsible AI regulation that balances ethical considerations with economic growth.

Leading think tanks and research institutions have significantly advanced the practical understanding of AI governance challenges. The Centre for the Governance of AI's emphasis on Global South inclusion and the Center for AI and Digital Policy's work on universal standards demonstrate how equitable participation strengthens governance effectiveness. The Carnegie Endowment's "regime complex" framework and Chatham House's human rights-centred analysis provide complementary approaches for addressing AI's varied security and ethical challenges. RAND and Royal United Services Institute (RUSI) have further illuminated critical intersections between AI, national security, and societal impact, while Stanford's Human-Centered AI initiative has pioneered frameworks for governing emerging technologies like generative AI. These institutions reveal specific implementation pathways and crucial considerations for transforming theoretical governance frameworks into practical international policy approaches.

This diverse ecosystem of institutional frameworks and expert analysis reveals the complexity of AI governance and the opportunity for strategic complementarity in policy approaches. Rather than viewing this diversity as a challenge, our analysis reveals how these varying perspectives and capabilities can combine to create more effective governance frameworks than any single approach could achieve.

1. OECD. AI Policy Observatory. https://oecd.ai/en/
2. United Nation. AI Advisory Body. https://www.un.org/en/ai-advisory-body

This policy paper builds on the current AI governance landscape, offering an evidence-based, practical mechanism for implementation focused on a domain-specific AI framework designed to advance actionable global cooperation.

Approach

This policy paper employs a systematic, data-driven approach to capture and analyse global AI policy narratives (from 714 policy documents from 2016 to March 2024) across leading international organisations - UN, NATO, WTO, and OECD (Figure 1). A list of policy documents and direct quotations used in this analysis is presented in the Appendix 2, which provides full documentary evidence supporting our findings.

The collected dataset[3] includes:

- 63 documents from the UN[4]
- 145 documents from NATO[5]
- 143 documents from the WTO,[6] and
- 363 documents from the OECD[7]

This comprehensive examination reveals natural convergence points where institutional approaches complement rather than conflict, creating opportunities for practical cooperation even amid strategic competition. Our methodology combines ChatGPT-supported thematic analysis (Turobov, Coyle & Harding, 2024) with network visualisation to identify specific domains where cooperation can deliver immediate benefits while respecting legitimate security concerns.

The findings presented in subsequent sections detail how domain-specific approaches can transform theoretical opportunities into practical achievements. Beginning with the analysis of institutional narratives, we proceed through the identification of specific cooperation opportunities, concluding with practical recommendations for implementation. This analysis provides policymakers with concrete mechanisms for advancing domestic innovation and international stability through carefully structured engagement in international AI policy.

Through this systematic analysis, we demonstrate how the complex landscape of AI policy, rather than presenting an obstacle to effective international cooperation, offers natural pathways for transforming competition into collaboration. The key lies not in choosing between competing frameworks but in identifying and leveraging their natural complementarity to create more effective collaborative approaches.

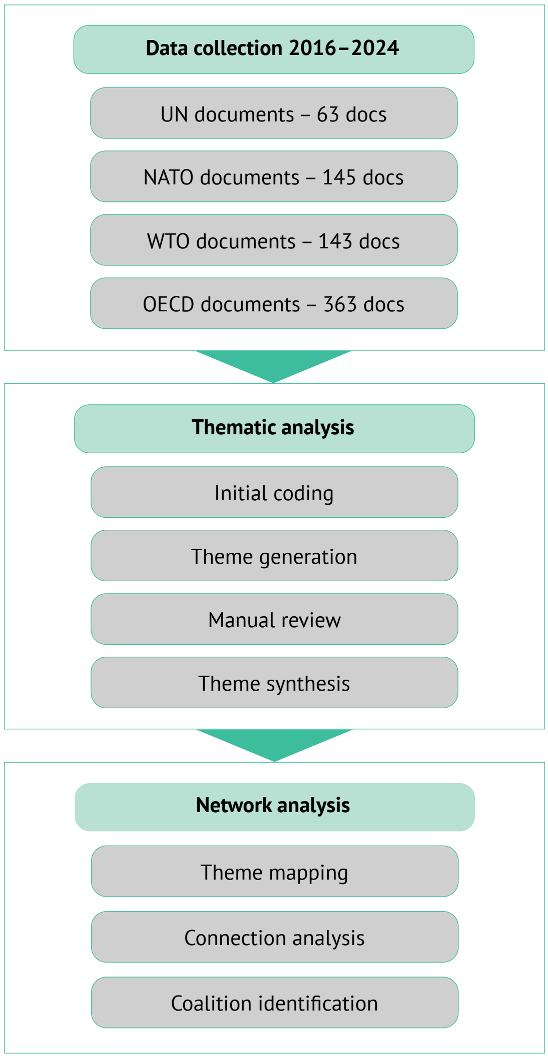


Figure 1: methodological framework for analysing international AI policy documents and identifying narrative patterns across major international organisations.

3. International Organisations' (WTO, UN, OECD and NATO) Policy Documents Dataset on Artificial Intelligence (2016-2024) published at Apollo - University of Cambridge Repository. https://doi.org/10.17863/CAM.113606
4. United Nations. Digital Library. https://digitallibrary.un.org/?ln=en
5. NATO. Advanced Search. https://www.nato.int/cps/en/natohq/search_380.htm
6. WTO. Documents database. https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S001.aspx
7. OECD. Publications. https://www.oecd.org/en/search/publications.html?orderBy=mostRelevant&page=0

1. International AI narratives

The landscape of international AI policy reveals a sophisticated evolution in how major institutions approach AI development. Our systematic analysis of 714 policy documents across key international organisations demonstrates a striking pattern: while each institution maintains its distinctive mandate, their approaches to AI show complementarity rather than conflict.

This convergence becomes particularly evident through the evolution of institutional responses between 2016 and 2024. Early approaches emphasised AI's transformative potential, with institutions viewing the technology primarily through their traditional mandates – the UN through development, NATO through security, the WTO through trade, and the OECD through policy coordination. However, as AI capabilities rapidly evolved, these seemingly disparate approaches revealed natural alignment points.

Three distinct phases characterise this institutional evolution. The period 2016-2018 reflected initial technological optimism, with organisations emphasising AI's potential within their domains. The UN spoke of AI's ability to "bolster shared values" and "serve the global good," while the WTO focused on AI's role in trade facilitation and economic development. During 2019-2021, growing recognition of AI's complexities led to more nuanced frameworks. The OECD's emphasis that "trust remains the bedrock of societies" is echoed in NATO's development of ethical principles for AI deployment. Most recently (2022-2024), institutions have developed sophisticated frameworks balancing innovation with governance concerns, exemplified by the UN's recognition of "joint responsibility" among stakeholders and the WTO's emphasis on "consensus-based international standards."

This evolution reveals more than parallel development – it demonstrates emerging strategic complementarity in international AI governance. The UN's human rights framework naturally reinforces the OECD's ethical principles and the WTO's trade frameworks, complementing NATO's responsible AI in security. These alignments create immediate opportunities for practical cooperation, even as institutions maintain their distinct priorities and approaches.

Our detailed analysis of each organisation's evolution reveals how these complementary approaches emerged not through formal coordination but through the natural alignment of institutional responses to AI's growing complexity. This pattern suggests practical pathways for transforming competition-focused narratives into productive cooperation frameworks. The comprehensive evidence supporting this analysis, including detailed thematic evolution tables for each organisation showing specific focus areas and transitions across time periods, is presented in Appendix 1, providing the empirical foundation for the patterns identified in our narrative analysis.

United Nations

Key messages

- Evolution from technological optimism to specific AI-related areas
- Growing emphasis on ethical frameworks and human rights
- Shift from user-centred to multi-stakeholder collaborative approaches
- Increasing attention to sovereignty and security implications
- Strong focus on sustainable development and gender-based policies

The United Nations' evolution in AI policy framework provides crucial insights for international cooperation. Analysis of 63 UN policy documents reveals an institutional transformation that offers practical pathways for addressing AI's growing complexity.

This evolution manifests most powerfully in the UN's approach to critical governance challenges. The organisation has developed specific, actionable positions where early frameworks offered only general principles. On autonomous systems, for instance, the UN explicitly declares that systems with "power and discretion to select targets and take lives without human involvement are politically unacceptable, morally repugnant, and should be prohibited by international law". Similarly, in addressing digital sovereignty, the organisation establishes that "sovereignty entails an obligation in its own right" in digital governance, creating foundations for collaborative approaches while respecting national interests.

The UN's inclusive AI development framework provides valuable lessons for international cooperation. By requiring that "all artificial intelligence-related capacity-building programming should be gender transformative" and emphasising "joint responsibility" among governments, the private sector, and academia, the organisation demonstrates how governance frameworks can simultaneously advance technological capabilities and social equity. This approach extends to practical applications, from "optimising energy usage and reducing emissions" to improving "access to healthcare" and advancing "inclusive equality".

These developments reveal opportunities for domain-specific cooperation, particularly in sustainable development, healthcare access, and educational opportunities. The UN's evolution provides frameworks for balancing innovation with ethical constraints while focusing on practical benefits that, as recent documents emphasise, can deliver "accelerated economic development and other gains" when adequately governed.

World Trade Organization

Key messages

- Evolution from digital trade enabler to AI policy framework
- Growing tension between promoting innovation and addressing national interest/security concerns
- Increasing emphasis on sector-specific AI applications and development
- Focus on capacity building and technical capability development in developing economies
- Shift toward balanced approaches that promote innovation while protecting legitimate national interests

The World Trade Organization's engagement with AI reveals how traditional trade frameworks can evolve to address emerging technological challenges while promoting international cooperation. Analysis of 143 policy documents demonstrates the organisation's transformation from viewing AI primarily through a digital trade lens to developing comprehensive frameworks that balance innovation with national interests.

The WTO has moved beyond conventional trade facilitation to address complex challenges of AI/technology deployment, documenting how "mobile equipment for farmers to interact with producers in other cotton-producing countries" creates practical pathways for knowledge sharing while improving agricultural practices. Such initiatives demonstrate how domain-specific cooperation can deliver immediate benefits while respecting national priorities.

The WTO has shown particular interest in addressing the tension between promoting innovation and managing security concerns. Recent measures acknowledge legitimate national interests in "critical technology, including robotics and artificial intelligence; security of supply of critical inputs; access to sensitive information." Yet rather than allowing these concerns to impede cooperation, the organisation has developed frameworks that enable collaboration while protecting essential interests. This approach proves especially valuable in healthcare, where documented successes include "AI-driven COVID-19 responses" and applications for "continuous monitoring and analysis of patient data to predict life-threatening medical conditions."

The organisation's emphasis on capacity building provides crucial mechanisms for bridging technological divides. By focusing on "digital capacity-building efforts in areas such as digital connectivity and digital literacy", the WTO creates practical pathways for ensuring AI benefits extend beyond advanced economies. This framework gains particular relevance through specific implementations, such as systems providing "weekly advice and market prices" to farmers, demonstrating how technical cooperation can deliver immediate practical benefits.

These developments suggest specific opportunities for transforming potential competition into practical cooperation. The WTO's experience shows how "consensus-based international standards" can enable technological advancement while respecting national interests, particularly when focused on domains with clear and shared benefits.

