

OCTOBER 2021

# MODERNISATION TRENDS POST COVID-19 (2020-21)

CSS DIALOGUE REPORT

# Modernisation Trends Post COVID-19 (2020-2021)

This report contains analyses of trends in defence and military modernization following the COVID-19 pandemic. Although defence expenditure was expected to decrease due to the pandemic, many countries have taken steps to bolster and modernize their capabilities, whether through the acquisition of new technology or by setting up new future-looking programmes. The reports in this collection discuss changes in approaches to defense modernization and resilience via militarization considering the challenges that COVID-19 has created and highlighted such as biowarfare. Moreover, defence modernization has been included in the post-COVID-19 recovery plans, given the connections between the military and manufacturing and R&D industry. The countries analyzed by the authors are Australia, India, China, France, and Russia, among others.

This report is a product of the Centre for Security Studies, Jindal School of International Affairs and was formulated after a discussion held on 25<sup>th</sup> June 2021.



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# Modernisation Post COVID-19 (2020-2021)

## Australia

*Khushi Mahendru*

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The COVID-19 pandemic has sparked transformation in government, defence, security, trade, and commercial operations. In the new normal, digital transformation has accelerated and exposed Australia to worldwide competition while also presenting possibilities. These possibilities are changes in defence expenditure, military training, and so on. The Australian government will play a key role in facilitating the future, not just via investment, but also through new regulations, policies, and laws. The COVID-19 pandemic has not only taken the country ahead with transformation but has also created a window of other opportunities and alliances, making a bigger position for the country in the global order.

As Australia advances into the future with the modernization trends post COVID, it stands with its 2016 *Defence White Paper* in continuing to believe that Australia will have significant potential for greater wealth and prosperity in the coming decades, but it will also face complex security concerns and increased strategic uncertainty. As the division of economic and political power changes in the Indo-Pacific they are in the midst of a moment of unparalleled change. The advent of more powerful military systems allowed by technological development, as well as the growing aggressive employment of grey-zone techniques to compel governments below the threshold for a traditional military response, has presented Australia with a challenging situation. The *Defence White Paper* has nevertheless helped the country secure its interests better. In the 2020 *Defence Strategic Update*<sup>1</sup>, Australia has focused on shaping Australia's strategic environment, deterring actions against Australia's interests, and responding when required with credible military force. Australia's 2020-21 defence budget has been of \$42,151 million, including the spending on acquisition, sustainment, workforce, operating costs, and operations. The defence budget comprises of:

1. Acquisition of new capability, which comprises the projected costs of purchasing new capacity such as weapons and equipment, facilities, infrastructure, and Information & Communications Technology (ICT) projects.
2. Procurement of current capability, which covers the expenses of keeping existing capability operational as well as the projected costs of future development capability yet to be put into operation.
3. To assist defence outcomes, such as military capabilities.<sup>2</sup>

The updates also included the following: twelve Attack Class submarines, nine Hunter Class frigates, the Joint Strike Fighter, and the Boxer combat reconnaissance vehicle, which were all acquired in 2020. In addition to defence related updates and spendings, the government invested in better information and electronic warfare technologies, as well as improved unified command, administration, and communications systems. The proposed improvements strengthened network

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<sup>1</sup> Australian Government, Department of Defence, *2020 Defence Strategic Update*, (Commonwealth of Australia, July 2020) <https://www1.defence.gov.au/about/publications/2020-defence-strategic-update>

<sup>2</sup> Ibid.

security and resilience, along with the ability to share data with foreign partners. Additionally, cash was provided to combine intelligence, surveillance, and reconnaissance programs and data. Investments in signals intelligence capabilities have continued. The budget puts aside funding to guarantee the future competitiveness of Australian defence in light of emergence of new technologies such as artificial intelligence.

In the maritime domain, efforts are underway to improve Australia's underwater warfare capabilities that protect the country's maritime access and sea lines of communication. The government is dedicated to delivering an outstanding submarine capability within its region. This submarine will be completely compatible with the US, enhancing Australia's own deterrence capability while contributing to regional anti-submarine operations. The government also engaged in an integrated undersea surveillance system, which included the experimentation of optionally crewed and/or uncrewed surface systems and uncrewed undersea systems, an undersea signature management range, and enlarged undersea warfare facilities and services to further safeguard Australia's undersea potential. The purchase of six modified Cape class patrol boats will ease the transfer from the Navy's ageing Armidale class patrol boats to the modern Arafura class. This is a better deal than a scheduled life extension, as it reduces operational and transitional risk while also supporting the Australian shipbuilding sector.

Prime Minister Morrison also kept the Air Force in action throughout the year of 2020. The allocation of US\$ 5–7.5 billion for the acquisition of a "Teaming Air Vehicle" is one of the most notable among these<sup>3</sup>. This pertains to the unmanned teaming aircraft, also known as UAVS, which serve as a faithful wingman. Under the auspices of Australia's Airpower Teaming System Program, Boeing Australia is already working on a concept of a devoted wingman drone for the Royal Australian Air Force. This feature has the potential to expand fleet sizes at a fraction of the cost of fully manned platforms. They can also improve manned platform survivability by reducing their exposure and boosting their distance from danger, during high-risk mission portions. The Government is committed to the procurement and introduction of the F-35A Lightning II Joint Strike Fighter aircraft, in support of the F/A-18F Super Hornet strike aircraft and acquiring enhanced air-launched munitions<sup>4</sup>.

Australia's modernisation trend also expanded more into the space with the 2020 plan, continuing to invest in and expand space capabilities. This has increased the defence's resilience and enhanced a wide range of space-dependent capabilities throughout the Joint Force. Over the next decade, an estimated \$7 billion will be invested on space capabilities, including investment in sovereign-controlled satellites, to ensure that these services are available when they are required. Taking advantage of its special geographical features, the country has improved surveillance and recognition of space objects and hazards, such as space debris, as well as the prediction and avoidance of possible collisions. The defence presently hosts a US C-Band Radar and Space Surveillance Telescope and will continue to work with the US and other key partners to improve space domain monitoring capabilities in the future. To make the most of the massive amounts of data that will be generated, the government is also spending in expanding on the expansion of intelligence and on supporting workers. During 2020, Australia continued to spend on long range rocket artillery, energy weapon systems and more military operations in extreme environments. The Australian government has been committed to preserving the capabilities of Australia's special forces, with investments planned in the Special Operations Continuous Development Program and a

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<sup>3</sup> GlobalData, "Post-COVID-19 security environment renders Australian next generation investment essential," Army Technology. Accessed July 1, 2021. <https://www.army-technology.com/comment/post-covid-19-security-environment-renders-australian-investment/>.

<sup>4</sup> Australian Government, Department of Defence, *2020 Force Structure Plan*

deployed special operations engineering capability.

Significant disruptive occurrences such as COVID-19 are frequently the trigger for hastening the rate of current change in military capabilities. Australia is making slow progress in digital transformations. On the bright side, communications infrastructure held up admirably as whole corporations shifted their employees to working from home; moreover, vital supplies reached isolated and vulnerable areas. However, without adequate digitally enabled systems to anticipate and measure stock levels, many firms' essential supply chains collapsed<sup>5</sup>. Over 80% of businesses are undergoing digital changes, which comes as no surprise. These projects range in size and scope, from cloud adoption to the implementation of flexible technology stacks, as well as customer journeys and employee initiatives such as large-scale agile transitions. More Australian businesses must use the six success criteria to improve their chances of producing long-term value from their digitalization: for consumers, investors, and Australia's resilience in the post-COVID world.

Investment in capacities will help governments to assert their security in a pacified post-COVID-19 world when war is more likely. The creation of new skills is critical to maintaining this competitive advantage. The competition between the world's major powers has heightened, the economy is in its worst slump since the Great Depression, and political movements fueled by political frustrations and economic despair threaten to wreak havoc. To rise from the crisis and build a better world in the future, strong central action is required. Australia would be set in its goals if not for the complication that China brings to the table. Australian actions affect the structure of China's growth and its economy, and Australia's position in it. Economic connections will be essential for both nations, but the key moment of seamless integration might have passed, owing to Chinese consumption drops and an Australian desire to expand. In Washington and Beijing, Australia must establish its own fair and unambiguous voice, as it seeks to prevent a worsening relationship. It would have to engage successfully in direct high-level talks with both Beijing and Washington. The US, Australia, and India, as well as other like-minded countries, may strive to rebuild, revive, and modify regulations, because of COVID-19. As an informal reaction to China's growing aggressiveness, the Quadrilateral Security Dialogue (Quad) has expanded its collaborations and planning in the defence, economic, and political arena. These developments point towards a multilateral global order, in which alliances play an important role in shaping and protecting the free world.

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<sup>5</sup> Patrick Forth and Stefan Mohr, "The Success Formula for Australian Companies to Digitally Transform" Boston Consulting Group, accessed May 20, 2021. <https://www.bcg.com/en-au/publications/2021/digital-transformation-in-australia>

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# Modernisation Post COVID-19 (2020-2021)

## South Korea

*Rayan V Bhagwagar*

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The COVID-19 virus wreaked chaos across the world after its outbreak in Wuhan, China, and the subsequent failure to contain its spread. The cost of unwillingness to check the spread of the lethal virus, never discovered before, led to the deaths of over 180 million people, both within the People's Republic and across the world. Some sources suggest that the COVID-19 virus was used as a bioweapon to help achieve objectives set about by the Chinese Communist Party – allegations backed by evidence that has recently begun to surface to the public eye en masse. In these unprecedented times, the world has seen the entrance of a new era of warfare, the arrival of a new means of weapon that the world and several international bodies had attempted to prevent – biowarfare. As such, the defence authorities, and military forces of several countries across the globe have engaged in increasing defence expenditure – which in 2020 was affected by the pandemic – to prepare for all eventualities in an ever-polarised international arena.

The rise of China as a force to reckon with is on course to challenge the current world order led by the United States. While some commentators suggest that the Chinese have already eliminated American primacy through the virus and interference in the American political landscape, the United States alongside its partners and allies continue to stand strong as the single largest hurdle on the Chinese path toward supremacy. Such tensions have not been witnessed since the hot days of the Cold War. Countries are building up their defences and preparing to handle all eventualities, in a bid to counter the constant aggression emerging from the expansionist regime in Beijing.

### **Threat Analysis – Democratic People's Republic of Korea**

The Korean peninsula has long been a point of contestation among the major powers of the international community. Involved in the politics of the peninsula are the Americans, the Chinese, the Russians, the Japanese as well as of course, the two Koreas. Seoul for too long, has faced aggression coming from the communist North. The North Koreans, boasting a 1.2 million personnel strong ground force, usually have two-thirds of the entirety of its force garrisoned along the northern limit of the DMZ, at any given point of time. Administrations of the present and the past decades, both in Seoul and Washington, have largely been unable to prevent the Democratic People's Republic of Korea from acquiring nuclear technology and weaponry. Pyongyang has constantly engaged in unwarranted missile tests, despite the imposition of several international and United Nations-sponsored sanctions on the already impoverished and malnourished nation. Despite the several summits in recent years, between the North and the South, as well as with members of the six-party talks, the North's missile testing frenzy has gone undeterred, leading to the development of missile technology that they claim can reach as far as the continental United States<sup>6</sup>. This has become a major threat to American national security, and posed an existential risk to Seoul, which does not possess the nuclear capabilities to launch a second strike in case of adversities.

