

**BFPG**

British Foreign Policy Group

# New Frontiers of Global Regulation

An Urgent Opportunity for  
Global Britain's Leadership

Sophia Gaston and Eleni Koumoundouros

March 2022

---

## The British Foreign Policy Group

The British Foreign Policy Group (BFPG) is an independent, non-partisan think tank dedicated to advancing the UK's global influence, at a crucial time in the nation's modern history. Our core objective is to bridge the link between the domestic and international spheres – recognising that Britain's foreign policy choices are shaped by our social, economic and democratic landscape at home. The BFPG works as the connective tissue between the UK's policy-makers, businesses, institutions, and ordinary citizens, to promote the connectivity and understanding needed to underpin Britain's national resilience and global leadership in the 21st Century.

Our mission supports Britain as a strong, engaged and influential global actor. We promote democratic values, liberal societies, and the power of multilateralism – and we recognise Britain's critical international responsibility to uphold and extend these throughout the world. The BFPG believes that a strong and united nation at home is the essential foundation of a confident and effective British foreign policy.

## The Authors

**Sophia Gaston** is the Director of the British Foreign Policy Group. She is a social and political researcher specialising in public opinion, whose research particularly explores threats to governance in advanced liberal democracies. Through the British Foreign Policy Group, she works to support the advancement of the Global Britain agenda through a particular focus on the integration of domestic and international policy-making, the reinvigoration of Britain's international relationships, and the harnessing of social research as a tool of strategic foreign policy foresight. Sophia is a Research Fellow in the Institute for Global Affairs at the London School of Economics and Political Science, and an Academic Fellow at the European Policy Centre in Brussels.

[sophia.gaston@bfpg.co.uk](mailto:sophia.gaston@bfpg.co.uk)

**Eleni Koumoundouros** is the Research and Events Coordinator at the British Foreign Policy Group. Having studied her undergraduate degree at the University of Surrey, she then went on to complete a Master's degree in International Relations at Goldsmiths, University of London. Her primary interests are security and defence, with an emphasis on grey-zone warfare, emerging threats and concepts of resilience. Eleni is an advocate for gender equality within a European women's rights organisation, championing youth and women's leadership, particularly within global governance structures.

[eleni.koumoundouros@bfpg.co.uk](mailto:eleni.koumoundouros@bfpg.co.uk)

## Acknowledgements

With thanks to BFPG colleagues Evie Aspinall and Sam Brown, and to designer Nadia Nelson, for their support in bringing this paper to life as a publication.

---

# Introduction and Overview

The UK has played a defining historical role in setting practical, ethical and liberal international standards and imposing robust regulatory frameworks to support global governance. We increasingly recognise that the liberal world order constituted in the 20th Century is facing profound and existential threats, and that we will need to renew cooperation with our allies to hold rising authoritarian states to account. While the coordinated statements, sanctions and other instruments being deployed among Western liberal partners towards such regimes are important tools of strategic influence and markers of strength, we must also consider the structural environment in which the future of liberalism and authoritarianism will be contested. Beyond holding our strategic rivals to account, we must also ensure that we are upholding and building the stage on which this accountability is defined and constituted. One of the most tangible and transformative means of embedding our fundamental values will be through our involvement in shaping the architecture of new frontiers of global regulation.

This introductory concept paper sets out how four areas of emerging governance – the ‘global’ internet, ethical Artificial Intelligence, space, and the Arctic – are spheres of significant interest to our geo-strategic rivals, and domains in which the UK has clear areas of expertise and credibility through which to advance our interests, and gain a ‘first-mover’ advantage. These spheres are each of independent and growing value to our democratic way of life, our prosperity, supply chains, and our national resilience, as well as of shared importance to global peace and security. The vacuum that is developing in the absence of clear frameworks of regulation offers no strategic benefit for the West, and considerable risk to many areas of our collective interest. There is an urgent need for the UK to invest in understanding the geopolitical potential of these areas, their utility to authoritarian states, and their role in determining future power dynamics. Moreover, to determine clear pathways through which the UK can carve out a leadership role in codifying and setting common standards and values by which such frontiers can be collectively managed.

## **This concept paper focuses on four themes:**

1. The Open Internet .....	p.4
2. Ethical Artificial Intelligence .....	p.9
3. The New 'Space Race' .....	p.15
4. The Arctic .....	p.22

---

# The Open Internet

The centrality of the internet to our economic, social, and political life is self-evident, and its increasing geopolitical role – both as a forum for the global commons and a tool of strategic influence and interference – requires urgent attention, up-skilling of capabilities, and resources. While there has been growing focus over recent years on the risks posed by cyber intrusions and the need for the UK to consider digital networks as part of our critical infrastructure, the broader picture of digital geopolitics has been reinforced by a trend towards increasingly balkanised, nationally led regulation. With data flows set to outpace growth in trade and finance over the coming years, it is unsustainable for global regulation in this area to continue to fall short.<sup>1</sup>

The terminology of ‘cyber sovereignty’ reflects the degree to which internet regulation is increasingly seen as both an imperative of national security and as an expression of individual national principles and values. The transferral of aspects of the national public sphere into a digital domain has rendered regulatory frameworks inextricably linked to questions of social and political power. Thus far, the incentives have fallen towards national regulation, with the fundamental question often being how governments can challenge the transnational power and influence of the technology superpowers. These debates around the ‘re-nationalisation’ of taxation and content moderation and social harms in the context of increasingly international platforms have obscured the task – and the opportunity – of considering the internet as a common space. One in which we could apply the tenets of global governance that we uphold in geographic terms, such as through freedom of navigation principles, to the digital arena.

As it currently stands, the evidence suggests that internet regulations will be framed in the short term as a tool of national governance and contested advantage.<sup>2</sup> There are implications of this trend for global peace and security, but also for digital commerce and international trade. Undoubtedly, imposing common frameworks at this point in the evolution of the internet and with global power dynamics leaning towards multipolarity will be immensely challenging, but it is also the case that the longer that normative practices remain undetermined, the more difficult the task will become for the liberal world to act as guardians and first-movers of this process.<sup>3</sup>

## The UK's Strategic Rivals

As a starting point, it will be wise to consider the efforts and intentions of our strategic rivals in determining how best to structure liberal-led initiatives that will best uphold our interests and values. For example, the West has recently been focused on software and hardware intrusions, while China and Russia have tended to concern themselves with information security.<sup>4</sup> Our own strategic interests may well necessitate that we approach this process from a fundamentally distinct angle than those nations we have designated to be existential threats, but it is essential that we take the time to understand their instincts to ensure that the architecture we seek to construct is resilient and adaptive.

China's domestic regulation interests are primarily focused on the twin prongs of censorship and surveillance, while the rising commercial success of technology companies is also a concern on a structural economic level. In 2000, the Chinese Communist Party's (CCP) Ministry of Public Security launched the ‘Golden Shield Project’, which has facilitated state-led initiatives to define harmful content, enabled the identification of individuals in the online environment, and provided access to users' personal records.<sup>5</sup> Over more recent years, China's internet service has come to be known as the ‘Great Firewall’, with many of the largest Western-owned websites and platforms – including Google, Facebook and Yahoo – either banned or subject to significant content restrictions. Technology giant Amazon, for example, has only managed to capture 1.3% of China's e-commerce as a result.<sup>6</sup> The nation's internet

infrastructure is regarded as not only a tool of domestic stability but a core tenet of China's digital foreign policy, in line with its broader 'dual circulation' strategy, which in part prioritises the sovereignty and supremacy of China's internal markets.<sup>7</sup>

Censorship has escalated under China's current President Xi Jinping, with the Chinese state harnessing AI-powered censors to scan images for specific pictures and words or phrases to remove.<sup>8</sup> This model has proven attractive to other regimes, including Iran and Saudi Arabia, which have in some ways looked to China as a blueprint of national governance.<sup>9</sup> The decision to tighten the scope of China's information environment has come up against the broader recognition within the CCP that digital innovation is an essential foundation of economic prosperity and the understanding that China will need to remain internationally competitive in these spheres.<sup>10</sup> As the compact between the Chinese Government and its citizens emphasises economic growth and security, the trajectory of this dynamic sector is a matter of political importance.

Digital regulation in authoritarian states, including China, generally extends beyond content moderation into the governance of network access. In late-2019, Russia implemented a new 'sovereign internet' law that allows the Russian Government to both monitor and impede citizens' access to the internet – capabilities that Chinese-owned technology provider Huawei assisted in developing.<sup>11</sup> Although the legislation is framed as a pillar of national security, it is clear that it also confers domestic powers that can be deployed as tools of state coercion against Russian citizens. While the use of internet shutdowns in periods of unrest within fragile states is clearly evidenced – for example, during the Arab Spring, and more recently in Myanmar<sup>12</sup> – these tactics are also being honed and perfected for more incremental incursions of social and political control. Most recently, Russia has been accused of launching a cyber-attack on Ukrainian state apparatus as part of its escalating military aggressions towards Ukraine, with 70 Government websites shut down as a menacing foreshadowing of the cyber dimensions likely to be embedded within a possible broader invasion.<sup>13</sup>

One particularly concerning aspect of China's efforts to define its own national technology regulation infrastructure is its intention to export these to other developing markets through its Digital Silk Road (DSR) initiative – which has overseen enormous sums of investment in low- and middle-income nations, many of which do not currently have their own regulatory structures.<sup>14</sup> China's involvement in building digital infrastructure in the developing world often appoints the capacity to maintain these systems and networks, which may create ongoing relationships of dependence and embed China-designed architecture determining the nature of systems access and possibly even content interference and data capture.<sup>15</sup> With China's state media compelling domestic internet companies to promote 'social values', the influence of its capture of developing markets may extend into a form of cultural diplomacy.<sup>16</sup> This is a risk worthy of particular scrutiny since the publication of the 'China Standards 2035' document in 2018, which set out plans to centralise China's standards on cyber and technology to become the global norm.<sup>17</sup>

As in other areas of global governance, the Chinese Government has been adept at securing positions of global influence for itself in existing regulatory and cooperation structures. For example, the current Secretary-General of the International Telecommunication Union (ITU) – a UN agency dedicated to matters relating to information and communication technologies, comprising 193 nations and 900 non-state sector members – is Chinese telecoms engineer Houlin Zhao. In 2022, the leadership of the ITU will be renewed, with the United States putting forward a candidate for the Secretary-General role, Doreen Bodgan-Martin, competing with a Russian candidate, who is also a former Huawei executive.<sup>18</sup>

The Chinese Government has recently launched a proposal to the ITU for a new standard for core network technology called 'New IP', which builds on a Huawei-led initiative to embed 'intrinsic security' into the internet, and in practice could see citizens' privacy and open access fundamentally compromised.<sup>19</sup> The recent joint statement in February 2022 by China and

Russia on a new era of international cooperation between the two powers highlighted the ITU as a means to ensure that national regulation of the internet remains viable, and described any attempts to limit this national authority as “unacceptable.”<sup>20</sup>

Despite the efforts by individual nations to gain influence within regulatory structures, it is ultimately the global private technology companies that have consumed much of the oxygen of debates around internet regulation, and it is impossible to draw hard lines between these organisations and their geopolitical influence – notwithstanding the fact that this influence can be intentional or take a more indirect form. Certainly, while the West has tended to focus on the pertinent questions of taxation and content moderation posed by multi-national technology behemoths, less thought has been given to the role that these organisations play in advancing Western values in non-democratic environments, and the consequences of their withdrawal from authoritarian markets. In China, the Personal Information Protection Law, which took effect in November 2021, limits the information that companies are allowed to gather and sets standards for how it must be stored. This Law saw several major technology companies and platforms including Yahoo, LinkedIn, and Epic Games withdraw or scale back their offering in the Chinese market in the first month of its application.<sup>21</sup>

One of the most difficult issues to reconcile is that it is hard to see the incentive for Chinese cooperation in a global governance framework when Chinese-owned technology companies are increasingly regarded – in many cases, with due reason – as a fundamental security risk. It is impossible to consider these companies as fully or even partially independent from the nation’s authoritarian government, given the realities of the hybridisation between its state and market. The question is then whether it is possible to design a framework of foundational standards that is not seen to be distinctively hostile towards the interests of either democratic or private sector interests in both the West and in other spheres of multipolar influence. Or, perhaps more credibly, to persuade a significant enough proportion of the world’s nations to adhere to a system that can reasonably be described as ‘global’ in reach.

## Challenges to Global Consensus-Building

---

Progress in designing and developing global internet regulation has thus far been slow, in large part driven by divides between the multiple competing spheres of interest within the West. This is further complicated by the various differences of opinion between the United States Government and the Silicon Valley technology giants within its own jurisdiction. Broadly, however, the longer-term trend across successive administrations has been that the United States promotes a free market, *laissez-faire* approach with low barriers to entry and minimal regulation. On the other hand, the EU promotes a framework of consumer rights, such as data and copyright protection.<sup>22</sup> This framework is grounded in values, but ultimately restricts the ability of many European companies to reach the scale required to become truly global players in the manner of the American technology behemoths. The result is that even traditionally likeminded allies have struggled to find enough substantive areas of common ground to establish a normative regime.<sup>23</sup>

There are obvious incentives for non-democratic regimes to uphold the increased state control they can insert through national internet regulation. At the same time, despite their commitment to other areas of international governance, many democratic governments believe that national frameworks are the most effective way in which they can respond directly to their citizens’ expectations around online safeguarding.<sup>24</sup> On a practical level, as the interests of both national governments and private organisations move further down into the internet stack – ie. the different levels of the internet, such as the application and network levels – it becomes increasingly difficult to create a fully interoperable internet across many layers of nationally fragmented innovation. Ultimately, nationalising internet systems will not only constrain citizens’ freedoms, and erode common global dialogue and connectivity, but will result in the formation of less efficient, more costly, and delayed network systems.<sup>25</sup>

In recent years, nations have been inclined to focus on ensuring their “Silicon-to-service” supply chains are defensively robust, and that they are sufficiently upholding their national values.<sup>26</sup> This has often taken place at the expense of devoting resources towards longer-term solutions, such as a multi-stakeholder approach to internet governance, which would ultimately strengthen collective resilience.<sup>27</sup>

## The Case for British Leadership

---

In examining its role in shaping global internet governance standards, the UK is already endowed with a number of key strengths that can be harnessed. There is, for example, a strong foundation of British non-governmental organisations working within this arena, which are already driving calls for an open, transparent and multi-stakeholder dialogue surrounding an open internet.<sup>28</sup> The relatively constructive links between civil society and the UK Government not only enhances the viability of forging a rigorous and ethical domestic framework, but also afford greater legitimacy to our global leadership in this area. The UK also has established an enduring degree of international credibility around its financial and legal systems due to the consistency and clarity of its regulatory frameworks, which – although by no means perfect and with some notable weak spots – provide certainty and transparency to both domestic and international actors. These principles should also be extended to internet governance, as well as the establishment of robust and independent oversight bodies.

