NATO PARLIAMENTARY ASSEMBLY

DEFENCE AND SECURITY COMMITTEE (DSC)
Sub-Committee on Future Security and Defence Capabilities (DSCFC)

CHINA'S DEFENCE POSTURE: IMPLICATIONS FOR NATO

Report

Lara MARTINHO (Portugal)
Rapporteur

015 DSCFC 21 E rev. 2 fin | Original: English | 9 October 2021

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Beijing is investing in modern armed forces capable of defending China's increasingly global interests. The modernisation of the People's Liberation Army (PLA) is accelerating under the watch of Xi Jinping. Three military goals structure Xi's vision for the PLA – *mechanisation*, *informationisation*, and *intelligentisation* – if achieved, Xi believes the PLA will be a 'world-class' fighting force by 2049; in time to celebrate the centenary of the PRC.

China's military does not pose an immediate threat to Allies, but it is increasingly apparent it is an over-the-horizon challenge – China's expanding global economic, political, and military interests are increasingly butting up against those of the Alliance in the Euro-Atlantic.

As Allies hone their understanding and approach to China in the coming months and years, it is certain NATO will need a whole-of-alliance effort. China's declared military ambitions will increasingly rub up against Allied interests in three key domains; ***sea, space, and cyber*** – in the preservation norms for the freedom of navigation on the high seas; the maintenance of access to secure satellite communication networks in space; and, in cyberspace, which has become a declared arena of strategic competition and disruption by China. In addition to mitigating the impact of the military challenges China will pose, Allies must also find the ways and means to cooperate with China on a number of global security issues.

This report concludes with focused recommendations for NATO parliamentarians, as well as governments to consider; among them: a strong political statement about what the Alliance stands for, rather than against, as it engages with the NATO 2030 agenda, a key part of which being the revision of the Strategic Concept, in order to position the Alliance in a world with a globally strong China; stronger inter-Allied and partner cooperation to garner a clearer picture of the size and scope of the China challenge in all domains; the expansion of NATO-China political and military contact; and the identification of Allied strategic vulnerabilities.

I. INTRODUCTION

1. To defend China's growing economic and political interests, Beijing has committed to building modern military forces capable of global reach. Under the leadership of Xi Jinping, China's military modernisation is accelerating along the lines of three military goals - *mechanisation*, *informationisation*, and *intelligentisation* – meaning: the modernisation of platforms and systems across the services; improved technical sophistication and system interoperability; and, finally, the integration of big data, artificial intelligence, and automation to make the People's Liberation Army (PLA) a 'world-class' fighting force by 2049.

2. While China's military challenge does not pose an immediate threat to the Euro-Atlantic area, there is a growing consensus it will be a challenge over the horizon. China's expanding global economic, political, and military interests are increasingly merging and butting up against those of the Alliance in the Euro-Atlantic area. China's Belt and Road initiative is channelling significant investments to grow the country's trading position in Europe. The Polar Silk Road seeks to position China to be a key player as access to the Arctic continues to open. Digital and Space Silk Road initiatives seek to facilitate the construction of an advanced digital infrastructure across the globe and in space answerable to Chinese technology architecture and interests.

3. Recent years have also witnessed an increase in Chinese military activities in the Baltic, Mediterranean, and Arctic. Chinese military cooperation with Russia is deeper than at any point in the post-Cold War era. China is also working to complete its nuclear triad, and, while the US Department of Defense has estimated it will double the size of its nuclear arsenal by the end of the decade, recent nuclear missile basing projects suggest this may come much sooner (Warrick, 2021; Broad and Sanger, 2021; US DOD, 2020).

4. As Allies made clear at their June 2021 Summit, China is increasingly viewed as a challenger to the international rules-based order, whose coercive policies 'stand in contrast to the fundamental values enshrined in the Washington Treaty' (NATO, 2021). As such, China's place on the NATO agenda is shifting. As NATO Allies hone their understanding and approach to China in the coming months and years, defending Allied interests over what will likely be a protracted era of competition with Beijing will almost certainly require a whole-of-alliance response. In parallel, however, it will be incumbent upon Allies to find the ways and means to cooperate with China on several critical global issues from climate change to terrorism to arms control.

5. This report reviews the development of China's modern military forces and the challenge they pose for NATO Allies. It examines not only force structure and platforms, but also focuses on PLA posture at home and abroad as China builds the military it believes it requires to defend its growing significant global interests. The report concludes with recommendations for NATO parliamentarians as they assess the Chinese military challenge as it is evolving today.

II. DRIVERS OF THE REPORT – CHINA'S EFFORTS TO DEFEND EXPANDING GLOBAL INTERESTS

6. China's rise is nothing short of a sea change for international relations. China has moved swiftly in the 21st century to position itself to be a near-peer competitor by some key metrics of the United States' global power – principally economic and military, but also, increasingly, diplomatic, informational, and cultural. China's economic expansion over the past two decades has perhaps been the most spectacular.

7. Today, China accounts for 18 percent of the globe's total GDP and makes a stunning 22 percent of global manufacturing exports (World Bank, 2021). Chinese production capacity not only anchors China's growing economic power at home, but it has so interwoven itself into many of the world's major economies that they are now almost totally dependent on Chinese imports to

sustain key sectors of their economies – just among Allies, for example, the US technology sector, German car manufacturing, financial services in the UK, and luxury goods in France are all dependent on Chinese capital or goods inputs (Economist, 2021).

8. Beijing's whole-of-government approach to everything it does in its rise – from the Belt and Road Initiative (BRI), Made in China 2025, to the current efforts to modernise the PLA – demonstrates a focused state-level approach to pave the way for Beijing to become a global norm changer at the economic, political, and security levels. The trajectory of China's growing weight in international affairs and institutions, its growing military power projecting capabilities, and the global scope of China's strategic acquisitions and investments signal that Beijing believes it may even be possible to achieve its hegemonic goals in time to celebrate the centennial of the PRC in 2049.

A. INCREASINGLY ENCROACHING ON ALLIED INTERESTS

9. As Allies are now increasingly aware, the strategic interests of the Euro-Atlantic community will not be immune from the increasing influence of China. As this report indicates, Chinese strategic investments are flowing into all corners of the Alliance. For example, infrastructural investments in Western Balkan highways and Mediterranean ports allow for facilitated access to the EU common market; mining stakes and gas terminal investments anchor efforts to secure potential future wealth and transit access across the High North; and many others crisscrossing Allied territory and waters signal an attempt to embed Chinese interests over the long term.

10. Signs that China's military is investing in the ways and means to defend these expanding economic interests across the Euro-Atlantic are also growing. For example, the Chinese Navy conducted live-fire drills in the Mediterranean Sea in 2017 en route to a joint exercise with the Russian Navy in the Baltic (Gady, 2017). In 2020, a US Coast Guard cutter stumbled upon an unannounced joint Chinese-Russian naval exercise in the Arctic during a routine patrol (Larter, 2020). Some experts believe Beijing may also be seeking to establish a naval presence in the Atlantic (Baldor, 2021). China's increased military presence in waters adjacent to NATO Allies' territory is just the most visible of an increasing Chinese challenge to Allied interests, which has ranged from cyberattacks and espionage to disinformation campaigns and other hybrid tactics.

11. China's military encroachment has not gone unnoticed by Allies. A key debate, however, continues about the size, shape, and character of NATO's approach to China. As Allies continue to develop a policy consensus, the Alliance has been increasingly including references to China in its official pronouncements; the tone of which have shifted from a relatively neutral and benign statement at the 2019 London meeting – noting only that China's 'growing influence and international policies present both opportunities and challenges' to NATO interests - to the more candid tone of the June 2021 summit communiqué in which Allies express their concern about China positioning itself as a systemic rival to the NATO-supported rules-based international order (NATO, 2019; NATO 2021). Of principal concern to Allies is China's rapidly expanding nuclear arsenal, its significant, though 'opaque', military modernisation, and general flaunting of its international commitments 'in keeping with its role as a major power' (NATO, 2021).

12. It is clear then that China's place on the NATO agenda is evolving rapidly. The size and shape of China's place in NATO's future policy, however, will likely continue to be at the core of Allied debate in the near-to-medium term – rightsizing the China challenge will also be a core question of the Strategic Concept revision. Essential to the review and adjustment of NATO policy to incorporate a complex challenge like China, however, is a clear understanding of the nation's evolving defence and deterrence posture. China's declared military ambitions will increasingly rub up against Allied interests in three key domains; ***sea, space, and cyber*** – in the preservation norms for the freedom of navigation on the high seas; the maintenance of access to secure satellite communication networks in space; and, in cyberspace, which has become a declared arena of strategic competition and disruption by China.

III. THE PLA AS A KEY INSTRUMENT OF CHINA'S FOREIGN POLICY – DEFENDING INCREASINGLY GLOBAL INTERESTS

13. The PLA is the armed wing of the founding and ruling party of the PRC, the Chinese Communist Party (CCP). As such, the PLA can be seen as the force backing the CCP's interests and ambitions. As experts note, the CCP hinges its continued survival upon driving a strong and prosperous nation (the PRC) (Albert, et al., 2021). China's rise as a major global power, and the role of the PLA within this rise, therefore, is a function of the interplay of complex and evolving domestic variables – China's leadership, and increasingly Xi Jinping himself, see increased wealth as a means of sourcing national pride, and the only means of increasing this wealth is by a continued expansion of Chinese interests across the globe.

14. Chinese President Xi Jinping has made an unabashed, global China a centrepiece of his tenure as President of the CCP from the start in 2012. Xi used his 2017 speech at the 19th National Congress to announce many of China's bold global ambitions. As Xi stated: "The Chinese dream of national rejuvenation will bring the nation closer to centre stage of world affairs." This was the first time any Chinese Communist Party leader had made pronouncements on such a scale. Defence of the *China Dream*, Xi stressed, would require transforming the PLA "into [a] world-class force…built to fight…[and] win when it is called upon" (*Xi*, 2017).[1]

15. Today, the PRC's ambitious and globally-oriented foreign policy is directly linked to its equally ambitious and globally-oriented economic interests — the *Belt and Road Initiative* is emblematic of the merging of the two. As the PRC seeks to continue to develop trade routes, secure energy resources, and engage with partners across the world, so too will it need to grow the military capabilities to defend this growing global footprint.

A. THE BELT AND ROAD INITIATIVE

16. Xi Jinping's wide-ranging *Belt and Road Initiative* is defining China's new global aspirations – for today, as well as over the horizon. Launched in 2013, BRI is a massive project to establish economic linkages across the globe. Currently, over 60 nations have announced or are considering BRI projects, and estimates indicate that the PRC could spend over $1 trillion USD by 2027 on such projects (Chatzky and McBride, 2020).

17. The strategy behind BRI is relatively straightforward: China is seeking the ways and means to invest in, and develop with partner nations, assets to enable the transportation of goods and services both to and from China across the globe. Europe is a key destination of the BRI: to facilitate access to the largest economic market in the world, China is investing across Central and South Asia into the Middle East to develop modern road, port, and telecommunication facilities. Many of the geographic routes hone the historical 'silk road' trading routes that connected China to these regions centuries ago. The use of *silk road*, however, is clearly not derivative of only historical pathways, as it is also being used to denote Chinese investments in trans-Arctic transportation and excavation aspirations, in addition to ambitions beyond land vehicle and sea vessel infrastructure to include the *digital (also informational)* and *space* domains.