The decision of the North Korean regime also reserves with it a degree of uncertainty, making it a

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<sup>6</sup> Albert, E. 2020. *North Korea's Military Capabilities*. Retrieved from Council on Foreign Relations. 16 November, 2020. <https://www.cfr.org/background/north-koreas-military-capabilities>

difficult task for analysts of other governments to evaluate decisions coming from Pyongyang. Their unpredictable and irrational behaviour can be seen through the example of the several North Korean moves, including missile tests and official statements, that put the second round of talks between President Trump and Chairman Kim in Vietnam in harm's way. North Koreans seem to have established their policies on similar lines to Richard Nixon's 'Madman theory' through which the North deliberately portrays itself as irrational to asymmetrically intimidate stronger players.<sup>7</sup> The on and off occurrences of ill-health of the dictator also risks the disruption of authority and the creation of a power vacuum in the communist state. Transitions of power in authoritarian states are uncertain affairs and can be marked by sudden breakdowns in authority and/or periods of prolonged instability as new structures of power and leadership are established.<sup>8</sup>

## Threat Analysis – People's Republic of China

China has long been engaged in cultural imperialism on the Korean peninsula, labelling Korean cultural heritage under the Sinic umbrella, causing public opinion to sway against what they see as being an instance of neo-colonialism. The polarisation of opinion on the Chinese regime has been a result of their aggressive diplomacy, the exercise of hard power, and the imposition of culture. This has led to the non-effectivity and near non-existence of any form of Chinese soft-power. China has engaged in more extreme tactics across the region, forcing the transformation of Turkic, Mongolian, and Tibetan identities within its areas of administration into Han Chinese. The crackdowns in Xinjiang, Inner Mongolia, Tibet and Hong Kong, alongside the COVID-19 virus pandemic, have further reinforced negative perceptions of Beijing amongst the Korean population. In a recent opinion poll carried out by the Chicago Council on Global Affairs, 83 per cent of Koreans view China as a security threat.<sup>9</sup> Furthermore, the Republic of Korea – being one of the closer allies of the United States – in 2016 agreed to participate in the United States-led Terminal High Altitude Area Defense (THAAD) missile defence program, in response to the growing nuclear threat from North Korea. In response to this, the Chinese engaged in coercive economic retaliation, causing several instances of disruption in bilateral trade in way of popular boycotts and decreased sales figures. The People's Liberation Army Air Force has also, at several instances, violated Korean sovereignty over its Korean Air Defence Identification Zone (KADIZ), as recently as December 2020. In this instance, several Chinese fighter aircraft and strategic bombers, alongside the Russian Air Force, violated Korean airspace. Air defence identification zones are not territorial airspace and are not bound by international law. But a foreign warplane is supposed to make prior notification before approaching them in line with international customs to prevent accidental clashes.<sup>10</sup> These claims were denied by the Chinese Foreign Ministry, saying that the "warplanes (including H-6K strategic bombers) abided by international law and did not enter South Korean air space"<sup>11</sup>.

## Defence Expenditure

South Korea's defence spending has hit significant benchmarks every six years, jumping from about 20 trillion won in 2005 to roughly 30 trillion won in 2011, and then to about 40 trillion won in 2017.<sup>12</sup> Defence expenditure under the current administration led by President Moon Jae-In has

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<sup>7</sup> Hanssen, U. 2013. *Explaining North Korea's irrationality*. 29 June, 2013. Retrieved from East Asia Forum: <https://www.eastasiaforum.org/2013/06/29/explaining-north-koreas-irrationality/>

<sup>8</sup> Robertson, J. 2009. *North Korea and non-traditional security challenges*. 20 July, 2009 Retrieved from Parliament of Australia: [https://www.aph.gov.au/Parliamentary\\_Library/pubs/rp/rp0910/10rp02](https://www.aph.gov.au/Parliamentary_Library/pubs/rp/rp0910/10rp02)

<sup>9</sup> Friedhoff, K., 2021 "South Koreans See China as More Threat than Partner, But Not the Most Critical Threat Facing the Country", Retrieved from *The Chicago Council on Global Affairs* <https://www.thechicagocouncil.org/research/public-opinion-survey/south-koreans-see-china-more-threat-partner-not-most-critical-threat> (Accessed April 6, 2021)

<sup>10</sup> Yonhap. 2020 "US says it supports S. Korea's concern over Chinese, Russian violation of KADIZ" Retrieved from *The Korean Herald* <http://www.koreaherald.com/view.php?ud=20201224000073> (Accessed December 24, 2020)

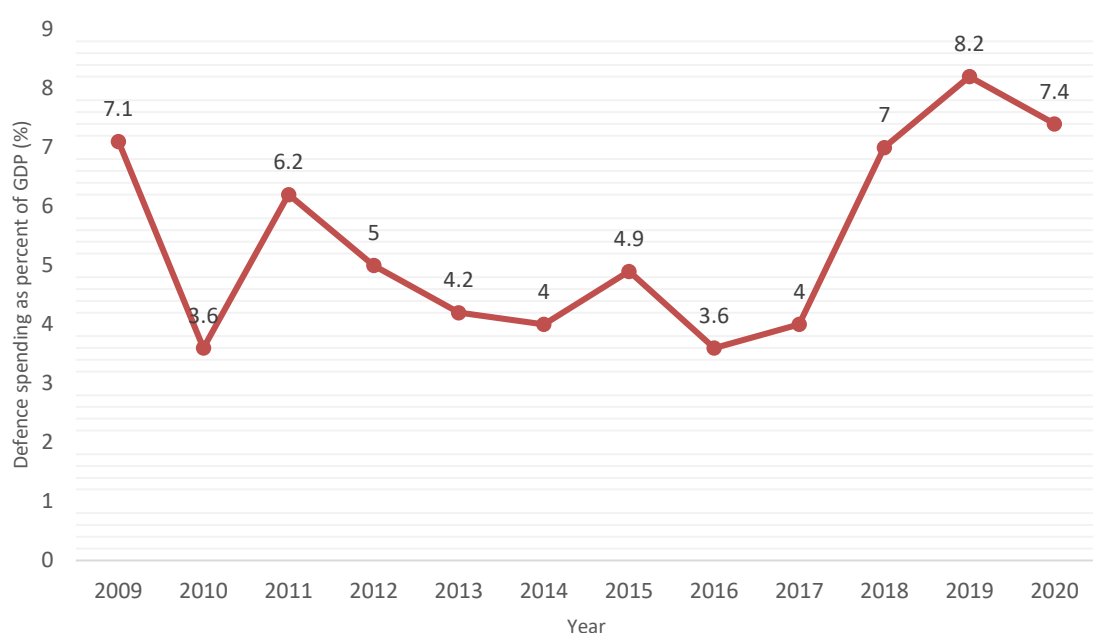
<sup>11</sup> Reuters. 2020. "South Korea scrambles jets as Chinese, Russian aircraft enter air defence zone." Retrieved from Reuters: <https://www.reuters.com/article/us-southkorea-china-russia-idUSKBN28W139> (accessed 22 December, 2020)

<sup>12</sup> Ito, K. 2020. "What to Make of South Korea's Growing Defense Spending" Retrieved from *The Sasakawa Peace Foundation*: [https://www.spf.org/iina/en/articles/ito\\_02.html](https://www.spf.org/iina/en/articles/ito_02.html) (Accessed 12 March, 2020)



been one of the highest in recent times, as can be seen in the following graph:

*Table 1: Changes in South Korea's Defence Spending and Defence Spending as a Percent of GDP (Source: The Sasakawa Peace Foundation<sup>13</sup>)*



However, the COVID-19 virus caused severe disruptions not only to lives and livelihood but also to the economies of the world, causing governments to alter existing budgetary plans to cope with the lethal pandemic. Seoul, in a bid to contain the spread of the Chinese virus, decided to reallocate funding earlier designated for usage by the Ministry of National Defense, toward combating the health pandemic. On April 16, 2020, the Ministry of Economy and Finance announced a slash of USD 733 million from defence expenditure. It removed USD 156 million from operating expenses and the remaining USD 577 million from military modernisation, including acquisition as well as research and development. On June 3, 2020, the Ministry announced an additional cut of USD 245 million from the defence budget.<sup>14</sup> However, in December 2021, the Ministry of National Defense announced the increase of the defence budget by 5.4%, bringing it up to USD 48 billion, compared to approximately USD 44 billion in 2020. The MND said that the 2021 defence budget included USD 316 billion for military operations and expenses, which it said was a 7.1% increase over 2020. Funding for force modernisation, including procurement and research & development, would receive USD 150 billion in 2021, an increase of 1.9%. Funding for operations and expenses was to be focused on supporting defence operations, education & training, improving personnel welfare, and reinforcing the Republic of Korea Armed Forces' responses to non-traditional threats including infectious diseases and terrorism<sup>15</sup>. This comes as the first move toward a future set in the new era of biowarfare. In the past, the South has attempted to bolster its preparations against the threat of bioterrorism and the immoral weaponisation of deadly pathogens. In 2012, the National Institute of Health of South Korea held discussions with biodefense specialists on the project aiming to proceed with the development of tools for identifying disease agents and potential infections, along with the creation of new vaccines, other medical countermeasures, and also delving nano-technology based systems for similar usage<sup>16</sup>.

<sup>13</sup> Ibid.

<sup>14</sup> Darling, D. 2020. "Due to COVID-19, South Korea Plans Fresh Cut to 2020 Defense Budget." February 3, 2020. Retrieved from Defense & Security Monitor: <https://dsm.forecastinternational.com/wordpress/2020/06/03/south-korea-plans-fresh-cut-to-2020-defense-budget-due-to-covid-19-fallout/>

<sup>15</sup> MacDonald, A., & Grevatt, J. 2020. "South Korea increases defence budget for 2021." December 03, 2020. Retrieved from Janes: <https://www.janes.com/defence-news/news-detail/south-korea-increases-defence-budget-for-2021>.

<sup>16</sup> Nuclear Threat Initiative. 2012. *South Korea to Ramp up Biodefense Efforts*. May 22, 2012. Retrieved from Nuclear Threat Initiative: <https://www.nti.org/gsn/article/south-korea-ramp-biodefense-efforts/>

## Research & Development

Over several decades, beginning from the 1970s, Seoul has directed its defence acquisition policy to look inward, promoting the bolstering of domestic industry in the field, looking outward only when necessary or at viable times. The South Koreans are attempting to forgo their dependence on American military gear and equipment and as such have been heavily funding and sponsoring defence R&D. It is also planning on reducing its troop size to an estimated 500,000 personnel, armed with state-of-the-art weaponry and technology to augment greater combat lethality. One MND official was quoted saying: *“In order to secure self-defense capabilities and lead the development of national science and technology, the acquisition policy will change to centre around domestic R&D rather than overseas purchases.”*<sup>17</sup>

This move certainly takes the Republic of Korea in the right direction, given the fact that Seoul is attempting to retake wartime operational control on the peninsula from Washington. In 2021, the Defense Acquisition Program Administration announced plans of increasing defence expenditure in the field of military R&D to USD 3.9 billion. Another USD 573.3 million was allotted for the development of core weapon technologies. DAPA noted that it will assist the transfer of defence technologies to the civilian sector, creating consortiums comprising companies, universities, and research centres. An official said that *“We will share our policy direction with other organisations and strengthen cooperation for the development of our defence science technology and the growth of the industry”*<sup>18</sup>. If it stays on its current path, ROK is on course to be the largest military R&D spender in the world, as a proportion of its budget.

Some recent projects include the development of a Light Attack Helicopter for the modernisation of the rotary-wing of the ROK Army Aviation Corps, which continues to employ AH-1 Cobras and MD500s – both from the Vietnam war era, accounting for 70% of the fleet – to this day. Attack helicopters can play a detrimental role in changing the dynamics on the battlefield. Korea Aerospace Industries (KAI) is developing the LAH Project along with technical assistance from Airbus Defence, the creators of the H155 platform. Its induction in coming years will give the South increased benefits in Army Aviation, being able to support more ground attack ops, close-air support, emergency transport as well as scouting and ISR roles.

The LAH – while still under development – took to the skies for the first time in 2019 with high-powered twin turboshaft engines, delivering a maximum speed of 323 kmph, an operational range of 857 km, and a flight ceiling of 4,500 m. It will be armed with a 20 mm three-barrel Gatling gun, 70 mm rocket launcher pods, four underwing weapons brackets that will support pods capable of firing both guided and non-guided air-to-surface missiles, all of which will be supported by real-time weapons control and aiming systems.<sup>19</sup>

KAI is also developing the KFX project, which looks into developing an indigenous 4.5<sup>th</sup> generation multi-purpose fighter jet. The resulting KF-21 Boramae which was under development since 2015, took to the skies for the first time in 2019. The KF-21 will replace the ROK Air Force’s ageing fleet of F-4 Phantoms and F-5 Tigers. In 2021, it was revealed at a ceremony, attended by the Indonesian defence minister, Prabowo Subianto. The Indonesians have funded 20% of the costs of the programme, in a joint bilateral R&D project. The project is also receiving technical advice and technological assistance from Lockheed Martin – the developers of the F-35 Lightning II.

While the performance objectives of the KF-X are meant to be less than those of the F-35, it aims to

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<sup>17</sup> Smith, J. 2019. “Buying a big stick: South Korea’s military spending has North Korea worried.” September 11, 2019. Retrieved from Reuters: <https://www.reuters.com/article/us-southkorea-military-analysis-idUSKCN1VW03C>

<sup>18</sup> Army Technology. 2021. “South Korea to invest \$3.9bn on defence R&D in 2021.” February 16, 2021. Retrieved from Army Technology: <https://www.army-technology.com/news/south-korea-to-invest-3-9bn-on-defence-rd-in-2021/>

<sup>19</sup> Military Factory “Kai / Airbus Helicopters Light Armed Helicopter (LAH).” Military Factory - Global Defense Reference, 2019. [https://www.militaryfactory.com/aircraft/detail.php?aircraft\\_id=1369](https://www.militaryfactory.com/aircraft/detail.php?aircraft_id=1369).

achieve capabilities superior to those of the F-16 Falcon, the Dassault Rafale as well as the Eurofighter Typhoon. While its design is similar to the F-35, it is smaller and much cheaper to operate than its American counterpart. The indigenous 4.5<sup>th</sup> generation aircraft will be powered by two General Electric afterburning turbofan engines producing: 22,000 lbs of thrust delivering a top speed of a supersonic 2,500 kmph, a flight ceiling of 19,800 m, and an operational range of 3,800 km. All these specifications trump those of the F-35. However, the agility and overall performance of the aircraft is yet to be discovered. The Boromae will be armed with a standard 20 mm Gatling-style automatic cannon, along with other munitions such as various missiles (other than cruise missiles) and guided and unguided bombs which will be equipped in an internal bay and six installable external weapons mounting hardpoints<sup>20</sup>.