The first step will be to determine the best means of cooperation within the existing Western alliance. As outlined above, data regulation and digital flows are already sources of active competition and contestation between the European Union and the United States, as the EU has recognised digital rights and taxation as an area in which its common market can wield genuinely global influence. The United States has taken a fundamentally different approach, in part driven by its distinct entrepreneurial culture, and the fact that many of the world’s most successful technology platforms are American-owned. A debate has emerged between those who believe that global internet security is unachievable, and that we should rather pursue a more regional approach to create zones of trust, and those who argue that imposing a baseline of global standards will be essential to upholding the concept of universal rights and the free movement of information.<sup>29</sup>

The next stage would be to consider the values and principles that need to be embedded in such a framework. Certainly, the trade-offs already posing significant challenges in national contexts will in many ways intensify and become more complex in a global process. As a starting point, the UK should look at the lessons learned from early efforts to experiment at a national level – both at home and abroad – in reconciling these. For example, when applied in emerging markets, some data privacy rules may tend to benefit larger multinational corporations over SMEs or start-ups, which can ultimately stifle innovation and competition.<sup>30</sup>

Building on the progress made on digital technical standards under its leadership at the 2021 G7 Summit in Cornwall, the UK should leverage its established position within multilateral institutions to promote global internet governance frameworks.<sup>31</sup> These will be the essential accompaniment and underpinning to efforts to challenge China’s dominance in competitive technology tenders, which had formed at least part of the original impetus behind the concept of forging a ‘D10’ group of democratic nations. Profound divergences between the United States and the EU on digital policy have created an opening for the UK to act as a moderator and convenor at the head of a broader cyber alliance of burden-sharing liberal democracies, forging a broad consensus that is resilient enough to accommodate the outstanding differences of opinion between these two spheres of influence within the West.

The UK’s efforts to advance global regulation will need to be underpinned by robust domestic frameworks, which keep up with the pace of innovation and are future-proofed against technological transformation. The first draft of the UK’s Online Safety Bill was published in May

2021 and will be an essential component of this legitimacy, in compelling the UK Government to make careful judgements about the balance between openness and security. The Bill has the potential to challenge many of the American social media and technology giants by forcing them to adopt a 'duty of care' to remove harmful or illegal content, protect children on their platforms and deter malign activity.<sup>32</sup> This piece of legislation is regarded as one of the most far-reaching attempts to regulate online content, imposing the risk of criminal prosecution if social media companies do not remove 'harmful' algorithms.<sup>33</sup> Actions by some of the UK's strategic partners have shown that robust regulation can indeed rein in the power of the Silicon Valley multinationals. Germany's social media legislation, for instance, is some of the most stringent in the Western world, and has proven to be controversial and the subject of some ongoing debate due to its implications for freedom of speech. However, it has also demonstrated that social media companies are capable of adapting their practices to respond to regulatory instruments, to enable them to continue to access profitable markets.<sup>34</sup>

## Conclusion

---

Establishing workable and finely balanced principles around domestic internet governance will enable the UK to make the case that it is indeed possible to build a global commons within the digital public sphere, and that the openness, transparency and connectivity of this truly international platform must be maintained. Should the UK and our allies not be able to convincingly make this argument, we will open the stage for our strategic rivals to establish their own models of regulation, on principles of control and coercion, which may well prove attractive to other, smaller nations. By consequence, the internet will increasingly become a national domain, reflecting something specific about the nature of a country's domestic political settlement. Such a defensive construction of the internet will fundamentally undermine the enormous potential of this connective tissue for the global exchange of capital and ideas, and the promotion of universal values and freedoms.

---

# Ethical Artificial Intelligence

## The Argument for Regulatory Frameworks

The current pace of technological advancement outstrips regulatory and ethical frameworks, and as a 'gatekeeper technology', Artificial Intelligence is a particularly troublesome area to leave uncodified. The current landscape for AI regulation is sparse and lacking, particularly around advanced AI technology capable of making autonomous decisions.<sup>35</sup> This is concerning as these tools are increasingly being embedded in our critical national infrastructure, for consumer purposes, and for our military capabilities. The question is how to ensure that a thriving culture of innovation can remain, while appropriate safeguards are put in place.<sup>36</sup>

The risks posed by this new area of technological research and commercialisation are increasingly apparent. Some of the most common of these risks are generally considered to be mis-deployment, questionable technical design, and unintended negative consequences to social and political rights – including questions of 'fairness', empowerment, transparency, accountability and privacy.<sup>37</sup> There are also profound foreign policy consequences of the integration of AI into the toolkits of both our allies and strategic rivals. In a military context, for example, the introduction of autonomous AI capabilities further intensifies the existing dangers of miscalculations and escalations that have been rising as traditional diplomatic channels have been eroded, through the expulsion of national diplomatic staff and international media.<sup>38</sup>

In the civilian world, one area of particular concern is 'deepfakes', which are AI-generated content that specifically seeks to deceive – whether for satire or to more pernicious ends. In 2019, for example, an AI-generated impersonation of a CEO's voice duped an employee into completing a 243-million-dollar fraudulent wire transfer.<sup>39</sup> On a democratic level, there are concerns about the implications of these burgeoning technologies exacerbating already fragile levels of institutional trust.

There are currently 26 authoritarian nations, for example, which are deploying computational propaganda as a means to suppress human rights, discredit political opponents, and suppress the voices of dissenting opinions within their nations.<sup>40</sup> Other elements of national security are also potentially at stake when AI becomes embedded in critical national infrastructure processes, in many ways enhancing citizens' everyday experiences while concomitantly amplifying the vulnerability of our supply chains. It is essential that AI regulation is established before trust in the capacity of governments and businesses to protect society from harm is fundamentally eroded, and so that the economic benefits that positive innovation can generate are able to be realised.

## Challenges of Implementation

New AI technology has the capacity to drive productivity and growth in established sectors and mature economic markets. It is estimated that robotics added 0.4% to the UK's annual GDP growth and labour productivity between 1993 and 2007, a rate similar to when steam engines were introduced in the industrial revolution.<sup>41</sup> The fast-paced development of AI technology is in many ways a good news story for global human society, with many potential benefits to our collective health and wellbeing. Its potential to advance health outcomes, to empower consumers, to transform work practices and to advance market competition has already been proven across a range of sectors.<sup>42</sup>

The momentous potential outcomes from AI research and development foster incentives to continue to scale up and expand their application, and makes the notion of slowing down or

interrupting progress to consider ethical frameworks less attractive. This area of technology is expected to advance so quickly that it will be essential to cast minds to the future and attempt to anticipate a host of potential pathways that will need to be addressed by contemporary legislation – some of which may not in fact come to bear. At the same time, to appreciate that we will be taking risks on the possibility of emergent risks that in doing so, may constrain the current growth of the sector.<sup>43</sup>

To minimise these disruptions, it is clear that the ethical implications of technologies must be considered in the earliest stages of conception rather than as an afterthought during the design and implementation phases, when organisations and institutions have already absorbed considerable commercial risk and hold a vested interest in their actualisation. Moreover, that the process of elevating the oversight of governments in AI development will require a diversification of mutual capabilities within both the technology sector and the state, and must also go hand-in-hand with a conversation that brings the public more centrally into the frame of view. Ultimately, building public trust in such technologies and enhancing citizens' critical thinking abilities towards them will strengthen nations' readiness to grasp the opportunities of this new frontier.<sup>44</sup>

One challenge is that many current ethical AI frameworks set out different principles that could at times fall into competition with each other; for instance, autonomy and transparency, while ethical and justifiable goals for regulation in themselves, can sit awkwardly alongside each other when not properly delineated. These contradictions must be untangled, and specific examples and contexts for different sectors must be given for these frameworks to have a meaningful impact.<sup>45</sup> New regulatory frameworks will also require the development of new compliance management tools, which not only governments but also individual businesses will also need to absorb. There are likely to be tension points embedded within this process due to a lack of consensus around the parameters of public and private interests.<sup>46</sup>

Currently, for example, less than half of organisations test for bias within their AI systems from data sets to the human use of algorithms.<sup>47</sup> Establishing norms will require significant political will to encourage the private sector to reshape its practices in a way that will embed an ethical framework in the long term, and ensure these instincts become second nature, rather than merely a box-ticking exercise. While many companies are self-regulating based on the demands and expectations of their shareholders or consumers, they would need to be persuaded of the merits of a whole-of-society benefit to legislation that would potentially interact, or interfere, with these.

Due to the dynamic nature of AI technology and the esoteric technical expertise required to balance risks and anticipate change in different areas of innovation, the development of sector-specific AI regulatory frameworks and regulatory bodies may prove a more resilient approach for global governance.<sup>48</sup> This could permit a greater degree of both agility and anticipatory safeguards to be embedded in the architecture of such frameworks. It is also the case that instead of seeking to regulate AI technology itself, it is possible to rather focus on developing common and expected norms of behaviour, including requirements for the testing and transparency of algorithms within private and public sector settings.<sup>49</sup>

## The UK's Strategic Rivals

---

Both Russia and China have been investing heavily in Artificial Intelligence to service both domestic and geopolitical functions. In terms of internal governance, China's application of AI is especially concerning due to its coercive social applications with, for example, facial recognition technologies deployed in Uighur 're-education camps' to not only identify individuals but to respond to emotions and moods.<sup>50</sup> Geopolitically, it is important to not only consider both China and Russia's integration of AI into their cyber intelligence operations and military hardware, but also their investment in innovation and scientific excellence pursued with a

subsidiary intention of elevating their individual claims to establish global standards and norms around AI research and application.

In late 2021, MI6 Chief Richard Moore, warned that both nations are “pouring money” into AI, as Russia and China understand the leverage these technologies bring, and the potential they have to reshape the geopolitical landscape.<sup>51</sup> The two nations also recently committed to strengthening dialogue and contact on AI in their recent joint statement in February 2022, emphasising their shared strategic interest in the global race to set the standards that will govern future technologies.<sup>52</sup>

Russia, which published its National Strategy for the Development of Artificial Intelligence in 2019, has set out an ambition for 30% of its military power to be constituted by autonomous and remote-controlled robotics by 2025. While it is unlikely the nation will become a leading force in AI innovation in general, it is feasible that it may develop specialist areas of excellence – supported by state plans to develop a grant system, and introduce educational programmes and training courses within schools.<sup>53</sup> The Russian Government has been focusing on the implementation of AI within its business community and is considered a world leader in some areas of application, as well as investing significant resources in its research sector with a vision to increase its AI publications at major conferences more than ten-fold over the coming decade.<sup>54</sup> Interestingly, Russia released an Artificial Intelligence Code of Ethics in October 2021, which outlines potential directions for the ethical development of AI. However, it is a form of so-called ‘soft regulation’, with accession to the code being voluntary.

While many nations are primarily concerned with the commercial application of AI technologies, it is important to recognise the value that is being placed among our strategic rivals on academic research itself – which is considered a longer-term gateway to playing a substantive role in global governance. Like Russia, China is also rapidly expanding its dominance in AI research, with its share of global academic papers increasing to almost 40,000 published in 2017 alone. Much of this research has supported the seeding of new products and systems, with China now filing the largest annual number of AI patents; but it also promotes the Chinese Government’s interests in conceiving the architecture of AI regulation. The publication of its Next Generation Artificial Intelligence Development Plan in 2017 was supported by the establishment of an ethics committee.<sup>55</sup> Following this, China’s Ministry of Science and Technology released its New Generation of Artificial Intelligence Ethics Code in September 2021 which includes six ethical requirements for AI development.<sup>56</sup>

In practice, the Chinese Government would objectively be regarded as violating many of these ethical codes in its own application of state-driven AI technologies, but it considers the impression of an ethical code of conduct an essential underpinning to the international esteem of its thriving AI sector.<sup>57</sup> The Chinese Government’s conception of privacy and safety, for example, is less focused on individual or universal human rights, and more on the state’s relationship with commercial organisations. In August 2021, China tightened regulations relating to algorithmic technology that companies use to recommend content and drive business, and strengthened user data-related regulations.<sup>58</sup> The Cyberspace Administration of China said companies should abide by business ethics and not use algorithms that promote spending large amounts of money or that disrupt the public order – underscoring the Government’s unique conception of social harm.<sup>59</sup>

There is some discussion among technology experts around whether China will continue its extraordinary successes in AI development, as its hybrid state-market model may eventually find its own limitations against the incentives inherent in the Western capitalist system.<sup>60</sup> In considering China to be a ‘systemic challenge’, there is, therefore, a question of how best to design Western-led and wider international frameworks of regulation and governance that safeguard against the vulnerabilities embedded in our societies, economies and democracies, while protecting individual freedoms and also allowing competition and innovation to thrive.

## Competition for Global Leadership

There are currently two major spheres of influence and interest in AI regulation in the West – with both the United States and the European Union seeking to design their own frameworks in line with their values, and their commercial and strategic interests. The leadership of global AI regulation will be an area of competition between allies as much as strategic rivals.

The two main existing cross-national governance frameworks relating to AI ethics are the European Commission's Communication, released in 2018, and the OECD Principles on AI, which was released in 2019. Both frameworks emphasise the need for trust and accountability, and are an effort to mitigate the negative consequences of institutional biases and discrimination that can often become embedded in automated decision-making.<sup>61</sup> The EU has made clear that it wishes to advance upon the advisory guidelines it has developed on AI, with the EU Commission setting out suggestions for legal requirements that could be applied to AI innovation that is deemed to be 'high-risk', from standards around information provision to robustness and accuracy.<sup>62</sup> The EU has already demonstrated, through its work on digital taxation and privacy rights, that its globally competitive market share enables it to advance such regulatory frameworks in a manner that can – when the EU is able to move swiftly – create a standard that other nations and regional blocs may choose to adopt.<sup>63</sup>

The G20 nations also published the G20 AI Principles in 2019, which takes a human-centred approach focused on values, fairness, transparency and sustainability, and builds on the OECD principles. In addition, in 2020, the Global Partnership on Artificial Intelligence (GPAI) was established, which comprises the European Union and 14 more nations, and is aimed at developing joint solutions on responsible use, development, theory and practice of artificial intelligence.<sup>64</sup> Some issues remain outside the scope of these early efforts to codify behaviour, with democratic risks being a notable gap. The omission of climate change considerations was remedied by the GPAI's 2021 paper on the potential for a constructive relationship between AI and climate action. Further consideration and depth could also be given to the question of inequalities and bias within AI, as well as the implications to human psychology of human-robot interactions and AI-assisted financial crime.<sup>65</sup>

There are also other examples<sup>66</sup> of mini-lateral AI regulatory and codification efforts. Canada and France, for example, have established the International Panel on Artificial Intelligence, which includes the UK and now the United States, although America's involvement in this initiative has been tempered by its concerns around 'burdensome' approaches to regulation.<sup>66</sup>

On a national level, approximately 60 countries have adopted their own government-led AI policies, including France, Denmark, Finland, Sweden, UAE, Singapore, India, Mexico and Canada. The thematic convergence around these frameworks is significant, with 80% of 22 frameworks requiring principles of accountability and or privacy and fairness, and 70% requiring transparency, openness and safety.<sup>67</sup> Nonetheless, many of these frameworks are relatively abstract in nature and are unlikely to keep pace with the momentum of technological progression.