Organisation for Economic Co-operation and Development

Key messages

- Most comprehensive institutional response to AI policy among international organisations
- Evolution from economic catalyst to integrated ethical-social-economic framework
- Strong emphasis on trust as foundational for AI development and adoption
- Digital transformation as fundamental context for AI policy development
- Sophisticated approach to risk identification and mitigation across sectors
- Leading role in developing practical frameworks for responsible AI implementation

The OECD's approach to AI governance represents the most comprehensive institutional response among international organisations, combining sophisticated policy frameworks with practical implementation guidance. Analysis of 363 policy documents reveals how the organisation has developed integrated approaches that address technological, ethical, and societal dimensions of AI development.

Trust emerges as a foundational element in the OECD's framework. The organisation explicitly recognises that "trust remains the bedrock of societies, communities, economies, and sustainable development" emphasising that addressing ethical concerns during system design is "essential to prevent AI systems from causing unintended harm". This principled approach gains practical significance through specific guidance on issues like algorithmic bias, acknowledging that "biased data can result in systems delivering biased outcomes" and that "inclusiveness may deteriorate if the AI application under consideration reinforces existing disparities".

The OECD's distinctive contribution lies in translating broad principles into actionable governance mechanisms. In education, for instance, the organisation identifies AI's potential for "personalisation of instruction" while providing specific guidance on addressing bias risks when "data used to train these systems does not sufficiently reflect the potential diversity of student backgrounds". Similarly, in healthcare, the OECD demonstrates how "AI has the potential to make health care more effective, efficient and equitable" while emphasising practical requirements for data governance and ethical implementation.

The organisation's sophisticated approach to risk management proves particularly valuable for international cooperation. By advocating for "regulatory sandboxes" and emphasising that "digital security risk management should be based on ethical conduct which respects the legitimate interests of others", the OECD provides tested frameworks for balancing innovation with responsible governance. This approach extends to international collaboration, recognising that "operationalising data governance and AI Principles will require international collaboration to harmonise approaches".

NATO

Key messages

- Recognition of AI as defining element in global strategic competition
- Perspective transformation from AI as military tool to strategic capability framework
- Strong emphasis on ethical standards and democratic values in AI development
- Growing concern over AI weaponisation and autonomous systems
- AI governance seen as crucial element of collective defence strategy
- Strategic response to China's explicit AI leadership ambitions

NATO's engagement with AI represents an actual transformation in approaching technological/digital security, reflecting a growing recognition of AI's pivotal role in future defence capabilities. Analysis of 145 policy documents reveals how the alliance has evolved from viewing AI as a military tool to developing comprehensive frameworks that address both strategic advantage and ethical deployment.

The urgency of NATO's approach emerges clearly in its assessment of technological competition. The alliance explicitly acknowledges that "we are in the midst of the most intense technological race, not only in recent history, but also, probably, in centuries". This recognition stems from the understanding that "for 70 years, NATO's deterrence and defence has relied upon maintaining our technological edge" while noting that "today we are under fierce competition". This competitive dynamic gains particular significance through NATO's assessment of China's AI ambitions, recognising that while "China is not our enemy, its rise is fundamentally shifting the global balance of power".

NATO's response centres on developing sophisticated frameworks for ethical AI deployment in defence applications. The alliance emphasises that "AI applications will be developed and used in accordance with national and international law, including international humanitarian law and human rights law". This commitment finds practical expression through specific requirements for "Lawfulness, Responsibility and Accountability, Explainability and Traceability, Reliability, Governability, and Bias Mitigation". This approach gains particular significance as NATO recognises that "the nature of warfare is fundamentally changing, not only because of cyber, but because of artificial intelligence, autonomous weapon systems, facial recognition".

The alliance's emphasis on establishing clear governance frameworks demonstrates a balance between maintaining technological advantage and ensuring responsible deployment. NATO's ambition "to set the gold standard on the ethical use of new technologies in defence" provides crucial foundations for international cooperation, even amid strategic competition. Through its Data and AI Review Board, NATO works to "operationalise the Principles of Responsible Use". creating practical mechanisms for implementing ethical frameworks in defence applications.

2. Towards a domain-specific AI policy framework

Key messages

- Network analysis reveals natural convergence points for international cooperation in AI policy
- Institutional approaches can complement rather than compete, creating opportunities for enhanced effectiveness
- Specific policy domains emerge as natural bridges for coordinated governance efforts
- Domain-specific approach provides concrete entry points for country-level cooperation

The complexity of the global AI policy framework necessitates moving beyond broad policy declarations to identify specific domains where international collaboration can deliver joint benefits. Our network analysis reveals a compelling finding - beneath apparent differences in organisational mandates lie natural convergence points where cooperation can replace competition.

This convergence becomes visible through systematic analysis of policy relationships across international organisations. The network visualisation (Figure 2) demonstrates how institutional approaches cluster around specific domains, creating natural bridges for international cooperation. While organisations maintain their distinct priorities – NATO's security focus, the WTO's trade emphasis, the OECD's policy coordination role, and the UN's development agenda – their approaches reveal sophisticated patterns of complementarity rather than conflict.

Three primary clusters emerge from the network analysis, each suggesting immediate opportunities for practical cooperation:

- Normative frameworks and risk management, where NATO's principles for responsible AI deployment naturally align with OECD's emphasis on trustworthy AI and the UN's human rights-based approach
- Practical policy mechanisms, particularly in areas like cybersecurity and digital economy, where organisational expertise proves complementary rather than competitive
- Transformative applications in sectors like healthcare and agriculture, where shared interests in promoting innovation while ensuring equitable access create natural cooperation opportunities

The network structure reveals opportunities for what might be termed "diplomatic bridging" - where organisations with different primary missions find common ground through specific applications or challenges. For instance, the intersection of AI and agriculture connects the OECD's policy expertise, the WTO's trade frameworks, and the UN's development goals, suggesting possibilities for coordinated approaches to food security and agricultural innovation. Similarly, in environmental policy, NATO's emphasis on climate security naturally complements the OECD's technical expertise and the UN's sustainable development frameworks.

This evidence suggests specific pathways for transforming abstract principles into practical cooperation. By focusing on domains where institutional approaches naturally align, we can move from broad policy aspirations to concrete mechanisms for international collaboration that bridge traditional organisational boundaries.

Strategic complementarity and distributed resilience

Key messages

- Strategic complementarity emerges organically through existing organisational priorities and capabilities
- Distributed resilience approach enhances governance effectiveness while preserving institutional autonomy
- International organisational frameworks provide ready-made platforms for country-level cooperation
- Case-based approach transforms zero-sum competition into positive-sum collaboration opportunities
- Established institutional legitimacy reduces barriers for national engagement in specific AI domains

The evolving landscape of international AI policy reveals a more sophisticated approach to institutional cooperation than traditional interdependence or shared sovereignty models. Network analysis of policy frameworks across major international organisations demonstrates the emergence of "**strategic complementarity**" - a model where distinct organisational capabilities naturally enhance overall policy and governance effectiveness while preserving institutional autonomy and independence.

Network anlaysis: international organisations and AI-related themes

Node size: betweenness centrality | Node border: degree centrality | Edge width: connection strength

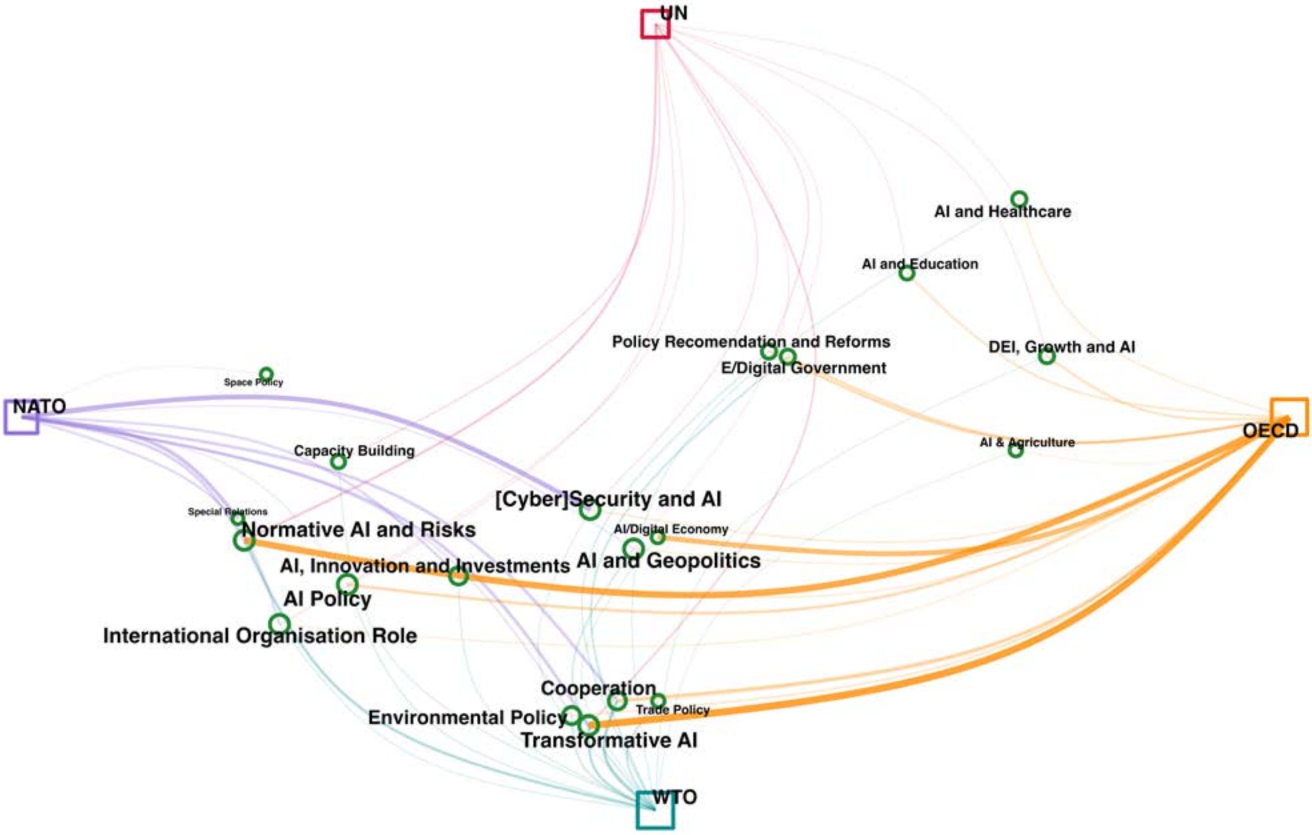


Figure 2: network structure of international AI frameworks.

This strategic complementarity manifests through increasingly complex layers of institutional interaction. At the foundational level, organisational capabilities create natural bridges - the UN's expertise in development enhances the OECD's policy frameworks and WTO's trade mechanisms, complementing NATO's responsible AI in security. As one OECD document emphasises, "operationalising data governance and AI Principles will require international collaboration to harmonise approaches", demonstrating how institutional frameworks naturally reinforce each other.

Deeper institutional alignments emerge around specific domains like environmental policy and healthcare applications. The UN's call for "optimising energy usage and reducing emissions" finds practical expression through the WTO's "comprehensive frameworks for circular economy priorities", enhanced by NATO's recognition of climate change as a "crisis multiplier". Similarly, when the WTO documents how "The creation of digital agreements offers an opportunity for cooperation between developed and developing countries", it demonstrates how institutional approaches create multiplicative effects on policy effectiveness.