The South Koreans are also looking into the acquisition of other platforms to boost their combat capabilities, and better prepare for future scenarios such as:

- Northrop Grumman RQ-4 “Global Hawk”
- Boeing E737 AEW&C Aircraft “Wedgetail”
- ROKS Marado (Dokdo-class amphibious assault ship)
- ROKS Dosan Ahn Changho (Korean Attack Submarine Programme)
- ROKS Daegu (Future Frigate Experimental)

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<sup>20</sup> Military Factory. (2021, April 13). “KAI KF-21 Boromae (KF-X)”. Retrieved from Military Factory, 2021. [https://www.militaryfactory.com/aircraft/detail.php?aircraft\\_id=1035](https://www.militaryfactory.com/aircraft/detail.php?aircraft_id=1035)

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# Modernisation Post COVID-19 (2020-2021)

## Indonesia

*Rayan V Bhagwagar*

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The COVID-19 virus, as of July 2021, has caused the deaths of over 4.1 million people globally. While it has had a major impact on economies across the world, it has caused merely a minor dent in the defence spending of countries. In fact, the outbreak of the virus has, in some cases, led to increased military spending and budgeting, representative of growing hostilities in today's post-modern world.

China is being increasingly viewed with a suspicious eye by capitals in its neighbourhood, as well as those across the globe. In Southeast Asia, the Chinese have laid claim to vast tracts of the South China Sea, overlapping those of smaller neighbouring states. Its maneuvers in the sea are seen as being the greatest traditional threat to the maintenance of status quo in the region. This, along with accusations for the global export of the COVID-19 virus, which has jolted the global economy and population, has painted the Chinese Communist Party in a negative light. Yet, Indonesia – which is not party to the South China Sea dispute, has no major quarrels with the Chinese. It is the world's largest archipelagic country with over 17,000 islands within its sovereign territory, and so does not face threats on a scale that can obliterate the entirety of its homeland.

### Threat Analysis

Senior Indonesian military officials agree that their country has no imminent conventional external threat. Internal and transnational security threats receive top priority in the Indonesian security architecture. Non-traditional threats like illegal fishing and other environmental crimes are weighted more heavily than terrorism, narcotics, or human trafficking. For most Indonesians, the most pressing security threats involve the economy: putting food on the table, the rising price of gasoline, and paying for children's schooling.

Terrorism, especially international terrorism, is not viewed as an existential threat to the country. In the past, there have been international connections with the Abu Sayyaf group in the Philippines, which included training and funding "Afghan veterans" number in hundreds, consisting of Indonesians who trained or participated in jihad in Afghanistan during the 1980s. Several expert bombmakers remain at large and accessing explosives and/or small arms is not particularly difficult.<sup>21</sup>

However, arguably, the most serious regional problem faced by Jakarta involves overlapping claims of sovereignty in the South China Sea of its partners in the Association of Southeast Asian Nations (ASEAN) and those of China. An increasingly assertive China looms as the region's most worrisome future threat.

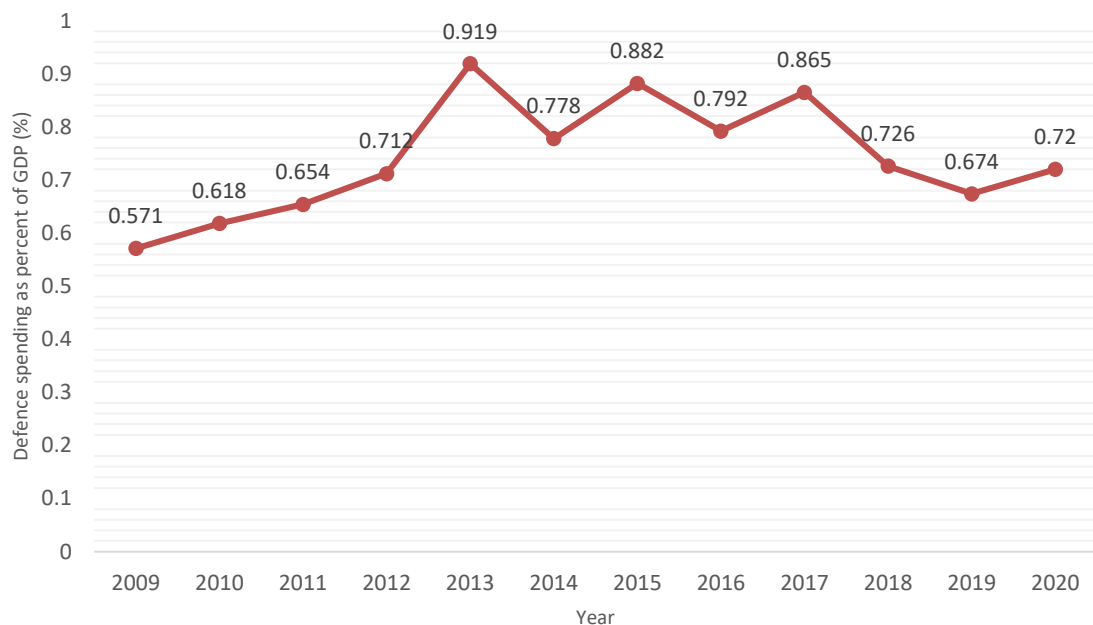
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<sup>21</sup> Campbell, J. R. (2012, February). *Transnational Security Threats to Indonesia*. Retrieved from Daniel K. Inouye Asia-Pacific Center for Security Studies: <https://apcss.org/wp-content/uploads/2012/02/48-62-Transnational-Security-Threats.pdf>

## Defence Expenditure

Indonesia's defence spending – under President Joko Widodo and Defence Minister Prabowo Subianto – has been in a somewhat confusing flux. Overall trends, however, have been on the increase. While several other countries in the region of Southeast Asia had already been spending over 1% of their GDP on their military, Indonesia was still below the 1% of GDP mark. The Defence Minister in 2020, prior to the outbreak of the global COVID-19 virus pandemic, had highlighted the necessity for Indonesian defence spending to reach the 1.5% of GDP mark to achieve Indonesia's larger military reform goal of creating a force-of-scale capable of meeting the minimum response required to deal with a variety of strategic threats by 2024.<sup>22</sup>

Table 2: Changes in Indonesia's Defence Spending and Defence Spending as a Percent of GDP (Source: World Bank)<sup>23</sup>



The recent sinking of the 40-year-old KRI Nanggala submarine has sparked the necessity for Jakarta to replace many of its platforms. As such, the country's Navy is looking to modernise and revitalise its naval capabilities, which can and will play such a crucial role in the defence of the archipelagic nation. Over the years, it has developed plans such as the "Minimum Essential Force" plan, which calls for the development of a 274-ship "green water" Navy with at least 12 new Diesel-Electric submarines, supported by a minimum of 10 fighter squadrons as part of a major upgrade to its air combat capability, complimenting both terrestrial and maritime domains of military operations, among other platforms listed by Jakarta.

The sinking of the KRI Nanggala – a German-designed Type 209 submarine, was a relic of the cold war era at 40 years of age. When it sank for unknown reasons, it took 53 of its sailors and officers with it to the bed of the ocean. The Indonesian military is quite literally in a state of decay with ancient platforms' lifetime being extended more than serviceable. One Indonesian defence analyst – Muhamad Hari-pin – was quoted in an interview on the submarine, suggesting that Indonesia had resorted to keeping aged equipment in service and acquiring second-hand systems because it has a fiscally strained budget dedicated to the defence of its territory and surrounding waters.<sup>24</sup>

Like the case with Seoul, Jakarta also announced a slash in the defence budget for the year to direct

<sup>22</sup> Darling, D. (2019, August 21). *Indonesian Government Proposes 16 Percent Defense Spending Increase for 2020*. Retrieved from Defense & Security Monitor: <https://dsm.forecastinternational.com/wordpress/2019/08/21/indonesian-government-proposes-16-percent-defense-spending-increase-for-2020/>

<sup>23</sup> World Bank. (2021). *Military expenditure (% of GDP) - Indonesia*. Retrieved from World Bank: <https://data.worldbank.org/indicator/MS.MIL.XPND.GD.ZS?locations=ID>

<sup>24</sup> Yeo, M. (2021, May 10). *What's impeding Indonesia's military ambitions?* Retrieved from DefenseNews: <https://www.defensenews.com/global/asia-pacific/2021/05/10/whats-impeding-indonesias-military-ambitions/>

funding toward countering the global pandemic in April 2020. However, after highlighting the necessity for modernisation, the Indonesian government announced an increase in defence spending in August 2020 amid the COVID-19 virus pandemic. The Ministry of Finance set the defence budget for 2021 at USD 9.2 billion – an increase of 16.2% over that of 2020. As per plans, the Ministry of Defence will spend increasingly on modernisation, while also supporting research & development.<sup>25</sup> The only major research project that Jakarta is engaged in is the KF-21 Boramae. For this project it is collaborating with Seoul, with a 20% stake in the project.

## Acquisitions

In May 2021, the Indonesian Presidential Office released a proposed regulation titled ‘Fulfilling the Defence and Security Equipment Needs of the Ministry of Defence and Indonesian Armed Forces (TNI) 2020-24’. It proposes military modernisation worth USD 124.9 billion over five years. The document proposes funding of USD 79 billion for defence equipment, USD 32.5 billion for sustainment, and USD 13.4 billion for interest payments on foreign loans. Given the fact that Indonesia can barely afford current defence expenditure, it has also been said that this plan will be funded majorly through foreign loans that it will seek from partner states such as the United States of America. While the plan prioritises sourcing TNI modernisation requirements from local industry, it also states that if domestic products cannot be procured, then foreign products can be used.<sup>26</sup>

To modernise its aerial combat capabilities, Jakarta has looked into multiple options. In October 2020, the Americans rejected Jokowi’s request for obtaining the F-35 Lightning II, and instead offered the F-16 and F/A-18. Since then, the government has also looked into European options such as the Eurofighter Typhoon, the Dassault Rafale. It is also considering the purchase of the modernised variant of the F-15EX. It has shown interest in obtaining more Russian Sukhoi 27 and Sukhoi 30 aircraft as well but has been prevented to do so due to CAATSA (Countering America’s Adversaries Through Sanctions Act).

Prior to the outbreak of the pandemic, Indonesia had also finalised an agreement to acquire three Nagapasa-class attack submarines to be built in Korea by DSME with the participation of the Indonesian industry as well. The class is an Indonesian upgrade of the Korean Chang Bogo class, which in turn is the Korean version of the German Type 209. The deliveries are expected to be completed

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<sup>25</sup> Grevatt, J. (2020, August 18). Indonesia announces strong increase in 2021 defence budget. Retrieved from Janes: [https://www.janes.com/defence-news/news-detail/indonesia-announces-strong-increase-in-2021-defence-budget\\_11656](https://www.janes.com/defence-news/news-detail/indonesia-announces-strong-increase-in-2021-defence-budget_11656)

<sup>26</sup> Grevatt, J., & MacDonald, A. (2021, June 01). Indonesia reveals USD125 billion military modernisation plan. Retrieved from Janes: <https://www.janes.com/defence-news/news-detail/indonesia-reveals-usd125-billion-military-modernisation-plan>

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# Modernisation Post COVID-19 (2020-2021)

## China

*Himanshu Dubey*

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### Introduction

The world of international relations saw a change in the dynamics of power, from military to economic power. But did this shift in the policy of power result in the decline of the military? No. Although the world of international relations saw a race towards the economy and scientific advancements since the 1990s, it continued to use such economic and scientific leverages for its military advancements and further resulted in the adoption of a phase of ‘modernization’ of military capabilities.