## The Case for British Leadership

A number of environmental factors and key strengths contribute to the UK being especially well-placed to advocate for and promote global AI regulation. The UK Government has one of the most sophisticated strategic plans for harnessing the opportunities of the technology, and the UK possesses strong regulatory frameworks in many intersecting areas of the law.<sup>68</sup> Moreover, the UK has consistently scored highly in rankings around its governance and ethics in this sphere, and holds productive partnerships with many other AI-forward nations, such as Sweden, Israel and Singapore.<sup>69</sup> Taken together, these attributes mean the UK stands to experience not only commercial benefit from AI advancements but to lead the international understanding of how these new technologies can be applied to both social benefit and potential harm.<sup>70</sup>

The UK Government's National AI Strategy sets out the long-term plan to work with The Alan Turing Institute to update guidance on AI ethics and safety within the public sector. This work would build on the frameworks which have been in place since 2010, when the Government granted open access to its public data-sets, and mandated for other public bodies to do the same, to support transparency and the promotion of ethical frameworks.<sup>71</sup> In the UK's private sector, awareness of the mixed consequences of AI experimental innovation are already leading to the establishment of new accountability frameworks within organisations, however there is some concern that these are failing to keep up with the strength of public expectation for enhanced regulatory mechanisms.<sup>72</sup>

In considering the UK's role in establishing global governance infrastructure and standards setting around AI, it is important to recognise both the UK's strengths in technological innovation and the AI 'supply chain', but also to emphasise the UK's international competitiveness and expertise in several business and policy areas in which AI is likely to rapidly flourish – including healthcare and financial services.<sup>73</sup> The UK already plays a significant global role in many regulatory aspects of these areas in terms of research and development, global institutions, and international markets, and therefore is credibly able to attempt to understand and anticipate a wider suite of concomitant implications of AI innovation within these fields.

In 2020, the UK signed a bilateral cooperation agreement with the United States on AI research and development, which was forged with a specific consciousness towards China's hasty advancement in this area.<sup>74</sup> This agreement could be further expanded to forge a common basis of ethical regulations. The UK should recognise that America's special status as the home of large technology companies will necessarily create areas of divergence in terms of collective action on ethics and other regulatory elements, and that we should not expect that we will always wish to go at the same pace and to the same extent in establishing frameworks.

The tensions between the EU and the United States on technological regulation remains a profound stumbling block to establishing a collective position on many significant areas of innovation, which may in the medium-term reduce the West's competitiveness if China and other strategic rivals are able to establish their own frameworks that prove attractive to developing nations. The UK does not need to pioneer its own unique 'fourth pillar'. It should rather advocate for its credibility in establishing a bridge between the United States and the EU's efforts, strengthening the architecture of a Western-led model in collaboration with other key innovation nations, and enhancing its legitimacy with wider international partners in both the developed and developing world.<sup>75</sup>

The World Economic Forum identified five key roadblocks to government adoption of AI around the world, including: the effective use of data (lack of understanding, infrastructure and processes), data and AI skills (hiring budgets affecting skills pool), the AI ecosystem (AI start-ups have limiting experience working with Government and scaling up), legacy culture (difficulties in adopting new technologies, public sector more risk-averse than private) and procurement mechanisms (public sector procurement mechanisms can be slow and complicated).<sup>76</sup> These are all areas in which the UK could be seeking to influence and engage in supporting the Global South develop its own national regulatory instruments and understand how these can be essential underpinnings to foster cultures of dynamic innovation and economic growth.<sup>77</sup>

## Conclusion

---

The agile and innovative nature of AI technologies will require responsive, adaptive regulation to ensure that we are best able to harness their many economic and social benefits, while minimising their potential risks to communities and our democracy. This is the essential foundation on which we will also be able to consider the wider geopolitical implications of AI, and advance efforts to establish a baseline of global norms. Given the interest being taken in

## Ethical Artificial Intelligence

---

both the research and commercialisation of AI technology by our strategic rivals, we should be especially attuned to their efforts to make the case for their centrality to any efforts to define international standards.

The UK's robust culture of intersecting legal environments, the visible connectivity of civil society in our state-led regulatory dialogues, and our position of balance between the United States and the European Union – the two leading voices in defining frameworks of Western technology principles – means we are uniquely placed to advocate for a liberal imprint on global ethical AI governance. In addition to focusing minds on the geopolitical costs of inaction and opportunities of cohesive leadership amongst our allies, the UK should make it a priority to reach out to our partners in the developing world and assist them in the development of competitive, innovative and open technology development cultures, and demonstrate how the establishment of robust regulatory frameworks will be integral to their success.

---

# The New 'Space Race'

The 'space race' in the 21st Century is no longer a rivalry between a handful of superpowers but a considerably more contested domain of geopolitical and commercial advantage. There are currently 13 space-faring nations with independent launch capabilities,<sup>78</sup> and as the private sector becomes an increasingly prominent presence, the lack of structured regulation is becoming increasingly unsustainable. This is especially pressing when one considers the integral role that space is beginning to play in the everyday lives of citizens, our individual and collective economic stability, as well as more sophisticated aspects of our national resilience.<sup>79</sup>

Britons depend on the services and functions that space infrastructure provides across myriad aspects of our everyday lives, from health services, to telecommunications, and banking. Even just a short disruption to satellite data flows could have catastrophic economic and practical ramifications.<sup>80</sup> One of the primary factors underpinning our reliance on space technologies is the role that the Global Positioning System (GPS) plays in a wide range of industries, spanning transport, maritime navigation and air traffic management. Recognising this integral capability, the UK Government has classified space as one of the nation's 13 critical national infrastructure sectors, a decision that the United States is yet to match.<sup>81</sup> This choice needs to be supported by a proactive British role in global space governance, and a much broader awareness campaign to advance citizens' understanding of the centrality of space to our British way of life.

A presence and influence in space is increasingly regarded as a matter of not only national prestige, but national security. In 2011, for example, the US Congress limited NASA's ability to cooperate with China, and the United States Government also has laws in place that prohibit foreigners from working in private sector space-focused organisations.<sup>82</sup> The UN Outer Space Treaty established in 1967, which underpins the core components of international regulation in space, is simply not able to accommodate the reality of the speed of technological advancement, nor the shifting geopolitical realities of space exploration in a battle for strategic advantage.

One of the most urgent security concerns is around the development of counterspace weapons, which can be categorised into kinetic physical, non-kinetic physical, electronic and cyber weapons. Kinetic physical counterspace weapons are those which cause significant damage or destruction to satellites and ground stations. As of yet, no nation has conducted a kinetic physical attack against another nation's satellite; however, the United States, Russia, China, and India have all successfully tested these weapons.<sup>83</sup> Non-kinetic physical counterspace weapons include lasers which could be used to blind satellites' sensors or ground systems. Electric counterspace weapons target the electromagnetic spectrum through which space systems transmit and receive data, and false information can be injected into a data stream to issue false commands to a satellite to disrupt its operations. Finally, cyber weapons target the data itself and the systems that use, transmit, and control the flow of data. While these attacks require a high degree of understanding of the systems being targeted, they do not necessarily require significant resources to conduct such operations.

Alongside an increasing interest in space activity from the UK's strategic rivals, a core issue about the safety and sustainability of space as a global commons is the growing presence of private sector organisations. Over the past year, SpaceX has launched over 1,000 satellites, and commercial actors now hold a larger presence in space than nation-states. Recent data suggests that SpaceX satellites could be responsible for over half of all near-collisions on space.<sup>84</sup> There is currently no existing international legislation regulating orbital slots, allowing thousands of satellites from one or few companies to cluster and flood within low earth orbit space. If the trajectory of space activities from private sector firms continues at its current pace, there are genuine concerns that they will become the primary stakeholders in space, fundamentally eroding what should be a shared resource, forum of resilience, and area of scientific exploration.<sup>85</sup>

Without the creation of new regulation and governance agreements, the current impasse between the great powers will continue, and problems related to debris, heavy orbital traffic, and harmful interference will intensify. This will increase the costs of space flight as well as the maintenance of satellite and associated infrastructure.<sup>86</sup> For instance, French scientists estimate that the Russian Government's missile test against its own satellite in November 2021, which caused a debris field of over 1500 individual pieces, increased the risk of a Kessler syndrome – the effect where debris creating collisions cascade until orbits are rendered inaccessible – by five percent.<sup>87</sup> If space becomes less accessible, the UK, along with all other space-faring nations, will be constrained in terms of the economic, scientific, and technological opportunities offered by our presence in space, as well as the risks presented to core aspects of our critical national infrastructure and broader resilience.<sup>88</sup>

### Current Governance Frameworks

The United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) was established in 1959 and five treaties were subsequently created from this in the following twenty years, which now underpin current international space regulation. The most prominent of these being the Outer Space Treaty of 1967.<sup>89</sup> The Outer Space Treaty, which is underpinned by the idea of 'common heritage' – similar to that of the deep seabed – stipulates the non-appropriation of resources, benefit sharing, freedom of access and environmental stewardship as key principles.<sup>90</sup>

The Treaty was born out of the Cold War period, in which space activity was largely limited to national actors, and private actors were mostly limited to activity in the Earth's Geostationary Orbit (GSO), and therefore fails to capture the nature of the contemporary space landscape.<sup>91</sup> The GSO is located approximately 36,000km above the equator, and was historically used to deploy mobile-communication satellites. This became recognised as a scarce natural resource by the UN in 1970, and under Article 44 of the Constitution of the ITU, member states were told to limit activity in the GSO.<sup>92</sup> New technology is also evolving at such a pace that the Treaty cannot accommodate the full scope of advancements, such as lunar and asteroid mining, nor to differentiate between benign and potentially pernicious applications.<sup>93</sup>

The rising visibility of private actors has been one of the most prominent developments of the past two decades. Their activities in space are largely confined to the Low Earth Orbit (LEO); however, as Article VI of the Outer Space Treaty merely states that the responsibility of space activities is left to individual nations, the LEO remains lightly regulated, despite this area of space becoming increasingly congested with satellites over recent years. While the Outer Space Treaty prohibits nations from claiming sovereignty in outer space, the ITU allocates orbital slots to nations launching telecommunications satellites on a first-come, first-served basis, placing developing and other smaller space nations at a significant disadvantage relative to some of their larger peers.<sup>94</sup> The ITU also coordinates, but doesn't authorise, satellite deployments and operations. However, these rules are not designed to address issues of growing importance, such as the escalation of space debris.<sup>95</sup>

It is noteworthy that current international guidelines and national regulations suffer from specific structural challenges relating to enforceability and coverage. While space operators like national space agencies and private companies can pledge to follow national regulations and international guidelines, decentralised accountability mechanisms limit the enforcement of regulations in practice.<sup>96</sup> Some guidelines, in turn, fail to cover key aspects of potential behaviours in space, by both private and national actors. For instance, the UN's Space Debris Mitigation Guidelines, which were formed in 2007 in an attempt to limit the damage caused by debris in space, do not cover the full suite of contemporary risks. While some space operators have the capability to manoeuvre satellites to avoid collisions, there are no compulsory rules on who has the right of way in such circumstances.<sup>97</sup> While guidelines as such can inform appropriate behaviours in space, updating legal frameworks will also be required; however, given that all 95 member states of the Outer Space Treaty would need to build consensus to update the Treaty, this is likely to be a long and tedious process.

It is true that the Convention on International Liability for Damage Caused by Space Objects imposes a fault-based liability for debris-related collisions in space.<sup>98</sup> Yet, it is difficult to prove fault within this framework, as satellite owners and operators are still to codify a standard of care in space, and the Convention therefore does not dis-incentivise debris creation in orbit. It is plain to see that these regulations need to be updated to reflect the large presence of private actors in space, as well as the regulation of equitable access, and space traffic management.<sup>99</sup>

In October 2020, the United States promoted the 'Artemis Accords' in an effort to close some of the gaps in existing frameworks for space exploration, however America's foundational role in the original 'space race' as a geopolitical instrument to some extent limited the scope of its legitimacy as an arbiter of contemporary space regulations.<sup>100</sup> In this respect, the UK might find its own role more easily cast – building on a narrative of scientific excellence with a common global purpose rather than starting from a position of national strategic influence. The UK's strong regulatory structures in other sectors, such as the financial and legal services industries, also provide an authentic basis on which to approach the question of regulation from a collaborative basis with the private sector. Moreover, the UK's credibility on environmental leadership could also allow a wider global negotiation to take place around issues such as space debris and the climate applications of satellite technology.

## The UK's Strategic Rivals

---

Russia and China have been involved in a series of projects testing the limits of their offensive space operations, and have invested significant resources in upgrading their capabilities.<sup>101</sup> China is also increasingly concealing aspects of its testing programme, suggesting the parameters of common transparency are deteriorating.<sup>102</sup> While China would typically only send a crew to space every two to three years, they are now doing so every few months, and the fanfare around these missions is beginning to match a level of national theatre akin to America's space fever in the 1950s and 1960s. Perhaps most concerning for the West is China's investment in space station infrastructure, which they hope will become a tool of soft power and strategic influence as smaller nations become dependent on its resources.<sup>103</sup>

Russia is a considerably more established space actor and has been testing counter-space weapons for some time. It established the Roscosmos State Corporation in 2015, which was intended to advance the nation's commercial and geopolitical objectives in space.<sup>104</sup> Nonetheless, historically, even during times of acute geopolitical tension, Russia generally worked in some capacity with the United States on space exploration, such as on the Shuttle-Mir programme in 1962. More recently, it has sought to orient its space activities towards independent objectives or, to some extent, collaboration with China.<sup>105</sup> Most recently, Russia conducted a missile test and destroyed one of its own satellites in order to trial equipment, with large amounts of debris narrowly missing the International Space Station. The United States' decision to scale up its own independent capabilities is in part driven by a need to reduce its entanglement with Russian-developed space products.<sup>106</sup>

It is difficult to assess the likelihood of Russia and China pursuing greater substantive, long-term cooperation in space, as both tend to practice a form of 'techno-nationalism' and a series of efforts to forge agreements codifying collaboration have not yet come to fruition.<sup>107</sup> Nonetheless, the actions of both nations have plainly accelerated the active militarisation of space. As part of the reorganisation of the People's Liberation Army of China in 2015, a Strategic Support Force was established, which included a space warfare branch focusing on 'informationised conflicts'.<sup>108</sup> China has been investing in the establishment of a Tiangong space station, which aims to advance its own direct interests, while also supporting its ambitions to offer an alternative of space infrastructure to smaller partners – earning the label of a 'belt and rocket initiative'. A second space station crew has been launched, who will live and work at its space station for approximately six months – the longest space mission from China to date. Foreign astronauts are also being invited to take part in their missions once the Tiangong space station is operational, with the objective of building soft power alliances and increasing dependency from other nations on China's space infrastructure.<sup>109</sup>

There is a lack of transparency around China's activities in space, which are being cloaked in secrecy as the nation's leaders seek to advance their strategic capabilities. US space technology company, Maxar, revealed in October 2021 that China is testing larger unmanned warships for high-end combat at a secret base than the international community was aware of, and it was also discovered in August 2021 that China had tested a nuclear-capable hypersonic missile – an event that would have traditionally been proactively announced as a signal of national prestige.<sup>110</sup> Such a feverish increase in space activity in recent years has led to the threat assessment conducted by the Office of the US Director of National Intelligence labelling China a “near-peer competitor” in April 2021.