18. The totality of the BRI's projects would be impossible to enumerate in this document; several projects, however, stand out as illustrations of the initiative's reach and ambition. The China-Pakistan Economic Corridor (CPEC), for example, is a $60 billion project to connect China's Xinjiang region to Gwadar port in Pakistan. When fully completed, this new overland route will allow a significant

---

[1] Xi's openness about the PRC's aims and ambitions are strikingly different than the guiding strategy espoused by former leader Deng Xiaoping, which advised PRC leaders to "observe carefully; secure our position; cope with affairs calmly; hide our capacity and bide our time; be good at maintaining a low profile; and never claim leadership" (Ostermann & Kraus, 2019).

percentage of Chinese goods to flow directly from Western China to the Indian Ocean, and, crucially, will allow for China to receive energy shipments without having to depend entirely on the congested and narrow Malacca Straits (Gill, 2019).[2]

19. The BRI is also upgrading Soviet-era and Russian-oriented critical infrastructure across Central Asia, with key investments flowing into energy industries. Today, China is drawing nearly a quarter of its natural gas supply from the region (Hashimova, 2018).[3] Other projects aim at hydroelectric dams and electrical grids, as China seeks to increase the resilience and redundancy of its energy supply lines. A key focus of the projects as well is to facilitate the flow of goods to (and, to a lesser extent from) Europe.

20. Chinese completed foreign direct investment in the EU and UK soared from under €1 billion in 2008 to €44.2 billion in 2016 before dropping to €6.5 billion in 2020 (Kratz, Zenglein and Sebastian, 2021) – a key focus of the investments has been to create Chinese-controlled linkages for secure entry into the EU common market. Today, Chinese state-run shipping companies own significant to commanding interests in over a dozen European ports. To facilitate the movement of Chinese goods from the coast to the core of Europe, China has undertaken infrastructure investment projects, such as highway projects in Montenegro, Serbia, and North Macedonia (Doehler, 2019), proposed upgrades to Black Sea ports in Bulgaria (Weitz, 2020) as well as a slew of other infrastructure and energy investments. COSCO is currently negotiating a stake in a container terminal in Hamburg, Germany; it already has stakes in the port facilities in Antwerp, Belgium as well as Bilbao and Valencia, Spain (Maritime Executive, 2021).

1. The Polar Silk Road

21. China published an Arctic policy in 2018, proclaiming itself a 'near-Arctic state' and making clear it would like a sizeable stake in the future of the Arctic as it becomes increasingly accessible due to climate change. China sees a wide array of potential in the climate change-driven increased access to the Arctic; from newly available sea lanes of communication (SLOCs) for goods transit to-and-from China to Europe to exploitation of the region's resource potential. Opening Arctic sea lanes of communication would benefit Chinese global shipping; the distance between Shanghai and German ports, for example, is about 4,600 km shorter than passing through the Suez Canal (Lino, 2020).

22. China is investing with partners across almost every Arctic nation. In the Russian Arctic, for example, China's National Petroleum Corporation (CNPC) has taken a 20 percent stake in the Yamal Peninsula LNG 1 project, while the CNPC and the China National Offshore Oil Corporation each purchased a 10 percent stake in the Yamal Arctic LNG 2 project. Chinese state-owned corporations are also working to secure a part of other oil, gas, and mining sector projects along Russia's Northern Sea Route (Sengupta and Meyers, 2019). Other notable investments across the region include research centres in Iceland and Norway, efforts to engage in rare earth mining in Greenland, and working with a Finnish company to link Northern Europe and Asia via undersea communications cables. China is also working to increase its regional presence via Arctic cooperative initiatives, such as the China-Russia Arctic Forum and the China-Nordic Arctic Research Center.

---

2 The Chinese economy is highly reliant on trade routes through narrow straits in the Indian Ocean. More than 80% of the world's oil which transits the ocean moves through these vital straits – 40 percent through the Strait of Hormuz, 35 percent through the Strait of Malacca and 8 percent through the Bab el-Mandab Strait (Gill, 2019).

3 For example, BRI-funded projects have built the Dushanbe-Chanak highway that connects Tajikistan's capital to the north of the country, and three railroad connections: Pop-Angren in Uzbekistan, Uzen-Bereket-Gorgan connecting Kazakhstan, Turkmenistan, and Iran, as well as the Khorgos dry port which connects China and Kazakhstan to Europe (Hashimova, 2018).

23. As noted above, China has participated in joint military exercises in the Arctic with Russia. Experts, however, caution that this is still a relative anomaly, rather than norm for China's Arctic presence. Military experts are, however, concerned about China's increased scientific and economic activities in the region as a means of regional exploration to build a clearer Arctic picture for a future PLA deployment (Larter, 2021). The real challenge of the PLA in the Arctic will be when China decides to run submarines through the region.

24. In April 2021, China launched a Shiyan 6 (03) satellite into near-polar orbit[4]. Official statements at the time note the satellite is purposed only for 'space environment survey and experiments on related technologies' (Jones, 2021). It is clear, however, the satellite's orbit will give Beijing a clearer view of activities in the Arctic.

2. The Space and Digital Silk Roads

25. Another focus for the BRI is China's investment in the *space silk road* – a massive investment in the expansion of the Chinese space industry in an effort to displace the United States as the dominant power in space. To this end, China has been extremely active in the space sector – coming in just behind the US in total number of global launches over the past several years; China just missed its goal of 40 launches in 2020 with 39, sending up 89 spacecraft, but has set 40 as a goal for 2021, along with the final construction of China's space station, due to be completed by 2022 (Zitvitski, 2020; Goswani, 2021).

26. The BRI Space Information Corridor was started in 2016 to create an advanced integrated information system to link BRI-invested nations into Chinese satellite networks to allow for effective communications, data relay, navigation, and remote sensing. The Beidou third-generation satellite network (Beidou-3) will anchor the space silk road's initiative. The constellation will consist of 3 satellites in geostationary orbit; 24 satellites in middle earth orbit; and 3 satellites in inclined geosynchronous orbit – Beidou-3 is a significant step forward from its predecessors and will be a key pillar of the *digital silk road* effort to link all BRI participants into a Chinese-controlled technology ecosystem (Dotson, 2020; IISS, 2021).

27. Beidou-3 is also a key means to achieving China's modern military ambitions – enabling the *informatisation* and, eventually, the *intelligentisation* of the PLA. A key driver of the Beidou system was the PLA's recognition of China's reliance on the US Global Positioning System (GPS) in the 1990s. Despite China's efforts to highlight the commercial and scientific benefits of Beidou-3, the system remains controlled by the PLA at the highest levels (Dotson, 2020).

28. In addition to the operationalisation of Beidou-3, the PRC is also working to develop its space-based situational awareness capabilities. Beijing is cooperating with Russia to advance its space-based early warning systems (Stefanovich, 2019). It is also rapidly expanding a space-based ISR network to not only increase situational awareness in its own neighbourhood, but also to enable military operations further from shore – anchoring this ability is the PLA's investment in electro-optical and synthetic aperture radars and other space-based sensor platforms (Stokes, et al., 2020). Further planned investments will likely enhance China's extended-range near-real-time targeting (Stokes, et al., 2020).

29. Another key component of the BRI is the *digital silk road*, which aims to establish a Sino-centric digital global order. To that end, China is investing in building critical information and communications technology (ICT) infrastructure, including fibre optic cables, broadband networks, satellite systems, data centres and surveillance systems, in countries along the BRI. President Xi has stated the initiative will also cover quantum computing, nanotechnology, artificial intelligence, big data, and cloud storage (Economist, 2018). While comprehensive data are hard to find, according to one

[4] The satellite orbits at 99.5 degrees above the equator and completes an orbit every 105 minutes (Jones, 2021).

estimate, Chinese investment in digital infrastructure projects abroad had reached USD 79 bn by 2018 (Prasso, 2019).

30. Via the *digital silk road*, China is expanding its control over the backbone of global digital infrastructure. Almost 98 percent of all international Internet and telephone data is carried by submarine fibre optic cables. As of early 2020, China was an owner, supplier, or landing point of 11.4 percent of all such cables globally and of 24 percent of all planned ones, while its share in Asia was close to 30 percent and more than 50 percent, respectively (Ghiasy and Krishnamurthy, 2020). China is similarly expanding its sway over cellular broadband networks. Huawei alone has built approximately 70 percent of Africa's 4G networks (Reddy, 2021). As of February 2021, the company was involved in developing 5G networks in more than 25 countries in Asia, Africa and the Middle East (Sacks, 2021). In 2015 and 2017, Chinese ICT infrastructure financing in Africa exceeded USD 1 bn annually, surpassing the combined financing from multilateral organisations, G7 nations, and the African countries themselves (ICA, 2018). Controlling key parts of the global communication infrastructure not only gives Chinese companies commercial advantages over their Western competitors, but also provides the PRC with political and economic leverage over foreign governments, facilitates potential cyberattacks and enables it to monitor and divert data traffic, feeding its intelligence collection and technological advances (Demchak and Shavitt, 2018; Kadiri and Tilouine, 2018).

31. In addition to its tangible dimension, the *digital silk road* supports China's efforts to set global technology standards, advance Chinese-defined cyber norms, and its model of 'sovereign' Internet governance, which centre on state control, strong data localisation requirements, intrusive surveillance, and censorship (PRC MFA, 2017). The state-sponsored "China Standards 2035" initiative aims to establish a technical standardisation organisation, the BRI Standards Forum, to internationalise China's domestic technical standards along the BRI (Rühlig, 2021). Several countries involved in the *digital silk road* have expressed interest in adopting Beijing's digital governance paradigm, while China has already provided training on surveillance and censorship to state officials in Middle Eastern countries (Gordon, Tong and Anderson, 2020). At the same time, Chinese companies are helping governments around the world set up smart city surveillance systems. As of late 2019, Chinese AI-powered surveillance technology was used in more than 60 countries, from Zimbabwe and Myanmar to Venezuela and Serbia, with Huawei being by far the leading supplier (Feldstein, 2019). In parallel, Beijing is working through UN bodies, such as the International Telecommunications Union and the Governmental Group of Experts, to secure developing countries' support for its domestic standards and Internet governance model (Bozhkov, 2020).

B. RESTRUCTURING AND FORCE MODERNISATION DRIVERS AND PLANS

32. Historically, the People's Liberation Army (PLA) has attempted to keep up with changing global and regional dynamics through reforms. In fact, since 1952, the PLA has undergone no less than eleven significant reorganisations (Allen et al., 2016). Following the end of the Cold War, however, China was particularly struck by US capabilities and technological superiority demonstrated in the 1991 Gulf War and off its own shores during the 1995-96 Taiwan Strait Crisis. Since this time, PLA reforms have sought to build forces capable of countering US influence and power in the Asia-Pacific region (Maizland, 2020).

1. Xi Jinping's Quest for a Modern PLA with Global Reach

33. Since coming to power in 2012, Xi Jinping has drastically accelerated PLA reforms. Xi is overseeing a sea change across the PLA's services to be capable of defending China's surging global interests. A strong modern military is a central pillar of Xi's *China Dream*; the motivating motto of the Chinese leader's 2013 articulated ambition to raise China's economic and cultural status across the globe.

34. Xi's *dream* of national rejuvenation envisions a world-class military by mid-century – in time to mark the 100th anniversary of the PRC in 2049 (Xi, 2017). To achieve his goal, President Xi has pushed an acceleration of ongoing reforms, but also initiated other significant changes to leadership/command hierarchy, force structure, ambitions, as well as tone for the PLA. As a result of Xi's efforts, the PLA has been downsized and streamlined at all levels to be able to shift from a *quantity-and-scale* to a *quality-and-efficiency* model (IISS, 2020).

35. Recent White Papers also indicate the PLA's changed outlook to be able to handle both regional and global challenges. Overseas interests are now considered an integral component of China's national interests, reinforcing a push for capable global reach, particularly via modern maritime capabilities. The necessity for a global PLA was reinforced by the 2011 Libya crisis, when China was forced to evacuate 35,860 nationals from the war-torn country quickly (White Paper, 2013). An increasingly hardened and aggressive approach to regional interests also resonates in China's recent Defence White Papers (White Paper, 2019).