The recent report published by the Stockholm International Peace Research Institute [SIPRI] supports the claim that in the world of the economic race, military advancement is not neglected. SIPRI released the world military expenditure report for the year 2020 when the world entered a phase of a global pandemic. The global pandemic resulted in a decline of the world’s economic growth rate for the year 2020. The International Monetary Fund [IMF] estimates a contraction of -3.5 percent in the global economy. However, such contractions did not cause a larger impact on military expenditure<sup>27</sup>. The world military expenditure is estimated to have been \$1981 billion, the highest level since 1988—the earliest year for which SIPRI created a consistent estimate for a total global military spending. The world’s military expenditure was 2.6 percent higher than 2019 and 9.3 percent higher than in 2011<sup>28</sup>. According to the report, such an increase was because most of the countries in the world experienced severe economic downturns in 2020, due to the COVID-19 pandemic, while military expenditure continued to rise overall.

Although military expenditure continued to grow in the year 2020, some countries such as Chile and South Korea explicitly reallocated a part of their planned military spending to pandemic response. Brazil and Russia also spent less than their initially planned military budget. In 2020, U.S. military expenditure reached an estimated \$778 billion, representing an increase of 4.4% over 2019, remaining the world’s largest military spender with an accounted percentage of 39 percent of total military expenditure in 2020. China continues to play a major role in military spending, being the second-highest military spender in the world and is estimated to have spent up to \$252 billion in 2019. Dr. Nan Tian, a Senior SIPRI researcher said, “China stands out as the only major spender in the world not to increase its military burden in 2020 despite increasing its military expenditure, because of its positive GDP growth last year. The ongoing growth in Chinese spending is due in part to the country’s long-term military modernization and expansion plans, in a line with the stated desire to catch up with other leading military powers.”<sup>29</sup> Other leading nations like India [ \$72.9 billion], Japan [ \$ 49.1 billion], South Korea [ \$45.7 billion], and Australia [ \$ 27.5 billion] were the

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<sup>27</sup> “World Economic Outlook Update,” *International Monetary Fund*, July 2021. <https://www.imf.org/-/media/Files/Publications/WEO/2021/Update/July/English/text.ashx>

<sup>28</sup> da Silva, Diago Lopes, Nan Tian and Alexandra Marksteiner. “Trends in World Military Expenditure” Stockholm International Peace Research Institute, 26 April 2021. [https://www.sipri.org/sites/default/files/2021-04/fs\\_2104\\_milex\\_0.pdf](https://www.sipri.org/sites/default/files/2021-04/fs_2104_milex_0.pdf)

<sup>29</sup> “World military spending expenditure rises to almost \$ 2 trillion in 2020.” *Stockholm International Peace Research Institute*. April 26, 2021. <https://www.sipri.org/media/press-release/2021/world-military-spending-rises-almost-2-trillion-2020>

largest military spenders in Asia and Oceania region<sup>30</sup>. The rise in military expenditure during the phase of a global pandemic answers the question of balance in the expansion of economic and military power altogether.

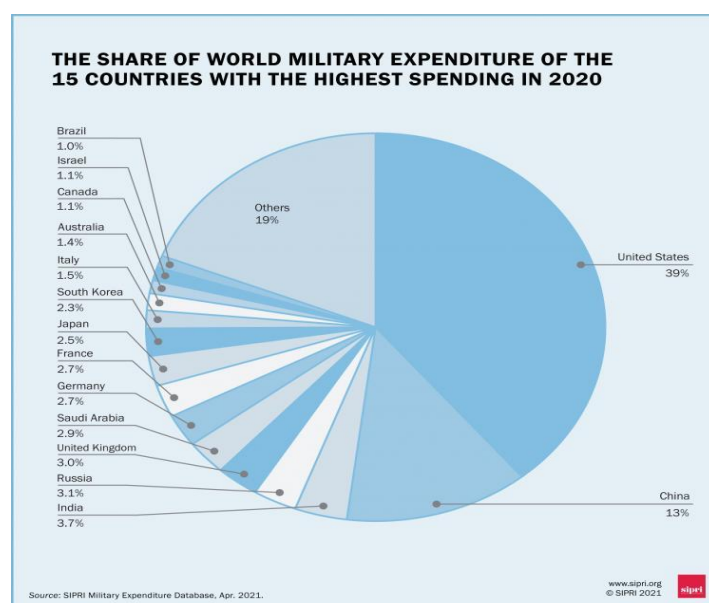


Figure 1.<sup>31</sup>

### China's defense expenditure

China's military expenditure remains the second highest in the world, after the United States. However, the estimates of its total military expenditure vary substantially, depending on the reporting sources. According to the official budget, China's military spending in 2019 was about US \$175 billion, while external estimates range from \$200 billion in 2019 by the US department of defence [DOD], to \$225 billion in 2018 by the International Institute of Strategic Studies [IISS], and up to \$261 billion in 2019<sup>32</sup>. China's defence budget has continued to grow each year for decades, so the increase in the 2021 defence budget is hardly surprising. Such a rate of growth in China's defence budget is closely linked to its economic development and perceived security demands. NPC [National people's congress of the People's Republic of China] spokesperson Zhang Yesui emphasized on this during a press conference in the run-up to NPC, stating that China's defence budget was "in line with [China's] level of national development" and aimed at safeguarding national sovereignty, securing development interests, fulfilling international responsibilities, and meeting the needs of military reforms.<sup>33</sup>

However, the official defence budget of China does not include all of China's military-related activities. For example, many defence-related outlays fall directly under the Central Military Commission [CMC], China's highest military authority, chaired by Xi Jinping; the people's Armed Police [PAP], a paramilitary police force charged with maintaining internal security and supporting the military in times of war, is under the command of the CMC, but not included in the budget. The

<sup>30</sup> da Silva, Diago Lopes, Nan Tian and Alexandra Marksteiner. "Trends in World Military Expenditure" Stockholm International Peace Research Institute. April 2021. <https://www.sipri.org/publications/2021/sipri-fact-sheets/trends-world-military-expenditure-2020>

<sup>31</sup> Beraud-Sudreau, Lucie, et al. "Military Spending Graphics 2020," Stockholm International Peace Research Institute. <https://www.sipri.org/research/armament-and-disarmament/arms-and-military-expenditure/military-expenditure>

<sup>32</sup> Tian, Nan, and Su Fei. "A New estimates of China's military expenditure," Stockholm International Peace Research Institute, January 2021. <https://www.sipri.org/publications/2021/other-publications/new-estimate-chinas-military-expenditure>

<sup>33</sup> Funaiolo, Matthew P., and Hart Brian. "Understanding China's 2021 defence budget," Center for Strategic and International Studies, March 5, 2021. <https://www.csis.org/analysis/understanding-chinas-2021-defense-budget>.



Chinese coast guard plays a major role in asserting the maritime claim in South China and the East China Sea. It was placed under the control of the PAP in 2018 and is also excluded from the official military budget of China.<sup>34</sup> The budget cannot be further accounted into the total expenditure towards the Chinese military because it neglected China's coast guard who are building an artificial island in the South China Sea and asserting a hard maritime claim in the East China Sea, in opposition to Japan.

China's rising defence spending corresponds with over two decades of modernization efforts. China began military modernization in earnest after 1995-1996, after the occurrence of the Taiwan strait crisis exposed fundamental weaknesses in China's ability to deter foreign intervention in sovereignty disputes.<sup>35</sup> Therefore, the modernization of China's military revolves around its expansion and economic development agenda to compete against major superpowers like the United States.

### **Expenditure on biowarfare**

The concept of 'bio-warfare or biological warfare' can be traced back to a period of ancient history. During ancient times, throwing carcasses of dead animals and dumping effluence into the town's water supply were the simplest means of spreading diseases, which eventually led to deaths in the enemy camps. In 1346, Tartars catapulted corpses of plague victims into the besieged city of Caffa in Crimea. Fleeing survivors became the carriers of 'black death' that swept up the entirety of Europe. There have been reports in the recent times that world leaders being poisoned, such as Yasser Arafat, former chairman of the PLO (Palestine Liberation Organisation), Turgut Özal, the former president of Turkey, and Victor Yushchenko, the former president of Ukraine. In 1979, a hundred people were infected in the accidental release of less than one gram of Anthrax in the Soviet Union. After the incident of 9/11, there was an anthrax alarm in the U.S that caused considerable fright. Such intense uses of biological weapons were brought under international consideration through conferences like the Biological Weapons Convention of 1972. This conference was a major step towards the total elimination of such weapons.<sup>36</sup>

China has a large and rapidly growing biotechnology and pharmaceutical industry. Statistics show that by 2004 China had built 200 major laboratories for the research and development of biological sciences and technologies. These labs are sponsored by national and local governments and employ over 20,000 personnel. China's approach to biosecurity has grown, with its regulations governing the storage of strain collection. China has made noteworthy strides to establish a national infrastructure on biosafety and biosecurity in the past several years. However, when compared to WHO standards and U.S. practices gaps in China's biosafety and biosecurity measures can be identifiable.<sup>37</sup>

Biological weapons are unique because deploying them to infect an enemy could also affect a country's own troops and people. A small intentional release of any form of disease could lead to unintentional side effects or large consequences. For example, it was speculated that the coronavirus outbreak that began in China in December 2019 could have been due to the

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<sup>34</sup>“Understanding China's 2021 budget.” *The Seoul Times*. Accessed July 2021.  
<https://theseoultimes.com/ST/?url=/ST/db/read.php%3fidx=14238>.

<sup>35</sup>“What Does China Really Spend On Its Military?” *China Power Team*. May 27, 2021.  
<https://chinapower.csis.org/military-spending/>.

<sup>36</sup>Yamin, Tughral. “Chemical & Biological Weapons: Positions, Prospects and Trends.” *Policy Perspectives* 10, no. 1 (2013): 147–59. <http://www.jstor.org/stable/42909302>.

<sup>37</sup> Wang, Qian. “Efforts to Strengthen Biosafety and Biosecurity in China,” in *Beijing on Biohazards: Chinese Experts on Bioweapons Nonproliferation Issues*, ed. Amy Smithson (James Martin Center for Non-Proliferation Studies: 2007)  
[https://nonproliferation.org/wp-content/uploads/2014/02/070917\\_wang.pdf](https://nonproliferation.org/wp-content/uploads/2014/02/070917_wang.pdf)

unintentional consequences of alleged bioweapon research in Wuhan.<sup>38</sup> The U.S. intelligence community was divided on the origins of the outbreak, debating whether it emerged due to a lab accident or due to human contact with infected animals. The U.S. president responded to the theories by ordering intelligence officials to investigate the origins of the coronavirus outbreak.<sup>39</sup> However, the outbreak of the coronavirus continues to be a debated issue.

### **Analysis & Conclusion**

China's military expenditure has continued to rise since 1998 from 1.6 %, following the upwards trends of 1.7% of its total GDP in 2020.<sup>40</sup> However, such data is dependent on the official budget released by the Chinese Government to the UN body. The data is projected to be four times higher than the data published by the government. China's rising military expenditure could be viewed as a threat to Asian regional stability and the West, led by the United States. China continues to focus on modernization and expansion plans for its military forces. Through a comprehensive military modernization program, China aims to complete military modernization by 2035 and transform the PLA [People's Liberation Army] into a world-class military by 2049. The PLA continues to engage in robust shipbuilding and modernization programs that include submarines, surface combatants, amphibious warfare ships, aircraft carriers, and auxiliary ship. Moreover, they are also developing and fielding advanced weapons, sensors, and command control capabilities. China's focus on modernization extends to the arena of space, where it would compete with the United States Space Force. China's space enterprise is maturing rapidly, with Beijing devoting significant resources to its space programs and their military and civil applications. Such applications include profit-generating launches, scientific endeavours, and space explorations<sup>41</sup>. This overall process of China's technological military modernization can be seen as a sign of a rising global military power. In fact, certain index reports have claimed that China has taken over the U.S. to become world's largest military<sup>42</sup>. The adoption of advanced technology and biotechnology has built up China's military and defense with the stated aim of safeguarding its territories. The 2020 SIPRI report on the world's military expenditure indicates that China's rising military expenditure is explained its plan of to modernize its military 2049. Moreover, the official budget published by the Chinese government does not include its space program which has potential military applications.

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<sup>38</sup> Pfluke, Corey. "Biohazards: A look at China's biological capabilities and the recent Coronavirus outbreak." *AIR University (AU)*. March 2, 2020. <https://www.airuniversity.af.edu/Wild-Blue-Yonder/Article-Display/Article/2094603/biohazard-a-look-at-chinas-biological-capabilities-and-the-recent-coronavirus-o/>.

<sup>39</sup> "COVID: Biden orders investigation into virus origin as Lab leak theory debated." *BBC* May 27, 2021, <https://www.bbc.com/news/world-us-canada-57260009>.