Both China and Russia have also been taking an interest in the subject of space governance, notably through the promotion at the United Nations of a proposed treaty called the Treaty on the Prevention of the Placement of Weapons in Outer Space and of the Threat or Use of Force Against Outer Space Objects (PPWT). The Treaty seeks to create a legally binding agreement to prevent an arms race in space, and has been proposed by the two nations twice before – once in 2008 and then again in 2014, both times failing to garner adequate wider support.<sup>111</sup> The Treaty would theoretically outlaw the threat or use of force against space objects, however, the development, testing, storage or deployment of these ground-based anti-satellite weapons would be permitted, activities that both nations continue to undertake.<sup>112</sup>

The proposed Treaty also fails to address issues with non-kinetic physical counterspace weapons, such as lasers, which interfere with space technology systems and could have lethal consequences. There are therefore suspicions that the intention is to forge a framework that would provide the illusion of regulation, but which will ultimately be toothless in many areas that may infringe upon their own interests. The prevention of the weaponisation of space was a notable focus in the joint statement of Russian and Chinese leaders following their meeting in February 2022. They reiterated the aforementioned Treaty amendments and the need to launch negotiations for a legally binding multilateral instrument, based on the Russian-Chinese draft Treaty.<sup>113</sup>

China and Russia both advocated for a ‘no first placement’ resolution amendment to the existing Prevention of an Arms Race in Space Treaty, which would mandate that no government should be the first to put lethal weapons in space. In reality, however, both nations already have capabilities in space that could be used in this capacity, and therefore this resolution would have the effect of protecting their assets while bounding emerging players to a new framework of international law. Their true instincts are visible in their opposition to the UK's resolution to the UN on building principles of responsible behaviour in space, for which they aligned themselves with Iran, North Korea and Syria.<sup>114</sup>

## The Case for British Leadership

The UK's interests in space span the need to capitalise on its commercial potential, while also defending our national security, and advancing liberal values and principles for common ends. The UK should therefore approach its involvement in this area from the three-pronged angles of economic opportunity, resilience, and governance. Many of these activities will be interlinked and mutually reinforcing, with the infrastructure created to support commercial products and services in space also providing both direct and indirect benefits to the UK's wider economy and our security apparatus.<sup>115</sup>

While the global superpowers of the past half-century have dominated the popular narratives around space, the UK does have a claim to some important historical roles in space innovation – even when working with smaller budgets and less advanced equipment. Many influential space researchers and engineers have come from the UK, including Francis Thomas Bacon, who developed the fuel cells used on Apollo 11 considered integral to the capacity of space explorers to land on the moon.<sup>116</sup> It was also British researchers who discovered

the hole in the ozone layer that NASA's considerably more sophisticated technology missed at the time, and the UK is home to the oldest space-advocacy group in the world, the British Interplanetary Society.<sup>117</sup>

The UK's commercial interests in space are becoming an increasingly significant aspect of our economic model. The UK's space sector has been growing at an impressive rate over the past decade, and in 2018 employed around 40,000 workers and directly contributed almost £6 billion to the UK's GDP.<sup>118</sup> More broadly, space technologies are also currently indirectly contributing to over £360 billion per annum in UK economic activity, through services such as telecommunications and navigation. These economic benefits stem from the vast array of space-focused companies based in the UK. We are currently home to the second-largest number of space-oriented organisations in the world, behind only the United States.<sup>119</sup>

Following the UK Government's acquisition of OneWeb, the company plans to spend £2.2 billion to move manufacturing from the United States to the UK which will begin next year, before building satellites of its own in 2025.<sup>120</sup> The investments that have been made in the Harwell space cluster campus has allowed this beacon of academic, commercial and state-sponsored excellence to become one of the most advanced scientific facilities in the world.<sup>121</sup> Many of the UK organisations investing in space innovation are also promoting wider British values; Spaceport Cornwall, for example, has made it a priority to be both 'sustainable' and 'responsible' in space, by setting up launch regulations and challenging others globally to do the same.<sup>122</sup>

While the UK cannot compete on all levels of investment in space exploration with many of our allies – including the United States, whose Space Force and Space Command have annual budgets of around \$USD15.4 billion each – the UK Government will need to amplify its own financial support for the sector as an imperative of national security. Other peer nations of similar economic size, such as France and Italy, have been spending between 5-10 times more on their national space sectors than we have in the UK.<sup>123</sup> France has been particularly proactive in building up its space capabilities with the French Space Command beginning simulating stress tests of existing systems in March 2021, with Commander Major General Michel Friedling, describing it as a "first for the French army, and even a first in Europe."<sup>124</sup>

A key aspect that will be critical to securing the UK's long-term interests will be investments in satellite communications. The UK Government has promised 600 additional satellites in 2022, but with an estimated 50,000 more satellites expected to become active globally in the next decade, the UK will need to contribute an additional 2,000 satellites to maintain our current stake of 4%.<sup>125</sup> It is also estimated that the UK space sector will need to attract a workforce of more than 30,000 new employees, with almost 40% of all space organisations in the UK highlighting recruitment as a major barrier to their growth. The same number of organisations also believe that some training or education is not available, or in short supply, to address the growing skills gap.<sup>126</sup>

To maximise long-term gains for the UK's economic and security interests, the Government should support the advancement of private sector investment in projects focused on research and development, including those addressing potential threats to our national resilience, such as space weather, rather than simply those emphasising commercial viability. There is ample scope to foster further collaborative partnerships on the model employed by a 2021 Rolls-Royce and UK Space Agency project, which launched a study into how nuclear power and technologies could be used as part of space exploration.<sup>127</sup>

With careful geographical consideration, there may well be dividends for the UK Government's 'Levelling Up' agenda – particularly through the involvement of universities and other education providers – to state investments in space innovation. More than £600,000 of Government funds have been granted across ten emerging space clusters around the UK, including Leeds University and the Northern Ireland Space Office,<sup>128</sup> and these clusters should be closely monitored to consider whether other Government and private sector instruments could support their advancement beyond these initial investments.

Space is a cross-cutting enabler of other mechanisms in defence and national security, and our participation in both space activities and regulation should be valued in terms of their integration with these connected areas of expertise and strategic advantage. Certainly, our capabilities in space will become an increasingly significant attribute of our leadership in our important alliances, such as NATO and the Five Eyes intelligence-sharing network.<sup>129</sup> Space also closely intersects with the UK's climate action and resilience ambitions, both in terms of the commercial and innovation advantages we seek to harness, but also the mitigations we will need to put in place to shield the UK from climate and space weather-related risks.<sup>130</sup>

The UK Government has sought to match the nation's rising commercial abilities in space with new machinery of government and strategic planning. Recent developments include the appointment of a new Director of Space role within the Ministry of Defence, launching a National Space Strategy, and acquiring strategic assets such as satellite communications company, OneWeb. The approach taken towards OneWeb reflects a new understanding of the security environment that commits to capabilities identified as essential to the UK's long-term interests, and/or prioritises capabilities of interest to our strategic rivals – even if the companies themselves have not enjoyed a track record of independent commercial success.<sup>131</sup>

While the Government had originally planned for a space defence strategy to be published at the same time as the National Space Strategy, the UK's first ever Defence Space Strategy was released in February 2022, five months later than the other document.<sup>132</sup> The delineation of commercial from defence strategy meant that the National Space Strategy focused in large part on the question of how to attract further private sector funding to support the UK's burgeoning space interests, complementing the Government's own involvement. The weight placed on private sector investment will also be heavily funnelled into commercial spaceflight, which brings little technological or exploration value. Significant gaps in both our capabilities and resilience therefore need to be addressed as part of a holistic plan that straddles the full gamut of both the public and private sector aspects of the UK's space interests – ideally, bringing these two Strategies together into one cohesive document.<sup>133</sup>

The enhancement of our space capabilities will afford legitimacy to any UK effort to lead the global regulation of the space sector, in addition to the economic benefits that such investments bring. The Defence Space Strategy is significant in this light, committing £1.4 billion to a number of new satellite and other technological programmes, designed to enhance the UK's space defence arsenal. This paper extends the strategic framework put forward in the National Space Strategy, by assessing how the UK Government should react to the emerging threats and opportunities of the space domain. The bulk of the spending outlined by the Strategy – £968 million out of the £1.4 billion – is to go towards the ISTARI multi-satellite programme, which aims to improve the UK's global surveillance and military intelligence capabilities.<sup>134</sup>

The UK Government's Integrated Review of the UK's Security, Defence, Development and Foreign Policy (IR) emphasised the role of space as a theatre of geopolitical competition. Many of the existing advantages the UK holds in space innovation, and which make us competitive in both research and commercialisation, also render us especially well-placed to stand at the forefront of the international regulation of space. As a medium-sized power that has so far shown an unwillingness to militarise space, the UK holds a unique status of geopolitical stature, combined with the perception of neutrality and objectivity in terms of the defensive applications of space.<sup>135</sup> The UK's growing interests in public-private coordination will need to continue to deepen, as bolstering hard power and capabilities in space will in turn bolster the UK's soft power and ability to engage in space diplomacy. Building up our capabilities and commercial expertise will strengthen the legitimacy of our position in advocating for new frameworks of space governance.

While both the National Security Strategy and the Defence Space Strategy ratchet up the UK's seriousness as an international space actor, the UK needs to further turbo-charge its sovereign space infrastructure and advocate for its interests through a more visible and consistent

leadership role in space regulation.<sup>136</sup> In December 2020, the UK led on a UN resolution focused on space governance, which gained the support of 164 'yes' votes at the UN General Assembly. This resolution aims to bolster collaboration on the future of space regulation, and calls for nations to establish a common definition of threats, responsible behaviour, and how rules and norms should be codified.<sup>137</sup> This initial success reinforces the viability of the UK pursuing a wider remit to coordinate amongst our liberal allies and other new global partners, to advance our collective interests.

Our capacity to take this forward will necessitate the clarification of our role within other existing alliances, and their co-dependencies. The UK holds an unusual position in that much of our military integration in space sits with our relationships to our Anglosphere partners and much of our industrial and scientific space integration sits with the European Space Agency, to whose budget we are the fourth-largest national contributor, behind Italy.<sup>138</sup> As the UK seeks to define its role in European regional security and prosperity outside of the European Union, our continued presence in the ESA is an important platform for leadership and to demonstrate our unique strengths and capabilities. Given our ambitions to act as the leading European power in NATO, which determined at its 2019 Leaders' meeting in London that space will be classified as its fifth domain of operation, this forum also offers another pathway through which the UK can seek to advance its collaborative role in space defence and innovation.<sup>139</sup>

Outside of Europe, the recent AUKUS security partnership between Australia, the UK, and the United States will also deepen space technology collaboration between our allies, in an attempt to establish the rules and norms for safe and sustainable space exploration.<sup>140</sup> There may also be profitable new partnerships for the UK to explore in the context of space cooperation, which could become a more significant underpinning of the UK's planned 'tilt' towards the Indo-Pacific.<sup>141</sup> Several trading blocs and partnerships in the Indo-Pacific region are beginning to experiment with various forms of standards-setting, and the centrality of economic priorities within these alliances may provide productive forums through which to design and establish entirely new forms of regulatory frameworks in a manner not dissimilar to that pursued by the considerably more politically integrated European Union.

## Conclusion

As the opportunities presented by space exploration and innovation continue to multiply, so too are the possible threats posed by the increasingly dynamic geopolitical environment in space and the escalating presence of cavalier private sector actors. It is in the UK's fundamental interest to not only promote ethical and sustainable space activities, but also to actively implement the architecture needed to underpin our national resilience. Space will only become further embedded in the everyday lives of citizens as the use of AI systems and processes for 'smart' technology and GPS infrastructure becomes fully embedded in our financial and consumer culture. Moreover, the relationship between space and climate resilience will come more firmly into view in the coming years. Global regulatory frameworks that are sufficiently agile and enforceable to keep up with the pace of change are urgently required, and the UK is in a unique position as a legitimate commercial and state actor, without a history of space militarisation, to lead these processes on behalf of our individual and wider liberal interests.

---

# The Arctic

The Arctic is becoming increasingly important to the UK's long-term strategic interests, particularly in terms of our global leadership on climate change, access to scarce and critical resources, and our global priorities around freedom of navigation. The seismic changes in ice coverage in the Arctic have made waters more navigable,<sup>142</sup> and opening new shipping routes between Asia, Europe and North America – including the Northern Sea Route (NSR) and the Northeast Passage – will significantly reduce both travel times and fuel costs. Beyond its utility as a shipping route, the Arctic region is also estimated to hold approximately \$90 billion barrels of undiscovered oil, and 30% of the Earth's undiscovered natural gas.<sup>143</sup> In addition to the melting ice caps raising sea levels, the thawing of Arctic and sub-Arctic permafrost poses a significant climate risk as stored carbon dioxide and methane could be released into the atmosphere. It is estimated that the consequences of climate change will impact 70% of Arctic infrastructure by 2050, vastly altering the geopolitical landscape of the region.<sup>144</sup> The economic and strategic value of the Arctic is therefore intrinsically linked to its environmental deterioration.

## The UK's Strategic Rivals

The untapped resources and geopolitical position of the Arctic has led to a surge in interest in the region from both our allies and strategic rivals. Russia's chairmanship of the Arctic Council was assumed in May 2021. Russian officials say cooperation on climate change will be put 'above all', and that projects will be cautious to mitigate environmental damage. However, President Putin signed off tax incentives worth \$7 billion in 2019 for a Russian firm to develop an oil field, which is currently under construction, and expected to produce 100 million tonnes of oil by 2030.<sup>145</sup> President Putin's priorities for the NSR have been further intensified by the supply chain disruptions stemming from the Suez Canal blockage, and he has since announced his intentions for year-round shipping routes via the Arctic by 2023. While thick ice restricts shipping to certain months, Russia is investing in nuclear-powered icebreakers to actualise these ambitions.<sup>146</sup> As such, despite the employment of some rhetoric promoting sustainability, Russian energy policy within the Arctic largely encourages fossil fuel production, combustion, and exports, and provides only a minimal role for the exploration of renewable energy sources.<sup>147</sup>

Russia's Arctic strategy has shifted over the past decade, with its activities in the region transitioning from principles of cooperation to deterrence, catalysed by an ambition to secure second-strike capabilities for its ballistic missile submarines. If achieved, this would severely undermine NATO's nuclear deterrence.<sup>148</sup> More recently, Russia resumed patrolling the airspace above the North Pole after a 30-year absence, signalling escalating military exertion in the region. Russian military aircraft also flew near the Alaska Air Defence Identification Zone more times in 2020 than any other time since the end of the Cold War. These activities were criticised by the United States, however, Russian Foreign Minister Sergei Lavrov responded by reinstating Russia's sovereignty over "our territory, our land".<sup>149</sup>

Over recent years, Russia has sought to refurbish former Soviet bases near the Arctic, build new military bases, patrol airspace and has deployed submarines large enough to carry ballistic missiles.<sup>150</sup> This investment into military infrastructure reflects the 2019 defence concept unveiled by Russia's Chief of Defence Gerasimov, of 'active defence', which emphasises the need for Russia to build up its military capabilities, and supports the deployment of a multi-layered air and coastal defence system to protect its interests in the Arctic in a more 'active' manner.<sup>151</sup>

The turning point of Russia's military escalation in the Arctic region can be traced to the 2014 sanctions imposed on the nation's energy sector by the United States and the European Union following Russia's invasion and annexation of Crimea, which impacted oil and gas

exploration in the Arctic and severely constrained Russia's economic growth.<sup>152</sup> Russia's interest in the region is therefore bolstered by this backdrop of a weakened economy, which is also structurally dependent on natural resources, and centrally supports the Kremlin's focus on concomitantly rebuilding the country's long-term economic resilience in a period of heightened conflict with the West.

While historically, Russia had been suspicious of the presence of non-Arctic nations in the region, the commercial opportunities presented by the Arctic during this period of self-inflicted economic volatility has encouraged its leaders to look to China for investment and cooperation on a range of areas. These include technology, science, energy, and other areas deemed to be critical for national defence.<sup>153</sup> Since 2015, for example, Russia and China have hosted regular dialogues between their Foreign Ministries, such as the China-Russia Dialogue on Arctic Affairs.<sup>154</sup>

The two nations also worked together in 2019 to build a 3,000 km-long 'Power of Siberia' natural gas pipeline. While this pipeline exclusively transports to China and therefore does not affect European supply, a 'Power of Siberia 2' is currently being negotiated, which would further strengthen important Russia-China supply chains. This could theoretically result in a bidding war between Europe and China for gas. Alongside this, Russia and China recently confirmed a deal for Moscow to provide China with a 30-year supply of natural gas, agreed in early February 2022 when the two leaders met in Beijing.<sup>155</sup> With Chinese investment into the Russian Arctic LNG 2, a liquefied natural gas development, the two nations have further intensified collaboration as China seeks to enhance its energy supply chain resilience.