This interaction pattern suggests what we identify as a "**distributed resilience**" model in international AI policy. Rather than centralising authority or requiring formal integration, this approach leverages the natural strengths of each organisation while maintaining their autonomous capabilities. When NATO emphasises that "the nature of warfare is fundamentally changing" due to AI technology, it complements rather than duplicates the OECD's vision that "Artificial intelligence is among the technologies that are contributing to the complexity of the digital environment". Each organisation maintains its distinct focus while contributing to a more robust overall governance framework.

The effectiveness of this approach becomes particularly evident as AI capabilities spread beyond traditional state control. The widespread availability of powerful AI models

Network anlaysis: international organisations and AI-related themes

Node size: betweenness centrality | Node border: degree centrality | Edge width: connection strength

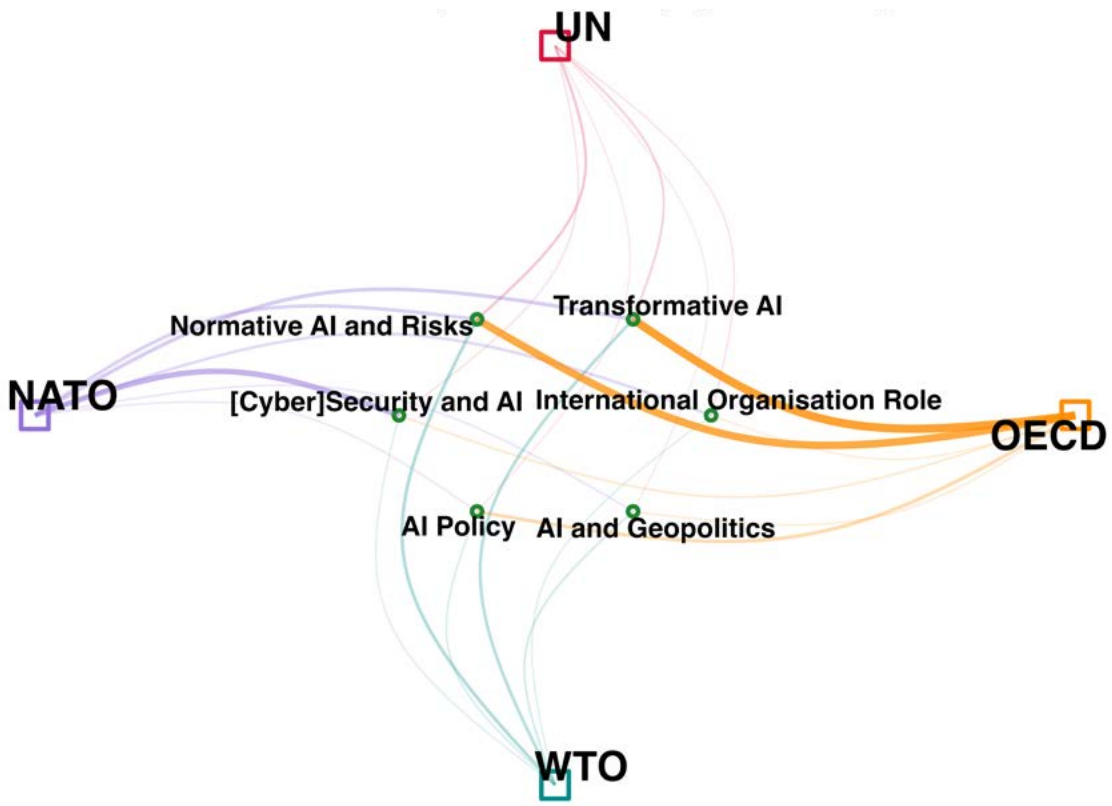


Figure.3: network structure of International AI frameworks - themes shared by all four international organisations.

capable of running on personal devices creates security challenges that transcend national boundaries. This transformation requires governance frameworks that are both robust and adaptable - precisely what the distributed resilience model provides through multiple centres of expertise and responsibility.

This framework creates concrete opportunities for country-level collaboration through established institutional mechanisms. The network analysis reveals specific domains where international organisations' aligned approaches create natural entry points for national cooperation, shifting the narrative from great power competition to practical collaboration. These "cooperation cases" - evidenced through themes like AI in agriculture, healthcare, and environmental policy - provide established frameworks within which countries can engage productively regardless of broader strategic tensions.

Case-based cooperation

Key messages

- Our analysis reveals natural convergence points for international cooperation in AI policy, demonstrating how shared challenges create practical opportunities for collaboration even amid strategic competition
- Key international organisations demonstrate complementary rather than competing approaches to AI policy:
  - The UN provides normative frameworks and development perspectives
  - The WTO offers established mechanisms for technology transfer and trade
  - The OECD contributes policy expertise and standards development
  - NATO adds crucial security dimensions and ethical frameworks

Network anlaysis: international organisations and AI-related themes
Node size: betweenness centrality | Node border: degree centrality | Edge width: connection strength

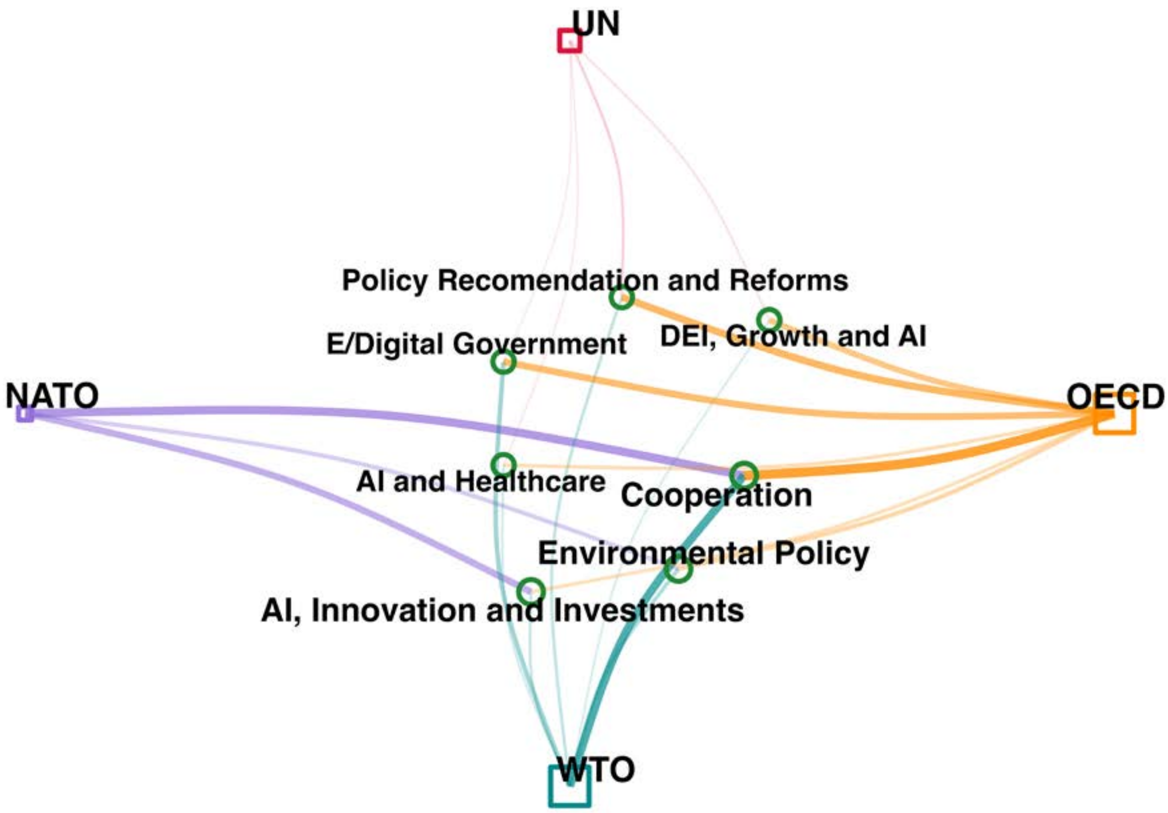


Figure 4: network structure of International AI frameworks - themes shared by three international organisations.

- Five strategic domains emerge as immediate opportunities for domain-specific cooperation:
    - Environmental Policy: shared climate challenges create compelling cooperation imperatives
    - Healthcare: technological innovation aligns with universal access objectives
    - Education: AI enhancement of learning aligns with respect for national educational policy
    - Agriculture: AI supports both food security and development opportunities
    - Cybersecurity: shared threats necessitate collaborative solutions
- Evidence demonstrates how domain-specific approaches transform abstract principles into practical action, building on existing institutional frameworks and, delivering concrete benefits to all actors while respecting national sovereignty and security interests
- Strategic complementarity and distributed resilience emerge as organising principles for international AI cooperation

Environmental Policy & AI

Analysis reveals two complementary mechanisms where institutional approaches to environmental AI create opportunities for practical cooperation. First, in resource optimisation and environmental monitoring, the UN's emphasis on "optimising energy usage and reducing emissions" finds practical expression through the WTO's "comprehensive frameworks for circular economy priorities." The OECD provides concrete evidence of this potential, documenting how AI applications "improve fuel efficiency by 15% for trucking companies" through smart optimisation. These technical benefits gain additional significance through NATO's recognition of climate change as a "crisis multiplier", demonstrating how environmental cooperation serves both sustainability and security objectives.

Second, in technology transfer, the WTO's established mechanisms for environmental technology trade

Network anlaysis: international organisations and AI-related themes
Node size: betweenness centrality | Node border: degree centrality | Edge width: connection strength

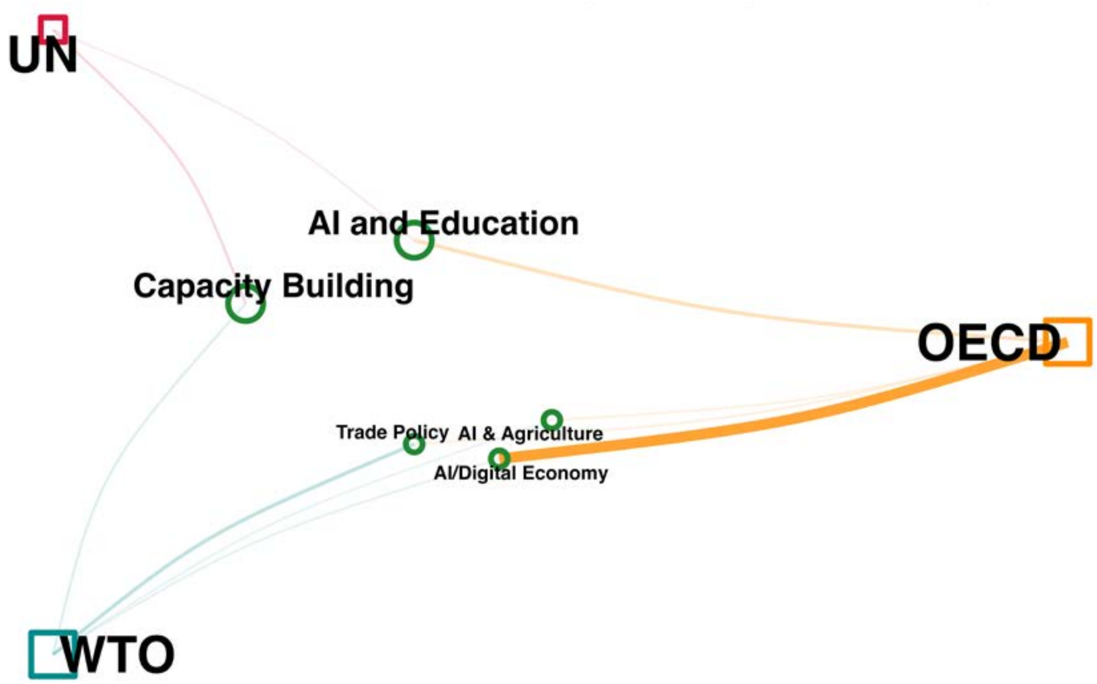


Figure 5: network structure of International AI frameworks - themes shared by two international organisations.

create ready-made pathways for cooperation, while the UN's capacity-building frameworks ensure equitable access. As the OECD documents, "combining sensors, automated farm machinery and advanced analytics software" enables precise environmental monitoring and resource management, creating immediate benefits for all participants while building foundations for broader cooperation.