2. Axes of Modernisation - Mechanisation, Informatisation, and Intelligentisation

36. In his speech at the 19th National Congress in 2017, Xi Jinping pledged China would 'adapt to the trend of a new global revolution and to national security needs' via its ongoing military modernisation efforts. Xi went on to underscore the three axes upon which his plans for accelerated Chinese military modernisation would move forward – *mechanisation*, *informatisation*, and *intelligentisation*. *Mechanisation* encapsulates the drive to replace legacy equipment; *informatisation* seeks technical sophistication[5]; and *intelligentisation* implies the future integration of autonomous systems, big data, and artificial intelligence (IISS, 2021).

37. Xi pledged PLA *mechanisation* would be 'basically' achieved and *informatisation* will have 'come a long way' and that strategic forces will have seen 'a big improvement' by 2020 (*Xi,* 2017). According to Xi, modernisation of the entire PLA should be 'basically' accomplished by 2035, and, by 2049, the PLA will be a fully modern and technologically advanced world-class force (IISS, 2020).

38. China's 2019 White Paper, however, warned that China likely missed its goal of *mechanisation* and enhanced *informatisation* by 2020. Still, as this report highlights, the rate and quality of modernisation continues at a rapid pace across the services, and, despite the significant impact of the coronavirus on other sectors. To support its military modernisation efforts, China dedicates an increasing amount of its national wealth.

3. Defence Spending

39. China announced a USD-equivalent of 209 bn for its 2021 budget, representing a 6.8 percent nominal increase from 2020 (McGerty and Nouwens, 2021). To lend perspective, the USD 13 bn increase in official Chinese defence spending from 2020-21 represents approximately the same amount spent by Taiwan on its entire defence spending (IISS, 2021). In fact, significant resources have underpinned Xi's ambitious modernisation efforts since his ascent to power.

40. China was largely able to protect its defence spending from broader economic tightening because of the COVID-19 pandemic impact in 2020 (IISS, 2021). As a result, the 2020 budget growth rate was only lightly impacted, falling back to 6.8 percent compared to the average annual increase of 7.2 percent between 2014 and 2019 (IISS, 2021). Official defence spending has more than doubled over the past decade, rising to USD 183.5 bn in 2020 (IISS, 2021). By 2020, China

---

5 The 2020 United States Department of Defense report on China compares intelligentisation to the US concept of net-centric warfare.

represented 13 percent of global defence spending, making it the second largest defence spender in the world – still far behind the US's 39 percent, but far ahead of India's 3.7 percent (Da Silva, 2021). Reflecting the strength and consistency of Chinese defence budget growth, China's 2020 defence budget increase of 6.7 percent was the lowest in 32 years (Campbell, 2021).

41. Experts believe actual spending, however, is far higher, as line items such as foreign weapons purchases and military R&D are not included (Bartels, 2020). The broader Chinese defence economy benefits from arms sales, capital markets, and other special projects, which, given China's state-driven model can also be considered to flow to defence 'spending' as well (IISS, 2021). As such, while official defence spending for 2020 was USD 183.5 bn, experts believe the number was likely much higher. For example, SIPRI estimates Chinese 2020 defence spending to have been as high as USD 252 bn[6] (Da Silva, 2021).

C. PLA MODERNISATION BY SERVICE

42. The broader goal of China's substantial military modernisation effort is a force with all services capable of a coordinated global reach. China's modern long-range missiles, aircraft and aircraft carriers, nuclear attack submarines, and developing nuclear triad are certainly bringing China's military closer to such a goal. As shown below, many of China's modern military capabilities (either entering service or planned) are designed to counter US (as well as Allied) capabilities directly - China's rapidly changing view of the United States is spelled out clearly in its 2019 White Paper, in which Beijing blames the United States for *provoking* and *intensifying* competition in Asia and across the globe (White Paper, 2019). To counter these, as well as a growing range of other global and regional threats, China is placing particular focus on advancing long-range, precise, smart, stealthy, and unmanned weapons, achieved through focused advances in space and cyberspace abilities.

43. The following sections review specific modernisation efforts across the PLA's five principal services. It will also break out China's specific efforts to modernise and grow its nuclear forces.

1. Rocket Force

44. Until 1985, the PLA's missile units were a primarily nuclear deterrent-focused force with intermediate and medium-range missiles but have since gradually transformed into a force consisting of intercontinental ballistic missiles (ICBM) and medium-range nuclear capacities along with an impressive array of conventional missiles capable of precision strikes at medium range (Cordesman, 2016). To solidify the growing importance of China's missile capabilities, the 2015 reforms broke out the Rocket Force (PLARF) as a separate service.[7]

45. China's heavy emphasis on its missile quantity and capabilities is best exemplified by the fact that the PLA launched more missiles for training and testing purposes in 2019 than the rest of the world combined (OSD, 2020). The PLARF's conventional missiles include the DF-15, DF-11, and DF-16 short-range ballistic missiles (which range between 600 and 850 km), medium-range missiles such as the DF-21, DF-26, and DH-10 (which range between 1,500 and 4,000 km), as well as numerous other models of varying specialty (OSD, 2020). China also possesses land-based ICBMs capable of carrying nuclear warheads as far as Europe and the United States. In its 2020 report on Chinese military power, the US DOD noted an expectation these types of nuclear-armed ICBMs would likely grow to 200 over the next five years (OSD, 2020). Recent revelations of new Chinese missile silos in the country's Western desert by independent academic researchers using commercially available satellite imagery have brought renewed attention to the size and shape of

---

6 Estimates vary due to lack of transparency and inconsistent reporting of figures by the Chinese government, as well as differences between current nominal USD and constant 2010 USD conversions. US defence spending in 2019, by comparison, was $730 bn (IISS, 2021).

7 Prior to 2015, the PLARF was an independent force within the PLA called the 2nd Artillery Force.

China's nuclear forces – this is discussed in more detail in Section D on China's nuclear modernisation efforts below.

46. During the PRC's 70th anniversary parade in October 2019, the PLA also revealed several new missiles. The DF-41 is a new road-mobile ICBM capable of delivering multiple warheads and jammers, as well as penetration aids and decoys (IISS, 2020). The new DF-17 medium-range ICBM and hypersonic glide vehicle, though presented as a conventional missile is likely to have future variants adapted for a nuclear payload (IISS, 2020). The CJ-100 cruise missile was also revealed at the parade. These new missile systems underscore China's belief in the necessity of a high-speed manoeuvrable modern missile capability to counter significantly upgraded modern missile defences of its potential adversaries (IISS, 2020).

47. China also possesses two new standoff missile variants, the DF-21D and the DF-26B. Both missiles have been dubbed "carrier killer" as they are seen as a direct challenge to US Navy power projection capabilities in the Pacific (CSIS, 2020). Both are road-mobile dual-capable multirole intermediate-range ballistic missiles (IRBM) with ranges of 1,500 and 4,000 km respectively (O'Rourke, 2021). The missiles are designed to hold US aircraft carriers to at least 1,600 kilometres off China's shore and, in the case of the DF-26, put US assets as far as Guam at risk (CSIS, 2020).

2. Strategic Support Force

48. China's 2015 Defence White Paper highlights cyber and space as the 'new commanding heights', the mastery of which being essential to strategic competition (White Paper, 2015). To assist with this, the 2015 reforms created the People's Liberation Army Strategic Support Force (PLASSF). Charged with safeguarding national security in a primarily cyber and space-oriented role, the PLASSF plays an important part in information security, communications, and new technology testing via increasingly advanced C4ISR means (White Paper, 2019). The PLASSF also deals with information warfare[8] and strategic-level information support (Kania, 2017). The PLASSF is likely a driving force behind the *intelligentisation* of the entire PLA.

49. The size of the PLASSF is hard to determine, as it is rarely discussed by Chinese officials. Experts describe the force as less of a military service, and more of an independent branch providing space and cyber information support to the other services (China Aerospace Studies Institute, 2017). The PLASSF likely now commands China's four space launch centres and plays a role in protecting Chinese space assets, including maintaining offensive abilities against foreign space assets. In 2007, China demonstrated its anti-satellite (ASAT) capabilities by using a ballistic missile to destroy one of their own weather satellites; it has since completed several other ASAT systems tests (Wall, 2021). Experts believe the PLASSF is also developing a range of ways to disrupt or disable satellites in a non-kinetic fashion through the use of lasers, direct energy, or hacking. For example, specially designed lasers can be aimed at satellites with electro-optical sensors to temporarily blind them and cyberattacks on satellite ground control stations could significantly disrupt satellite activities as well (USAF, 2017).

3. Ground Forces

50. As the PLA continues to move away from its prior land-based military doctrine, the Ground Forces (PLAGF) have naturally seen reductions. The total strength of the Ground Forces has dropped from 3.16 million in 1985 to 915,000 in 2019 (OSD, 2020), while in the same period, these cuts, as well as the downgrading of divisions to brigades, saw PLAGF infantry divisions fall from 118 to simply 18 (Cordesman and Colley, 2015). Even with the massive cuts to manpower, the PLAGF remains the largest structure within the PLA, and is currently building small, multifunctional, and modular units as well as a combat force structure for joint operations (White

---

[8] Information Warfare is an umbrella term which covers various concepts and abilities, such as cyberwarfare, technical reconnaissance, electronic warfare, and psychological warfare which are meant to enable PLA information dominance in times of war or crisis.

Paper, 2015). The PLAGF is also transitioning from a regional defence model to one of trans-theatre operations and improving the capabilities for sustained operations (White Paper, 2019). To streamline leadership and decision making, the PLA has organised into five Theatre Commands (TC), which will focus on operations and leave force building to the services.

51. Another major objective of the PLAGF is to continue to increase modernisation and mechanisation, thereby increasing mobility, firepower, and technological abilities. Between 1985 and the early 2000s, China possessed few armoured infantry fighting vehicles (AIFV) and armoured personnel carriers (APC). These numbers have grown dramatically over the past decade and a half; by 2015 the PLAGF possessed over 9,000 such vehicles (of which 40% were considered modern, up from 0% in 2000) (Cordesman and Colley, 2015). In the group armies' combined arms brigades, between two-thirds and three-quarters of total inventory are reported as modern (IISS, 2021). The PLAGF still remains reliant on trains for mass troop transport, and will continue to add AIFVs, APCs, and transport helicopters to achieve full mechanisation.

52. The PLA also possesses an airborne corps made up of six combined arms brigades (one or more of which are fully mechanised), one special forces brigade, a service/support brigade, and one air transport brigade (OSD, 2020). Similarly, the Navy's Marine Corps is made up of eight brigades, two of which are fully mechanised manoeuvre brigades, another four are transitioning to the same standard, one special forces brigade, and an aviation (helicopter) brigade. The Marine Corps is designed to be scalable and mobile, with the intent of operating beyond the First Island Chain (OSD, 2020). Both the Airborne Corps and Marine Corps are some of the most highly mobile, mechanised, as well as joint operation and expeditionary-oriented forces in the PLA, and a model for how the future lean and mobile army will look.

53. The PLAGF is also transitioning away from legacy equipment. For example, the outdated ZTZ-59 tank is currently in the process of being replaced with modern variants, such as the ZTZ-99A main battle tank (IISS, 2020) — at the end of 2020, 25 of the PLAGF's 32 heavy brigades were reported as equipped with either modern main battle or light tanks (IISS, 2021). There has also been a shift away from towed artillery, as well as multiple rocket launcher systems, and a strong shift towards modern and more mobile self-propelled artillery (Cordesman and Colley, 2015). Experts estimate that by 2020 only about 50% of PLAGF armoured vehicles, artillery, and air defence systems are modern (Boyd, 2019).

4. Air Force

54. The PLA Air Force (PLAAF) is the largest air force in Asia and the third largest in the world (OSD, 2020). The 2015 White Paper notes the PLAAF is seeking to pivot from solely territorial air defence to one encompassing both defence and offence. As such, the PLAAF is working to modernise its force via increased capabilities for early warning, air strike, air and missile defence, information countermeasures, strategic projection, comprehensive support, and airborne operations (White Paper, 2015). Today, the PLAAF is increasingly capable of joint operations (to include over water) and is transitioning from a large fleet of fourth-generation fighters to operationalising a new fifth-generation fleet (IISS, 2020).