In many ways, cooperation in the Arctic is a natural extension of Russia's deepening ties with China. In 2018, China proclaimed itself to be a 'near-Arctic state' in its first Arctic strategy, which also included plans for an economic 'Polar Silk Road'.<sup>156</sup> These ambitions support China's individual planning towards Arctic influence, but also facilitate profitable partnerships with a nation holding a strong geographic claim to the Arctic but which is relatively economically weak and therefore open to narratives of mutual benefit.<sup>157</sup> Most recently, the joint statement released by Russia and China in February 2022 highlighted the development of the Arctic routes, as a means to support post-pandemic recovery.<sup>158</sup> Despite this public show of cooperation, there is nonetheless some doubt as to the long-term trajectory and scope of this relationship, following China's decision to partner with Finland rather than Russia on the construction of China's first domestically built icebreaker, as well as the arrest in 2020 by Russian authorities of an Arctic expert national, who was accused of providing state secrets about Russian submarines to China.<sup>159</sup>

China's growing interest in the Arctic in part stems from Greenland's reserves of rare earth minerals, which are used in sectors vital to national infrastructure, and its perception that the Arctic region is currently 'under-governed'. Rare earth minerals are difficult to process, and China currently produces 90% of the world's supply. As these minerals continue to remain lucrative and scarce, China has sought to increase its stake in Greenland's infrastructure, attempting to buy old naval bases and airports.<sup>160</sup> While these efforts have not yet come to fruition, China has begun to pursue alternative routes to enhance its influence in the wider Arctic region, such as acquiring Scandinavian naval facilities.<sup>161</sup>

The United States Government has raised the prospect of China deploying submarines to the Arctic as a potential deterrent against nuclear attacks.<sup>162</sup> Meanwhile, Denmark has expressed concerns regarding the nature of China's intentions as it increases its research activities in the region. Despite Greenland having gained 'self-rule' in 2009, it remains of strategic importance to Denmark, which retains control over its foreign and defence policy. Greenland's governing party won the most recent 2021 elections over its campaign to ban the mining of specific and scarce minerals highly valuable to the Chinese market.<sup>163</sup>

## The Competition for Leadership

The United States has been advocating for increased Western private sector investment into the Arctic, specifically in green energy and broadband connectivity sectors, to offer competitive alternatives to the services offered by authoritarian states, with some degree of success. After years of collaboration with China-owned Huawei, the Faroe Islands recently signed a contract with telecommunications company Ericsson. Other Western alternatives identified with a potential role in the region include OneWeb and Starlink communication satellites.<sup>164</sup>

There is a risk, however, that the Arctic could become a playground in which geopolitical tensions play out among powerful nations, causing difficulties for the UK, Europe and NATO as these groups navigate competing interests.<sup>165</sup> At the root of the Arctic's potential as a site of intense power competition are the economic imperatives that create the conditions for geopolitical posturing. Russia aims to benefit from the vast offshore hydrocarbon resources situated off its Northern Arctic coast, with help from China – a prospect the United States views with caution. These foundational tensions are further exacerbated by symbolic provocations, such as Russia planting its flag at the North Pole in 2007.<sup>166</sup> More recently, comments from Russian premier Mikhail Mishustin stating that year-round shipping along the NSR “will ensure the supremacy of Russia in the Arctic”, have raised alarm in Western foreign policy circles.<sup>167</sup>

The Arctic is also vulnerable to spill-over tensions from the Baltic Sea or the North Atlantic. Against the backdrop of the escalating crisis on the Ukrainian border, Sweden deployed troops to the island of Gotland after Russia sent landing craft to the region, and unidentified drones were seen hovering above Swedish power stations. Russia has also been accused of increasing the numbers of cyber and signal-jamming attacks against Norwegian Government infrastructure, widening the theatre of its demonstrations of its military capabilities.<sup>168</sup> In the wake of this Russian aggression, Operation Cold Response, the largest NATO exercise within the Arctic Circle since the 1980s, will take place in March and April 2022. It is estimated that 35,000 soldiers from 28 nations will take part in the exercise, which is designed to reinforce defences in the northern Norwegian territory. While Russian actions around Ukraine are not directly linked to the NATO operation, the Arctic exercise represents NATO's recognition of the strategic importance of the High North to overall European security.<sup>169</sup>

## The Case for UK Leadership

The Arctic will by no means stand at the centre of UK foreign policy, but it is a region in which we share individual and collective interests with our allies and in which many of the key issues at stake align with specific areas of British expertise. In particular, our historical role in advancing and upholding freedom of navigation operations, and our international leadership role on the issue of climate change. In geographic terms, certainly the UK has a direct interest in what is known as the ‘gateway region’ between Greenland, Iceland, Norway and the UK, and there are concerns that this space may become a centre of increasing geopolitical activity.<sup>170</sup> However, there are barriers in the way of any UK attempt to lead on regulation in the Arctic, with current governance structures making any change inherently difficult.

One of the primary challenges to regulation of the Arctic is the fragmentation of existing governance mechanisms in the region, which have not kept pace with geopolitical developments. The Arctic Council, for example, does not currently have the authority to make legally binding rulings on disputes as the Council's mandate explicitly omits military security.<sup>171</sup> Rather than starting anew, there is value on building on, strengthening and better integrating existing accountability mechanisms in the region. Regulating activities in the Arctic must reflect the new security landscape, which has evolved since the last Soviet President, Mikhail Gorbachev described the Arctic as “high North, low tension”.<sup>172</sup>

The complex sovereignty challenges that exist in the Arctic make formulating a unified Arctic treaty system very difficult. Any agreement across Arctic states must respect the existing

## The Arctic

---

rights and sovereignty of Arctic states while carefully balancing these with the interests of non-state actors in the region and non-Arctic nations with interests in the region. The UK should therefore call for strengthened multilateral governance structures in the Arctic and also enhance the interoperability of existing but varying mechanisms, from the Arctic Council to the UN Convention on the Law of the Sea.<sup>173</sup>

The UK should also call for a reinstatement of the Arctic Chiefs of Defence Staff Conference, which was halted in 2014; this would encourage dialogue between nations on the Arctic's regional security and promote peace. Russia's senior Arctic Official has also stated his preference for this forum to resume, which could be a diplomatic avenue in which to share best practices and establish a coherent strategy.<sup>174</sup> It is in the UK's interest to leverage the fact that British-born Michael Mann has recently been appointed the EU's Arctic envoy. Establishing these relationships and dialogues is the most effective way that the UK will be able to advance its interests in the Arctic and promote peace in the region. Several other nations peripheral to the Arctic are of growing diplomatic and defensive importance to the UK, including Finland, Sweden and Canada, and these relationships may well prove fruitful springboards through which to promote regulatory frameworks for the sustainability and security of the Arctic region.

## Conclusion

The Arctic presents a unique opportunity for the UK to advance its Global Britain ambitions, catalysed by the intersecting climate, security, and diplomatic issues at stake. Escalating tensions in Ukraine only highlight the need to not only be present in areas of strategic importance, but actively and confidently protect our interests and those we believe to be universal. Certainly, the contested nature of the Arctic, which Russia feels territorially entitled to, and the introduction of China into the periphery of the Arctic geopolitical orbit, creates a complex set of barriers to establishing new global regulatory frameworks. However, the current governance structures in place provide an opportunity for diplomatic avenues to be pursued to expand the remit of the multilateral forums currently in play. Incentivising free and fair trade, open passages of navigation, and the ethical and sustainable management of scarce minerals, should be able to be advanced within the structures of the Arctic Council. Other additional priorities should include the embedding of common principles around environmental degradation, under the understanding that the outcomes of climate change mitigations will bear substantial geopolitical consequences.

As the Arctic becomes a less secure geopolitical terrain, the UK's reputation as a convenor and architect of international governance, as well as our credibility in advancing both climate action and freedom of navigation principles, should lend us a role in establishing new regulatory frameworks to uphold peace, maintain trading and supply chain stability, and reinforce environmental protections in this increasingly contested region.

---

# References and Further Reading

- <sup>1</sup> Manning, R. (2020, May). Emerging Technologies: New Challenges to Global Stability. *Atlantic Council*. Retrieved from: [https://www.jstor.org/stable/pdf/resrep26000.pdf?ab\\_segments=0%252Fbasic\\_search\\_gsv2%252Fcontrol&refreqid=excelsior%3A165c617deb4fe1e26c85daa740ec3f3e](https://www.jstor.org/stable/pdf/resrep26000.pdf?ab_segments=0%252Fbasic_search_gsv2%252Fcontrol&refreqid=excelsior%3A165c617deb4fe1e26c85daa740ec3f3e)
- <sup>2</sup> Sherman, J. (2019, October 3). How Much Cyber Sovereignty is Too Much Cyber Sovereignty?. *Council on Foreign Relations*. Retrieved from: <https://www.cfr.org/blog/how-much-cyber-sovereignty-too-much-cyber-sovereignty>
- <sup>3</sup> Manning, R. (2020, May). *ibid*.
- <sup>4</sup> Grigsby, A. (2017). The End of Cyber Norms. *Survival*, 59(6), 109–122. Retrieved from: <https://www.tandfonline.com/doi/abs/10.1080/00396338.2017.1399730>
- <sup>5</sup> Wang, Y. (2020, September 1). In China, the “Great Firewall” Is Changing a Generation. *Human Rights Watch*. Retrieved from: <https://www.hrw.org/news/2020/09/01/china-great-firewall-changing-generation>
- <sup>6</sup> Leskin, P. (2019, October 10). Here are all the major US tech companies blocked behind China’s “Great Firewall.” Retrieved from: Business Insider website: <https://www.businessinsider.com/major-us-tech-companies-blocked-from-operating-in-china-2019-5?r=US&IR=T>; Manning, R. (2020, May). *ibid*.
- <sup>7</sup> Center for Strategic & International Studies. (2022). Will the Dual Circulation Strategy Enable China to Compete in a Post-Pandemic World? Retrieved from: <https://chinapower.csis.org/china-covid-dual-circulation-economic-strategy/>
- <sup>8</sup> Wang, Y. (2020, September 1). *ibid*.
- <sup>9</sup> Ghosh, B. (2022, January 3). Iran is crushing what is left of internet freedom. *The Bloomberg*. Retrieved from: <https://www.bloomberg.com/opinion/articles/2022-01-03/iran-is-crushing-what-s-left-of-internet-freedom>; Riedel, B. (2020, July 20). Saudi Arabia’s relations with China: Functional, but not strategic. *Brookings Institute*. Retrieved from: <https://www.brookings.edu/articles/saudi-arabias-relations-with-china-functional-but-not-strategic/>
- <sup>10</sup> Reuters. (2021, August 20). *Chinese internet companies should innovate, promote social values - state media*. Retrieved from: <https://www.reuters.com/world/china/chinese-internet-companies-should-innovate-promote-social-values-state-media-2021-08-20/>
- <sup>11</sup> Murgia, M., & Gross, A. (2020, March 30). Inside China’s controversial mission to reinvent the internet. *The Financial Times*. Retrieved from: <https://www.ft.com/content/ba94c2bc-6e27-11ea-9bca-bf503995cd6f>
- <sup>12</sup> Januta, A., & Funakoshi, M. (2021, April 7). Myanmar’s internet suppression. Retrieved from: Reuters website: <https://graphics.reuters.com/MYANMAR-POLITICS/INTERNET-RESTRICTION/rlgpdbreepo/>; Volpicelli, G. M. (2021, September 2). The draconian rise of internet shutdowns. *Wired*. Retrieved from: <https://www.wired.co.uk/article/internet-shutdowns>
- <sup>13</sup> BBC News. (2022, January 14). Ukraine cyber-attack: Russia to blame for hack, says Kyiv. Retrieved from: <https://www.bbc.co.uk/news/world-europe-59992531>
- <sup>14</sup> Ghiasy, R., & Krishnamurthy, R. (2021, April 13). China’s Digital Silk Road and the Global Digital Order. *The Diplomat*. Retrieved from: <https://thediplomat.com/2021/04/chinas-digital-silk-road-and-the-global-digital-order/>
- <sup>15</sup> Runde, D. F., & Ramanujam, S. R. (2021, August 2). Digital Governance: It Is Time for the United States to Lead Again. *Centre for Strategic and International Studies*. Retrieved from: <https://www.csis.org/analysis/digital-governance-it-time-united-states-lead-again>; Ghiasy, R., & Krishnamurthy, R. (2021, April 13). *ibid*.
- <sup>16</sup> Reuters. (2021, August 20). *ibid*.
- <sup>17</sup> Park, J. (2022, February 9). Breaking the Internet: China-US Competition Over Technology Standards. *The Diplomat*. Retrieved from: <https://thediplomat.com/2022/02/breaking-the-internet-china-us-competition-over-technology-standards/>
- <sup>18</sup> Runde, D. F., & Ramanujam, S. R. (2021, August 2). *ibid*.
- <sup>19</sup> Titcomb, J. (2021a, October 3). BBC sounds alarm on Beijing’s plan to rewrite internet rules. *The Telegraph*. Retrieved from: <https://www.telegraph.co.uk/technology/2021/10/03/bbc-sounds-alarm-beijings-plan-rewrite-internet-rules/>; Gross, A., & Murgia, M. (2020, March 27). China and Huawei propose reinvention of the internet. *The Financial Times*. Retrieved from: <https://www.ft.com/content/c78be2cf-a1a1-40b1-8ab7-904d7095e0f2>
- <sup>20</sup> President of Russia. (2022, February 4). *Joint Statement of the Russian Federation and the People’s Republic of China on the International Relations Entering a New Era and the Global Sustainable Development*. Retrieved from: <http://en.kremlin.ru/supplement/5770>
- <sup>21</sup> Soo, Z. (2022, November 3). Why Are Foreign Tech Firms Pulling Out of China. *Bloomberg*. Retrieved from: <https://www.bloomberg.com/news/articles/2021-11-03/explainer-why-are-foreign-tech-firms-pulling-out-of-china>
- <sup>22</sup> Skycoin. (2019, January 9). *Cyberbalkanization and the Future of the Internets*. Retrieved from: <https://medium.com/skycoin/cyberbalkanization-and-the-future-of-the-internets-f03f2b590c39>; Bennett, A., Garson, M., Boakye, B., & Beverton-Palmer, M. et al. (2021, September 30). The Open Internet on the Brink: A Model to Save Its Future. Retrieved from: <https://institute.global/sites/default/files/2021-09/The-Open-Internet-on-the-Brink-Full.pdf>
- <sup>23</sup> O’hara, K., and Hall, W. (2019, December 24). *The dream of a global internet is edging towards destruction*. Retrieved from: <https://www.wired.co.uk/article/internet-fragmentation>; Bennett, A., Garson, M., Boakye, B., & Beverton-Palmer, M. et al. (2021, September 30). *ibid*.
- <sup>24</sup> Skycoin. (2019, January 9). *ibid*.
- <sup>25</sup> Meinrath, S. (2013, October 14). *We Can’t Let the Internet Become Balkanized*. Retrieved from: [http://www.slate.com/articles/technology/future\\_tense/2013/10/internet\\_balkanization\\_may\\_be\\_a\\_side\\_effect\\_of\\_the\\_snowden\\_surveillance.html](http://www.slate.com/articles/technology/future_tense/2013/10/internet_balkanization_may_be_a_side_effect_of_the_snowden_surveillance.html); OECD. (2011, December 13). OECD Council Recommendation on Principles for Internet Policy Making. Retrieved from: <https://www.oecd.org/sti/ieconomy/49258588.pdf>; Bennett, A., Garson, M., Boakye, B., & Beverton-Palmer, M. et al. (2021, September 30). *ibid*.
- <sup>26</sup> Levy, I. (2021, January 29). *Get ready for the death of the global internet. It won’t be pretty*. Retrieved from: <https://www.wired.co.uk/article/internet-balkanisation-ian-levy>
- <sup>27</sup> Bennett, A., Garson, M., Boakye, B., & Beverton-Palmer, M. et al. (2021, September 30). *ibid*.
- <sup>28</sup> London School of Economics. (2018, August 23). *The essential elements of the new Internet governance: diversity, optimism and independence*. Retrieved from: <https://blogs.lse.ac.uk/medialse/2018/08/23/the-essential-elements-of-the-new-internet-governance-diversity-optimism-and-independence/>
- <sup>29</sup> Clark, D., & Claffy, K. (2021). Trust Zones: A Path to a More Secure Internet Infrastructure. *Journal of Information Policy*, 11, 26. Retrieved from: <https://scholarlypublishingcollective.org/psup/information-policy/article/11/1/26/292014>