The evidence demonstrates how domain-specific cooperation in environmental AI can deliver concrete benefits while respecting national interests. When the WTO documents specific cases where "artificial intelligence and blockchain technologies" improve environmental efficiency, it shows how technological cooperation creates positive-sum outcomes that advance both national and global objectives. This approach provides a model for transforming shared challenges into practical cooperation opportunities.

Healthcare & AI

Healthcare presents compelling opportunities for international AI cooperation by combining clear technological benefits with universal needs. The OECD's assessment that "artificial intelligence has the potential to make healthcare more effective, efficient and equitable" gains practical significance through documented implementations across institutional frameworks. The WTO highlights concrete achievements where "AI-driven COVID-19 responses" and "continuous monitoring and analysis of patient data" demonstrate immediate benefits in improving patient care and health system efficiency.

These technological capabilities gain additional power through institutional complementarity. While the UN emphasises AI's "promise of improved access to healthcare," the OECD provides practical guidance on data governance, noting that "AI applications require large amounts of training data" and helping shape frameworks that balance innovation with privacy protection.

The COVID-19 pandemic demonstrated the practical value of this institutional alignment. When "AI tools helped policymakers and the medical community understand the COVID-19 virus and accelerate research on treatments by rapidly analysing large volumes of research data", it showed how international cooperation could enhance national healthcare capabilities and global medical knowledge. This experience provides mechanisms for transforming shared health challenges into practical achievements, even amid broader strategic competition.

Education & AI

Education emerges as a domain where AI can enhance learning outcomes through international cooperation while preserving national educational interests and policy. The OECD highlights this potential through AI's capacity for "personalisation of instruction: AI Applications allow identifying materials and approaches in line with each student's needs", while the UN emphasises how such systems can provide "data-driven insights into student performance" to enhance teaching effectiveness.

International frameworks converge effectively in addressing implementation challenges. The OECD's warning that "if the data used to train these systems does not sufficiently reflect the potential diversity of student backgrounds and characteristics, bias can be built into the system" finds practical resolution through the UN's observation that "while AI has the potential to democratise access to education, there is a risk of widening the digital divide if not implemented with careful attention to equity and inclusion". The WTO adds crucial frameworks for educational technology transfer, particularly through "digital capacity-building efforts in areas such as digital connectivity and digital literacy".

When "technology provides platforms for collaboration in knowledge creation, where teachers can share and enrich teaching materials" (OECD), it shows how international cooperation can enhance educational outcomes while maintaining educational autonomy. This balance of shared technological advancement and preserved national sovereignty provides a model for cooperation in other sensitive domains.

Agriculture & AI

Agriculture presents a unique domain where AI can simultaneously strengthen national food security and enhance international development cooperation. The WTO demonstrates this potential through documented successes where "mobile equipment for farmers to interact with producers in other cotton-producing countries" enables knowledge sharing and improves agricultural practices across borders. The OECD reinforces these benefits by showing how "digital technologies can help track agriculture's impacts on the environment" while "combining sensors, automated farm machinery and advanced analytics software" enables precision agriculture at scale.

The practical implementation builds on natural synergies between organisations. The WTO documents specific cases where mobile platforms deliver "weekly advice and market prices at the nearest markets", while the OECD notes that "in agriculture, the use of data in combination with artificial intelligence holds significant promise to enhance productivity, sustainability, and resilience". The UN's sustainable development framework provides overarching guidance for these initiatives, ensuring they advance technological capabilities and equitable development.

This creates what the OECD describes as significant opportunities for collaborative frameworks where AI applications in agriculture - from supply chain optimisation to crop monitoring - can simultaneously enhance national food security and support international development. When the WTO shows how "artificial intelligence and blockchain technologies applied to agricultural sectors" improve efficiency, it demonstrates how technological cooperation creates positive-sum outcomes benefiting both developed and developing nations.

Cybersecurity & AI

Cybersecurity represents a domain where shared vulnerabilities create compelling imperatives for international cooperation. NATO's landmark determination that "a cyber-attack can trigger Article 5" (2016-2017[8]) marks a fundamental shift in security doctrine, while the OECD emphasises that "digital security risk undermines trust in digital transformation and generates tremendous economic and social costs". This recognition of shared risks gains additional significance through the UN's emphasis that in cyberspace, "sovereignty entails an obligation in its own right" in managing technological capabilities.

The evolving threat landscape reinforces these cooperation imperatives. The OECD notes that "Artificial intelligence is among the technologies that are contributing to the complexity of the digital environment, increasing the potential attack surface of critical infrastructures". NATO echoes this assessment, warning that "cyber threats will become more dangerous with the development of new technologies such as artificial intelligence". Yet, these shared challenges create natural foundations for collaborative solutions.

Cross-border cooperation proves particularly effective in addressing emerging threats. The OECD emphasises that "there can be substantial benefits from international cooperation, particularly in terms of sharing experience, resources, code and potentially even data". NATO's commitment to "set the gold standard on the ethical use of new technologies in defence" provides frameworks for responsible deployment, while the WTO contributes mechanisms for secure digital trade through "consensus-based international standards". This convergence of institutional approaches demonstrates how shared security challenges can transform potential competition into practical cooperation.

8. "At the 2016 Warsaw Summit, Allies recognised cyberspace as a new operational domain, to enable better protection of networks, missions and operations." Collective defence and Article 5. NATO official website.
https://www.nato.int/cps/en/natohq/topics_110496.htm#:~:text=On%20the%20evening%20of%2012,Nations%20of%20the%20Alliance's%20decision
"We have also decided that a cyber attack can trigger Article 5 and we have also decided and we are in the process of establishing cyber as a military domain meaning that we will have land, air, sea and cyber as military domains." Press conference by NATO Secretary General Jens Stoltenberg ahead of the meeting of NATO Defence Ministers. NATO official website.
https://www.nato.int/cps/en/natohq/opinions_145415.htm#:~:text=We%20have%20also%20decided%20that,and%20cyber%20as%20military%20domains

Conclusions

The intensifying AI race between major powers risks transforming AI from a potential catalyst for global progress into a source of international instability. The prevailing narrative of AI as a zero-sum game creates self-reinforcing cycles of competition that ultimately reduce innovation potential while fragmenting the global order. This 'technological Cold War' mindset manifests in increasing restrictions on AI development and deployment, growing barriers to international collaboration, and mounting concerns about AI applications in national security domains.

The urgency for transforming this competitive dynamic has intensified as AI capabilities spread beyond state control. Powerful AI models now run on personal devices, enabling non-state actors to develop and deploy sophisticated applications without significant infrastructure. This fundamental shift in access creates security challenges that transcend traditional state competition and demand collaborative responses, similar to international counter-terrorism efforts.

Our systematic analysis of over 700 policy documents reveals immediate opportunities for practical cooperation and demonstrates how institutional approaches naturally complement rather than conflict with each other: NATO's emphasis on ethical AI deployment aligns with OECD principles for trustworthy AI, while UN development frameworks enhance WTO trade protocols. This strategic complementarity creates specific pathways for transforming competition into collaboration through domains where shared interests naturally overcome rivalry.

The evidence reveals three compelling advantages of this domain-specific approach. First, it enables immediate **action through existing institutional frameworks**, as demonstrated by cases in environmental monitoring, healthcare innovation, and agricultural development. Second, **it respects sovereignty by focusing on domains where security sensitivities are naturally minimised, allowing cooperation** while protecting essential national interests. Third, it creates **scalable success through positive feedback loops**, where initial achievements build trust and establish frameworks for addressing increasingly challenging areas.

Our analysis reveals specific pathways through which policymakers can advance domestic innovation and international stability. The evidence suggests particular promise in domains where institutional frameworks already enable practical cooperation, from environmental monitoring to healthcare innovation. These areas demonstrate how existing mechanisms can be leveraged to create positive outcomes while respecting national priorities and security considerations. Success in initial cooperation domains builds trust, establishes working relationships, and creates practical frameworks that can be applied to increasingly challenging areas. Rather than requiring immediate agreement on comprehensive AI governance, this approach enables incremental progress through demonstrated achievements in specific domains.

The evidence suggests that the current framing of AI development as inevitably competitive is neither accurate nor productive. Through careful case selection, practical implementation frameworks, and sophisticated institutional engagement, we can transform AI from a source of international tension into a catalyst for productive cooperation. The growing complexity of AI challenges makes this transformation not just desirable but essential for maintaining international security and stability. The path forward lies not in choosing between competition and cooperation but in pursuing specific opportunities where collaboration benefits all actors.

References

Alaga, J., Schuett, J., & Anderljung, M. (2024). A Grading Rubric for AI Safety Frameworks. arXiv preprint arXiv:2409.08751.

Bryson, J. J., & Malikova, H. (2021). Is there an AI cold war? *Global Perspectives*, *2*(1), 24803.

Coate, R. A., Griffin, J. A., & Elliott-Gower, S. (2015). Interdependence in international organization and global governance. In Oxford Research Encyclopedia of International Studies.

de La Bruyère, E. & Picarsic, N.. (2024, March 26). Cooperate or Compete? The Zero-Sum Game of AI Engagement with China. FDD. https://www.fdd.org/analysis/op_eds/2024/03/26/cooperate-or-compete-the-zero-sum-game-of-ai-engagement-with-china/

Garcia, D. (2021). Stop the emerging AI cold war. *Nature*, *593*(7858), 169-169.

Geist, E. (2024). Building a Foundation for Strategic Stability with China on AI. https://www.rand.org/pubs/commentary/2024/04/building-a-foundation-for-strategic-stability-with.html

Hüsch, P. (2024). AI, Geopolitics and the Need for a New Analytical Framework? RUSI Disruptive Technologies Workshop Report. https://static.rusi.org/disruptive-technology-workshop-report.pdf

Jones, K. (2023). AI governance and human rights. DOI: 10.55317/9781784135492

Klein, E., & Patrick, S. (2024). Envisioning a Global Regime Complex to Govern Artificial Intelligence.

Lee, C. (2023). Winning the Tech Cold War. https://www.rand.org/pubs/commentary/2023/08/winning-the-tech-cold-war.html
Muñiz, M & Saran, S. (2023). AI, Democracy and the Global Order. RUSI.