55. The PLAAF possesses 2,500 total aircraft, of which 2,000 are combat aircraft, as well as an indeterminate number of highly advanced UAV's (OSD, 2020). The entire PLA possesses approximately 1,500 fighter jets (some belonging to the Navy), of which just over 50% are modern fourth-generation aircraft, such as the J-16 and J-10C, as well as a limited number of fighters which are state-of-the-art fifth-generation aircraft, such as the J-20 (OSD, 2020). China's fifth-generation fighters are either becoming operational now or are in the late stages of development (Campbell, 2021).

56. The 70th-anniversary parade showcased new unmanned air systems. The WZ-8 high-speed reconnaissance RPV and the GJ-11 combat RPV were presented as the vanguard of the PLAAF's

future unmanned systems. Experts believe China will have an increasingly advanced mixed force of manned and unmanned air systems within the decade (IISS, 2020).

57. Bombers also play an important role in projecting Chinese offensive power; the H-6 series is based on a 1950s-era design that the Chinese military has been upgrading over successive generations ever since. The newer H-6K model has an extended operational range with a long-range standoff precision strike capability via its land attack cruise missiles which could theoretically reach as far as Guam. The PLAAF has also built and acquired H-6U and Ukrainian IL-78 air-to-air refuelers to extend its operational range even further (OSD, 2020).

58. The H-20, the designated successor series to the H-6, was announced in 2016 and is likely to be revealed in the next couple years (Mizokami, 2020). Chinese sources have indicated the H-20 will be capable of very long-range stealthy flights carrying a significant bomb load – thereby surpassing the capabilities of any long-range bomber in existence. Experts are sceptical of these claims, however, given the design necessities for such capabilities. (Mizokami, 2020).

59. The PLAAF has also increased its defensive capabilities. The new KJ-500, an Airborne Early Warning and Control aircraft, acts as a mobile radar and surveillance system which allows the PLAAF to detect, track, and target air, ground, and maritime threats at a greater distance than the earlier KJ-2000 and KJ-200, while also helping to extend the range of the PLA's integrated air defence network (OSD, 2020). The PLAAF also has one of the most extensive long-range surface-to-air-missile (SAM) defence systems in the world which includes Russian-sourced S-300s as well as the domestically produced HQ-9s (OSD, 2020).[9] China has contracted to acquire Russia's S-400 and is developing the HQ-9B as a follow system. Experts believe China will use the S-400 systems to reverse engineer capabilities it requires into its own domestic production cycle (OSD, 2020).

5. Navy

60. The PLA Navy (PLAN) has arguably been the principal focus of the military modernisation overhaul of the PLA. As China's interests increasingly expand beyond its borders, the necessity to project power via maritime power is considered vital. As a result, the PLAN has made impressive steps in the last decade to operate as a global blue-water navy.

61. In recent years, the PLAN has surpassed the United States in the number of battle force ships, with 360 compared to the US's 297 (O'Rourke, 2021). As a result, the PLAN is now the largest naval force in the world numerically (OSD, 2020). Despite this feat, some gaps remain, particularly in China's long-range carrier capacity; experts remain uncertain as to when (or if) China will achieve the step change necessary to make the PLAN the most capable global maritime force (IISS, 2020).

62. More than a quarter century's worth of focused maritime forces overhaul has led to the decommissioning of legacy equipment and focused on acquiring a wide range of new ship, aircraft, unmanned vehicles, weapons, and C4ISR systems. In parallel, the PLAN has also significantly changed its doctrine, professional military education, and exercising programmes, as well as updated its maintenance routines and logistics planning.

63. Successive Defence White Papers have clarified the focus of the modern PLAN; the 2019 White Paper being the most direct and forceful in its language. Accordingly, the modernised PLAN will have the capabilities to resolve, if necessary, the Taiwan situation, and dominate the adjacent seas covering Chinese EEZs and key sea lanes of communication (SLOCs) vital to Chinese economic activities (both present and future). Key SLOCs link China to its vital petroleum supply lines with the Middle East, as well as to its developing commercial BRI transit routes into Europe via

[9] SAM units are concentrated in border areas throughout China's five Theatre Commands but have a particularly heavy concentration in the Eastern Theatre Command, opposite Taiwan and the Japanese Ryukyu Islands (Lin & Garafola, 2016).

the Suez Canal route today and potentially adding the Arctic Northern Sea Route tomorrow. A strong blue-water navy is also vital to China's longer-term ambition of Pacific dominance and, eventually, global hegemony.

64. Like the PLAGF, the PLAN has long been shifting to a "quality over quantity" force while at the same time leading the world in naval vessel building as a means to replace its legacy fleet. In doing so, the PLAN has commissioned many modern and advanced vessels, such as the Type-054/054A frigates, Type-052C/D destroyers, and Type-055 cruisers (Saunders, et al., 2019). The PLAN retains a strong focus on anti-surface warfare capabilities, and these new ships will help achieve this aim, as well as play a vital role in maritime air defence, anti-ship, and anti-submarine capabilities (OSD, 2020). More than 70 percent of the PLAN fleet was considered modern in 2017, up from less than 50 percent in 2010 (CSIS, 2018).

65. The PLAN also increased its power projection and expeditionary capabilities with the development of the Type-075 landing helicopter dock large amphibious assault ship; launched in 2019, the first Type-075 began sea trials in August 2020, while a second vessel was launched in April 2020, and a third is currently under construction (IISS, 2021). Still, the most effective ships for power projection are aircraft carriers, of which China currently has two (one repurposed Ukrainian carrier and a domestically built copy of the first). A third carrier is underway, though analysts believe that the PLAN may still not be up to the task of creating an effective carrier capability — such as long-range deployments or integrated task group operations (IISS, 2020).

66. Modernising the PLAN's submarine force remains a high priority for China, and the force was set to have reached between 69 and 78 submarines in 2020. Most of the PLAN's submarines are diesel-powered, but 10-12 nuclear submarines have been added, of which at least 6 are longer-range attack submarines and 4 ballistic missile submarines (Saunders, et al., 2019). A growing number of the PLAN's submarines have advanced anti-ship cruise missile capabilities.

D. THE RISING CHALLENGE OF CHINA'S NUCLEAR MODERNISATION EFFORTS

67. China has historically maintained a nuclear strategy of "minimum deterrence." Since acquiring nuclear weapons in 1964, Beijing's nuclear arsenal has been small and uniform. Estimates vary, but experts believe Beijing possesses a stockpile of roughly 200 to 320 mostly high-yield warheads, deliverable via silo-based and road-mobile missile forces. China has also maintained a "no first use" policy since its first nuclear test in 1964 (Kristensen and Korda, 2020).

68. In line with China's rise in power and stature, however, so too has its apparent desire to field a larger and more diverse nuclear arsenal. China is steadily improving its nuclear triad capabilities. China's triad pursuit seems primarily oriented towards circumventing American BMD systems deployed against North Korean nuclear systems; however, there appears to be a consensus emerging in Beijing that minimum deterrence is no longer a desirable strategy (Panda, 2020).

69. Beijing already possesses land-based and air-based deterrents and has invested major funds in modernising both. The PLA is steadily replacing its older, liquid-fuelled, and slower-launching missiles systems like the mobile DF-4 (CSS-3) ICBM and silo-based DF5A/B (CSS-4) ICBM with a new generation of solid-fuelled, road-mobile, and rapid-launching missile systems like the DF-31 (CSS-10) ICBM and the DF-26 IRBM (Kristensen and Korda, 2020b). As noted above, the now widespread deployment of the DF-26 is especially concerning as it is equipped to carry both conventional and nuclear missiles. The key challenge with dual-use systems being, in the event of a crisis, an adversary may accidentally target nuclear systems believing them to be conventionally armed, leading to inadvertent escalation (Talmadge, 2017). According to experts, the recently deployed H-6N long-range bomber is now likely capable of delivering nuclear-tipped air-launched ballistic missiles (ALBMs) alongside its usual payload of gravity bombs (Panda, 2018).

70. Beijing's final hurdle is the development and deployment of a credible sea-based deterrent, the most difficult technological impediment for a nuclear power. Under development since the mid-2000s, China's *Jin*-class SSBN is now entering service and is the PLAN's most advanced subsurface vessel. The *Jin*-class SSBN will replace the vulnerable and aging *Xia*-class SSBN. Significant questions surround the *Jin*-class's vulnerability to advanced ASW capabilities – especially those of the US – as experts claim the *Jin* design radiates sonar signatures during radio silence (Cordesman, 2015).

71. Recent reports indicate China has begun a significant expansion of its nuclear warhead stockpile, with particular attention being paid to land-based missile systems. In a 2020 report, US Defense Department officials estimated Beijing will double its nuclear warheads stockpile by 2030, and reports in the same year that China was adding 30 new warheads to its arsenal seemed to align with this prediction (US DOD, 2020; Sen, 2020). 2021, however, has been marked by significant new developments with regards to China's nuclear forces.

72. On three separate occasions in 2021, US-based academic researchers, using open-source, commercially available satellite imagery, discovered what would amount to a vast expansion of nuclear missile silo networks in the Western Chinese desert near the border with Mongolia. Until 2020, it was understood that China operates 18-20 silos (Kristensen, 2021). In February, researchers discovered the construction of 16 new missile silos at a PLARF training facility near the city of Jilantai in inner Mongolia (Kristensen, 2021). If confirmed, the discovery would indicate China was likely doubling its missile silo capacity; it was still far below the number of operational silos of both the US and Russia at the time. Two subsequent discoveries in June and July, however, revealed the construction of 120 and 110 new silos respectively. Experts believe these silos could host DF-41 ICBMs, China's powerful strategic delivery system with a range of 12,000 km, which would permit China to reach most of the US mainland. Both discoveries were made by research scientists using satellite imagery available from Planet, a publicly available satellite imagery firm (Economist, 2021(b)). Experts note the discoveries could signal a vast expansion of China's nuclear arsenal, which, depending upon how many silos end up being armed (and how many warheads each ICBM carries), could significantly impact the balance of land-based nuclear deterrent forces globally (Kristensen and Korda, 2021).

E. CHINA'S GROWING DEFENCE INDUSTRY

73. As noted above, to reach its goals of rivalling or even surpassing Western military capabilities, Beijing has placed significant emphasis on upgrading equipment and incorporating cutting-edge technologies across all its services. To accomplish this, Beijing has worked to streamline the quantity and quality of the output of its national defence industry.

74. For the last several decades, particularly since the advent of President Xi, there has been a focused effort to eradicate corruption, eliminate redundancies, foster innovation, and, most importantly, drive defence industrial self-sufficiency and independence. China has historically been dependent on arms imports in every domain. As noted below, Russia has been the principal arms supplier to the PRC since its founding over seven decades ago. Over the last several decades, increased defence spending has driven a significant growth across China's defence industrial base, vastly improving China's domestic defence production capabilities. For example, whereas China was only able to produce equipment based on outdated Soviet technology from the 1950s, China now is the world's second largest producer of defence equipment and the fifth largest defence goods exporter (CSIS, 2021; Da Silva, 2020).

75. As a result, China's defence industrial base is increasingly capable of meeting the needs of the 21st century PLA. China's defence industrial rise has been fuelled by the significant effort to boost spending on defence equipment for the PLA as a principal pillar of China's defence modernisation efforts. For example, China's defence budget allocation for new equipment rose from USD 26.2 bn in 2010 to USD 63.5 bn in 2017, representing over 41 percent of the total budget (CSIS, 2021). Nine state-owned enterprises sit at the top of large-scale industrial organisation to supply the equipment

and technology demand of the growing PLA: four of these rank among the world's 25 largest defence suppliers – Aviation Industry Corporation of China (AVIC), China Electronics Technology Group Corporation (CETC), China North Industries Group Corporation (NORINCO), and China South Industries Group Corporation (CSGC) (CSIS, 2021).