## References and Further Reading

---

- <sup>30</sup> Raymond, M. (2016). *Managing Decentralized Cyber Governance: The Responsibility to Troubleshoot*. Retrieved from: [https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-10\\_Issue-4/Raymond.pdf](https://www.airuniversity.af.edu/Portals/10/SSQ/documents/Volume-10_Issue-4/Raymond.pdf)
- <sup>31</sup> Department for Digital, Culture, Media & Sport. (2021, April 28). G7 Digital and Technology - Ministerial Declaration. Retrieved from: <https://www.gov.uk/government/publications/g7-digital-and-technology-ministerial-declaration>
- <sup>32</sup> Milmo, D. (2021, Oct 13). TechScape: UK online safety bill could set tone for global social media regulation. *The Guardian*. Retrieved from: <https://www.theguardian.com/technology/2021/oct/13/techscape-uk-online-safety-bill-could-set-tone-for-social-media-regulation-worldwide-facebook-google>
- <sup>33</sup> Hymas, C., & Wright, M. (2022, February 4). Five years in prison for using the web as a “weapon” of abuse. *The Telegraph*. Retrieved from: <https://www.telegraph.co.uk/news/2022/02/04/internet-trolls-harass-people-online-will-jailed-promises-nadine/>
- <sup>34</sup> Satariano, A. (2020, February 12). Britain to Create Regulator for Internet Content. *The New York Times*. Retrieved from: <https://www.nytimes.com/2020/02/12/technology/britain-internet-regulator.html>
- <sup>35</sup> Leslie, D. (2019). Understanding Artificial Intelligence Ethics and Safety. *The Alan Turing Institute*. Retrieved from: [https://www.turing.ac.uk/sites/default/files/2019-08/understanding\\_artificial\\_intelligence\\_ethics\\_and\\_safety.pdf](https://www.turing.ac.uk/sites/default/files/2019-08/understanding_artificial_intelligence_ethics_and_safety.pdf); GCHQ. (2021). Pioneering a New National Security: The Ethics of Artificial Intelligence. Retrieved from: <https://www.gchq.gov.uk/files/GCHQAIpaper.pdf>; Renstrom, J. (2018, August 1). The U.K. Wants to Become the World Leader in Ethical A.I. What Does That Actually Mean?. *Slate*. Retrieved from: <https://slate.com/technology/2018/08/the-u-k-wants-to-be-the-world-leader-in-ethical-a-i.html>
- <sup>36</sup> Steinacker, S., Natusch, M., & Cobban, P. et al. (2019). Towards Ethical AI Conversations with leading CxOs, startups, and academics. Capgemini Research Institute. Retrieved from: <https://www.capgemini.com/wp-content/uploads/2019/12/Report-%E2%80%93-Conversations-Towards-Ethical-AI-1.pdf>
- <sup>37</sup> GCHQ. (2021). *ibid*.
- <sup>38</sup> Wong, Y. H., Yurchak, J., Button, R. W., et al. (2020). Deterrence in the Age of Thinking Machines. *RAND*. Retrieved from: [https://www.rand.org/pubs/research\\_reports/RR2797.html](https://www.rand.org/pubs/research_reports/RR2797.html)
- <sup>39</sup> van Rijmenam, D. (2020, January 24). Why We Need Ethical AI: 5 Initiatives to Ensure Ethics in AI. *Datafloq*. Retrieved from: <https://datafloq.com/read/we-need-ethical-ai-5-initiatives-ensure-ethical-ai/7571>
- <sup>40</sup> Bradshaw, S., Howard, P. (2019). The Global Disinformation Disorder: 2019 Global Inventory of Organised Social Media Manipulation. Retrieved from: <https://demtech.oii.ox.ac.uk/wp-content/uploads/sites/93/2019/09/CyberTroop-Report19.pdf>; Kumar, K. (2021, February 19). We Need Ethical Artificial Intelligence. *Reworked*. Retrieved from: <https://www.reworked.co/information-management/we-need-ethical-artificial-intelligence/>
- <sup>41</sup> Scanlon, L., & Jhakra, P. (2021, January 27). The future of AI regulation in Europe. *UK Finance*. Retrieved from: <https://www.ukfinance.org.uk/news-and-insight/blogs/future-ai-regulation-europe>
- <sup>42</sup> Bird, E., Fox-Skelly, J., & Jenner, N. (2020). The ethics of artificial intelligence: Issues and initiatives. *European Parliament Research Service*. Retrieved from: [https://www.europarl.europa.eu/RegData/etudes/STUD/2020/634452/EPRS\\_STU\(2020\)634452\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2020/634452/EPRS_STU(2020)634452_EN.pdf)
- <sup>43</sup> Pazzanese, C. (2020, March). Ethical concerns mount as AI takes bigger decision-making role. Retrieved from: <https://news.harvard.edu/gazette/story/2020/10/ethical-concerns-mount-as-ai-takes-bigger-decision-making-role/>
- <sup>44</sup> Kaspersen, A., & Wallach, W. (2021, November 10). Why Are We Failing at the Ethics of AI?. *Carnegie Council*. Retrieved from: [https://www.carnegiecouncil.org/publications/articles\\_papers\\_reports/why-are-we-failing-at-ai-ethics](https://www.carnegiecouncil.org/publications/articles_papers_reports/why-are-we-failing-at-ai-ethics)
- <sup>45</sup> Mulgan, G. (2019, September 16). AI ethics and the limits of code(s). *Nesta*. Retrieved from: <https://www.nesta.org.uk/blog/ai-ethics-and-limits-codes/>
- <sup>46</sup> Boza, P., & Evgeniou, T. (2021). Implementing Ai Principles: Frameworks, Processes, and Tools. *INSEAD*. Retrieved from: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3783124](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3783124)
- <sup>47</sup> PwC (2019). Six AI priorities you can't afford to ignore. Retrieved 4 February 2022, from <https://www.pwc.com/m1/en/services/assurance/risk-assurance/documents/2019-ai-predictions-summary-six-priorities.pdf>
- <sup>48</sup> Ada Lovelace Institute. (2021, November 29). Regulate to innovate. Retrieved 4 February 2022, from <https://www.adalovelaceinstitute.org/report/regulate-innovate/>
- <sup>49</sup> Kaplan, A., & Haenlein, M. (2019). Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. *Business Horizons*, 62(1), 15–25. <https://doi.org/10.1016/j.bushor.2018.08.004>
- <sup>50</sup> Byler, D. (2020, June 8). The Global Implications of “Re-education” Technologies in Northwest China. *New Lines Institute*. Retrieved from: <https://newlinesinstitute.org/china/the-global-implications-of-re-education-technologies-in-northwest-china/>
- <sup>51</sup> Al Jazeera. (2021, November 30). UK spy chief warns China, Russia racing to master AI. Retrieved February 10, 2022, from [www.aljazeera.com website: https://www.aljazeera.com/news/2021/11/30/uk-spy-chief-warns-china-russia-racing-to-master-ai](https://www.aljazeera.com/news/2021/11/30/uk-spy-chief-warns-china-russia-racing-to-master-ai)
- <sup>52</sup> President of Russia. (2022, February 4). *ibid*.
- <sup>53</sup> Gady, F-S. (2015, July 21). *ibid*.
- <sup>54</sup> Chernenko, E., & Markotkin, N. (2020). Developing Artificial Intelligence in Russia: Objectives and Reality. *Carnegie Moscow Center*. Retrieved from: <https://carnegiemoscow.org/commentary/82422>
- <sup>55</sup> Bird, E., Fox-Skelly, J., & Jenner, N. (2020). *ibid*; Li, D., Tong, T., & Xiao, Y. (2021, February 18). *ibid*.
- <sup>56</sup> International Research Center for AI Ethics and Governance (2021). *The Ethical Norms for the New Generation Artificial Intelligence*. Retrieved from: <https://ai-ethics-and-governance.institute/2021/09/27/the-ethical-norms-for-the-new-generation-artificial-intelligence-china/>; Day, K. (2021, October 8). China unveils AI ethics code. Global Government Forum. Retrieved from: <https://www.globalgovernmentforum.com/china-unveils-ai-ethics-code/>
- <sup>57</sup> McGregor, G. (2020, November 3). The world's biggest surveillance system is growing—and so is the backlash. *Fortune*. Retrieved from: <https://fortune.com/2020/11/03/china-surveillance-system-backlash-worlds-largest/>; Mozur, P. (2019, April 14). One Month, 500,000 Face Scans: How China Is Using A.I. to Profile a Minority. *The New York Times*. Retrieved from: <https://www.nytimes.com/2019/04/14/technology/china-surveillance-artificial-intelligence-racial-profiling.html>; Bouchard, J. (2021, December 1). AI Strategic Competition, Norms, and the Ethics of Global Empire. *The Diplomat*. Retrieved from: <https://thediplomat.com/2021/12/ai-strategic-competition-norms-and-the-ethics-of-global-empire/>
- <sup>58</sup> Houweling, E. (2021, October 4). China's new AI rulebook: Humans must remain in control. *Verdict*. Retrieved from: <https://www.verdict.co.uk/china-ai-rulebook/>; Fung, P., & Etienne, H. (2021, November 19). Can China and Europe find common ground on AI ethics?. *World Economic Forum*. Retrieved from: <https://www.weforum.org/agenda/2021/11/can-china-and-europe-find-common-ground-on-ai-ethics/>
- <sup>59</sup> Goh, B. (2021, August 27). China Swoops on algorithms in latest tech clampdown. *Reuters*. Retrieved from: <https://www.reuters.com/technology/china-issues-draft-guidelines-internet-recommendation-algorithms-2021-08-27/>