<sup>40</sup> "Data of all countries military expenditure from 1988- 2020 as a share of GDP" January 2021. *Stockholm International Peace Research Institute*. <https://www.sipri.org/databases/milex>

<sup>41</sup> Office of the Secretary of Defense. *Military and security developments involving the people's republic of China*, (Washington D.C: 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>

<sup>42</sup> "China beats the U.S. in the ultimate military strength Index while India comes in the fourth," *Economic Times*, March 22, 2021. <https://economictimes.indiatimes.com/news/defence/china-beats-us-in-ultimate-military-strength-index-while-india-comes-in-fourth/china/slideshow/81632470.cms>

# Modernisation Post COVID-19 (2020-2021)

## India

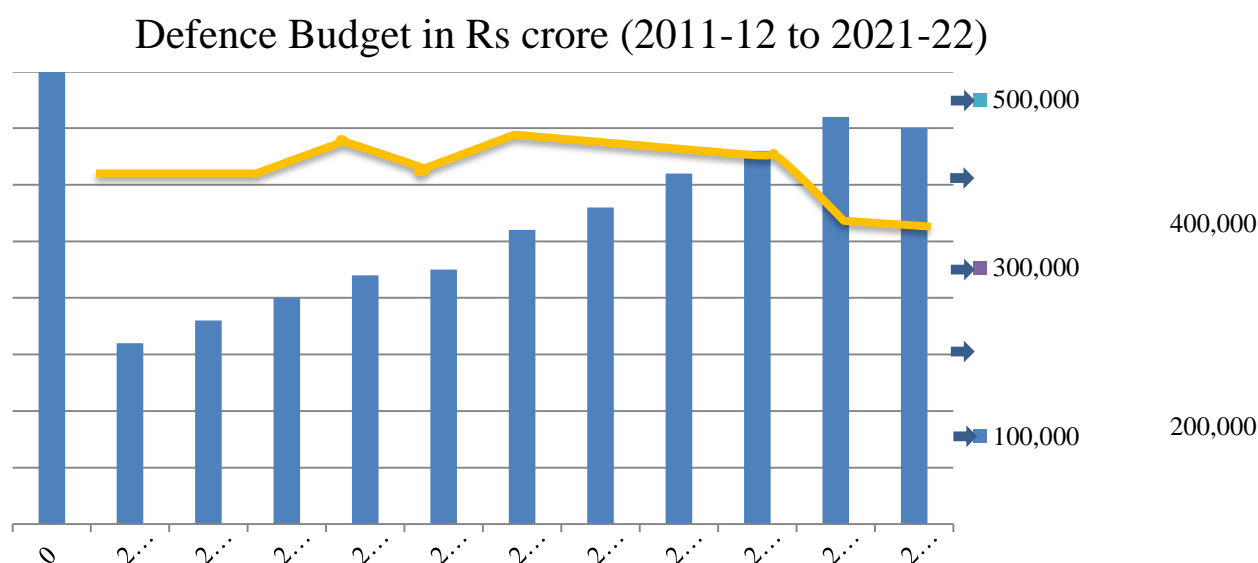
Mahek Dhiman

### Introduction

According to the Stockholm International Peace Research Institute (SIPRI), India was the third largest defence spender in absolute terms in 2019 (after the USA and China). India has not clearly articulated National Security Strategy and this is mainly an outcome of institutional weakness. This weakness has also resulted in sub-optimal military effectiveness. However, there are some significant changes that India aims to make, and it is working to modernise national security keeping in mind the long-term and short-term threats it faces. Formulating a national security strategy becomes even more important for India in the context of the contemporary threats that surround it. India faces a threat from China's growing assertiveness and military and economic growth. Pakistan's and China's growing relationships with India's neighbouring countries also pose significant threats along with climate change and terrorism.

### Defence Budget

The Stockholm International Peace Research Institute (SIPRI) deemed India the third largest military spender in the world with a defence budget of US\$72.9 billion in 2020. In 2021, India's capital expenditure witnessed a hike of 0.4%, increasing from US\$46.27 billion in 2020 to \$49.71 billion in 2021.<sup>43</sup> Despite this hike, the defence budget decreased as a proportion of the total government expenditure from 16.4% to 13.7%. The total government expenditure grew at an annual average rate of 10.3% while the defence budget has grown at the rate of 8.4%. The correlation and comparison between the total defence expenditure and its percentage from the total government expenditure are portrayed in the bar graph below (Fig. 1).<sup>44</sup>



<sup>43</sup> Mathur, K. M. (2021, March 10). Understanding India's Defense Budget 2021-22: Expectations Vs. Reality. South Asian Voices. <https://southasianvoices.org/understanding-indias-defense-budget-2021-22-expectations-vs-reality/>

<sup>44</sup> Demand for Grants 2021-22 Analysis Defence (Pg. 1-2). (2021, February). PRS Legislative Research. [https://prsindia.org/files/budget/budget\\_parliament/2021/Defence%20DFG%20Analysis%202021-22.pdf](https://prsindia.org/files/budget/budget_parliament/2021/Defence%20DFG%20Analysis%202021-22.pdf)



Defence expenditure  
Defence expenditure % of central government expenditure

Source (Figure - 1) *Demand for Grants 2021–22 Analysis Defence, 2021*

This decrease in the defence budget as a percentage of total government expenditure is also accompanied by a gap in actual expenditure and the projected amount by the defence forces, which is more than the actual expenditure. The budget allocation for the Ministry of Defence (MoD) will approximately grow at a 3% annual rate in 2021-22. This is less than the rate of growth of the overall union expenditure, which stands at 14%. This effect is also visible in the growth in capital outlay which is at a 10% growth rate in contrast to the 29% growth rate of the central government. In addition to this, the expenditure on salaries and pensions, in 2021-22, is Rs 2,58,628 crore. This constitutes 54% of the entire defence budget.<sup>45</sup> These gaps and trends in budget allocation have been heavy and disadvantageous for the modernisation of the Indian Military. Along with this, there is a shortage in manpower in the three forces despite considerable expenditure on welfare and salaries.<sup>46</sup>

## Threat Assessment

Threat assessment, along with the Defence Budget, is the most important indicator of a country's military capability and its strategy. India is going through a rough phase, and it is likely that the situation may worsen in the future, The CoVID-19 pandemic has been discouraging in a time where India is surrounded by many internal and external security challenges. At the beginning of the first wave, the Chinese army surprised India with aggressive acts in eastern Ladakh at the Galwan river valley, Gogra Post area, and around the picturesque Pangong Tso. The Indian Army immediately occupied the dominating Kailash Range, and the confrontation has been on and off since then. To resolve the tension, both sides indulged in negotiation and disengagement which has come to no positive conclusion. With such advancements being made by the People's Liberation Army (PLA) and its growing aggression in every domain, India finds itself at the brink of war or at least a prolonged conflict. As India is aiming to match China's build-up it must also be mindful of China's client state, Pakistan. The Pakistan Army is also keeping the Indian Armed forces busy along the Line of Control through routine ceasefire violations. While the situation in Jammu & Kashmir seems to be gradually improving, India must contain its internal issues and vulnerabilities to face its enemies head-on. It must deal with terrorism in J&K and Naxalism in the Northeast.<sup>47</sup>

## Modernisation of Forces

Considering the threats that surround it, modernisation of the armed forces is imperative for the Indian Military. Constant measures are being taken by the government to modernise, update and renew existing equipment.

- ***The Indian Army***

The Indian Army has always been the largest of the three forces and is responsible for land-based military and humanitarian operations. The Capital budget for the Indian Army has seen an increase

<sup>45</sup> Demand for Grants 2021–22 Analysis Defence (Pg. 1–2). (2021, February). PRS Legislative Research. [https://prsindia.org/files/budget/budget\\_parliament/2021/Defence%20DFG%20Analysis%202021-22.pdf](https://prsindia.org/files/budget/budget_parliament/2021/Defence%20DFG%20Analysis%202021-22.pdf)

<sup>46</sup> STANDING COMMITTEE ON DEFENCE. (2020, March). DEMANDS FOR GRANTS (2020–21) (No. 6). MINISTRY OF DEFENCE. [http://164.100.47.193/lsscommittee/Defence/17\\_Defence\\_6.pdf](http://164.100.47.193/lsscommittee/Defence/17_Defence_6.pdf)

<sup>47</sup> Lt Gen Davar (Retd), K. D. (2021, January 2). Security threats looming in 2021. The Sunday Guardian Live. <https://www.sundayguardianlive.com/news/security-threats-looming-2021>

of 10% in the last year. This has facilitated Capital acquisition and helped in bettering and securing critical infrastructure and modernisation of the forces. The modernisation budget accounts for Rs. 15,959 crores. In addition, allocations of Rs. 13,978.42 crores and Rs. 8,118.00 crores were made for the first and the second supplementary stages respectively. This was done to meet the expenditure on transactions with Hindustan Aeronautics Limited (HAL), Foreign Committed Liabilities, Defence Public Sector Undertakings (DPSUs), private vendors, critical vehicles, and BrahMos which enhance deep strike capability. To further highlight the Capital acquisition, the Indian Army contracted T-90 Tanks, Light Strike Vehicles, bulletproof jackets, assault rifles, combat net radio, bridges, small arms, radars, rocket ammunition, missiles and electronic fuses in the last two years, i.e., 2018-19 and 2019-20.<sup>48</sup>

- **Indian Navy**

The Indian Navy has been receiving the attention it requires to strengthen and modernise itself. In the year 2020, the Indian Navy was allotted a total of Rs. 21,177 crores at the Budget Estimate stage and Rs. 24,226 crores at the Revenue Estimate stage. These funds cover modernisation or Capital Acquisition which includes Committed Liabilities and New Schemes. These funds meet the expenditure demand by payment for emergency procurement, Naval air-field integrated security system, milestone payment of Dornier and ALH for coastal security scheme, likely contract conclusion of ASW shallow watercraft, and outgo envisaged in various projects such as Varsha, Strategic projects, Seabird, etc. Active modernisation efforts have been undertaken by the Indian Navy. For example, two Project 75 submarines - INS Kalvari and INS Khanderi - have been inducted. In addition to these, the existence of fifteen conventional submarines and two Nuclear Submarines further enhance India's maritime capability which must be given more importance to avert the threat looming in the Indo-Pacific and the Indian Ocean Region.<sup>49</sup>

Efforts to modernise the Plan of Naval Base Karwar, under project 'Seabird' are underway in full vigour. This is complemented by the commissioning of INS Kavaratti in Visakhapatnam on 22<sup>nd</sup> October 2020 and IN LCU L57 at Port Blair on 15 May 20. The keel-laying ceremonies for Yard 3023, Yard 12653, Yard 12654, and Yard 3024 were held on 24th January 2020 in Kolkata, 10th September 2020 in Mumbai, 22nd January 2020 in Mumbai, and 22nd August 2020 in Kolkata respectively.<sup>50</sup>

The Indian Navy has also expanded its reach and capacity by assisting various neighbouring countries like Madagascar, Mauritius, the Philippines, and the Maldives in various endeavours. It is also vigorously contributing to the indigenisation of the modern military and its self-sufficiency. Selective projects have received funding through a self-financing model to cover the budgetary gap which has posed a long-standing problem for the Indian Navy.<sup>51</sup>

- **Indian Air Force (IAF)**

The IAF was allocated Rs.36,409.89 crore in the Budget Estimate stage and Rs. 41,799.89 crore in the Revenue Estimate stage in the year 2020.<sup>52</sup> Against these allocations, an expenditure of Rs. 35,027.06 crore has been incurred in FY 2019-20, up to December 2019. Air power has evolved drastically with the introduction of newer technology and Artificial Intelligence. Air power is seen

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<sup>48</sup> STANDING COMMITTEE ON DEFENCE. (2020, March). DEMANDS FOR GRANTS (2020–21) (No. 6).

MINISTRY OF DEFENCE. [http://164.100.47.193/lsscommittee/Defence/17\\_Defence\\_6.pdf](http://164.100.47.193/lsscommittee/Defence/17_Defence_6.pdf)

<sup>49</sup> Ibid. (pg. 28-30)

<sup>50</sup> Press Information Bureau. (2021, January). Year End Review – 2020 Ministry of Defence. Ministry of Defence. <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1685437>

<sup>51</sup> Ibid.

<sup>52</sup> STANDING COMMITTEE ON DEFENCE. (2020, March). DEMANDS FOR GRANTS (2020–21) (No. 6).

MINISTRY OF DEFENCE. [http://164.100.47.193/lsscommittee/Defence/17\\_Defence\\_6.pdf](http://164.100.47.193/lsscommittee/Defence/17_Defence_6.pdf)

as a complementary aspect to achieve ground as well as naval operations. Due to their importance, the Air Force Stations are constantly under threat from enemy attacks. The disruption of an airbase would leave the armed forces incapable of performing naval, land, air, as well as joint operations. Moreover, air power is expensive and limited which further contributes to its vulnerability.