76. Despite these significant advances of China's domestic defence industrial production, the country is still faced with challenges when it comes to high-end (advanced technology) platforms. As a result, China still imports some of its major parts and even systems; for example, aircraft and engine purchase made up over 70 percent of China's USD 6.3 bn in arms imported from 2015-2019 (CSIS, 2021). As a result, China ranks fifth worldwide in terms of arms imports (CSIS, 2021).

77. Still, as experts note, the consensus among China's own military and civilian leaders is that, even at current defence spending growth rate predictions, the defence budget alone is insufficient to meet the needs of the current modernisation efforts (Campbell, 2021). As such, there is an increased effort to look to the civilian sector for additional resources that may be able to add the manpower, ingenuity, and initiatives needed to achieve the broader goals of China's vast military modernisation goals.

F. MILITARY-CIVIL FUSION – DEEP IMPLEMENTATION

78. Over the past decade, the Chinese leadership has been working to benefit in terms of technological innovation and scaled production capabilities from closer cooperation between the Chinese commercial and defence sector. Military-Civil fusion (MCF) is a high-profile strategic effort, therefore, to merge both the resources and ends sought by the civilian and defence economies – as such, further intertwining Chinese economic and defence interests at home and, by extension, abroad. Chinese leaders have indicated that the beginning of the 2020s is the transition to the 'deep implementation' phase of the strategy (IISS, 2021).

79. To help continue to strengthen the MCF initiative, the Chinese government has worked to institutionalise, and therefore centralise, the effort. A key outcome of this has been the establishment of an oversight commission chaired by President Xi and overseen by high-level party officials, demonstrating the high-level political support for the effort (Lafferty, 2019). Other channels include a procurement clearing house to match civilian companies with military acquisition projects, and a series of initiatives that pave the way for easier use of all aspects of the civilian road, rail, and aviation networks (Lafferty, 2019).

80. MCF also boosts China's defence sector by leveraging the civilian sector's science and technology advances. As such, civilian technologies are made available for military use and increased capital sources flow toward the defence sector – the cycle is meant to increase competition, innovation, and capital flows in both directions over time. To date, approximately 1,800 companies have been granted the necessary permits for MCF, but these have been limited to mostly logistical suppliers (IISS, 2021). As the cycle of MCF strengthens, Chinese leadership is anticipating significant benefits to domestic defence industrial production for the PLA, as well as a boost in lucrative defence exports – because of the strategy, experts say, China's UAV industry and broader technology production for ISR systems have benefitted significantly (IISS, 2021). It is clear the PRC also sees China's massive global economic investments, particularly those driven by the Belt and Road Initiative (BRI) as a key means of expanding defence exports.

81. The initiative is clearly aimed to increase China's defence industrial sector's exposure to and incorporation of dual-use technologies. Some experts have highlighted, however, that much of this gleaned from the acquisition of foreign technology and expertise (CSIS, 2021). A clear and increasing concern for Allies is the unwitting transfer of technological expertise or other scientific knowhow that may service China's military modernisation goals (De La Beaumelle, et al., 2019).

IV. INCREASING SINO-RUSSIAN COOPERATION

A. MILITARY COOPERATION: DEFENCE INDUSTRIAL AND MILITARY EXERCISES

82. Chinese and Russian efforts to strengthen cooperation in the decades post the Cold War were met with mixed success, as they were often challenged by political sensitivities, such as China's increasing displacement of Russia's long-standing economic and political influence in Central Asia. Pressured by post-2014 sanctions, Russia has pushed to strengthen economic and military relations with China; these efforts began to be more warmly received as the US pressure campaign on China increased after 2017 (Kashin, 2019). Both countries have been clear in what they see as a common cause to push back against US global influence.

83. In 2017, the Chinese and Russian governments announced the so-called 'roadmap on military cooperation for 2017-2020'. The roadmap is meant to signal mutual trust and strategic cooperation between China and Russia (Wu, 2017). Although neither side seems to want to risk being drawn into a major conflict over the interests of the other, the recent increase in Sino-Russian military cooperation has led to some speculation of a formal alliance. To this end, in late 2020, President Putin noted: "It is possible to imagine anything.… We have not set that goal for ourselves. But, in principle, we are not going to rule it out, either" (Gabuev, 2020). Some experts, however, are sceptical about any such statements, as well as the broader rise in Russia-China military cooperation, believing it is principally strategic communications toward NATO Allies by other means (Rumer and Sokolsky, 2021).

84. After decades of divergent views about the Communist world, the USSR normalised relations with China in 1989 (Aliyev, 2020). Soviet then Russian arms sales soon followed, with China buying between a quarter to a half of all Russian weapons sales for the first two decades post-Cold War (Weitz, 2010). This declined to about 12 percent of Russia's total over the last decade due to advances of China's domestic defence industry, and Russian concerns about reverse engineering some of its more advanced systems (Weitz, 2010; Aliyev, 2020). Recent years, however, have seen Russia more willing to sell some advanced systems, such as the S-400 air defence system and the Su-35 fighter jet (Aliyev, 2020). China and Russia's "strategic partnership" has also led them to cooperate on building a missile attack early-warning system in China which would significantly increase the PRC's defensive measures by enabling the detection of incoming ballistic missiles and the ability to calculate their possible impact points while also allowing time for counterlaunch measures (Felgenhauer, 2019).

85. Since the first joint military exercises in 2003, Sino-Russian joint military exercises have become ever more frequent, and their scope and scale have also increased. China has taken part in Russia's last three annual strategic exercises: Vostok-2018, Tsentr-2019, and Kavkaz-2020 (all of which, including Zapad, take place quadrennially). Russian officials reported Vostok-2018 included 300,000 military personnel, 36,000 tanks and armoured vehicles, more than 1,000 aircraft, and 80 ships, making it the largest military exercise in Russia since 1981 (Carlson, 2018). China provided 3,200 military personnel, 30 aircraft and 900 tanks and armoured vehicles to this exercise, and along with Mongolia, became the first non-Soviet nations to participate in a Vostok exercise (Carlson, 2018). Another notable aspect of Vostok-2018, is that as recently as 2010 the Vostok exercises simulated the defence of Russia's eastern regions against a hypothetical invasion by China, whereas during this exercise, Russia signalled that it does not view China as a military threat to its eastern regions and tried hard to express that these exercises were not aimed at China — most overtly of course, by inviting them (Carlson, 2018).

86. In August 2021, Russian and Chinese forces held combined, separate exercise called Zapad/Interaction-2021. The exercise took place in Western China and test their forces' ability to conduct joint reconnaissance, early warning, electronic information attack, and joint strike capabilities (Rajagopalan, 2021). Some experts suggest the increased number and complexity of Chinese-Russian military exercising has created a de facto military alliance between the two nations (Blivas, 2021).

B. OTHER FORMS OF SINO-RUSSIAN COOPERATION: CYBER TO SPACE

87. For China, Russia is a key like-minded partner in advancing its global digital agenda. The two governments act in concert in international fora to offer what they term as an 'alternative' to Western influence and norms in cyberspace, which centres on the promotion of a state-centred model of 'sovereign' Internet governance (Broeders, Adamson and Creemers, 2019). In 2011 and 2015, Beijing and Moscow made a joint submission of a code of conduct for 'information security' to the UN General Assembly, which emphasised states' right to control information flows and critical ICT infrastructure within their jurisdiction as they deem fit. In 2015, they also signed a cyber pact pledging, inter alia, to join forces in promoting their shared vision for the Internet, which outlines a limited role for non-governmental stakeholders (Bozhkov, 2020). In addition, experts note that the two governments engage in regular bilateral cooperation to better share technologies, methods, and information to control the internet (Segal, 2020).

88. China's long-standing cooperation with Russia on space has recently intensified as well. In 2017, the Sino-Russian Subcommittee on Space Cooperation signed a five-year cooperation agreement (Glavkosmos, 2017), and in 2019 it pledged its support to joint initiatives for lunar and deep space exploration, low orbit satellite communications systems, rocket engines and launch vehicles, and remote sensing (Glavkosmos, 2019). In April 2021, the two countries announced plans for a joint robotic mission to an asteroid in 2024 (Kramer and Myers, 2021). The announcement closely followed their agreement to collaborate on a series of lunar missions, including the establishment of a permanent lunar base by 2030 (Myers, 2021). The Sino-Russian lunar cooperation will support their efforts to tap the moon's rich resources (e.g. rare earth elements) as well as to advance a state-centred international order for space exploration and development in opposition to the multistakeholder order promoted by the US-sponsored Artemis Accords, a series of international agreements aimed at establishing a framework of shared principles, guidelines and best practices for cooperative space exploration based on the UN Outer Space Treaty of 1967 (Goswami, 2021b).

V. NAVAL BASING AND PEACEKEEPING

89. Along with the increase in land-based military cooperation with Russia, the PLA has also taken part in numerous joint naval exercises as well. The two navies have also joined each other for drills in the Black, Baltic, Mediterranean, Yellow, and South China Seas, as well as in the Sea of Japan (Aliyev, 2020; Gady, 2015). Joint naval training is, however, relatively new for China.

90. Regular Chinese naval engagement beyond its immediate shores only began in the 1980s (White, 2020). China's 2008 White Paper called for the PLAN to "gradually develop its capabilities of conducting cooperation in distant waters" (White Paper, 2009). In the same year, the PLAN began deploying naval forces to the Gulf of Aden to fight piracy and these deployments have continued nearly unabated since then; by 2013 the number of outbound PLAN port calls increased significantly, and in 2014 joint naval exercises began to increase as well (White, 2020). Much of the PLAN's attention beyond its regional shores has been focused on the Indian Ocean.

91. In 2017, to aid in the rotating counterpiracy deployments, China opened its first overseas military base in Djibouti — which the PRC officially describes as only a logistics facility (Reuters, 2017). Satellites have also detected a new Chinese high-security compound near the BRI-funded port of Gwadar in Pakistan (Sutton, 2020), while in 2017, a Chinese state-owned firm acquired a 99-year lease on the Hambantota port after the Sri Lankan government could not pay its loans (Ferchen & Perera, 2019). These ports and military bases, as well as other Chinese port proposals in the region, make up the String of Pearls. Although China claims these ports are for strictly civilian purposes, some of these facilities could feasibly be utilised as access points by the PLAN in order to sustain military forces in the Indian Ocean region (Cooper, 2018).

92. According to some estimates, China may also be planning to expand its naval presence into the Atlantic. The head of US Africa Command has warned in an interview that Beijing is seeking to establish a naval facility capable of hosting submarines or aircraft carriers on Africa's western coast and has approached several littoral countries to that end (Baldor, 2021). The US Department of Defense's 2020 China Military Power Report assessed that Beijing has likely already considered setting up a military logistics facility in Angola, among several other locations, and made overtures to Namibia, while pointing out that Chinese outreach will not necessarily lead to negotiations for a basing agreement (OSD, 2020). If realised, however, a naval facility on the western African coast would enable Beijing to project and sustain military power in the Atlantic and the wider Euro-Atlantic space more easily.

93. On land, the PLA has also undergone a global expansion of operations over the last decades, mainly through peacekeeping operations in Africa. As of 31 May 2021, the PLA was participating in nine peacekeeping missions, had 2,382 soldiers deployed with the UN, and the PRC was the second largest contributor of funds to UN peacekeeping operations after the United States, amounting to about 15% of the entire UN peacekeeping budget (UN, 2021). China has also opened training centres for peacekeeping forces where it has trained around 2,000 foreign military peacekeepers from 69+ countries as of 2020, and has also set up a standing peacekeeping force of 8,000 personnel which includes six infantry battalions, three companies of engineers, two transport companies, four mobile hospitals, four security companies, three rapid-reaction companies, two helicopter units, two transport aircraft units, one drone unit, and one naval ship (Zürcher, 2019).