NATO Review—An Artificial Intelligence Strategy for NATO. (2021, October 25). NATO Review. https://www.nato.int/docu/review/articles/2021/10/25/an-artificial-intelligence-strategy-for-nato/index.html

NATO. (n.d.). Summary of NATO's revised Artificial Intelligence (AI) strategy. NATO. Retrieved 30 October 2024, from https://www.nato.int/cps/en/natohq/official_texts_227237.htm

Maslej, N., Fattorini, L., Perrault, R., Parli, V., Reuel, A., Brynjolfsson, E., Etchemendy, J., Ligett, K., Lyons, T., Manyika, J., Niebles, J.C., Shoham, Y., Wald, R. & Clark, J. (2024). The AI Index 2024 Annual Report. AI Index Steering Committee, Institute for Human-Centered AI, Stanford University, Stanford, CA.

RAND. Project: "Exploring AI Governance: Short Reports on Key Issues". https://www.rand.org/well-being/justice-policy/projects/artificial-intelligence-governance.html

RAND. The Rise of AI: Insights from RAND. https://www.rand.org/topics/featured/artificial-intelligence.html

Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 Laying down Harmonised Rules on Artificial Intelligence and Amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act) (Text with EEA Relevance) (2024). http://data.europa.eu/eli/reg/2024/1689/oj/eng

Rotenberg, M. (2021). Artificial Intelligence and Democratic Values: The Role of Data Protection. Eur. Data Prot. L. Rev., 7, 496.

Schmidt, E. & Allison, E. (2020, August 4). Is China Winning the AI Race? | by Eric Schmidt & Graham Allison. Project Syndicate. https://www.project-syndicate.org/commentary/china-versus-america-ai-race-pandemic-by-eric-schmidt-and-graham-allison-2020-08

Schuett, J., Anderljung, M., Carlier, A., Koessler, L., & Garfinkel, B. (2024). From principles to rules: A regulatory approach for frontier AI. arXiv preprint arXiv:2407.07300.

Turobov, A. (2024). How geopolitical tensions are shaping the future of AI. Bennett Institute for Public Policy Blog. https://www.bennettinstitute.cam.ac.uk/blog/geopolitical-tensions-shaping-future-ai/

Turobov, A., Coyle, D., & Harding, V. (2024). Using ChatGPT for thematic analysis. arXiv preprint arXiv:2405.08828. https://doi.org/10.48550/arXiv.2405.08828

Turobov, A., Coyle, D., & Harding, V. (2024). International Organisations' (WTO, UN, OECD and NATO) Policy Documents Dataset on Artificial Intelligence (2016-2024). Apollo - University of Cambridge Repository. https://doi.org/10.17863/CAM.113606

UNESCO. (2021). Recommendation on the ethics of artificial intelligence. Retrieved 30 October 2024, from https://unesdoc.unesco.org/ark:/48223/pf0000381137

WTO. The role of advanced technologies in cross-border trade: A customs perspective. (n.d.). Retrieved 30 October 2024, from https://www.wto.org/english/res_e/publications_e/wcotech22_e.htm

Appendix 1

United Nations

Theme	2017-2018	2019-2021	2022-2024	Key focus
Ethical AI, values & humanity and human rights-based AI	Establishing foundational principles and addressing ethical concerns	Developing global ethical standards and frameworks	Emphasis on human rights safeguards and inclusive equality	Human rights framework, transparency, shared values, dual nature of AI, right to appeal, global standard-setting
Transformative AI	High optimism for AI's potential in various domains	Balanced assessment of benefits and challenges	Focus on practical applications and societal impact	AI for improved public services, economic development, labour market impact, climate action, SDGs
Security, nuclear safety and disarmament	Addressing AI's implications on international law and ethics	Considering AI's dual nature and autonomous systems	Emphasis on national sovereignty and AI in peacekeeping	Autonomous weapons, international cooperation, sovereignty in cyberspace, AI for peacekeeping
Partnerships, capacity building and support	Limited coverage	Building multi-stakeholder partnerships and frameworks	Active collaboration and shared responsibility	Multi-stakeholder engagement, capacity building, leveraging strengths, global dialogue
Sustainable development and policy evolution	Limited integration	Growing recognition of AI's role in achieving SDGs	AI as a catalyst for progress beyond GDP	AI for SDGs acceleration, innovative solutions, holistic sustainability
UN's role in AI governance	Positioning UN as a universal platform for AI governance	Deploying AI applications and advocating for global norms	Limited coverage	Ethical leadership, norms and standards, leveraging AI for operational effectiveness
Economic policies and gender equality	Addressing gender inequality in economic reforms	Integrating gender transformative approaches in AI capacity building	Promoting women's leadership in AI	Gender gap in ICT, economic policies considering women's rights, inclusive AI development
AI and education	Limited coverage	Recognizing AI's potential in personalising learning	Addressing equity and inclusion in AI-driven education[25]	Personalised learning, data-driven insights, democratising access, digital divide

Theme	2017-2018	2019-2021	2022-2024	Key focus
Human involvement and accessibility	Emphasising user-centred design and accessibility	Limited coverage	Limited coverage	User involvement in AI design, addressing unintended impacts, inclusive AI
AI strategy [national] and governance	Limited coverage	Importance of monitoring and evaluation mechanisms	Limited coverage	AI strategy implementation, SWOT analysis, dedicated oversight
E-government development and adoption	AI for sustainable and resilient societies[30]	Limited coverage	Limited coverage	E-government for public service delivery, global trends, ICT readiness
Geopolitical tension	Limited coverage	Limited coverage	Reflecting on escalating geopolitical tensions	Global stability, international relations, multifaceted crises
AI and healthcare	Limited coverage	AI's promise for improved healthcare access	AI's potential for eradicating diseases	AI for healthcare accessibility, disease eradication, SDGs

Table 1: UN thematic evolution and primary areas of focus, based on analysis of 63 UN policy documents (2017-2024).

World Trade Organization

Theme	2016-2018	2019-2021	2022-2024	Key focus
AI and innovation / Transformative and application	Initial focus on AI's role in targeting high-risk shipments	AI applications in logistics, manufacturing, and services; WTO's use of AI to enhance trade monitoring	AI in public sector enhancing decision-making and service delivery; AI in healthcare and agriculture	Machine learning for customs risk management; AI revolutionising industries; WTO leveraging AI; AI in public services, healthcare, and agriculture
AI regulation, IP and ethics	Addressing IP implications of AI; EU developing legal framework for AI	Japan adapting IP regime for AI; establishing AI governance and ethics in trade agreements	International standards essential for AI regulations; addressing ethical concerns and aligning with best practices	IP policy for AI; ethical and trustworthy AI governance; international standards and best practices
Energy policy	Promoting biofuels and renewable energy	Achieving energy security and efficiency	Enhancing development of advanced energy technologies	Renewable energy; energy security and efficiency; advanced energy tech transfer
Trade policy	Objectives of global value chain integration and export competitiveness	Facilitating trade through tariff reductions and simplified customs; trade instrumental for COVID-19 recovery	More trade-facilitating than restrictive measures; free and open trade crucial for development	Global value chains; trade facilitation; free and open trade for sustainable recovery
Rollback protectionism and restrictions	Political commitments to roll back protectionism	Rolling back pandemic trade restrictions	Limited coverage	Standstill and rollback of protectionist measures, especially during crises
AI and economic growth, trade & information flow	AI applications supporting export growth	AI as key driver of future economic growth	Limited coverage	AI driving trade, economic growth, and supply chain resilience
Trade agreements and cooperation	Pursuing market opening through trade agreements	New regional trade agreements; IP cooperation with WIPO and INTERPOL	Leveraging FTAs for market opportunities; strengthening regional integration; international collaboration on standards	Bilateral, regional, and plurilateral trade agreements; international IP cooperation; standards collaboration
Gender and economic policy	Focus on women's economic empowerment	Supporting female labour force participation; disproportionate COVID-19 impact on women	Gender provisions in trade agreements; AI for women's health and gender equality	Women's economic empowerment; inclusive trade and economic policies; gender-responsive AI

Theme	2016-2018	2019-2021	2022-2024	Key focus
Digital transformation	Digital networks intertwining with physical trade; rapid development of digital technologies	Digital transformation strategies; capacity building for digital policy; digital challenges for farmers	Digitalization enabling customs efficiency; AI in digital transformation agendas	Digital trade; digital transformation strategies; AI in digital ecosystem; digital divide
AI cooperation (academia, industry, international organisations)	Limited coverage	Collaborations with academia and private sector on AI solutions	Public-private consortiums for AI development; cooperation on AI in trade agreements	Multi-stakeholder AI partnerships; AI cooperation in trade agreements
Restriction Policy	China's restrictions on foreign ICT products; rise in trade-restrictive measures	Prior authorization for foreign investments in strategic AI sectors	Export restrictions on AI technologies; significant rise in export restrictions	ICT and AI-related investment restrictions; AI export controls
AI & [national] security and cybersecurity	Extending government powers to block foreign takeovers in AI sectors	AI in critical technologies and dual-use items; AI in cybersecurity	Mandatory security reviews for AI-related foreign investments; AI in national security technologies	Foreign investment screening in AI for national security; AI in critical and dual-use technologies
AI strategy/plan	China's AI development plans; EU coordinated action plan on AI	National AI strategies for economic and social objectives	Trustworthy AI solutions in national strategies; leveraging AI for IPO efficiency	National AI strategies and plans; AI for economic, social, and IPO objectives
Economic reforms	Limited coverage	Structural economic reforms	Circular economy frameworks; reforms to boost productivity and wages; AI in economic reform packages	Structural reforms; circular economy; AI-driven economic transformation
AI risks and concerns	Risks to national security and public order; market concentration and digital divide concerns	Ethical implications of AI in trade policy	Traditional and AI-specific risks; regulatory fragmentation and compliance costs	National security, ethics, market risks; regulatory challenges and costs
AI & agriculture	Limited coverage	AI for efficient resource use in agriculture; AI tools for farmers	AI and digital technologies in agricultural transformation	AI for agricultural efficiency, tools, and transformation
AI & investments	Limited coverage	Encouraging foreign investment in AI sectors; policy recommendations for AI investments	Investing in AI R&D for competitive edge	Foreign investment promotion in AI; AI investment for innovation and competitiveness

Theme	2016-2018	2019-2021	2022-2024	Key focus
WTO role & order	Insufficient WTO rules to constrain China	WTO facing biggest crisis; active role in WTO negotiations	Efforts to reform WTO for 21st century; urgency of dispute settlement system reforms	WTO reforms and modernization; effective disciplines and negotiations
International tension and uncertainties	Trade tensions and global uncertainties	Continued trade tensions and GDP slowdown; US-China AI competition	Multiple crises affecting global economy	Trade and geopolitical tensions; economic uncertainties; US-China tech rivalry
Capacity building and tech capability	Limited coverage	Capacity building for IP protection and enforcement; adapting to online technical assistance delivery	Digital capacity building via Aid for Trade	IP and digital capacity building; online technical assistance
Environmental policy	Limited coverage	Technology transfer for renewable energy and resource efficiency	Green economy strategies; climate-friendly technologies	Sustainable development; green technologies; climate action
AI and healthcare	Limited coverage	Technology transfer for public health; AI for COVID-19 response and drug discovery	AI in healthcare applications and services; AI for disease risk assessment and mental health	AI for public health, pandemic response, diagnostics, and personalised medicine

Table 2: WTO thematic evolution and primary areas of focus, based on analysis of 143 WTO policy documents (2016-2024).