Modernisation efforts in the IAF include the commissioning of the AKASH Weapon System designed and developed by the Defence Research and Development Organisation (DRDO.) This is a Surface-to-Air Weapon System (SAWS) which is the first Tactical Missile System to be successfully developed by DRDO. Akash Air Defence System (AADS) has also improved the National Air Defence Grid (ADG) where hostile intruding aircraft are targeted. DRDO has worked on many new technologies which will constitute the base for most of the modernisation. The organisation has also established a technological base while developing the Akash Weapon system. This base is used by Public Sector Undertakings (PSUs), Private Industries, and Micro Small Medium Enterprises (MSMEs) for producing various other systems.<sup>53</sup>

Astra is another weapon system and is the first Beyond Visual Range air-to-air missile developed by DRDO. This 100km range class weapon has a good Electronic Counter Counter Measure (ECCM). Its installation on Su30 aircraft improves its operational military capabilities. This technology will be integrated with other fighter jets of the Indian Air Force. This feature and its evolved versions will give an enhanced-kill-range and no-escape-zone.<sup>54</sup>

- ***Indian Coast Guard***

The developments in the Indian Coast Guard and its integration with the three forces have had a ground-breaking impact on India's security. It assists in Extended EEZ Surveillance Aid to civil authority, assistance to neighbouring countries and foreign vessels, coastal security, and engages in coastal security Standard Operating Procedures (SOPs)/Exercises. It has conducted 23 security operations, additional joint exercises, and has provided intelligence for anti-smuggling and narcotics control. Japan's "Echigo" coast guard ship arrived at Chennai for the 'Sahyog-Kaijin XIX' joint exercise on 16<sup>th</sup> January 2020. The Indian Coast guard ships Shaurya, Veera, Abheek, C-432, and C-435 also participated in this exercise.<sup>55</sup>

## **Indigenisation**

India is the largest importer of defence equipment in the world, but the Ministry of Defence is making fundamental changes to escape this reputation and position of vulnerability and secure the Armed Forces in the long run. 'Make in India' and 'Atmanirbhar Bharat' are the two initiatives taken by Prime Minister Narendra Modi to achieve this goal. In the last year, India signed 12 contracts of capital acquisition - out of the 22 contracts in total - with indigenous vendors. Equipment like bulletproof jackets, electronic fuses, Light Strike Vehicles, FAT, EW System, TI Sights, and Bridges are being procured for the Indian Army. An amount of Rs. 16896.59 crores and Rs. 8366.63 crores during 2018-19 and 2019-20 respectively, were devoted to indigenous deals.<sup>56</sup>

When it comes to the maritime domain, twelve submarines designed and developed in India are to be constructed indigenously. The inspiration for these submarines has been taken from submarines

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<sup>53</sup> Ibid. (pp. 23-25)

<sup>54</sup> Ibid. (p. 25)

<sup>55</sup> Press Information Bureau. (2021, January). Year End Review – 2020 Ministry of Defence. Ministry of Defence. <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1685437>

<sup>56</sup> STANDING COMMITTEE ON DEFENCE. (2020, March). DEMANDS FOR GRANTS (2020–21) (No. 6). MINISTRY OF DEFENCE. [http://164.100.47.193/lssccommittee/Defence/17\\_Defence\\_6.pdf](http://164.100.47.193/lssccommittee/Defence/17_Defence_6.pdf)

of Scorpene class (P 75), INS Kalvari, and INS Khanderi.<sup>57</sup> Apart from a total of 43 ships ordered, 41 are being constructed in India. The Indian Navy has also indigenously come up with 23 important systems and more than 4500 components, including a Sonar Dome for ships supplied by M/s Kineco, Goa in September 20, 2020.<sup>58</sup>

In the air domain, the IAF has made various efforts towards achieving self-reliance. Make-II Scheme, Technology Development Fund (TDF) Scheme, iDEX (Innovation for Defence Excellence), AEW&C Mk-2 (Air Borne Early Warning and Control), LCA Induction, and Pechora Digitisation are a few schemes and plans which add to the initiatives of 'Make in India' and 'Atmanirbhar Bharat'.<sup>59</sup>

- ***Positive Indigenisation List***

The Positive Indigenisation List, formerly called the Negative Import List has been updated and now consists of 209 weapon systems and equipment compared to 108 in the prior list.<sup>60</sup> The items on the list will not be imported and instead, will be developed indigenously. This indigenisation of the defence procurement and purchases will be implemented from December 2021. The list includes complex systems and subsystems along with weapons and ammunition. Items such as helicopters, next-generation corvettes, AEW&C systems, tank engines, medium power radar for mountains, and Medium Range Surface to Air Missile (MRSAM) weapon systems will be built and delivered by the Indian industry. More importance has been given to systems and ammunitions which are required often and must be produced in bulk. This initiative aims to help India be self-sufficient and strong. This is a big opportunity for all the Indian private sector players and DPSUs to deliver and challenge themselves. It provides an excellent opportunity for start-ups and Micro, Small and Medium Enterprises (MSMEs).<sup>61</sup>

Launch of SRIJAN Indigenisation portal: This initiative adds to the Positive Indigenisation List. The SRIJAN portal, developed by DDP/MoD ([srijandefence.gov.in](http://srijandefence.gov.in)), will display information and a list of items that are excessively imported and the manufacturing of which can be taken up by India. The entry of such data can be done by DPSUs/OFB/SHQs. 849 items are already being manufactured in India by the private sector.<sup>62</sup>

- ***Defence Offset Policy 2020***

The Defence Offset Policy is another self-sufficiency initiative. The offset policy first came into being in 2005 to enable provisions to attract investment and technology through offsets. This gives India some advantage for making defence procurement purchases from other countries. The latest amendment makes this policy applicable to contracts above Rs 2,000 crore, which was Rs 300 crores till 2015. This has a major impact on the domestic manufacturing sector.

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<sup>57</sup> Ibid. (p. 31)

<sup>58</sup> Press Information Bureau. (2021, January). Year End Review – 2020 Ministry of Defence. Ministry of Defence. <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1685437>

<sup>59</sup> Ibid.

<sup>60</sup> Press Information Bureau, Delhi. (2020, August). DRDO identifies 108 Systems and Subsystems for industry to design, develop and manufacture towards achieving "Atmanirbhar Bharat." Ministry of Defence. <https://pib.gov.in/PressReleasePage.aspx?PRID=1648234>

<sup>61</sup> Defence Scientific Information & Documentation Centre. (2021). Newspapers Clippings. Defence Science Library, 46(109). [https://www.drdo.gov.in/sites/default/files/drdo-news-documents/NPC\\_04\\_June\\_2021.pdf](https://www.drdo.gov.in/sites/default/files/drdo-news-documents/NPC_04_June_2021.pdf)

<sup>62</sup> Press Information Bureau. (2021, January). Year End Review – 2020 Ministry of Defence. Ministry of Defence. <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1685437>

- **Offset provisions to apply on Capital Acquisitions of Rs. 2000 Cr or more**
- **Quantum of offset to be 30 % of the estimated acquisition cost.**
- **Offset/ obligation to be discharged through Indian Offset Partner (IOP) – Pvt. industry/ DPSUs/ OFB / DRDO**
- **Vendors free to select their IOP**
- **Streamlined list of eligible products**
- **Higher preference for purchase of defence product as compared to components.**
- **Multiplier of 1x for products/ systems, 0.5x for components and 1.5x for MSME**
- **Investment Multipliers are 1.5x in defence manufacturing, 2x in defence industrial corridor, 2x for ToT to Indian Enterprise, 3x for ToT to OFB/ DPSUs, 4x for critical technology.**

Source – (*Press Information Bureau, 2021*)

The Comptroller and Auditor General noticed that the offsets worth Rs 19,223 crores, which were due to dispatch by 2018, have not yet been delivered. Only Rs 11,396 crores worth of items has been discharged. The large gap of 41% has not been accepted by the Ministry of Defence. Additionally, the rate of annual discharge is only Rs 1,300 crore. This issue is likely to be visible in the Rs 55,000 crore worth of discharge due in 2024.<sup>63</sup>

The Defence Acquisition Procedure (DAP) 2020 has further narrowed down the possibilities by limiting the policy's applicability to contracts that are purchased from foreign vendors through competitive bidding. The aim of lowering the cost price will be heavy on India's Defence sector.<sup>64</sup>

## Science & Technology and Research & Development

- *Defence Research and Development Organization (DRDO)*

The DRDO has initiated many active plans of action to achieve the goal of self-reliance and 'Atmanirbhar Bharat'. It has set up DRDO Young Scientist Laboratories (DYSLs) in Bengaluru, Mumbai, Chennai, Kolkata and Hyderabad. It has successfully conducted the first landing of, indigenously developed, LCA Navy onboard INS Vikramaditya along with three flight tests of anti-tank guided missile (ATGM) "Dhruvastra", which is the most advanced anti-tank weapon in the world. DRDO has also developed an Air Defence Fire Control Radar (ADFCR) the User Assisted Technical Trials (UATT) of which were completed in February 2020. The Advanced Light Weight Torpedo (ALWT), an anti-submarine torpedo finished two dynamic trials conducted in March 2020. It successfully achieved a satisfactory homing range, increased target range and reduced target strength. The Software Defined Radio-Airborne, also built indigenously, has legacy communication support and secure digital voice/data communication support, the installation and integration of which, with two Nos of 4-channel CEMILAC SOFT, was successful in March 2020. DRDO also came up with anti-drone technology, a laser-based Directed Energy Weapon, which was used for the PM's security at the Red Fort. Furthermore, successful flight tests of Hypersonic Technology Demonstrator Vehicle, Multi Influence Ground Mine (MIGM), Active Electronically Scanned

<sup>63</sup> E.T Contributors, & Kumar, G. K. (2020, December 26). View: Need for a comprehensive review of defence offset policy. The Economic Times. [https://economictimes.indiatimes.com/news/defence/view-need-for-a-comprehensive-review-of-defence-offset-policy/articleshow/79962716.cms?utm\\_source=contentofinterest&utm\\_medium=text&utm\\_campaign=cppst](https://economictimes.indiatimes.com/news/defence/view-need-for-a-comprehensive-review-of-defence-offset-policy/articleshow/79962716.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst)

<sup>64</sup> Cowshish, A. C. (2020, October 5). Defence Offset Policy Yielding Diminishing Returns Despite Various Amendments. The Wire. <https://thewire.in/government/defence-offset-policy-changes-dap-2020>



Array Radar (AESAR) ‘Uttam’, ABHYAS, BrahMos Missile, DRDO’s Laser-Guided ATGM, Supersonic Missile Assisted Release of Torpedo (SMART), Anti-Radiation Missile (RUDRAM), and Final User Trial of NAG Missile were conducted.<sup>65</sup>

India has also made plans to expedite the building of roads and highway tunnels parallel to the Line of Actual Control. The completion of these construction projects will significantly improve the Indian military’s logistical and mobilisation capacities. This will also bolster the use and deployment of ready-to-be-used weapons like the enhanced version of the PINAKA rocket system, which completed its trials recently. DRDO has also inaugurated critical infrastructure like the Hypersonic Wind Tunnel.<sup>66</sup>

- ***Intelligence, Surveillance, and Reconnaissance (ISR)***

In the military, the ISR helps in coordinated procurement and timely retrieval of credible information to support the decision-making process. The ISR has made various initiatives to develop indigenous systems like the satellite-based global-positioning capability through the Indian Regional Navigational Satellite System (IRNSS).<sup>67</sup>

The army is also deploying extra troops of Heron unmanned aerial vehicles (UAV) apart from satellite-based information systems. Such systems will provide India with high positional accuracy once integrated with weapon systems. Indigenous Rustom MK I UAV’s and Predator armed UAV’s, if successfully tested will further the ISR capabilities. These capabilities will also improve the tactical air-defence cover. (e.g., newly acquired Israeli low-level quick-reaction missiles).

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<sup>65</sup> Press Information Bureau. (2021, January). Year End Review – 2020 Ministry of Defence. Ministry of Defence. <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1685437>

<sup>66</sup> Press Information Bureau. (2021, January). Year End Review – 2020 Ministry of Defence. Ministry of Defence. <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1685437>

<sup>67</sup> ISRO SATELLITE CENTRE. (2017, August). IRNSS SIS ICD FOR STANDARD POSITIONING SERVICE. Indian Space Research Organisation. <https://www.isro.gov.in/irnss-programme#:~:text=IRNSS%20is%20an%20independent%20regional,is%20its%20primary%20service%20area.>

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# Modernisation Post COVID-19 (2020-2021)

## Russia

*Kritika Karmarkar*

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### Introduction

The health crisis that the COVID-19 pandemic has presented has required nations to re-evaluate several aspects of security and defence. These include addressing health and security concerns as well as developing new technologies and methods to protect populations. However, most nations have also been faced with a turbulent economy which has been a direct repercussion of the plunging global market due to the pandemic. Due to the financial setbacks experienced by most nations, their policies surrounding state defence, security, and research and development have also been affected in terms of funding. However, countries worldwide have still prioritised their modernisation efforts in all fields. Especially Russia which, despite its many economic setbacks, has managed to keep up with its defence and security goals. This paper shall discuss some of the modernization efforts undertaken by Russia regarding the same during the years 2020 and 2021.