94. Motivations for global expansion of operations can be multilayer; in the case of PRC there seem to be a number of reasons to participate in peacekeeping missions: first, it supports its image as a responsible great power taking an interest in creating a stable environment beyond its region; secondly, it allows them to deepen engagement with developing nations and portray themself as a leader amongst these nations; third, it allows the PLA to gain operational experience abroad and test new systems, methods, and equipment; and finally, it allows Beijing to demonstrate its stated commitment to multilateralism (Zürcher, 2019).

95. China also appears to have economic and geopolitical interests in some of their peacekeeping missions as well. For instance, the largest group of Chinese peacekeepers is stationed in South Sudan, a country that has the third largest oil reserves in Africa and where China National Petroleum Corporation (a state-owned enterprise) has invested (Savkov, 2020).

96. Beijing has also continued to refuse the adoption of the "responsibility to protect" principle and therefore does not participate in peacekeeping missions which do not have the host government's consent. Beijing's stated reason for this is that it does not want to undermine state sovereignty. Similarly, the PRC has continuously refused to support peacekeeping proposals at the UN regarding nations which have diplomatic relations with Taiwan or have forced those nations to drop ties with Taiwan in exchange for support — such as with Guatemala in 1997, North Macedonia in 1999, and Liberia in 2003 (Savkov, 2020).

VI. CONCLUSIONS FOR NATO PARLIAMENTARIANS

97. China's military modernisation is advancing rapidly. Since coming to power in 2012, Xi Jinping is channelling significant resources to build a military capable of defending his vision for a strong global China. Xi's idea of a modern PLA is articulated by three military goals: *mechanisation*, *informationisation*, and *intelligentisation*. As a result, the PLA has been reforming, reorganising, and transforming its different services into a leaner, more streamlined, technologically advanced, and mechanised force with the ability to operate far from China's immediate borders and shores.

98. China is increasingly demonstrating the PLA's global reach via a range of activities; from counterpiracy operations in the Gulf of Aden to peace operations to exercising with partners. Beyond the PLA's expanded military presence in the East and South China Seas, China's military has also engaged in exercises in the Mediterranean and Baltic Seas, as well as in the Arctic Ocean. These recent activities are among the more visible occurrences of China's military expanding security interests and ambitions rubbing up against Allied interests in the Euro-Atlantic, and with great probability in the future.

99. As Allies forge a consensus understanding of just how to approach China to be able to benefit from potential opportunities and mitigate future potential challenges, Allies must continue to learn as much as possible about all aspects of China's rise. This report reviews the dynamic of Chinese military modernisation as a means for Beijing to defend its expanding global interests.

100. As the report notes, China's military ambitions will likely increasingly impose upon Allied interests in three principal (and essential) domains – sea, space, and cyber. First, China's rapid expansion has seen it challenge established norms at sea, thereby posing a potential future challenge to Allies' freedom of navigation on the high seas. Second, China's move to assert dominance in space will weigh upon Allies' ability to maintain secure satellite communication networks. Third, China's stated position that the cyber domain is an arena for strategic competition and disruption will potentially challenge Allies at all levels of national power.

101. This report also makes it clear China's military, foreign, and economic policies are increasingly entwined. Xi Jinping's China Dream sees the PLA having a sophisticated global reach to defend China's growing economic and security interests across the globe. To this end, recommendations for Allied policies toward China must first focus on the broader challenge of adapting to a world wherein China's weight will impact the global balance of power more significantly.

102. To this end, this report recommends Allies do the following:

a. Seize upon the strategic opportunities of the NATO 2030 initiative and the review of the Alliance's Strategic Concept to position the Alliance as an anchor of regional and, by extension, global stability and defender of values and ideals enshrined by the Washington Treaty – namely, democracy, individual liberty, and the rule of law. As NATO officially positions itself in a world with a globally strong China, it is best to make it clear what the Alliance stands for, rather than against.

   Such a strong political statement is particularly important as Allies continue to weigh the degree to which they can seize upon the potential opportunities to harness China's global footprint and strength to take on global security problems requiring strong multilateral cooperation, such as climate change, future pandemics, terrorism, and arms control.

b. Strengthen their cooperation to build a clearer picture of the challenges and opportunities China's rise poses to Allied interests. China's military has long been obfuscated by a lack of official information on national security strategy and military doctrine – while this has changed recently with a series of White Papers, such efforts by Beijing are insufficient to build a shared clear understanding of China's defence and deterrence posture. To this end, Allies must

continue to expand information sharing, political and military coordination, and increase coordination about China's military modernisation on a systematic basis through established channels within NATO Headquarters. Allies must particularly focus on China's push to adopt and incorporate emerging and disruptive technologies across its services from quantum computing to AI to automation.

Allies have recognised the importance of working together to maintain and consolidate their lead in defence innovation. At the June 2021 Summit in Brussels, Allied Heads of State and Government agreed to pool and share their resources and knowhow to focus on defence-related technological development via the agreement to create a civil-military Defence Innovation Accelerator. Allied governments need to follow through with the resourcing and funding necessary to allow the initiative to reach its full potential.

c. Engage more closely with global partners, particularly those in the Indo-Pacific region, to better understand, engage with, and even balance against China's rise. NATO's extensive global partnership network can help NATO maintain and even strengthen established global norms in the face of future Chinese challenges – from the law of the sea to the less regulated domains of cyber and space. Global partners can also help NATO build an understanding of China from a perspective outside of the Euro-Atlantic. It is likely that such levels of expanded cooperation will help NATO and its partners size the China challenge more appropriately, rather than making China an outsized challenge.

   The Alliance established global partnerships with South Korea, New Zealand and Mongolia in 2012, Australia in 2013 and Japan in 2014; thereby formalising what had already been years of ad hoc cooperation and dialogue. These partnerships were established predominantly from an advisory point of view, but some of these partners ended up contributing to NATO missions, as was the case in Afghanistan. This consultative dimension must be complemented by more regular and more robust military exercises in the air, maritime and land domains, involving, for example, joint training with American forces stationed in the Pacific and which have long had the participation of European allies.

d. Work to expand NATO-China contact. Currently, NATO's political and military dialogue with China remains relatively minimal. While high-level political and military talks do take place, they can certainly be increased, routinised, and across a broader range of issues. As the DSCFC delegation found during its June 2019 visit to China, there is a relatively widespread level of misunderstanding among Chinese political and military interlocutors about what NATO is and does. As such, Chinese interlocutors were quick to dismiss attempts to discuss potential areas for future cooperation, when it is clear there are many multilateral issue areas ripe for global collective action to which both NATO and China can contribute significantly. Such misunderstandings and reluctance for engagement can only be broken down through consistent interactions at many levels.

   A key issue Allies can work on together to bring China to the table on is arms control. As Allies work to help shape new frameworks for arms control to help global peace and stability, China will need to be a key partner at the table. China's clear efforts to expand its nuclear arsenal significantly over the coming decade behoves it to take on a new role as a responsible stakeholder in the collective effort to negotiate stability through arms control. China's participation as an honest broker in future arms control negotiations can help shape frameworks necessary to mitigate the dangers of the advent of emerging and disruptive technologies across a full range of conventional and non-conventional platforms. Further, China will be a key voice at the table as states look to negotiate new, clearer rules in the interest of all stakeholders as both the space and cyber domains take on increasingly important roles in all sectors of modern life.

e. Identify strategic vulnerabilities and shore them up against potential external leverage. The ongoing coronavirus pandemic has demonstrated clearly that Allies are overly dependent

on external providers, like China, in critical areas such as medical supplies, which can make supply chains vulnerable and thereby threaten effective crisis response. A range of sectors can likely be identified as such strategic vulnerabilities; from technology to energy to communications and beyond, Allies can benefit from bringing investments in these sectors back within the community of Allies.

103. More broadly, in the balance of challenges versus opportunities ahead for NATO Allies in dealing with China in the coming years, your rapporteur would advocate for a concerted effort to find the ways and means to achieve a closer and mutually beneficial level of cooperation with China. The size and the scope of the global security facing all nations in the 21st century necessitate it.

BIBLIOGRAPHY

Albert, Eleanor, Lindsey Maizland, and Beina Xu, “The Chinese Communist Party,” Council on Foreign Relations, *Backgrounder*, 23 June 2021. https://www.cfr.org/backgrounder/chinese-communist-party

Aliyev, Nurlan, “Military Cooperation Between Russia and China: The Military Alliance Without an Agreement?”, ICDS, 5 February, 2020, https://icds.ee/en/military-cooperation-between-russia-and-china-the-military-alliance-without-an-agreement/

Allen, Kenneth W. Dennis J Blasko, John F. Corbett, Jr., “The PLA’s New Organizational Structure: What is Known, Unknown, and Speculation,” *The Jamestown Foundation*, China Brief, Volume 16, Issue 3, 4 February 2016. https://jamestown.org/program/the-plas-new-organizational-structure-what-is-known-unknown-and-speculation-part-1/

Amaro, Silvia, “China bought most of Greece’s main port and now it wants to make it the biggest in Europe”, CNBC, 15 November 2019, https://www.cnbc.com/2019/11/15/china-wants-to-turn-greece-piraeus-port-into-europe-biggest.html

Baldor, Lolita C., “General: China’s Africa outreach poses threat from Atlantic”, AP, 6 May 2021, https://apnews.com/article/middle-east-africa-china-business-government-and-politics-24f774a952eaabcb38d2b25380b61a62.

Bartels, Frederico, “China’s Defence Spending is Larger than it Looks,” The Heritage Foundation, 27 May 2020. https://www.heritage.org/defense/commentary/chinas-defense-spending-larger-it-looks

Basu, Arindrajit, Poetranto, Irene, Lau, Justin, "The UN Struggles to Make Progress on Securing Cyberspace," *The Carnegie Endowment for International Peace*, 19 May 2021, https://carnegieendowment.org/2021/05/19/un-struggles-to-make-progress-on-securing-cyberspace-pub-84491.

Blivas, Alec, “Sino-Russian Military Exercises Signal a Growing Alliance,” U.S. Naval Institute, June 2021. https://www.usni.org/magazines/proceedings/2021/june/sino-russian-military-exercises-signal-growing-alliance

Boyd, Henry, “China’s army modernisation: progress, rhetoric and reality”, IISS, 21 August 2019, https://www.iiss.org/blogs/military-balance/2019/08/china-army-modernisation.

Bozhkov, Nikolay, "China’s Cyber Diplomacy: A Primer," *EU Cyber Direct*, March 2020, https://eucyberdirect.eu/wp-content/uploads/2020/03/bozhkov-digital-dialogue-final.pdf.

Brattberg, Erik, Soula, Etienne, “Europe’s Emerging Approach to China’s Belt and Road Initiative”, Carnegie, 19 October 2018, https://carnegieendowment.org/2018/10/19/europe-s-emerging-approach-to-china-s-belt-and-road-initiative-pub-77536.

Broad, William and David Sanger, “A 2nd New Nuclear Missile Base for China, and Many Questions About Strategy,” *The New York Times*, 26 July 2021. https://www.nytimes.com/2021/07/26/us/politics/china-nuclear-weapons.html

Broeders, Dennis, Adamson, Liisi and Creemers, Rogier, "A coalition of the unwilling? Chinese and Russian perspectives on cyberspace," *The Hague Programme for Cyber Norms Policy Brief*, November 2019, https://www.thehaguecybernorms.nl/research-and-publication-posts/a-coalition-of-the-unwilling-chinese-and-russian-perspectives-on-cyberspace.

Campbell, Caitlin, “China’s Military: The People’s Liberation Army,” Congressional Research Services, *In Focus*, 4 June 2021.

Carlson, Brian G., “Vostok-2018: Another Sign of Strengthening Russia-China Ties”, German Institute for International and Security Affairs (SWP), November 2018, https://www.swp-berlin.org/fileadmin/contents/products/comments/2018C47_Carlson.pdf.