## References and Further Reading

---

- <sup>60</sup> Li, D., Tong, T., & Xiao, Y. (2021, February 18). *ibid*.
- <sup>61</sup> OECD AI Policy Observatory. (n.d). *OECD AI Principles overview*. Retrieved from: <https://oecd.ai/en/ai-principles>; European Commission (2018, April 25). Artificial Intelligence for Europe. Retrieved from: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018DC0237&from=EN>
- <sup>62</sup> Bryan Cave Leighton Paisner. (2020, March 4). The EC White Paper shows that AI regulation is at a crossroads: Where is the UK now and where is it going?. Retrieved from: <https://www.bclplaw.com/en-GB/insights/the-ec-white-paper-shows-that-ai-regulation-is-at-a-crossroads-where-is-the-uk-now-and-where-is-it-going.html>
- <sup>63</sup> European Commission. (2021, April 21). *Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts*. Retrieved from: <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1623335154975&uri=CELEX%3A52021PC0206>
- <sup>64</sup> Ministry of Economy, Trade and Industry (Japan) (2019, June). G20 ministerial statement on trade and Digital Economy Retrieved from: <https://www.meti.go.jp/press/2019/06/20190610010/20190610010-1.pdf>; The Global Partnership on Artificial Intelligence (2019). *Global Partnership on Artificial Intelligence*. Retrieved from: <https://gpai.ai/>
- <sup>65</sup> Bird, E., Fox-Skelly, J., & Jenner, N. (2020). *ibid*.
- <sup>66</sup> The Global Partnership on Artificial Intelligence (2021, November). *Responsible Development, Use and Governance of AI Working Group Report*. Retrieved from: <https://gpai.ai/projects/responsible-ai/gpai-responsible-ai-wg-report-november-2021.pdf>
- <sup>67</sup> Meltzer, J., & Kerry, C. (2021, February 17). Strengthening International Cooperation on Artificial Intelligence. *Brookings Institute*. Retrieved from: <https://www.brookings.edu/research/strengthening-international-cooperation-on-artificial-intelligence/>
- <sup>68</sup> Walch, K. (2020, April). The United Kingdom's role in the future of ai. *Forbes*. Retrieved from: <https://www.forbes.com/sites/cognitiveworld/2020/04/12/the-united-kingdoms-role-in-the-future-of-ai/?sh=468716d768d8>
- <sup>69</sup> Oxford Insights (n.d.). *Oxford Insights*. Retrieved from: <https://www.oxfordinsights.com/>
- <sup>70</sup> Manning, R. (2020, May). *ibid*.
- <sup>71</sup> Renstrom, J. (2018, August 1). *ibid*.
- <sup>72</sup> Steinacker, S., Natusch, M., & Cobban, P. et al. (2019). *ibid*. Ebell, C., Baeza-Yates, R., Benjamins, R., et al. (2021, April 13). Towards intellectual freedom in an AI Ethics Global Community. *AI and Ethics*. Retrieved from: <https://link.springer.com/article/10.1007/s43681-021-00052-5>
- <sup>73</sup> Department for Business, Energy and Industrial Strategy. (2021, July). *UK Innovation Strategy: Leading the future by creating it*. Retrieved from: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1009577/uk-innovation-strategy.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1009577/uk-innovation-strategy.pdf); Department for Digital, Culture, Media & Sport. (2021, September 22). New ten-year plan to make the UK a global AI superpower. Retrieved from: <https://www.gov.uk/government/news/new-ten-year-plan-to-make-britain-a-global-ai-superpower#:~:text=The%20country%20is%20ranked%20third>
- <sup>74</sup> Department for Digital, Culture, Media & Sport, Department for Business, Energy & Industrial Strategy, & Office for Artificial Intelligence. (2020, September 25). *Declaration of the United States of America and the United Kingdom of Great Britain and Northern Ireland on Cooperation in Artificial Intelligence Research and Development*. Retrieved from: <https://www.gov.uk/government/publications/declaration-of-the-united-states-of-america-and-the-united-kingdom-of-great-britain-and-northern-ireland-on-cooperation-in-ai-research-and-development/declaration-of-the-united-states-of-america-and-the-united-kingdom-of-great-britain-and-northern-ireland-on-cooperation-in-artificial-intelligence-re>
- <sup>75</sup> Marshall, J., Rutter, J., & Mills-Sheehy, J. (2021, May 31). Taking back control of regulation: Managing divergence from EU rules. *Institute for Government*. Retrieved from: <https://www.instituteforgovernment.org.uk/sites/default/files/publications/taking-back-control-regulation.pdf>
- <sup>76</sup> Torres Santeli, J., & Gerdon, S. (2019, August 16). 5 challenges for government adoption of AI. *World Economic Forum*. Retrieved from: <https://www.weforum.org/agenda/2019/08/artificial-intelligence-government-public-sector/>
- <sup>77</sup> Bird, E., Fox-Skelly, J., & Jenner, N. et al. (2020, March 11). *ibid*.
- <sup>78</sup> Steer, C. (2020, January 8). Why Outer Space Matters for National and International Security. *Center for Ethics and the Rule of Law, University of Pennsylvania*. Retrieved from: <https://www.law.upenn.edu/live/files/10053-why-outer-space-matters-for-national-and>
- <sup>79</sup> Al-Rodhan, N. (2019, July 20). The Future of Meta-Geopolitical Competition in Outer Space. *Italian Institute for International Political Studies*. Retrieved from: <https://www.ispionline.it/en/publicazione/future-meta-geopolitical-competition-outer-space-23531>
- <sup>80</sup> Hoffner, J. (2020, May 15). The Myth of ITAR-Free. *Center for Strategic and International Studies*. Retrieved from: <https://aerospace.csis.org/the-myth-of-itar-free/>
- <sup>81</sup> Swallow, E., & Visner, S. (2021, February 4). It's time to declare space systems as critical infrastructure. *Politico*. Retrieved from: <https://www.politico.com/news/2021/04/02/its-time-to-declare-space-systems-as-critical-infrastructure-478848>
- <sup>82</sup> Harrison, T., Johnson, K., Moye, J., & Young, M. (2021, April). Space Threat Assessment 2021. *Center for Strategic and International Studies*. Retrieved from: [https://aerospace.csis.org/wp-content/uploads/2021/03/CSIS\\_Harrison\\_SpaceThreatAssessment2021.pdf](https://aerospace.csis.org/wp-content/uploads/2021/03/CSIS_Harrison_SpaceThreatAssessment2021.pdf); Pappalardo, J. (2016b, September 28). SpaceX Can't Hire International Rocket Scientists Even If It Wants To. Retrieved from: <https://www.popularmechanics.com/space/rockets/a23080/spacex-elon-musk-itar/>
- <sup>83</sup> Harrison, T., Johnson, K., Moye, J., & Young, M. (2021, April). *ibid*.
- <sup>84</sup> Smith, A. (2021, August 20). Starlink's near-misses with spacecraft are getting "out of control." *The Independent*. Retrieved from: <https://www.independent.co.uk/space/elon-musk-spacex-starlink-satellite-near-misses-b1905969.html>; Samson, V. (2021, February 24). Threats to space aren't just weapons. *Trends Research*. Retrieved from: <https://trendsresearch.org/insight/threats-to-space-arent-just-weapons/>
- <sup>85</sup> Maidenberg, M., & Cole, D. (2021, August 26). Richard Branson and Jeff Bezos Traveled to Space. Here's How Their Trips Differed. *The Wall Street Journal*. Retrieved from: <https://www.wsj.com/story/photos-richard-branson-and-jeff-bezos-are-going-to-space-heres-how-their-trips-will-differ-e04c32dd>; Harrison, T., Johnson, K., Moye, J., & Young, M. (2021, April). *ibid*.
- <sup>86</sup> Silverstein, B., & Panda, A. (2021, March 9). Space Is a Great Commons. It's Time to Treat It as Such. *Carnegie Endowment for International Peace*. Retrieved from: <https://carnegieendowment.org/2021/03/09/space-is-great-commons.-it-s-time-to-treat-it-as-such-pub-84018>
- <sup>87</sup> Kao, J. S., Ahmed, M., & Hollinger, P. (2021, November 22). The growing problem of space junk. *The Financial Times*. Retrieved from: <https://www.ft.com/content/db10452c-ddf2-445a-a28f-34253506c142>
- <sup>88</sup> UK Space Agency, Department for Business, Energy, and Industrial Strategy, Department for Transport, & Civil Aviation Authority. (2020, October 1). *How we are promoting and regulating spaceflight from the UK*. Retrieved from: <https://www.gov.uk/guidance/how-we-are-promoting-and-regulating-spaceflight-from-the-uk>
- <sup>89</sup> Wheeler, J. (2021, December 9). The Space Law Review: International Treaties. *The Law Reviews*. Retrieved from: <https://thelawreviews.co.uk/title/the-space-law-review/international-treaties>
- <sup>90</sup> Lyall, F., & Larsen, M. P. B. (Eds.). (2013). *Space Law: A Treatise*. Ashgate Publishing, Ltd.
- <sup>91</sup> Harding, L. (2021, July 16). *ibid*.

## References and Further Reading

- <sup>92</sup> International Telecommunications Union (n.d.). *The Constitution of the International Telecommunication Union*. Retrieved from: <https://www.itu.int/council/pd/constitution.html>; UN Committee on the Peaceful Uses of Outer Space. (1970). Report of the Committee on the Peaceful Uses of Outer Space. United Nations Digital Library. Retrieved from: <https://digitallibrary.un.org/record/722813?ln=en>
- <sup>93</sup> Mallick, S., & Pillai Rajagopalan, R. (2019, January 24). If space is “the province of mankind”, who owns its resources?. *Observer Research Foundation*. Retrieved from: <https://www.orfonline.org/research/if-space-is-the-province-of-mankind-who-owns-its-resources-47561/>
- <sup>94</sup> Goswami, T., & Aggarwal, S. (2021, May 31). SpaceX, OneWeb and the “Mega” Effect of Mega-Constellations on International Space Law. *Jurist*. Retrieved from: <https://www.jurist.org/commentary/2021/05/goswami-aggarwal-international-space-law/>
- <sup>95</sup> International Telecommunications Union (n.d.). *ibid*.
- <sup>96</sup> United Nations Office for Outer Space Affairs. (n.d.). *Space Law: National Space Law Database*. Retrieved from: <https://www.unoosa.org/oosa/en/ourwork/spacelaw/nationalspacelaw/index.html>; United Nations. (2010). UN Space Debris Mitigation Guidelines. Inter-Agency Space Debris Coordination Committee. Retrieved from: [https://www.iadc-home.org/documents\\_public/view/search\\_order/eNortj10sVjy1EsuSk0sSU1RSEktTlayBlwwS3cG0g~/~/search\\_field/eNortj12tjly1CsuTcKTS7RdtTLS8xNBVllielAMjk\\_ryQ1r6RYyRpcMAypDUU~/page/1/id/126#u](https://www.iadc-home.org/documents_public/view/search_order/eNortj10sVjy1EsuSk0sSU1RSEktTlayBlwwS3cG0g~/~/search_field/eNortj12tjly1CsuTcKTS7RdtTLS8xNBVllielAMjk_ryQ1r6RYyRpcMAypDUU~/page/1/id/126#u)
- <sup>97</sup> Agence France-Presse. (2019b, September 3). European satellite in near collision with Elon Musk SpaceX craft. *The Guardian*. Retrieved from: <https://www.theguardian.com/science/2019/sep/03/european-satellite-in-near-collision-with-elon-musk-spacex-craft>
- <sup>98</sup> United Nation Office for Outer Space Affairs. (1971). *Convention on International Liability for Damage Caused by Space Objects*. Retrieved from: <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introliability-convention.html>
- <sup>99</sup> Bird, R. C. (2008). Procedural Challenges to Environmental Challenge to Environmental Regulation of Space Debris. *American Business Law Journal*, 40(3), 635–685. Retrieved from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1744-1714.2003.tb01162.x>
- <sup>100</sup> Boley, A., & Byers, M. (2020). U.S. policy puts the safe development of space at risk. *Science*, 370(6513), 174–175. Retrieved from: <https://science.sciencemag.org/content/370/6513/174>
- <sup>101</sup> Rincon, P., & Amos, J. (2021, November 16). Russian anti-satellite test adds to worsening problem of space debris. *BBC News*. Retrieved from: <https://www.bbc.co.uk/news/science-environment-59307862>; Samson, V., & Weeden, B. (2021, April 1). Global Counterspace Capabilities. *Secure World Foundation*. Retrieved from: [https://swfound.org/media/207161/swf\\_global\\_counterspace\\_capabilities\\_es\\_2021\\_en.pdf](https://swfound.org/media/207161/swf_global_counterspace_capabilities_es_2021_en.pdf)
- <sup>102</sup> Sevastopulo, D., & Hille, K. (2021, October 16). China tests new space capability with hypersonic missile. *Financial Times*. Retrieved from: <https://www.ft.com/content/ba0a3cde-719b-4040-93cb-a486e1f843fb>
- <sup>103</sup> Yeung, J., & Jiang, S. (2021, October 16). China's historic crewed mission arrives at new space station. CNN. Retrieved from: <https://edition.cnn.com/2021/10/15/china/china-shenzhou-13-manned-launch-intl-hnk-scn/index.html>; Harding, L. (2021, July 16). The space race is back on – but who will win? *The Guardian*. Retrieved from: <https://www.theguardian.com/science/2021/jul/16/the-space-race-is-back-on-but-who-will-win>
- <sup>104</sup> Harrison, T., Johnson, K., Moye, J., & Young, M. (2021). *ibid*; Vidal, F. (2021, January 7). Russia's Space Policy: The Path of Decline? *The French Institute of International Relations*. Retrieved from: [https://www.ifri.org/sites/default/files/atoms/files/vidal\\_russia\\_space\\_policy\\_2021\\_.pdf](https://www.ifri.org/sites/default/files/atoms/files/vidal_russia_space_policy_2021_.pdf)
- <sup>105</sup> NASA. (2007, November 23). *Shuttle-Mir*. Retrieved from: [https://www.nasa.gov/mission\\_pages/shuttle-mir/](https://www.nasa.gov/mission_pages/shuttle-mir/)
- <sup>106</sup> Rincon, P., & Amos, J. (2021, November 16). *ibid*; Vidal, F. (2021, January 7). Russia's Space Policy: The Path of Decline? The French Institute of International Relations. Retrieved from: [https://www.ifri.org/sites/default/files/atoms/files/vidal\\_russia\\_space\\_policy\\_2021\\_.pdf](https://www.ifri.org/sites/default/files/atoms/files/vidal_russia_space_policy_2021_.pdf)
- <sup>107</sup> Harding, L. (2021, July 16). *ibid*.
- <sup>108</sup> Ni, A., & Gill, B. (2019, May 29). The People's Liberation Army Strategic Support Force: Update 2019. *The Jamestown Foundation*. Retrieved from: <https://jamestown.org/program/the-peoples-liberation-army-strategic-support-force-update-2019/>
- <sup>109</sup> Harding, L. (2021, July 16). *ibid*.
- <sup>110</sup> Sevastopulo, D., & Hille, K. (2021, October 16). *ibid*.
- <sup>111</sup> Ortega, A. (2021, January 28). *Placement of Weapons in Outer Space: The Dichotomy Between Word and Deed*. Retrieved from: <https://www.lawfareblog.com/placement-weapons-outer-space-dichotomy-between-word-and-deed>
- <sup>112</sup> US Mission Geneva. (2019, August 14). *Statement by Ambassador Wood: The Threats Posed by Russia and China to Security of the Outer Space Environment*. Retrieved from: <https://geneva.usmission.gov/2019/08/14/statement-by-ambassador-wood-the-threats-posed-by-russia-and-china-to-security-of-the-outer-space-environment/>
- <sup>113</sup> President of Russia. (2022, February 4). *ibid*.
- <sup>114</sup> Algeria, Angola, & Armenia et al. (2016, October 14). No first placement of weapons in outer space : draft resolution. *United Nations Digital Library*. Retrieved from: <https://digitallibrary.un.org/record/845371?ln=en>; Bowman, B., & Thompson, J. (2021, March 31). Russia and China Seek to Tie America's Hands in Space. *Foreign Policy*. Retrieved from: <https://foreignpolicy.com/2021/03/31/russia-china-space-war-treaty-demilitarization-satellites/>
- <sup>115</sup> Bowen, B. E. (2019, July). The Integrated Review and UK Spacepower: The Search for Strategy. *Freeman Air and Space Institute, Kings College London*. Retrieved from: <https://www.kcl.ac.uk/security-studies/assets/kcl-fasi-british-spacepower-and-the-integrated-review-web4.pdf>
- <sup>116</sup> Bharmal, Z. (2020, December 31). Is the UK about to have liftoff in the global space industry? *The Guardian*. Retrieved from: <https://www.theguardian.com/science/2020/dec/31/is-the-uk-about-to-have-liftoff-in-the-global-space-industry>
- <sup>117</sup> Grossman, D. (2020, October 24). How the UK is quietly disrupting the space industry. *Inverse*. Retrieved from: <https://www.inverse.com/innovation/uk-disrupting-the-space-agency>; Highfield, R. (2010, September 8). Zeros to heroes: How we almost missed the ozone hole. *New Scientist*. Retrieved from: <https://www.newscientist.com/article/mg20727771-400-zeros-to-heroes-how-we-almost-missed-the-ozone-hole/>
- <sup>118</sup> UK Space Agency. (2018). *Size and Health of the UK Space Industry 2018*. Retrieved from: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/774818/LE-SHUKSI\\_2018-INFOGRAPHIC-FINAL-Issue1-S2C090119sw.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/774818/LE-SHUKSI_2018-INFOGRAPHIC-FINAL-Issue1-S2C090119sw.pdf)
- <sup>119</sup> Koetsier, J. (2021, May 22). Space Inc: 10,000 Companies, \$4T Value ... And 52% American. *Forbes*. Retrieved from: <https://www.forbes.com/sites/johnkoetsier/2021/05/22/space-inc-10000-companies-4t-value--and-52-american/?sh=5a8a9c4c55ac>; HM Government. (2021, September 27). *National Space Strategy*. Retrieved from: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1020617/national-space-strategy.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1020617/national-space-strategy.pdf)
- <sup>120</sup> Titcomb, J. (2021b, December 8). OneWeb to start making satellites in Britain in \$3bn boost to space sector. *The Telegraph*. Retrieved from: <https://www.telegraph.co.uk/technology/2021/12/08/oneweb-start-making-satellites-britain-3bn-boost-space-sector/>
- <sup>121</sup> Srivastava, A. (2020, December 2). The most innovative UK-led space companies exploring new galaxies of technology in 2020. *UK Tech News*. Retrieved from: <https://www.uktech.news/featured/innovative-uk-space-companies-20201202>
- <sup>122</sup> Harebottle, A. (2021, November 19). The UK's Space Strategy Casts the Nation as a Rising Space Super Power. *Satellite*. Retrieved from: <http://interactive.satellitetoday.com/via/december-2021/the-uks-space-strategy-casts-the-nation-as-a-rising-space-super-power/>
- <sup>123</sup> Science and Technology Committee, House of Commons. (2021, November 3). UK space strategy and UK satellite infrastructure: inquiry. *UK Parliament*. Retrieved from: <https://committees.parliament.uk/work/1194/uk-space-strategy-and-uk-satellite-infrastructure/>