### How has the pandemic affected Russia?

Before delving into the various changes observed in the Russian security forces, one must understand the different ways in which the pandemic affected the nation. Before the onset of the pandemic in 2019, Russia's GDP (Gross Domestic Product) was estimated to be around 1689.3 trillion US dollars<sup>68</sup>, with an expected growth of 1.3 per cent<sup>69</sup> at the end of the same year. However, these numbers changed in 2020, as the GDP contracted by 6 per cent, which is estimated to be the state's lowest GDP in eleven years.<sup>70</sup> There were primarily two reasons for this dip. Firstly, the COVID-19 pandemic and secondly, the setbacks that Russia faced due to plummeting crude oil prices. Russia is one of the biggest hydrocarbon exporters in the world, but the pandemic led to a 53 per cent fall in crude oil prices, from January to May of 2020 alone.<sup>71</sup> The situation worsened because of Saudi Arabia's ability to influence oil prices in the global market.<sup>72</sup>

These effects of the recession were also seen on the military expenditure of the nation. Russia has always been one of the top military spenders in the world. Following this trend, as of 2019, around 3.9 per cent of its GDP was allocated for military spending, which is estimated to be around 65.1 billion US dollars.<sup>73</sup> Interestingly enough, in the year 2020, Russia's military expenditure increased

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<sup>68</sup> "Russia GDP 1996-2026." n.d. Statista.com. Accessed November 14, 2021.

<https://www.statista.com/statistics/263772/gross-domestic-product-gdp-in-russia/>.

<sup>69</sup> Reuters. 2020. "Russia's Economic Growth at 1.3% in 2019, Slightly above Expectations," February 3, 2020.

<https://www.reuters.com/article/us-russia-economy-idUSKBN1ZX1PR>.

<sup>70</sup> World Bank Group. 2020. "Russian Economy Faces Deep Recession amid Global Pandemic and Oil Crisis, Says New World Bank Report." World Bank Group. July 30, 2020. <https://www.worldbank.org/en/news/press-release/2020/07/06/russian-economy-faces-deep-recession-amid-global-pandemic-and-oil-crisis-says-new-world-bank-report>.

<sup>71</sup> Ibid.

<sup>72</sup> Sweatman, Russia Analysts Farley. n.d. "Russia's Macro Resilience to Exogenous Oil Shocks." Utoronto.Ca. Accessed November 14, 2021. [https://munkschool.utoronto.ca/gepl/files/2021/03/GEPL\\_Russia\\_2021-5.pdf](https://munkschool.utoronto.ca/gepl/files/2021/03/GEPL_Russia_2021-5.pdf).

<sup>73</sup> Wezeman, Siemon T. 2020. "Russia's military spending: Frequently asked questions | SIPRI". *Sipri.org*. <https://www.sipri.org/commentary/topical-backgrounder/2020/russias-military-spending-frequently-asked-questions> (accessed November 10, 2021).

by 2.5 per cent, and the nation allocated around 4.3 per cent of its GDP for military expenditure<sup>74</sup> which is 61.7 billion US dollars. However, military spending decreased by 6.6 per cent<sup>75</sup>. Despite these numbers, Russia's military modernization efforts over the past two years have witnessed some ambitious ventures. These efforts range from the changes introduced within the armed forces as well as the development of new equipment. The next section of the paper will elaborate on Russia's State Armament Programme (SAP), which forms the basis of its national security.

## State Armament Programme (SAP) 2020

The SAP is a 10-year plan that specifies the different defence investment plans as well as the nation's long-term goals and changes to be brought about, with regards to its various security forces. The funding is divided based on the defence procurement needs, modernisation requirements and investments in the field of research and development; the plan is revised every five years.<sup>76</sup> A total of 626 billion US dollars were allocated to the project. The SAP 2020 was signed at the end of 2010. As per the original plans stated by the document, Russia aimed to achieve around 30 per cent of modern equipment by 2015 and 70 per cent by 2020.<sup>77</sup> The main aim of SAP 2020 was modernisation, which was seen on various fronts. However, more focus was laid on the naval and air defence forces.

## Naval modernisation efforts under SAP 2020

With regards to Russia's naval modernisation efforts, most of the investments made were used to finance defence acquisitions: over fifty surface combat vehicles and two dozen modern submarines, including the nuclear-powered ballistic missile submarines that were a part of the strategic nuclear forces. Apart from the enhancement of defence equipment, an important part of the SAP 2020 was the development of the Zircon ship launched hypersonic cruise missile. The first successful testing for the Zircon was reportedly conducted in October 2020, where the test missile was launched from the North Sea frigate Admiral Gorshkov, and according to sources, hit a target 450 km away at full speed. This addition to the Russian naval forces is said to have been one of the most prominent modernisation efforts. Apart from that, the black fleet was one of the only fleets that received significant modernisation of its submarine forces in addition to being provided by kilo class submarines under the SAP 2020. According to SAP 2020, the coastal defence systems were also upgraded. This can be seen in the production of new classes of small, well-armed surface combat vessels including frigates, corvettes, and small missile ships. Some of the ships were made more powerful by adding on a new anti-ship and land attack cruise missile. Nevertheless, even though there were reported cases of industrial delays, the percentage of modern surface ships increased from 41 per cent in 2013 to 54 per cent in 2017.

However, the plan also experienced some shortcomings, and some of the initial goals under the SAP 2020 were slated for SAP 2027. One such setback was the overall reduction of Russia's surface fleet which arose due to the delay in the modernisation of large surface combatants. The Admiral Kuznetsov, which is Russia's only aircraft carrier was also undergoing repairs and its modernisation procedures' timelines were extended till 2022. The modernisation of the other vessels was also scheduled under the SAP 2027 plan. Additionally, the new heavy aircraft carriers

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<sup>74</sup> Military Spending as GDP Share by Country 2020." n.d. Statista.Com. Accessed November 14, 2021.

<https://www.statista.com/statistics/266892/military-expenditure-as-percentage-of-gdp-in-highest-spending-countries/>.

<sup>75</sup> Sipri.Org. Accessed November 14, 2021. <https://www.sipri.org/media/press-release/2021/world-military-spending-rises-almost-2-trillion-2020>

<sup>76</sup> Perrin, Cédric. 2020 "Russian Military Modernisation: Challenges Ahead for NATO Allies", 20 November 2020, General Report. NATO Parliamentary Assembly.

<sup>77</sup> Ibid

that were to be developed in 2017 are believed to be built over the SAP 2027 as well. Apart from the defence naval forces, the shipbuilding industry of Russia also faced some serious challenges as they too faced monetary cuts and there were several delays with regards to the delivery of high-quality ships. Even though the industry seemed capable of supplying more advanced versions of older designs, developing newer equipment proved to be a challenge.

### **Modernisation of the air force under SAP 2020**

25 per cent of the funding allocated for the SAP 2020, equalling 115 billion US dollars, was reserved for the Russian air force. According to the initial plan, the combat aircraft inventory was to be replaced with a mix of modernised and next-generation aircraft. Even though the development of new designs have been slow, there has been significant progress to the modernisation carried out on the Soviet era systems. This includes improving the mutations, sensors, and engines of these equipment which has increased the lifespan and proficiency of many of the aircraft models. One of these aircraft is the Su-27, a stealth air-to-air fighter (Felon). The Su-27 is said to be Russia's attempt to match the joint strike fighter's industry-leading capabilities<sup>78</sup>. However, it is believed that the introduction of a considerable number of Su-27 might not be possible as, even under SAP 2027, there have been delays in the production and design of the same. Moreover, given that the primary focus of the SAP 2020 with regards to its air force was to modernise and develop newer and more advanced equipment, the SAP 2027 will emphasise filling up the defence procurement gaps. Apart from the efforts made to modernise the navy and the Air Force, the SAP 2020 also saw investments in the new hypersonic missile systems, like the Avangard Hypersonic glide vehicle that can be launched from the UN-100N and the RS-28. Given that most of the goals of the SAP 2020 were shaped by Russia's performance in the Russo-Georgian war, the deficit in electronic warfare was also addressed. Hence, the SAP 2020 was also dedicated to overcoming this shortfall by improving its C4ISR and aimed to achieve 70 per cent of its modernisation by 2020. One of the biggest breakthroughs in this advancement was that the EW systems that were developed would enable Russia to disrupt any competitor's use of EMS via electronic attack, thereby making them more vulnerable.

In March 2020, the Russian defence minister Sergei Shoigu made a statement giving an account of the progress made with regards to the SAP 2020. In his statement, he said that "modern" systems make up to 62.8 per cent of the inventory and that the target of 70 per cent would be reached by the end of 2020. He claimed that the Strategic Rocket Forces were more than 87 per cent modern, however, it was not clear whether older delivery systems were counted within these numbers.<sup>79</sup>

### **State Armament Programme (SAP) 2027**

In December 2017, Russian President Vladimir Putin signed the SAP 2027. As stated before, SAPs are updated every five years, however, SAP 2027 was signed in 2017, when it had been initially scheduled for 2014. This delay was caused due to falling oil prices in 2014. The SAP 2027 saw an investment of 325 US dollars over 10 years, however, it is said that the scope of the SAP 2027 is limited as compared to its predecessor.<sup>80</sup> The SAP 2027, has mainly prioritised Russia's ground forces, primarily improving its rapid reaction forces, which include the naval infantry, airborne and air assault troops (VDV), and Spetsnaz. Russia's prior interventions in Ukraine and Syria have helped shape the aims of the SAP 2027, hence there has been special focus on the importance of reconnaissance and heavy artillery along with strengthening mobility and command control<sup>81</sup>.

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<sup>78</sup> Ibid

<sup>79</sup> McDermott, Roger. 2020. "Shoigu Reflects on Military Modernization amid COVID-19 Crisis." Jamestown.Org. April 15, 2020. <https://jamestown.org/program/shoigu-reflects-on-military-modernization-amid-covid-19-crisis/>.

<sup>80</sup> Ibid, Perrin.

<sup>81</sup> Ibid.

SAP 2027's focus has been on developing and modernizing its ground forces, as opposed to the focus on the navy and the air force in SAP 2020. The ground forces have also received a higher share of the procurement budget allocated to the SAP 2027, and this has come largely at the expense of the navy. The ground forces are now likely to be equipped with more modern artillery systems such as the Uragan-M1 and Tornado-S MLRS.<sup>82</sup> Consequently, it is speculated that the naval forces will experience a shortage of funds, which will eventually affect some of its processes. This includes eschewing the development of large surface vessels like destroyers or amphibious assault ships. However, there will be a focus on modernising legacy ships or producing more adaptable vehicles like corvettes or frigates. The SAP 2027 will primarily concentrate on filling up its procurement gaps, considering that most of the modernisation efforts were carried out under SAP 2020.

The Russian navy is not the only cadet suffering from a lack of funds. Owing to the pandemic, the Ministry of Finance had announced several budget cuts. In September 2020, the Ministry of Finance had suggested that there be a limit on spending under SAP 2027 between 2021 and 2023 by 5 per cent, which amounts up to 2.87 billion US dollars. This would eventually lead to a reduction in defence expenditures by 2 per cent.<sup>83</sup>

## Alliances and exercises with other nations

Considering that the pandemic has affected all nations worldwide, countries have come together to find a solution to the problem. However, these efforts are not simply limited to combating the COVID-19 pandemic; they extend to developing cooperation in other fields as well. Bearing that in mind, Russia has collaborated with China for a space mission that is set to last from 2021 to 2025. During the GLEX-2021 conference, it was said that China and Russia were planning to launch six missions and that the building of the international moon base was still underway. These investigation stages are said to last from 2021 to 2025. China is said to send three missions within this period- Chang'e 4, Chang'e 6, and Chang'e 7. Whereas Russia plans on launching an automatic station called "Luna 25", a lunar polar orbiter called "Luna 26", and a lunar lander named "Luna 27". These missions will make use of Russia's Soyuz-2 and China's CZ-3B and CZ-5 launch vehicles. These missions aim to develop the technology that would aid in an accurate and soft landing on the moon.<sup>84</sup>

## Conclusion

Most of Russia's modernisation efforts were mainly covered under the SAP 2020. But given the unforeseen COVID-19 pandemic, the last half of the project met with some difficulties, which included budget cuts and delays in the development and delivery of some equipment. Despite these shortcomings, most of the modernization efforts were completed by Russia. However, due to its secretive nature, most nations are unsure about how truthful Russia has been with regards to the numbers surrounding its equipment and personnel. The SAP 2027 has also experienced many setbacks due to the current pandemic. However, it is interesting to note that no new information regarding biowarfare or the development of biological weapons has been added to SAP 2027,

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<sup>82</sup> Connolly, Richard & Boulègue, Mathieu. 2021. "Russia's New State Armament Programme." *Chatham House- Royal Institute of International Affairs*, 2018. Accessed November 14, 2021.