Chatzky, Andrew and McBride, James, “China’s Massive Belt and Road Initiative”, CFR, 28 January 2020, https://www.cfr.org/backgrounder/chinas-massive-belt-and-road-initiative.

Cooper, Zach, “Security Implications of China’s Military Presence in the Indian Ocean”, CSIS, 2 April, 2018, https://www.csis.org/analysis/security-implications-chinas-military-presence-indian-ocean.

Cordesman, Anthony H. and Colley, Steven, “Chinese Strategy and Military Modernization in 2015: A Comparative Analysis”, CSIS, 10 October 2015, https://csis-website-prod.s3.amazonaws.com/s3fs-public/legacy_files/files/publication/150901_Chinese_Mil_Bal.pdf.

Cordesman, Anthony H., “The PLA Rocket Force: Evolving Beyond the Second Artillery Corps (SAC) and Nuclear Dimension”, CSIS, 13 October 2016, https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/161013_China_Missile_Forces_AHC.pdf.

CSIS, “DF-26 (Dong-Feng 26),” *Missile Threat*, Missile Defense Project, updated 23 June 2020. https://missilethreat.csis.org/missile/dong-feng-26-df-26/

- “How Are China’s Land-based Conventional Missile Forces Evolving?”, 21 September 2020, https://chinapower.csis.org/conventional-missiles/.
- “How is China Modernizing its Navy?”, 17 December 2018, updated 25 August 2020, https://chinapower.csis.org/china-naval-modernization/#:~:text=The%20capabilities%20of%20the%20Chinese,than%2050%20percent%20in%202010.
- “How Developed is China’s Arms Industry?” ChinaPower: Unpacking the Complexity of China’s Rise, 2021. https://chinapower.csis.org/arms-companies/

Da Silva, Diego Lopes, Nan Tian, and Alexandra Marksteiner, “Trends in World Military Expenditure, 2020,” SIPRI, SIPRI Factsheet, April 2021. https://sipri.org/sites/default/files/2021-04/fs_2104_milex_0.pdf

De La Beaumelle, Marcel Angliviel, Benjamin Spevack, and Devin Thorne. “Open Arms: Evaluating Global Exposure to China’s Defense-Industrial Base,” C4ADS, October 2019.

Demchak, Chris C., Shavitt, Yuval, "China’s Maxim – Leave No Access Point Unexploited: The Hidden Story of China Telecom’s BGP Hijacking" *Military Cyber Affairs* 3(1) Article 7, 2018, https://digitalcommons.usf.edu/mca/vol3/iss1/7.

Doehler, Austin, “How China Challenges the EU in the Western Balkans”, The Diplomat, 25 September 2019, https://thediplomat.com/2019/09/how-china-challenges-the-eu-in-the-western-balkans/.

Dotson, John, “The Beidou Satellite Network and the “Space Silk Road” in Eurasia,” 15 July 2020. https://jamestown.org/program/the-beidou-satellite-network-and-the-space-silk-road-in-eurasia/

Economist, “How to Deal with China,” 20 March 2021 (print edition). https://www.economist.com/leaders/2021/03/20/how-to-deal-with-china

(b), “China is Rapidly Building New Nuclear Missile Silos,” 31 July 2021. https://www.economist.com/china/2021/07/31/china-is-rapidly-building-new-nuclear-missile-silos

- "China talks of building a “digital silk road”," 31 May 2018, https://www.economist.com/china/2018/05/31/china-talks-of-building-a-digital-silk-road.

Feldstein, Steven, “The Global Expansion of AI Surveillance,” *The Carnegie Endowment for International Peace*, 17 September 2019, https://carnegieendowment.org/2019/09/17/global-expansion-of-ai-surveillance-pub-79847.

Felgenhauer, Pavel, “Russia Exports Its Missile Early-Warning Knowhow to China”, The Jamestown Foundation, 10 October 2019, https://jamestown.org/program/russia-exports-its-missile-early-warning-knowhow-to-china/.

Ferchen, Matt and Perera, Anarkalee, “Why Unsustainable Chinese Infrastructure Deals Are a Two-Way Street”, Carnegie, July 2019, https://carnegieendowment.org/files/7-15-19_Ferchen_Debt_Trap.pdf.

Gabuev, Alexander, “Is Putin Really Considering a Military Alliance With China?”, The Moscow Times, 2 December 2020, https://www.themoscowtimes.com/2020/12/02/is-putin-really-considering-a-military-alliance-with-china-a72207.

Gady, Franz-Stefan, “Russia and China Kick Off Naval Exercise in Sea of Japan”, The Diplomat, 24 August 2015, https://thediplomat.com/2015/08/russia-and-china-kick-off-naval-exercise-in-sea-of-japan/.

- “Chinese Navy Conducts Live-Fire Drill in Mediterranean Sea,” The Diplomat, 13 July 2017. https://thediplomat.com/2017/07/chinese-navy-conducts-live-fire-drill-in-mediterranean-sea/

Ghiasy, Richard and Krishnamurthy, Rajeshwari, "China’s Digital Silk Road Strategic Implications for the EU and India," *Institute of Peace and Conflict Studies and Leiden Asia Centre*, 21 August 2020, https://leidenasiacentre.nl/wp-content/uploads/2021/01/LAC-IPCS-DSR-Report-Aug-2020.pdf.

Ghosh, Iman, “The People’s Republic of China: 70 Years of Economic History”, Visual Capitalist, 12 October 2019, https://www.visualcapitalist.com/china-economic-growth-history/.

Gill, Don McLain, “The Geopolitics of the China-Pakistan Economic Corridor(CPEC) and its Security Implications for India”, The Korean Journal of International Studies, December 2019, https://doi.org/10.14731/kjis.2019.12.17.3.337.

Glaser, Bonnie S., et al., “Breaking Down China’s 2020 Defense Budget”, CSIS, 22 May 2020, https://www.csis.org/analysis/breaking-down-chinas-2020-defense-

budget#:~:text=In%202019%2C%20the%20Chinese%20government,to%20have%20been%20%24261%20billion.
Glavkosmos, "Russia-China Space Cooperation: progress and prospects," 18 July 2019, https://www.glavkosmos.com/en/russiachina-space-cooperation-progress-and-prospects/.
(b), "The 18th meeting of the Space Cooperation Subcommittee of the Russian-Chinese Committee for Preparing Regular Meetings between Heads of Government," 15 September 2017, https://www.glavkosmos.com/en/the-18th-meeting-of-the-space-cooperation-subcommittee-of-the-russianchinese-committee-for-preparing-regular-meetings-between-heads-of-government/.
Gordon, David F., Tong, Haoyu and Anderson, Tabatha, "Beyond the Myths – Towards a Realistic Assessment of China's Belt and Road Initiative: The Security Dimension," *International Institute for Security Studies*, September 2020, https://www.iiss.org/-/media/files/research-papers/bri-report-two--beyond-the-myths--towards-a-realistic-assessment-of-chinas-belt-and-road-initiative.pdf.
Goswani, Namrata, "What's Ahead for China's Space Program in 2021?" *The Diplomat*, 22 January 2021. https://thediplomat.com/2021/01/whats-ahead-for-chinas-space-program-in-2021/
(b), "The Strategic Implications of the China-Russia Lunar Base Cooperation Agreement," *The Diplomat*, 19 March 2021, https://thediplomat.com/2021/03/the-strategic-implications-of-the-china-russia-lunar-base-cooperation-agreement/.
Gould, Joe, "China Plans to Double Nuclear Arsenal, Pentagon Says," *Defense News,* September 1, 2020. https://www.defensenews.com/congress/2020/09/01/china-planning-to-double-nuclear-arsenal-pentagon-says/
Green, Mark, "China's Debt Diplomacy", FP, 25 April 2019, https://foreignpolicy.com/2019/04/25/chinas-debt-diplomacy/.
Hashimova, Umida, "Why Central Asia Is Betting on China's Belt and Road", The Diplomat, 13 August 2018, https://thediplomat.com/2018/08/why-central-asia-is-betting-on-chinas-belt-and-road/.
Hillman, Jonathan E., "India and Pakistan Join the Shanghai Club", CSIS, 8 June 2017, https://www.csis.org/analysis/india-and-pakistan-join-shanghai-club.
Infrastructure Consortium for Africa (ICA), "Infrastructure Financing Trends in Africa – 2017," 2018, https://www.icafrica.org/fileadmin/documents/Annual_Reports/IFT2017.pdf.
International institute for Strategic Studies (IISS), "The Military Balance 2020", February 2020.
- "The Military Balance 2021," February 2021.
Jianing, Yao, Editor, "China's National Defense in the New Era," Ministry of National Defense of the People's Republic of China, July 2019. http://eng.mod.gov.cn/news/2019-07/24/content_4846443.htm.
- "White Paper 2014," Ministry of National Defense of the People's Republic of China, July 2016. http://eng.mod.gov.cn/publications/2016-07/13/content_4768294.htm.
- "White Paper 2012," Ministry of National Defense of the People's Republic of China, April 2013. http://eng.mod.gov.cn/publications/2016-07/13/content_4768293.htm.
- "White Paper 2010," Ministry of National Defense of the People's Republic of China, March 2011. http://eng.mod.gov.cn/publications/2017-04/11/content_4778206.htm.
Jones, Andrew, "China Launches Experimental Satellite into Polar Orbit," Space, 23 April 2021. https://www.space.com/china-satellite-shiyan-6-launch
Kadiri, Ghalia, Tilouine, Joan, "A Addis-Abeba, le siège de l'Union africaine espionné par Pékin," *Le Monde*, 26 January 2018, https://www.lemonde.fr/afrique/article/2018/01/26/a-addis-abeba-le-siege-de-l-union-africaine-espionne-par-les-chinois_5247521_3212.html.
Kania, Elsa, "PLA Strategic Support Force: The 'Information Umbrella' for China's Military", The Diplomat, 1 April 2017, https://thediplomat.com/2017/04/pla-strategic-support-force-the-information-umbrella-for-chinas-military/.
Kashin, Vassily, "Tacit Alliance: Russia and China Take Military Partnership to New Level", Carnegie Moscow, 22 October 2019, https://carnegie.ru/commentary/80136.
Kramer, Andrew E., and Myers, Steven Lee, "Russia, Once a Space Superpower, Turns to China for Missions," *The New York Times*, 15 June 2021,https://www.nytimes.com/2021/06/15/world/asia/china-russia-space.html.
Kratz, Agatha, Zenglein, Max J., and Sebastian, Gregor, "Chinese FDI in Europe: 2020 Update", MERICS, 2021, https://merics.org/sites/default/files/2021-06/MERICSRhodium%20GroupCOFDIUpdate2021.pdf.

Kristensen, Hans M., “China’s Expanding Missile Training Area: More Silos, Tunnels, and Support Facilities,” Federation of American Scientists, 24 February 2021. https://fas.org/blogs/security/2021/02/plarf-jilantai-expansion/

Kristensen, Hans M., and Matt Korda, “Chinese Nuclear Forces, 2020,” *Bulletin of Atomic Scientists* Vol. 76, No. 6 (December 2020): 443-457. https://doi.org/10.1080/00963402.2020.1846432

- (2021): “China is Building a Second Nuclear Missile Silo Field,” Federation of American Scientists, 26 July 2021. https://fas.org/blogs/security/2021/07/china-is-building-a-second-nuclear-missile-silo-field/

Lafferty, Brian, “Civil-Military Integration and PLA Reforms,” in *Chairman Xi Remakes the PLA: Assessing Chinese Military Reforms*, edited by Philip C. Saunders, et al., National Defense University, 2019. https://ndupress.ndu.edu/Publications/Books/Chairman-Xi-Remakes-the-PLA/

Larter, David B. “The Arctic is a Strategic Hot Spot, but Western Allies Lack Good Intel,” DefenseNews, 21 September 2020. https://www.defensenews.com/naval/2020/09/21/the-arctic-is-a-strategic-hot-spot-but-western-allies-lack-good-intel/

Lin, Bonny and Garafola Cristina L., “Training the People's Liberation Army Air Force Surface-to-Air Missile (SAM) Forces”, RAND, 2016, https://www.rand.org/content/dam/rand/pubs/research_reports/RR1400/RR1414/RAND_RR1414.pdf.