## References and Further Reading

---

- <sup>124</sup> Agence France-Presse. (2021a, March 9). France conducts first military drills in space. *Space War*. Retrieved from: [https://www.spacewar.com/reports/France\\_conducts\\_first\\_military\\_drills\\_in\\_space\\_999.html](https://www.spacewar.com/reports/France_conducts_first_military_drills_in_space_999.html)
- <sup>125</sup> Hughes, S. (2020). Securing our future in space. *UKSpace*. Retrieved from: [https://www.ukspace.org/wp-content/uploads/2020/12/Securing-Our-Future-in-Space\\_Dec2020.pdf](https://www.ukspace.org/wp-content/uploads/2020/12/Securing-Our-Future-in-Space_Dec2020.pdf)
- <sup>126</sup> Sant, R., Roe, P., & Osborne, E. et al (2021, February 25). Space Sector Skills Survey 2020. *UK Space Agency*. Retrieved from: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/964639/BMG\\_2081\\_UKSA\\_Space\\_Sector\\_Skills\\_Survey\\_2020\\_Report\\_V1.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/964639/BMG_2081_UKSA_Space_Sector_Skills_Survey_2020_Report_V1.pdf); Space Growth Partnership. (2018). *Prosperity from Space: A Partnership Strategy for the UK*. Retrieved from: [https://sa.catapult.org.uk/wp-content/uploads/2018/09/Prosperity-from-Space-strategy\\_2May2018.pdf](https://sa.catapult.org.uk/wp-content/uploads/2018/09/Prosperity-from-Space-strategy_2May2018.pdf); Sadlier, G., Flytkjær, R., Sabri, F., & Esteve, R. (2018). Size & Health of the UK Space Industry 2018 A Report to the UK Space Agency. London Economics. Retrieved from: <https://spaceskills.org/public/docs/Size%20&%20Health%20of%20UK%20Space%20Industry%202018.pdf>
- <sup>127</sup> UK Space Agency. (2021, January 12). *Rolls-Royce and UK Space Agency launch study into nuclear-powered space exploration*. Retrieved from: <https://www.gov.uk/government/news/rolls-royce-and-uk-space-agency-launch-first-ever-study-into-nuclear-powered-space-exploration>
- <sup>128</sup> UK Space Agency. (2022, February 2). Boost for space clusters across the UK. Retrieved from: <https://www.gov.uk/government/news/boost-for-space-clusters-across-the-uk>
- <sup>129</sup> Taylor, E., Stickings, A., Tonami, A., & Nagashima, J. (2021, March). *ibid*.
- <sup>130</sup> UK Space Agency, & Department for Business, Energy and Industrial Strategy. (2020, November 14). UK government commissions space solar power stations research. Retrieved from: <https://www.gov.uk/government/news/uk-government-commissions-space-solar-power-stations-research>
- <sup>131</sup> Rough, E., Kirk-Wade, E., Adcock, A., & Housley, C. (2021, February 3). Future of the UK Space Agency. Retrieved from: <https://researchbriefings.files.parliament.uk/documents/CDP-2021-0006/CDP-2021-0006.pdf>
- <sup>132</sup> Ministry of Defence. (2022, February 1). Defence Space Strategy: Operationalising the Space Domain. Retrieved from: <https://www.gov.uk/government/publications/defence-space-strategy-operationalising-the-space-domain>
- <sup>133</sup> HM Government. (2021). *National Space Strategy*. Retrieved from: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1020617/national-space-strategy.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1020617/national-space-strategy.pdf)
- <sup>134</sup> Ministry of Defence. (2022, February 1). *ibid*.
- <sup>135</sup> Lewis, P. (2019, June 12). Create a Global Code of Conduct for Outer Space. *Chatham House*. Retrieved from: <https://www.chathamhouse.org/2019/06/create-global-code-conduct-outer-space>
- <sup>136</sup> Bowen, B. E. (2019, July). *ibid*.
- <sup>137</sup> Sant, R., Roe, P., Osborne, E., Hallam, L., & Sullivan-Drage, H. (2021, February). *ibid*.
- <sup>138</sup> Bowen, B. E. (2019, July). *ibid*.
- <sup>139</sup> NATO. (2021, December 2). NATO's approach to space. Retrieved from: [https://www.nato.int/cps/en/natohq/topics\\_175419.htm](https://www.nato.int/cps/en/natohq/topics_175419.htm)
- <sup>140</sup> Shepherd, T. (2021, October 7). Aukus pact to deepen Australia, US collaboration on space technology. *The Guardian*. Retrieved from: <https://www.theguardian.com/science/2021/oct/07/aukus-pact-to-deepen-australia-us-collaboration-on-space-technology>
- <sup>141</sup> Elefeteriu, G. (2021, October 1). UK's space strategy: the boost is yet to come. *Policy Exchange*. Retrieved from: <https://policyexchange.org.uk/uks-space-strategy-the-boost-is-yet-to-come/>
- <sup>142</sup> Zandee, D., Kruijver, K., & Stoetman, A. (2020). The future of Arctic security: The geopolitical pressure cooker and the consequences for the Netherlands on JSTOR. *Clingendael Institute*. Retrieved from: <https://www.jstor.org/stable/resrep24676>
- <sup>143</sup> Folland, R. (2021, March 30). Arctic Security: Deterrence and Détente in the High North. *The Arctic Institute*. Retrieved from: <https://www.thearcticinstitute.org/arctic-security-deterrence-detente-high-north/?cn-reloaded=1>; Bird, K. J., Charpentier, R. R., & Gautier, D. L. et al. (2008). Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle. United States Geological Survey. Retrieved from: <https://pubs.usgs.gov/fs/2008/3049/fs2008-3049.pdf>
- <sup>144</sup> Wall, C. (2021, March 21). U.S.-Russian Arctic Relations: A Change in Climate? *Centre for Strategic and International Studies*. Retrieved from: <https://www.csis.org/analysis/us-russian-arctic-relations-change-climate>
- <sup>145</sup> Global Construction Review. (2021, May 28). *Russia starts work on Arctic port for \$110bn Vostok oil project*. Retrieved from: <https://www.globalconstructionreview.com/russia-starts-work-arctic-port-110bn-vostok-oil-pr/>; Wall, C., & Conley, H. A. (2021, March 31). U.S.-Russian Arctic Relations: A Change in Climate? Retrieved from: [www.csis.org website: https://www.csis.org/analysis/us-russian-arctic-relations-change-climate](https://www.csis.org/analysis/us-russian-arctic-relations-change-climate)
- <sup>146</sup> Danilov, P. B. (2021b, October 12). Russia is Planning for Year-Round Shipping on the Northern Sea Route by 2022 or 2023. *High North News*. Retrieved from: [https://www.highnorthnews.com/en/russia-planning-year-round-shipping-northern-sea-route-2022-or-2023#:~:text=Russia%20has%20over%20time%20had;O'Neill, D. \(2021, October 29\). Putin's Arctic polar push. \*Institute of Marine Engineering, Science and Technology\*. Retrieved from: <https://www.imarest.org/themarineprofessional/on-the-radar/6284-putin-s-arctic-polar-push>](https://www.highnorthnews.com/en/russia-planning-year-round-shipping-northern-sea-route-2022-or-2023#:~:text=Russia%20has%20over%20time%20had;O'Neill, D. (2021, October 29). Putin's Arctic polar push. Institute of Marine Engineering, Science and Technology. Retrieved from: https://www.imarest.org/themarineprofessional/on-the-radar/6284-putin-s-arctic-polar-push)
- <sup>147</sup> Wall, C. (2021, March 21). *ibid*
- <sup>148</sup> Rumer, E. S., Sokolsky, R., & Stronski, P. (2021, March 29). Russia in the Arctic—A Critical Examination. *Carnegie Endowment for International Peace*. Retrieved from: <https://carnegieendowment.org/2021/03/29/russia-in-arctic-critical-examination-pub-84181>; Folland, R. (2021, March 30). *ibid*.
- <sup>149</sup> Auerswald, D. (2021, May 27). A U.S. Security Strategy for the Arctic. *War on the Rocks*. Retrieved from: <https://warontherocks.com/2021/05/a-u-s-security-strategy-for-the-arctic/>; Zandee, D., Kruijver, K., & Stoetman, A. (2020). *ibid*.
- <sup>150</sup> Tavenier, R. (2021, February 17). Russia and the Arctic Council in 2021: a New Security Dilemma. *Global Risk Insights*. Retrieved from: <https://globalriskinsights.com/2021/02/russia-and-the-arctic-council-in-2021-a-new-security-dilemma/>
- <sup>151</sup> Folland, R. (2021, March 30). *ibid*.
- <sup>152</sup> Zandee, D., Kruijver, K., & Stoetman, A. (2020). *ibid*.
- <sup>153</sup> Folland, R. (2021, March 30). *ibid*; Reuters. (2021, June 28). *Russia, China extend friendship and cooperation treaty -Kremlin*. Retrieved from: <https://www.reuters.com/world/china/russia-china-extend-friendship-cooperation-treaty-kremlin-2021-06-28/>
- <sup>154</sup> Wishnick, E. (2021, June 5). Will Russia Put China's Arctic Ambitions on Ice? *The Diplomat*. Retrieved from: <https://thediplomat.com/2021/06/will-russia-put-chinas-arctic-ambitions-on-ice/>
- <sup>155</sup> Robinson, T. (2022, February 7). Russia's Plans to Send More Natural Gas to China by Pipeline Could Cut LNG Demand. *Natural Gas Intelligence*. Retrieved from: <https://www.naturalgasintel.com/russias-plans-to-send-more-natural-gas-to-china-by-pipeline-could-cut-lng-demand/>; Ridgewell, H. (2022, January 18). "Power of Siberia 2" Pipeline Could See Europe, China Compete for Russian Gas. *VOA*. Retrieved from: <https://www.voanews.com/a/power-of-siberia-2-pipeline-could-see-europe-china-compete-for-russian-gas-/6402242.html>
- <sup>156</sup> Koh, S. L. C. (2020, May 11). China's strategic interest in the Arctic goes beyond economics. *Defense News*. Retrieved from: <https://www.defensenews.com/opinion/commentary/2020/05/11/chinas-strategic-interest-in-the-arctic-goes-beyond-economics/>

## References and Further Reading

---

- <sup>157</sup> Auerswald, D. (2021, May 27). *ibid.*
- <sup>158</sup> President of Russia. (2022, February 4). *ibid.*
- <sup>159</sup> Wishnick, E. (2021, June 5). *ibid.*
- <sup>160</sup> Doshi, R., Dale-Huang, A., & Zhang, G. (2021, April). Northern Expedition China's Arctic Activities and Ambitions. *Brookings Institute*. Retrieved from: [https://www.brookings.edu/wp-content/uploads/2021/04/FP\\_20210412\\_china\\_arctic.pdf](https://www.brookings.edu/wp-content/uploads/2021/04/FP_20210412_china_arctic.pdf); Gronholt-Pederson, J., & Onstad, E. (2021, March 2). Mining magnets: Arctic island finds green power can be a curse. *Reuters*. Retrieved from: <https://www.reuters.com/article/us-rareearths-greenland-usa-china-insigh-idUSKBN2AU0FM>
- <sup>161</sup> The Maritime Executive. (2017, April 12). *Chinese Investor Acquires Port for Swedish Navy*. Retrieved from: <https://www.maritime-executive.com/article/chinese-investor-acquires-port-for-swedish-navy>
- <sup>162</sup> Koh, S. L. C. (2020, May 11). *ibid.*
- <sup>163</sup> Scholer, M., & Lanteigne, M. (2022, January 8). China and Greenland: Debunking the "Debt Trap" Scenario. *The Diplomat*. Retrieved from: <https://thediplomat.com/2022/01/china-and-greenland-debunking-the-debt-trap-scenario/>; Lino, M. R. (2020, February 25). Understanding China's Arctic activities. *IJSS*. Retrieved from: <https://www.ijss.org/blogs/analysis/2020/02/china-arctic>; Institute for Security and Development Policy. (2019, August 14). *A Touch of Frost: Danish Concerns over Chinese Investment to Greenland*. Retrieved from: <https://isdp.eu/danish-concerns-chinese-investment-greenland/>
- <sup>164</sup> Auerswald, D. (2021, May 27). *ibid.*
- <sup>165</sup> Folland, R. (2021, March 30). *ibid.*
- <sup>166</sup> Parfitt, T. (2017, April 12). Russia plants flag on North Pole seabed. *The Guardian*. Retrieved from: <https://www.theguardian.com/world/2007/aug/02/russia-arctic>
- <sup>167</sup> McLaughlin, D. (2021, December 10). Arctic region may be site of new cold war as Russia's ambitions expand. Retrieved from: The Irish Times website: <https://www.irishtimes.com/news/world/europe/arctic-region-may-be-site-of-new-cold-war-as-russia-s-ambitions-expand-1.4752075>
- <sup>168</sup> Devlin, J. (2022, January 17). Russian cyberattacks target Norway's infrastructure. *The Times*. Retrieved from: <https://www.thetimes.co.uk/article/russian-cyberattacks-target-norways-infrastructure-mbzhdzbz6f>
- <sup>169</sup> Edvardsen, T. A. (2022, January 19). Cold Response 2022: 35,000 Soldiers from 26 Countries in Northern Military Exercise. *High North News*. Retrieved from: <https://www.highnorthnews.com/en/cold-response-2022-35000-soldiers-26-countries-northern-military-exercise#:~:text=Cold%20Response%20is%20a%20Norwegian%20led%20series%20of%20military%20exercises>
- <sup>170</sup> Boulegue, M., & Depledge, D. (2021, April 16). It Is Time to Negotiate a New Military Security Architecture for the Arctic. *Wilson Center*. Retrieved from: <https://www.wilsoncenter.org/blog-post/no-5-it-time-negotiate-new-military-security-architecture-arctic>
- <sup>171</sup> Arctic Council. (2019, September). *A Quick Guide to the Arctic Council*. Retrieved from: [https://oaarchive.arctic-council.org/bitstream/handle/11374/2424/2019-09-30-A\\_quick\\_guide\\_to\\_the\\_AC\\_online.pdf?sequence=1&isAllowed=y](https://oaarchive.arctic-council.org/bitstream/handle/11374/2424/2019-09-30-A_quick_guide_to_the_AC_online.pdf?sequence=1&isAllowed=y); Exnor-Pirot, H., Ackren, M., Loukacheva, N., Nicol, H., & Nilsson, A. (2019, February 5). Form and Function: The Future of the Arctic Council. *The Arctic Institute*. Retrieved from: <https://www.thearcticinstitute.org/form-function-future-arctic-council/>
- <sup>172</sup> Gorbachev, M. (1987, October 1). The Speech in Murmansk at the ceremonial meeting on the occasion of the presentation of the Order of Lenin and the Gold Star Medal to the city of Murmansk. *Novosti Press Agency*. Retrieved from: [https://www.barentsinfo.fi/docs/gorbachev\\_speech.pdf](https://www.barentsinfo.fi/docs/gorbachev_speech.pdf)
- <sup>173</sup> Long, Z. (2016). Arctic Governance: Challenges and Opportunities. *Council on Foreign Relations*. Retrieved from: <https://www.cfr.org/report/arctic-governance>
- <sup>174</sup> Danilov, T. P. B. (2021a, January 19). Russia Wants to Resume Meetings Between Arctic Defense Chiefs. *High North News*. Retrieved from: <https://www.highnorthnews.com/en/russia-wants-resume-meetings-between-arctic-defense-chiefs>

The British Foreign Policy Group is an independent, non-partisan think tank dedicated to advancing the UK's global influence, at a crucial time in the nation's modern history. To achieve this, we produce dynamic events and high-quality research, and facilitate networks amongst stakeholders with a vested interest in Britain's international engagement.

Our core objective is to bridge the link between the domestic and international spheres – recognising that Britain's foreign policy choices and obstacles are shaped by our social landscape at home. Through pioneering research into the UK's social fabric, we seek to build understanding of the nuances of public opinion, and how our foreign policy can become more inclusive, responsive and relevant to citizens' lives.



**British Foreign Policy Group**