Organisation for Economic Co-operation and Development

Theme	2016-2018	2019-2021	2022-2024	Key focus
Digitalisation / Digital transformation	AI's transformative impact on innovation and the economy	Accelerated digital transformation due to COVID-19	AI as a driver of value creation and resource efficiency	AI's transformative potential; digital economy challenges; leveraging AI for sustainability
Transformative AI & innovation	AI's disruptive potential and economic implications	AI applications in various sectors; AI for addressing global challenges	Advanced AI capabilities and their societal impact	AI as a disruptive force; sector-specific applications; AI for global good
Growth and equality/ Inequality	AI's potential to increase inequalities	AI's role in bridging gaps and promoting inclusion	Addressing AI's potential to reinforce disparities	Inclusive growth; distributing AI benefits equitably; mitigating AI-driven inequality
Policy recommendations / Reforms	Need for AI-adapted policies and regulatory frameworks	Balancing AI opportunities and challenges; agile governance approaches	Reviewing regulatory frameworks for AI-driven changes	Adaptive regulations; balancing benefits and risks; agile governance
Collaboration	AI enabling cross-sector collaboration	International cooperation for AI governance; multi-stakeholder responses	Collaboration for harmonised AI approaches and standards	Cross-sector, international, and multi-stakeholder collaboration on AI
Innovation & investment	Policies to foster AI investment and innovation	AI adoption challenges for SMEs; high expectations for AI investments	AI-driven innovation in response to changing demands	AI investment promotion; AI innovation dynamics; SME challenges
International trade	AI's impact on trade facilitation and global value chains	AI transforming international trade dynamics	AI for supply chain optimization and trade cost reduction	AI in trade facilitation, global value chains, and trade cost reduction
Sustainability and environmental impact	AI for tracking agriculture's environmental impacts	AI's contribution to sustainability and green transition	AI for resource efficiency and circular economy; energy-efficient AI	AI for environmental monitoring, sustainability, and resource efficiency
AI and digital / Economy	AI's role in digital economy dynamics and competition	AI's impact on jobs and productivity; online platforms and AI	Integrating AI in digital transformation strategies	AI in digital economy competition, labour market impact, and digital transformation
Legal and ethical AI / Risks and limitations	Transparency and accountability challenges; AI risks and ethical questions	Developing AI governance frameworks and principles	Operationalizing trustworthy AI principles; addressing AI biases	Ethical AI principles; transparency and accountability; AI governance frameworks
AI policy and regulation	Development of national AI strategies and policies	OECD AI Principles and implementation; regulatory proposals	Risk-based AI regulation; responsible AI use in the public sector/	National AI strategies; OECD AI Principles; regulatory approaches for trustworthy AI

Theme	2016-2018	2019-2021	2022-2024	Key focus
Globalisation, AI and geopolitics	AI's implications for global economic shifts	Geographic concentration of AI activities; trade and geopolitical tensions	AI in the context of geopolitical dynamics and economic security	AI and global economic shifts; AI geopolitics; economic security considerations
OECD role	OECD as a platform for AI policy discussions	OECD's role in developing AI principles and frameworks	OECD's ongoing work on AI policy and measurement	OECD's leadership in AI policy discussions, principles, and frameworks
[Cyber]Security and digital/AI	AI's implications for national security and public order	AI in the context of cybersecurity and digital security risks	AI and the complexity of the digital security landscape	AI and national security; AI in cybersecurity and digital security risk management
AI and digital in education	AI's potential to transform learning and skills needs	AI applications in education; ethical considerations	AI's impact on education systems and practices	AI-driven learning personalization; AI ethics in education; AI and education system transformation
AI/Digital in agriculture	AI for agricultural efficiency and sustainability	AI in agricultural supply chains and trade	Trust in agricultural AI applications	AI for agricultural productivity, sustainability, and supply chain efficiency
AI and healthcare	AI in medical diagnostics and clinical decision-making	AI for healthcare effectiveness and equity; data considerations	Generative AI in healthcare; AI for public health emergencies	AI-driven diagnostics and treatments; AI for healthcare access and equity; AI and health data governance

Table 3: OECD thematic evolution and primary areas of focus, based on analysis of 363 WTO policy documents (2016-2024).

The North Atlantic Treaty Organisation

Theme	2016-2018	2019-2021	2022-2024	Key focus
AI technological edge and defence	AI for advanced weapon systems and maintaining technological advantage	AI as crucial for modernising military capabilities	AI for preserving technological edge amidst competitions	Integrating AI for strategic and tactical advantage; modernising defence capabilities
NATO-Russia relations	Balancing dialogue and deterrence	Russia as a security challenge; violations of arms control agreements	AI in the context of Russian aggression and hybrid threats	Evolving dynamics; AI and technological competition; addressing hybrid threats
Collective defence and partnership	AI for enhancing collaborative defence strategies	AI cooperation with private sector and academia	Operationalizing AI principles through collaboration	AI in collective defence; partnerships for AI development and interoperability
Counterterrorism and terrorism response	Limited coverage	AI in the context of evolving terrorist threats	AI for counterterrorism in emerging technologies framework	AI for enhancing counterterrorism strategies and responses
Cyber defence/Security and hybrid threats	Increasing focus on cyber threats and AI	Cyber attacks triggering Article 5; AI and cyber warfare	AI in the context of hybrid threats and resilience	AI for cybersecurity; addressing AI-enabled hybrid threats
AI cyber defence and partnership	Limited coverage	AI and cyber threats; AI for collective defence	AI, cybersecurity, and modern technology challenges	Collaborative AI efforts for cyber defence; AI and emerging tech threats
NATO adaptation and readiness	Adapting to technological innovations*	AI for operational readiness and infrastructure resilience	NATO's continuous adaptation to AI-driven changes	Integrating AI for enhanced readiness; adapting to technological shifts
AI uncertainty and risks	Concerns over AI advancements and risks	Risks of autonomous weapons; AI and arms control challenges	Managing AI risks; addressing AI in arms control	Addressing AI uncertainties; mitigating risks of AI in defence
NATO-China relations (AI leadership)	Limited coverage	China's AI ambitions challenging NATO's edge	China's AI investments and ideological challenges	China's AI leadership; technological competition; value-based challenges
AI and rules based order, international law and ethics	Limited coverage	AI's impact on arms control and international stability	Developing AI ethical standards and legal frameworks	Ethical AI use; international law compliance; AI governance frameworks

Theme	2016-2018	2019-2021	2022-2024	Key focus
AI in modern warfare	AI and information warfare concerns	AI transforming the nature of warfare	AI in cyber operations and defence strategies	AI's impact on warfare; integrating AI in military operations
Nuclear deterrence	Limited coverage	AI and nuclear command and control challenges	Limited coverage	AI's impact on nuclear deterrence; ensuring reliable nuclear C2
Burden sharing and investment	Limited coverage	Increased defence spending for technological edge	Sustained defence investment for AI adoption	Shared investments for AI capabilities; maintaining technological advantage
Space security and policy	Limited coverage	Developing NATO's space policy	Limited coverage	AI in space defence strategies; space as an operational domain
Global competition and geopolitical tension	Limited coverage	AI and the shifting global balance of power	AI in technological race and ideological competition	AI and geopolitical shifts; technological race; value-based competition
Climate change and security	Limited coverage	Climate change as a crisis multiplier; existential threat	Limited coverage	Climate-related security challenges; climate change and AI
Investment in AI	Limited coverage	Investing in AI for technological edge	Continued AI investments amidst global competitions	Investing in AI development; maintaining AI superiority
NATO-Ukraine collaboration	Limited coverage	Limited coverage	AI in the context of support to Ukraine; cyber cooperation	Collaborative AI efforts; AI and cyber support
Youth engagement and leadership	Limited coverage	Engaging youth in AI and defence	Empowering young entrepreneurs in defence technologies	Engaging youth in AI development; fostering leadership
AI strategy	Limited coverage	Limited coverage	Developing NATO's AI strategy and implementation frameworks	Strategic approach to AI adoption; operationalizing AI principles

Table 4: NATO thematic evolution and primary areas of focus, based on analysis of 145 WTO policy documents (2016-2024).

Appendix 2: document list & key evidence (quotations)

United Nations

"Together let us make sure we use artificial intelligence to enhance human dignity and serve the global good." - Artificial Intelligence Should Bolster Shared Values, Serve Global Good, Secretary-General Tells Summit in Video Message | Meetings Coverage and Press Releases (2017).

"The AI for Good Global Summit convened by the International Telecommunication Union recognizes the joint responsibility of governments, the private sector, United Nations agencies, academia, and others to ensure AI reaches its full potential — while preventing and mitigating harms." - Urging Creation of Guardrails, Secretary-General Tells AI for Good Summit Artificial Intelligence Must Benefit Everyone, Be Used to Drive Sustainable Development. Meetings Coverage and Press Releases (2023)

"We stress that under international law sovereignty entails an obligation in its own right and is therefore applicable as a standalone rule in the use of ICTs by States." - Compendium of statements in explanation of position on the adoption of the progress report of the Open-ended Working Group as contained in A/78/265, annex (2023)

"We should respect other countries' national sovereignty and strictly abide by their laws when providing them with AI products and services, highlighting the importance of ethical considerations in AI deployment across borders." - Letter dated 23 October 2023 from the Permanent Representative of China to the United Nations addressed to the Secretary-General (2023)

"As I have said before, autonomous machines with the power and discretion to select targets and take lives without human involvement are politically unacceptable, morally repugnant, and should be prohibited by international law." - Harness technological advances for 'the common good', Secretary-General tells Artificial Intelligence Summit (2019)

"Many have commented on the liberating potential of artificial intelligence for persons with disabilities…it can advance the overall goal of 'inclusive equality'." - Rights of persons with disabilities report of the Special Rapporteur on the Rights of Persons with Disabilities (2021)

"All artificial intelligence-related capacity-building programming by United Nations entities should be gender transformative." - Summary of deliberations Chief Executives Board for Coordination, 1st regular session addendum (2019)

"Going forward there is a need for a continued global dialogue and the building of a shared understanding of both the positive and negative impacts of artificial intelligence on the machinery of government." - Artificial intelligence governance to reinforce the 2030 Agenda and leave no one behind (2024)

"AI technologies could revolutionize peacekeeping operations by improving situational awareness and predictive capabilities for conflict prevention." - Letter dated 14 July 2023 from the Permanent Representative of the United Kingdom of Great Britain and Northern Ireland to the United Nations addressed to the Secretary-General (2023)

"AI's role in climate action was mentioned, particularly in optimizing energy usage and reducing emissions, with a focus on ensuring AI applications respect environmental rights." - Summary record of the 21st meeting 3rd Committee, held at Headquarters, New York, on Friday 13 October 2023, General Assembly, 78th session (2023)

"Artificial intelligence brings the promise of improved access to health care, accelerated economic development, and other gains." - Harness technological advances for 'the common good', Secretary-General tells Artificial Intelligence Summit (2019)