Lino, Marisa, “Understanding China’s Arctic Activities,” *IISS analysis*, 25 February 2020. https://www.iiss.org/blogs/analysis/2020/02/china-arctic

MacHaffie, James, “The Shanghai Cooperation Organization’s Limited Role In Easing Tensions Between China and India”, The Jamestown Foundation, 23 December 2020, https://jamestown.org/program/the-shanghai-cooperation-organizations-limited-role-in-easing-tensions-between-china-and-india/.

Maizland, Lindsay, “China’s Modernizing Military”, CFR, 5 February 2020, https://www.cfr.org/backgrounder/chinas-modernizing-military.

Mardell, Jacob, “Fear of the Middle Kingdom in Central Asia”, Berlin Policy Journal, 16 January 2020, https://berlinpolicyjournal.com/sinophobia-in-central-asia/.

Maritime Executive, “COSCO in Talks to Acquire Stake in Hamburg Container Terminal,” 9 June 2021. https://www.maritime-executive.com/article/cosco-in-talks-to-acquire-stake-in-hamburg-container-terminal

McGerty, Fenella and Meia Nouwens, “China’s New Five-Year Plan and 2021 Budget: What Do They Mean for Defence?” *IISS Analysis*, 8 March 2021.

Myers, Steven Lee, "China and Russia Agree to Explore the Moon Together," *The New York Times*, 10 March 2021, https://nytimes.com/2021/03/10/world/asia/china-russia-moon.html.

Ministry of Foreign Affairs of the People's Republic of China (PRC MFA). "International Strategy of Cooperation on Cyberspace," 1 March 2017, https://www.fmprc.gov.cn/mfa_eng/wjb_663304/zzjg_663340/jks_665232/kjlc_665236/qtwt_665250/t1442390.shtml.

Mizokami, Kyle, “China’s New Stealth Bomber Can’t Be as Powerful as it Sounds,” Popular Mechanics, 9 December 2020. https://www.popularmechanics.com/military/aviation/a34908283/china-new-h-20-stealth-bomber-powerful/

NATO, “London Declaration”, 4 December 2019, https://www.nato.int/cps/en/natohq/official_texts_171584.htm.

- Author interviews with civilian defence experts, January 2021.

Office of the Secretary of Defense (OSD), “Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2020”, United States Department of Defense, 2020, https://media.defense.gov/2020/Sep/01/2002488689/-1/-1/1/2020-DOD-CHINA-MILITARY-POWER-REPORT-FINAL.PDF.

O’Rourke, Ronald, “China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress”, *Congressional Research Service*, 27 January 2021, https://fas.org/sgp/crs/row/RL33153.pdf.

Ostermann, Christian F., and Kraus, Charles, Editors, “From Mao to Deng: China's Changing Relations with the United States”, Woodrow Wilson International Center for Scholars, November 2019,

https://www.wilsoncenter.org/sites/default/files/media/documents/publication/cwihp_wp_92_chen_jian_from_mao_to_deng_chinas_changing_relations_with_us_november_2019.pdf.
Panda, Ankit, 2020): “A New U.S. Missile Defense Test May Have Increased the Risk of Nuclear War,” *Carnegie Endowment for International Peace,* November 19, 2020. https://carnegieendowment.org/2020/11/19/new-u.s.-missile-defense-test-may-have-increased-risk-of-nuclear-war-pub-83273
Prasso, Sheridan, "China’s Digital Silk Road Is Looking More Like an Iron Curtain," *Bloomberg*, 10 January 2019, https://www.bloomberg.com/news/features/2019-01-10/china-s-digital-silk-road-is-looking-more-like-an-iron-curtain.
Putz, Catherine, “Can Russia and China ‘Synergize’ the Eurasian Economic Union and the Belt and Road Initiative?”, The Diplomat, 9 November 2018, https://thediplomat.com/2018/11/can-russia-and-china-synergize-the-eurasian-economic-union-and-the-belt-and-road-initiative/.
Rajagopalan, Rajeswari, “Zapad/Interaction Military Exercise 2021: Growing Russia-China Bonhomie?” The Diplomat, 6 August 2021. https://thediplomat.com/2021/08/zapad-interaction-military-exercise-2021-growing-china-russia-bonhomie/
Reddy, Rahul Karan, "Mapping China’s Presence In Africa’s Digital Economy," *Eurasia Review*, 16 July 2021, https://www.eurasiareview.com/16072021-mapping-chinas-presence-in-africas-digital-economy-analysis/.
Reuters, “China formally opens first overseas military base in Djibouti”, 1 August 2017, https://www.reuters.com/article/us-china-djibouti/china-formally-opens-first-overseas-military-base-in-djibouti-idUSKBN1AH3E3
Rinehart, Ian E., “The Chinese Military: Overview and Issues for Congress”, Congressional Research Service, 24 March 2016, https://fas.org/sgp/crs/row/R44196.pdf.
Rühlig, Tim, "China, Europe and the new power competition over technical standards," *UI Brief* No 1, January 2021, https://www.ui.se/globalassets/ui.se-eng/publications/ui-publications/2021/ui-brief-no.-1-2021.pdf.
Rumer, Eugene, Richard Sokolsky, “Chinese-Russian Defense Cooperation Is More Flash Than Bang,” The Carnegie Endowment for International Peace, 17 June 2021. https://carnegieendowment.org/2021/06/17/chinese-russian-defense-cooperation-is-more-flash-than-bang-pub-84787
Sacks, David, "China's Huawei Is Winning the 5G Race. Here's What the United States Should Do To Respond," *Council on Foreign Relations*, 29 March 2021, https://www.cfr.org/blog/china-huawei-5g.
Saunders, Phillip C., et al. “Chairman Xi Remakes the PLA: Assessing Chinese Military Reforms”, National Defense University Press, 2019, https://ndupress.ndu.edu/Portals/68/Documents/Books/Chairman-Xi/Chairman-Xi.pdf.
Savkov, Nikita, “China’s Discourse and Interests Related to Its Role in U.N. Peacekeeping”, The Jamestown Foundation, 30 October 2020, https://jamestown.org/program/chinas-discourse-and-interests-related-to-its-role-in-u-n-peacekeeping/.
Segal, Adam, "Peering into the Future of Sino-Russian Cyber Security Cooperation," *War on the Rocks*, 10 August 2020, https://warontherocks.com/2020/08/peering-into-the-future-of-sino-russian-cyber-security-cooperation/.
Sen, Sudhi Ranjan, “India and China Have Added to Their Nuclear Arsenals in 2020, Report Says,” *Bloomberg,* June 16, 2020. https://www.bloomberg.com/news/articles/2020-06-16/india-and-china-add-to-nuclear-arsenals-in-2020-says-report
Sengupta, Somini and Steven Meyers, “Latest Arena for China’s Growing Global Ambitions: The Arctic,” The New York Times, 24 May 2019. https://www.nytimes.com/2019/05/24/climate/china-arctic.html
Stefanovich, Dmitry, “Russia to Help China Develop an Early Warning System,” The Diplomat, 25 October 2019. https://thediplomat.com/2019/10/russia-to-help-china-develop-an-early-warning-system/
Stokes, Mark et al., “China’s Space and Counterspace Capabilities and Activities,” Project 2049 Institute and Pointe Bello on behalf of the U.S.-China Economic and Security Review Commission, March 2020. https://www.uscc.gov/sites/default/files/2020-05/China_Space_and_Counterspace_Activities.pdf
Sutton, H.I., “China’s New High-Security Compound In Pakistan May Indicate Naval Plans”, Forbes, 2 June 2020, https://www.forbes.com/sites/hisutton/2020/06/02/chinas-new-high-security-compound-in-pakistan-may-indicate-naval-plans/.

Talmadge, Caitlin, "Would China Go Nuclear?: Assessing the Risk of Chinese Nuclear Escalation in a Conventional War with the United States," *International Security* Vol. 41, No. 4 (Spring 2017):50-92.https://cpb-us-e1.wpmucdn.com/blogs.gwu.edu/dist/b/1590/files/2018/07/Talmadge-IS-2017-y16c9h.pdf

Tian, Yew Lun, "China Needs More Nuclear Warheads: Global Times Editor," *Reuters,* May 8, 2020. https://www.reuters.com/article/us-china-usa-war-idUSKBN22K1EE

United Nations (UN), Peacekeeping, https://peacekeeping.un.org/en/troop-and-police-contributors; https://peacekeeping.un.org/en/how-we-are-funded.

US Air Force, Air University, China Aerospace Studies Institute, "PLA Aerospace Power", 2017, https://www.airuniversity.af.edu/Portals/10/CASI/documents/Research/PLAAF/CASI_Primer%202017.pdf.

Wall, Mike, "US Military to Keep Wary Eye on Chinese and Russian Space Ambitions under President Biden," Space.com, March 2021. https://www.space.com/us-space-policy-china-russia-biden-administration

Warrick, Joby, "China is Building More Than 100 New Missile Silos in its Western Desert, Analysts Say." *The Washington Post,* June 30, 2021. https://www.washingtonpost.com/national-security/china-nuclear-missile-silos/2021/06/30/0fa8debc-d9c2-11eb-bb9e-70fda8c37057_story.html

Weitz, Richard, "Why China Snubs Russia Arms," *The Diplomat*, 5 April 2010. https://thediplomat.com/2010/04/why-china-snubs-russian-arms/

- "China and the Black Sea Region: A Bridge Too Far?", Middle East Institute, 16 September 2020, https://www.mei.edu/publications/china-and-black-sea-region-bridge-too-far.

White, Joshua T., "China's Indian Ocean Ambitions: Investment, Influence, And Military Advantage", Brookings, June 2020, https://www.brookings.edu/wp-content/uploads/2020/06/FP_20200615_chinas_indian_ocean_ambitions_white-1.pdf.

World Bank, Country Data. https://data.worldbank.org/indicator/NY.GDP.MKTP.CD

Wu, DD, "China and Russia Sign Military Cooperation Roadmap", The Diplomat, 30 June 2017, https://thediplomat.com/2017/06/china-and-russia-sign-military-cooperation-roadmap/.

Xi, Jinping, "Secure a Decisive Victory in Building a Moderately Prosperous Society in All Respects and Strive for the Great Success of Socialism with Chinese Characteristics for a New Era", 19th National Congress of the Communist Party of China, 18 October 2017, http://www.xinhuanet.com/english/download/Xi_Jinping%27s_report_at_19th_CPC_National_Congress.pdf.

Xinhua, "Xi calls for building a strong army", 27 October 2017. http://english.www.gov.cn/news/top_news/2017/10/27/content_281475922905044.htm.

Yau, Niva, "Chinese business briefing: Getting back on track", Eurasianet, 6 July 2020, https://eurasianet.org/chinese-business-briefing-getting-back-on-track.

Zitvitski, Liane, "China Wants to Dominate Space, and the US Must Take Countermeasures," *DefenseNews*, 23 June 2020.

Zogg, Benno, "Cooperation, Co-existence or Clash? China and Russia's Ambitions in Central Asia", The Diplomat, 8 November 2019, https://thediplomat.com/2019/11/cooperation-co-existence-or-clash-china-and-russias-ambitions-in-central-asia/.

Zürcher, Christoph, "30 Years of Chinese Peacekeeping", Centre for International Policy Studies (CIPS) – Universty of Ottawa, January 2019, https://www.cips-cepi.ca/wp-content/uploads/2019/01/30YearsofChinesePeacekeeping-FINAL-Jan23-1.pdf.