"But AI also has the potential for enormous good. Its powerful tools could drive forward the 2030 Agenda and the Sustainable Development Goals: by making a massive leap in health care and eradicating diseases that affect millions; by transforming education and empowering people everywhere to build a better future." - Urging Creation of Guardrails, Secretary-General Tells AI for Good Summit Artificial Intelligence Must Benefit Everyone, Be Used to Drive Sustainable Development - Meetings coverage and press releases (2023)

"Artificial Intelligence systems offer unprecedented opportunities for personalized learning, adapting educational content to meet the unique needs and pace of individual learners." "AI tools can provide significant support to teachers, offering data-driven insights into student performance and potential learning gaps, thus enhancing teaching effectiveness." "While AI has the potential to democratize access to education, there is a risk of widening the digital divide if not implemented with careful attention to equity and inclusion." - Global education monitoring report 2023 technology in education a tool on whose terms? (2023)

"AI applications hold the potential to accelerate progress towards the SDGs, offering innovative solutions to climate change, healthcare, and educational challenges." - Report of the High-level Committee on Programmes at its 46th session (United Nations Children's Fund, Global Supply and Logistics Hub, Copenhagen, 3 October (2023)

World Trade Organization

"Consensus-based international standards must be the essential component in developing AI regulations." - Committee on Technical Barriers to Trade - Thematic session on regulatory cooperation between Members on intangible digital products - 20 June 2023, 10:00 - 13:00 - Moderator's report (2023)

"The new measure extends the government's "golden powers", which allow to block and impose conditions on takeovers by non-EU companies, to high technology sectors in cases of threats to national security and public order, subject to prior adoption of administrative regulations. Sectors concerned can now include, if individuated by a regulation: critical or sensitive infrastructure such as storage and management of data; critical technology, including robotics and artificial intelligence; security of supply of critical inputs; access to sensitive information or ability to control sensitive information." - Trade Policy Review Body - Report to the TPRB from the Director-General on Trade-Related Developments - (Mid-October 2017 to mid-May 2018) (2018)

"This WTO Trade Monitoring Report on trade-related developments arrives with multiple crises affecting the global economy. Inflation and large external debts in many countries, the war in Ukraine, climate change, high food and energy prices, as well as persistent pandemic-related ramifications, are all impacting the global economic environment." - Trade Policy Review Body - Overview of developments in the international trading environment - Annual Report by the Director-General - Mid-October 2022 to mid-October 2023 (2023)

"This project is strengthening Uganda's data systems to create AI-driven COVID-19 responses that improve *surveillance and management of the pandemic. The project is also developing and deploying AI-driven detection and diagnosis tools for improved patient care and real-time tracking of COVID-19 spread and associated risks." - Council for Trade-Related Aspects of Intellectual Property Rights - Report on the implementation of article 66.2 of the TRIPS Agreement - Canada (2021)*

"The UAE's healthcare sector is also capitalizing on AI technologies. The Ministry of Health and Prevention, for example, developed and released Medopad, a smart application that continuously monitors and analyses patient data to predict life-threatening medical conditions." - Trade Policy Review Body - Trade policy review - Report by United Arab Emirates - Revision (2022)

"The creation of digital agreements offers an opportunity for cooperation between developed and developing countries. Aid for Trade must therefore help with digital capacity-building efforts in areas such as digital connectivity, and digital literacy, often incorporating AI technologies." - Committee on Trade and Development - Aid for trade - Eighth global review of aid for trade - Empowering connected sustainable trade - Summary report - 27 - 29 July 2022 (2022)

"In January 2021, the UAE Cabinet approved the 'UAE Circular Economy Policy', which is a comprehensive framework for identifying circular economy priorities, achieving sustainable governance and ensuring the efficient use of natural resources through the adoption of sustainable consumption and production methods." - Trade Policy Review Body - Trade policy review - Report by United Arab Emirates - Revision (2022)

The creation of digital agreements offers an opportunity for cooperation between developed and developing countries. Aid for Trade must therefore help with digital capacity-building efforts in areas such as digital connectivity, and digital literacy, often incorporating AI technologies." - Committee on Trade and Development - Aid for trade - Eighth global review of aid for trade - Empowering connected sustainable trade - Summary report - 27 - 29 July 2022 (2022)

"On the artificial intelligence tools presented, he praised the mobile equipment for farmers to interact with producers in other cotton-producing countries to identify pests and improve their good agricultural practices, especially considering the illiteracy of many farmers." - Sub-Committee on Cotton - Roundtable - The current market situation for fertilizers and viable alternatives for cotton production - 10 November 2022, 15:00 - 18:00 (Room F / Interprefy) - Report (2023)

"Regarding the challenges with introducing digital technology in several parts of the world, especially in Africa and Asia, he highlighted the fact that farmers would need a smartphone, access to electricity to charge their devices, a reliable internet service and a mobile data plan. This might pose special difficulties to elderly farmers who were not used to handling new technologies." - Sub-Committee on Cotton - Implementation of the development assistance aspects of the cotton-related discussions in the 2004 July package and paragraph 12 of the Hong Kong Ministerial Declaration - Item 2c - Coherence between trade and development aspects : update on t[...]hanism on Cotton - 30 July 2020 (2020)

“The second digital tool presented by ICAC is an interactive soil and plant health application for use on smartphone devices and available in several languages. The farmer must enter the location of the farm and the application will identify the soil type, monitor the weather forecast, measure heat and soil moisture, and advise when to sow. The application analyses diseases and provides a diagnosis through a tailored-made algorithm. It also produces weekly advice and market prices at the nearest markets.” - Sub-Committee on Cotton - Implementation of the development assistance aspects of the cotton-related discussions in the 2004 July package and paragraph 12 of the Hong Kong Ministerial Declaration - Item 2c - Coherence between trade and development aspects : update on t[…]hanism on Cotton - 30 July 2020 (2020)

“He stated that the EU would like to understand better the digital transformation agenda, artificial intelligence and block chain technologies applied to agricultural sectors, and how they would be incorporated in future activities.” - Sub-Committee on Cotton - Thematic session on cotton by-products development in least-developed countries (LDCs) - 12 November 2020 - Report (2021)

“The WTO Secretariat has utilized artificial intelligence and machine learning algorithms to enhance the trade monitoring process, ensuring more accurate and timely data analysis.” - Trade Policy Review Body - Overview of developments in the international trading environment - Annual report by the Director-General - Mid-October 2019 to mid-October 2020 (2020)

Organisation for Economic Co-operation and Development

“AI is making devices and systems smart and empowering new kinds of software and robots that increasingly act as self-governing agents, operating much more independently from the decisions of their human creators and operators than machines have previously done.” - Going digital: making the transformation work for growth and well-being (2017)

“It is essential that trust remains the bedrock of societies, communities, economies, and sustainable development. We therefore identify Trustworthy AI as our foundational ambition, since human beings and communities will only be able to have confidence in the technology’s development and its applications when a clear and comprehensive framework for achieving its trustworthiness is in place.” - Hello, World. Artificial intelligence and its use in the public sector (2019)

“Stakeholders should proactively engage in responsible stewardship of trustworthy AI in pursuit of beneficial outcomes for people and the planet, such as augmenting human capabilities and enhancing creativity, advancing inclusion of underrepresented populations, reducing economic, social, gender and other inequalities, and protecting natural environments, thus invigorating inclusive growth, sustainable development and well-being.” - Terms of Reference (2022)

“The digital transformation is rapidly reshaping the way we learn, live and work, redefining interactions between economic, social and government actors, and creating new opportunities for growth and well-being. The COVID-19 crisis is accelerating the already fast pace of the digital transformation and underscoring the growing importance of digital technologies, such as Artificial Intelligence and blockchain, in our daily lives.” - 2020 strategic orientations of the secretary-general (2020)

“Modern and increasingly statistical and probabilistic AI systems use data as an input… Biased data can result in systems delivering biased outcomes.” “However, the technology can lack transparency that challenges traditional accountability mechanisms and could propagate biases.” - Data in an evolving technological landscape (2022)

“Algorithmic discrimination can affect gender equality and non-discrimination and can also increase the gender pay and gender digital gap as well as gender stereotypes and structural inequalities between women and men.” - POLICY FRAMEWORK FOR GENDER-SENSITIVE PUBLIC GOVERNANCE (2021)

“AI is expected to replace and/or augment components of human labour in both skilled and unskilled jobs, requiring policies to facilitate professional transitions and to help workers develop the skills to benefit from, and to complement AI.” - GOING DIGITAL IN A MULTILATERAL WORLD (2018)

“While certain jobs may disappear, others will emerge… Job automation could bring large benefits to the economy, such as higher productivity and improved working conditions.” - THAILAND’S EDUCATION SYSTEM AND SKILLS IMBALANCES: ASSESSMENT AND POLICY RECOMMENDATIONS (2021)

“Inclusiveness may deteriorate if the AI application under consideration reinforces existing disparities and biases.” - Defining and Classifying AI in the Workplace (2023)

“AI brings immense promise for the personalisation of instruction: AI Applications allow identifying materials and approaches in line with each student’s needs and, relying on data from students, make predictions and recommendations about how to pursue learning activities.” - ICT resources in school education: What do we know from OECD work? (2020)

“If the data used to train these systems does not sufficiently reflect the potential diversity of student backgrounds and characteristics, bias can be built into the system and further disadvantage students from already disadvantaged backgrounds.” - Digital equity and inclusion in education: An overview of practice and policy in OECD countries (2023)

“Artificial intelligence (AI) has the potential to make health care more effective, efficient and equitable.” “AI promises to change clinical practice in the not so distant future… automation of diagnostic processes and clinical decision-making.” - OECD Health Working Paper No. 128 (2021)

“The challenges of technology governance place the agility, quality and coherence of regulation front and centre… regulatory sandboxes… agile regulatory governance.” - KEY ISSUES PAPER - PART II OF THE 2021 MINISTERIAL COUNCIL MEETING (2021)

“Digital security risk management should be based on ethical conduct which respects and recognizes the legitimate interests of others and of the society as a whole.” - Enhancing the Digital Security of Critical Activities (2021)

“Operationalising data governance and AI Principles will also require international collaboration to harmonise approaches to health data development, use and governance and to ensure that the application of AI is ethical and helpful, with benefits that outweigh its costs.” - Laying the foundations for artificial intelligence in health (2021)

“Addressing ethical concerns during systems design is essential to prevent AI systems from causing unintended harm.” - Stocktaking for the development of an AI incident definition (2023)

“Making sure that workers have the right skills to work with new technologies is therefore a key policy challenge.” - AI and Employment (2021)

“Wide-scale use of blockchain and AI in circular economy applications requires data processing that is energy intensive.” “The recognition of specific materials (through AI and machine vision) and their handling (with robotic arms) improve the quality and thereby also the amount of secondary material that can be further reused, reducing thus the demand for and dependence on virgin materials.” “AI can also help optimising the logistics through estimation to logistics techniques… through the use of sensors monitoring vehicle performance and the behaviour of the driver, routing of deliveries has been seen to improve fuel efficiency by 15% for a trucking company.” - Digitalisation for the transition to a resource efficient and circular economy (2022)

“Digital technologies can help track agriculture’s impacts on the environment. This ‘datafication’ of production processes unlocks the potential to apply digital analytical techniques to physical and economic processes.” - How digital technologies are impacting the way we grow and distribute food (2018) - ENHANCING THE CONTRIBUTION OF DIGITALISATION TO THE SMART CITIES OF THE FUTURE (2019)

“AI tools and techniques helped policy makers and the medical community understand the COVID-19 virus and accelerate research on treatments by rapidly analysing large volumes of research data.” - OECD Digital Economy Outlook 2020

“AI can identify unknown patterns or irregularities in data thus helping to improve the accuracy of administrative or clinical decision making, better allocate resources, anticipate risks, or enhance biomedical research and drug discovery, among many other things.” “AI applications in health require large amounts of training data to make predictions… these algorithms may not work well when used with data that is even slightly different from the training data.” - OECD Health Working Paper No. 129 (2021)

“In education AI can be considered trustworthy not just when the system successfully implements what it is supposed to do, but also when one can trust humans will use it in an appropriate and fair way.” - Children in the Digital Environment: Revised Typology of Risks (2021)

“Technology provides platforms for collaboration in knowledge creation, where teachers can share and enrich teaching materials… Technology can enhance experiential learning, foster project-based and inquiry-based pedagogies, facilitate hands-on activities and co-operative learning, and deliver formative real-time assessment.” - CURRICULUM REFORM: A LITERATURE REVIEW TO SUPPORT EFFECTIVE IMPLEMENTATION (2020)

“For a number of reasons (e.g. representativeness and breadth of input data), many applications of AI in health would gain considerably from cross-border collaboration.” - Laying the foundations for artificial intelligence in health (2021)

“Advanced technologies, such as AI, promise significant change to various areas of education systems, including assessment, learning analytics for parents, schools or school systems, dropout reduction or credentials.” “Digital technologies and data can be used to improve policy coordination and create more integrated public services or more easily identify emerging trends (e.g. in terms of new professional development needs).” “New analytical tools and personalised learning technologies can enable educators to respond to each student’s needs, adapt their teaching to different learning styles, abilities and interests, and provide additional support to students who might otherwise fall behind.” - Policies for the Digital Transformation of School Education: Proposed analytical framework and methodology (2023)

“Digital access and literacy remain an obstacle to wider participation of vulnerable groups.” - Building Trust and Reinforcing Democracy – Key Issues Paper (2023)

“Combining sensors, automated farm machinery and advanced analytics software to fine-tune and automate agricultural production.” “Robots can be used to carry sensors to extend the farmers’ eyes (in multiple senses), but can also be used to perform actions in the field, to increase productivity and labour costs.” - How digital technologies are impacting the way we grow and distribute food (2018)

“The take-up of digital technologies has been slow. For instance, only 16% of businesses in the agricultural sector were using fibre broadband.” - BOOSTING PRODUCTIVITY IN NEW ZEALAND BY UNLEASHING DIGITALISATION (2021)

“In agriculture, the use of data in combination with artificial intelligence (AI) holds significant promise to enhance productivity, sustainability, and resilience.” - Data Stewardship, Access, Sharing and Control: A Going Digital III module synthesis report (2023)

“Digital security risk undermines trust in digital transformation and generates tremendous economic and social costs.” - ENCOURAGING VULNERABILITY TREATMENT (2021)

“Artificial intelligence is among the technologies that are contributing to the complexity of the digital environment, increasing the potential attack surface of critical infrastructures.” - Enhancing the Digital Security of Critical Activities (2021)

“There can be substantial benefits from international co-operation, particularly in terms of sharing experience, resources, code and potentially even data.” - Data Screening Tools in Competition Investigations - Background note by the Secretariat (2022)

The North Atlantic Treaty Organisation

“It’s obvious that we are in the midst of the most intense technological race, not only in recent history, but also, probably, in centuries.” (2021) - NATO - Opinion_ Remarks by NATO Deputy Secretary General Mircea Geoană in the panel_ “Global Emerging Technology Summit” organised by the National Security Commission on AI (NSCAI), 13-Jul.-2021

“For 70 years, NATO’s deterrence and defence has relied upon maintaining our technological edge, on being better and more advanced than our opponents. We have done this by investing more in research and development than anyone else, but today we are under fierce competition. For example, President Xi has announced plans for China to become the world’s leading power in artificial intelligence by the end of 2030 and is investing billions of dollars to make it happen. Our future security depends on our ability to understand, adopt and implement emerging disruptive technologies.” - NATO - Opinion_ ‘‘NATO_ Maintaining Security in a Changing World’’ - Speech by NATO Secretary General Jens Stoltenberg - Ambassador Donald and Vera Blinken Lecture on Global Governance, Columbia University, 26-Sep. (2019)

“China is a leading actor in artificial intelligence and a hub for AI development, which makes this forum an especially appropriate venue for discussion of these issues.” - NATO - Opinion_ Remarks by NATO Deputy Secretary General Rose Gottemoeller at the Xiangshan Forum in Beijing, China, 25-Oct. (2018)

“China is not our enemy, but its rise is fundamentally shifting the global balance of power.” - NATO - Opinion_ Adapting NATO for 2030 and beyond - Speech by NATO Secretary General Jens Stoltenberg at the 66th Annual Session of the NATO Parliamentary Assembly, 23-Nov. (2020)

“AI applications will be developed and used in accordance with national and international law, including international humanitarian law and human rights law, as applicable.” - NATO - Official text_ Summary of the NATO Artificial Intelligence Strategy, 22-Oct. (2021)

“The six PRUs are: Lawfulness, Responsibility and Accountability, Explainability and Traceability, Reliability, Governability, and Bias Mitigation.” - NATO - Official text_ Summary of NATO’s Data Exploitation Framework Policy, 22-Oct. (2021)

“NATO has realised that the nature of warfare is fundamentally changing, not only because of cyber, but because of artificial intelligence, autonomous weapon systems, facial recognition.” - NATO - Opinion_ “The future of NATO” - Session at the World Economic Forum with participation of NATO Secretary General Jens Stoltenberg, 23-Jan. (2020)

“On cyber, in particular, we have decided that a cyber-attack can trigger Article 5. And that was actually an important decision.” - NATO - Opinion_ “The future of NATO” - Session at the World Economic Forum with participation of NATO Secretary General Jens Stoltenberg, 23-Jan. (2020)

“We should also address the impact on arms control of emerging and disruptive technologies. Such as autonomous platforms and artificial intelligence. They can all be weaponised.” - NATO - Opinion_ Remarks by NATO Secretary General Jens Stoltenberg at the 17th Annual NATO Conference on, Arms Control, Disarmament and Weapons of Mass Destruction Non-Proliferation, 06-Sep. (2021)

“how do we approach the advent of entirely autonomous weapons systems that can locate, identify and kill with no human interaction?” - NATO - Opinion_ Speech by NATO Secretary General Jens Stoltenberg at the United States Military Academy West Point , 25-Sep. (2019)

“They don’t share values. We see how they crackdown on the free independent press. They monitor and control the people in a way we’ve never seen before. Also using artificial intelligence and facial recognition to control their people in a way we’ve not seen before. All of this matters.” - NATO - Opinion_ Joint press conference with NATO Secretary General Jens Stoltenberg, the Minister of Foreign Affairs of France, Jean-Yves Le Drian, and the Minister of the Armed Forces of France, Florence Parly, 10-Dec.-2021

“Our ambition is for NATO to set the gold standard on the ethical use of new technologies in defence.” - NATO - Opinion_ Speech by NATO Deputy Secretary General Mircea Geoană at the GoTech World 2022 conference, 04-Nov. (2022)

“We have developed Principles of Responsible Use for emerging technologies, such as AI, we will do the same for quantum, will do the same for biotech, will do the same for every single new piece of technology, that can be used also for defence and security. Because we are democratic societies, and we owe this to our citizens, we owe this to our freedom. And making sure that we use responsibly new technologies is something that NATO takes very seriously.” - NATO - Opinion_ Speech by NATO Deputy Secretary General Mircea Geoană followed by Q&A session at the 2023 Spring Session of the NATO Parliamentary Assembly (NPA), 22-May. (2023)

“NATO’s Data and AI Review Board…operationalise the Principles of Responsible Use of AI that Allies agreed in NATO’s AI Strategy, including by developing a ‘Responsible AI’ certification standard.” - NATO - Topic_ Emerging and disruptive technologies (2024)

“One of the reasons why we have pledged to invest more is that that’s the only way to keep our technological edge. The best way to develop new technologies and to also apply them in military systems and capabilities is, of course, to invest in new, modern systems.” - NATO - Opinion_ Conversation between NATO Secretary General Jens Stoltenberg and Rose Gottemoeller, Payne Distinguished Lecturer at the Center for International Security and Cooperation (CISAC), Stanford University, 09-Mar. (2021)

“Recognising the leading role of the civil private sector and academia in AI development, this Strategy will be underpinned by: significant cooperation between NATO, the private sector and academia.” - NATO - Official text_ Summary of the NATO Artificial Intelligence Strategy, 22-Oct. (2021)

“First, I think your question highlights one important message when it comes to climate change and security. And that is that climate change is a kind of crisis multiplier.” - NATO - Opinion_ NATO and the security implications of climate change - Virtual speech by NATO Secretary General Jens Stoltenberg, 28-Sep. (2020)

“NATO is not immune. We register suspicious events against NATO cyber systems every day. And cyber threats will become more dangerous with the development of new technologies. Such as artificial intelligence, machine learning and deep fakes.” - NATO - Opinion_ Remarks by NATO Secretary General Jens Stoltenberg at the Cyber Defence Pledge Conference, London, 23-May. (2019)

“Malicious cyber and hybrid activities are a common feature of a more contested world…” - NATO - Opinion_ Keynote address by NATO Deputy Secretary General at InnovX-BCR DemoDay, 15-Jun. (2022)

Authors
Aleksei Turobov, Diane Coyle, Verity Harding
Bennett Institute for Public Policy, University of Cambridge

Suggested citation
Turobov, A., Coyle, D. and Harding, V. (2024). 'Moving beyond competition. Domain-specific approach for international AI framework.' Bennett Institute for Public Policy, University of Cambridge.

Acknowledgement
This research was supported by the MacArthur Foundation Grant No. 23-2306-157778-TPI.

Methodological work with ChatGPT for this research received ethical approval from the Department of Politics & International Studies, University of Cambridge.

About the AI & Geopolitics Project (AIxGEO)
This Policy Paper is produced by the AI & Geopolitics Project (AIxGEO). AIxGEO aims, through research, publications, and convenings, to critically analyse the AI arms race narrative and provide evidence-based foundations for a more cooperative future for AI development so that the technology can deliver the broad benefits it promises

bennettschool.cam.ac.uk/research/research-projects/aixgeo/

About the Bennett Institute for Public Policy
The Bennett Institute for Public Policy at the University of Cambridge is committed to interdisciplinary academic and policy research into the major challenges facing the world, and to high-quality teaching of the knowledge and skills required in public service. Our research connects the world-leading work in technology and science at Cambridge with the economic and political dimensions of policymaking. We are committed to outstanding teaching, policy engagement, and to devising sustainable and long-lasting solutions.

bennettinstitute.cam.ac.uk

UNIVERSITY OF CAMBRIDGE

Bennett Institute for Public Policy Cambridge

bennettinstitute.cam.ac.uk