<https://www.chathamhouse.org/sites/default/files/publications/research/2018-05-10-russia-state-armament-programme-connolly-boulegue-final.pdf>.

<sup>83</sup> Ezez, "World military spending rises to almost \$2 trillion in 2020 | SIPRI. *Sipri.org* <https://www.sipri.org/media/press-release/2021/world-military-spending-rises-almost-2-trillion-2020> (accessed November 10, 2021)

<sup>84</sup> TASS. 2021. "China and Russia to Launch 6 Lunar Missions in 2021-2025 to Build International Moon Base." TASS. June 16, 2021. <https://tass.com/science/1303403>.

especially considering the present health crisis.

In 2021, Russia signed the SAP 2024-2033. Under this programme, emphasis has been laid upon developing high precision weapons, robot complexes and artificial intelligence.<sup>85</sup> Even though information surrounding this programme is currently scarce and most of the work is still underway, there seems to be no mention of any potential steps that Russia may take in the future to safeguard itself against biological weapons.

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<sup>85</sup> Russia's State Armament Programme 2024-2033 – New Defence Order. Strategy.” 2021. Dfnc.Ru. May 12, 2021. <https://dfnc.ru/en/russia-news/russia-s-state-armament-programme-2024-2033/>.

# Modernisation Post COVID-19 (2020-2021)

## Germany

Arun Teja Polcumpally

### Introduction

In the period of the pandemic, it was thought that military spending would decrease, and the budget would be shifted to empower banks, bear the burn cost of unemployment, and on the whole provide a fiscal stimulus to the nation. While these processes are under way, it should not be forgotten that the pandemic has created new forms of securitisation: the viral pandemic has triggered the fear of biological warfare, and the availability of AI (Artificial Intelligence) has strengthened the securitisation of cyberspace. This will lead to an increase in defence spending. This is the reality in Germany. According to Trading economics data, Germany's military spending has increased to US\$51570 million in 2020 from US\$49008 million in 2019.<sup>86</sup> Interestingly, it is also the highest in the decadal history of Germany's military expenditure. It should be noted, however, that even though there has been a steady annual increase in military expenditure; there was no sudden spike after the pandemic started. With the constant increase in military expenditure, Germany's current military expenditure stands at 1.4% of GDP, which is the highest in two decades.<sup>87</sup> Another interesting development is that the 2021 budget has cuts in healthcare and education while there is a spike in defence spending.<sup>88</sup>

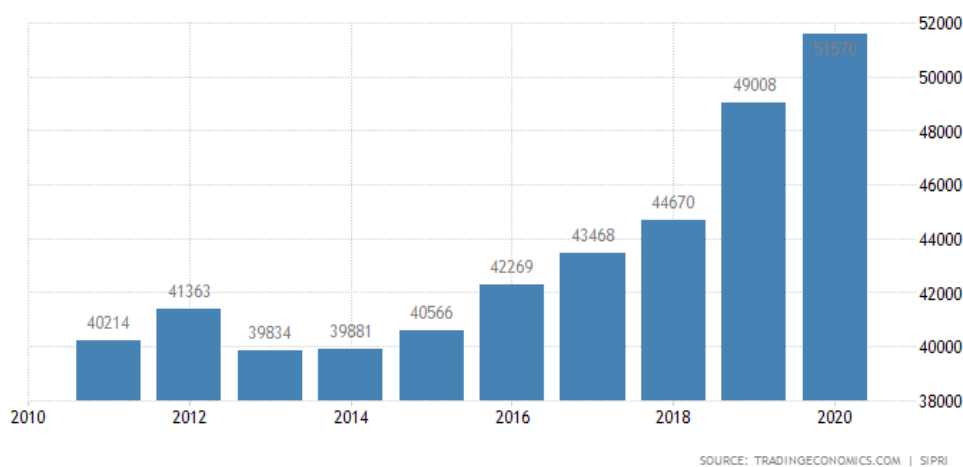


Figure 1: The annual military expenditure of Germany (Source: Trading Economics)

### Germany's Modernisation of Military has become Necessary in Europe

As discussed in the introduction, states across the world are empowering their banks and companies

<sup>86</sup> Trading economics. n.d. *Germany Military Expenditure*. Available at <https://tradingeconomics.com/germany/military-expenditure> (Accessed on July 6 2021).

<sup>87</sup> SIPRI. 2020. *SIPRI Military Expenditure Database*. Available at <https://www.sipri.org/databases/milex> (Accessed on July 6, 2021).

<sup>88</sup> Stern, Johannes (2020). "German government increases military spending, cuts education and health care", *International Committee of the Fourth International*, 16 December. Available at <https://www.wsws.org/en/articles/2020/12/17/mili-d17.html> (Accessed on July 8, 2021).

with their economic stimulus package. A state cannot spend on bailing out individuals from the economic burden by providing subsidised food, unemployment allowances etc. Rather, they must invest in those sectors which can generate employment and national income. The increasing defence expenditure can also be credited for the creation of jobs, like the French case. In this manner, defence spending is not purely traditional security strengthening, but also an economic revival.

Apart from the idea to revive the domestic economy, Germany's increased defence expenditure can be attributed to the security dilemma in Europe. All European states' defence spending spiked in 2020, with total military spending amounting to US\$378 billion. This was 4.0% higher than in 2019 and 16% higher than in 2011.<sup>89</sup> The United Kingdom, after Brexit, is also spending on modernising its military,<sup>90</sup> for example by establishing a space command.<sup>91</sup> Given these concurrent changes, Germany's increased expenditure on defence and modernisation is not unusual. Another important reason for Germany to spend significantly on the military is to be prepared for future security issues. The traditional army and its armaments are made to fight against the visible, human enemy. An interesting speech by a Left Party spokesman, Michael Leutert, quoted by an online media<sup>92</sup> website is as follows –

*“We have a fundamental problem; because German foreign policy is simply no longer visible. Foreign Minister Heiko Maas (Social Democratic Party SPD) had recently failed as head of the foreign ministry to position Germany strategically in such a way that the Federal Republic remains capable of acting. The world has been undergoing rapid and dramatic change for years, with all the effects that are well known. Shifts in power, the breaking away of international certainties.”*

Such statements from the political leaders, especially from leaders of the left party firmly establishes the revival of national rejuvenation ideas. From another angle, the weak structure of NATO also prompts Germany to increase its strength. It is no secret that NATO has been struggling with financial stability. Though NATO's financial capacity is nearly equivalent to that of Russia's, NATO's divided interests and lesser coordination makes it weak.<sup>93</sup> As one of the major powers of NATO, Germany is bound to increase its military strength and match the growing powers of Russia and China. This will be discussed more in the sections below. Having comprehensively discussed the reasons for modernisation and increased military spending, this article shall shift its focus to areas where Germany is spending.

## Upgrading of the German Armed Forces

- **Digitisation**

On 9 February 2021, the Federal Office of Bundeswehr Equipment, Information Technology and In-Service Support has given the contract for building a deployable (remote and stationary)

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<sup>89</sup> SIPRI. 2021. *TRENDS IN WORLD MILITARY*. Annual Report, Stockholm: SIPRI. Available at [https://sipri.org/sites/default/files/2021-04/fs\\_2104\\_milex\\_0.pdf](https://sipri.org/sites/default/files/2021-04/fs_2104_milex_0.pdf) [online].

<sup>90</sup> Andrew MacAskill and William James (2020). “Post-Brexit UK announces largest military spending since Cold War”, *Reuters*, 19 November. Available at <https://www.reuters.com/article/uk-britain-defence-idUKKBN27Y314> (Accessed on July 7, 2021).

<sup>91</sup> Second Line of Defence (2021). *The UK Establishes a New Space Command and Names its First Commander*. 17 February. Available at <https://sldinfo.com/2021/02/the-uk-establishes-a-new-space-command-and-names-its-first-commander/> (Accessed on July 9, 2021).

<sup>92</sup> Stern, Johannes (2020). “German government increases military spending, cuts education and health care”, *International Committee of the Fourth International*, 16 December. Available at <https://www.wsws.org/en/articles/2020/12/17/mili-d17.html> (Accessed on July 8, 2021).

<sup>93</sup> Max Bergmann and Siena Cicarelli (2021). “NATO's Financing Gap”, *Center for American Progress*. 13 January. Available at <https://www.americanprogress.org/issues/security/reports/2021/01/13/494605/natos-financing-gap/> (Accessed on July 8, 2021).



communications network within four years.<sup>94</sup> The contract includes the delivery of 12,500 handheld and 4,000 mobile and fixed radios. The relocatable network solutions are interoperable with the communication networks of the German Public Safety Organizations (BOS), NATO and the EU. This enables successful collaboration during crises or disaster relief where interagency communication is a prerequisite for success. A new digital battlefield management system is currently under the test phase. A digital command system for NATO's rapid force will be established in 2023.<sup>95</sup> It will be led by Germany for the first term.

- ***Upgradation of existing arms***

Bundeswehr's 67 boxer command vehicles are being upgraded to A2 standard. The contract to upgrade these vehicles is given to Rheinmetall. It increases the driver front visibility, data processing and communication channels, exhaust emission, air-conditioning ducts, towing gear, driver's station, headlight technology, and software and system security modifications.<sup>96</sup> To upgrade its air force, Germany is planning to replace the old Tornado fighter-bombers with the U.S. F/A-18F Super Hornet for air-to-ground missions, and the EA-18G Growler for jamming purposes.<sup>97</sup>

The German parliament (Bundestag) budget committee has approved the €2.7 billion (US\$3.22 billion) submarine acquisition and €1.4 billion (US\$1.67 billion) P-8 purchases. Other naval upgradations include<sup>98</sup>:

1. Two additional Type 212 submarines (with the ThyssenKrupp Marine Systems Type 212CD to be purchased in a batch with Norway).
2. Two Type 707 double-hulled tankers, three Fleet Service Boats specializing in electronic intelligence (ELINT) and signals intelligence (SIGINT) missions.
3. Two test boats for the WTD71 Bundeswehr Technical Center for Ships and Naval Weapons centre.
4. Five Boeing P-8 Poseidon multi-mission maritime patrol aircraft (MPAs).

## **Security Analysis and the Upcoming Elections**

The two great powers which may become hostile towards Germany are China and Russia. The current policy narratives in Russia and China show their intent for national rejuvenation. This is made evident by their catchphrases, "Making Russia Great Again" and "rejuvenation of the great Chinese nation, the greatest dream of all Chinese in modern times." With the upcoming elections in September of 2021, it will be interesting to anticipate the stances on the military and foreign policy taken by competing leaders.

The Green party's Chancellor candidate, Bayerbock opines that Germany can stand against the

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<sup>94</sup> Business Wire (2021). *German Armed Forces Order Deployable Mission-Critical Communication Networks from Motorola Solutions to Drive Greater Digitization*. 21 February. Available at <https://www.businesswire.com/news/home/20210209005199/en/German-Armed-Forces-Order-Deployable-Mission-Critical-Communication-Networks-from-Motorola-Solutions-to-Drive-Greater-Digitization> (Accessed on July 8, 2021).

<sup>95</sup> Bundeswehr. n.d. *Digitization of the Bundeswehr*. Available at <https://www.bundeswehr.de/de/ueber-die-bundeswehr/modernisierung-bundeswehr/digitalisierung-bundeswehr>. (Accessed on July 9, 2021).

<sup>96</sup> Army Technology (2021). *Rheinmetall to upgrade 27 additional German Boxer command vehicles*. 12 February. Available at <https://www.army-technology.com/news/rheinmetall-upgrade-german-boxer-command-vehicles/> (Accessed on July 9, 2021).

<sup>97</sup> Gerhartz, Lt. Gen. Ingo (2021). *German Air Force Chief: The service is undergoing upgrades to meet future challenges*. 11 January. Available at <https://www.defensenews.com/outlook/2021/01/11/german-air-force-chief-the-service-is-undergoing-upgrades-to-meet-future-challenges/> (Accessed on July 9, 2021).

<sup>98</sup> Darling, Daniel (2021). *A Boost for the German Navy as Parliamentary Defense Committee Green-Lights Several Projects*. 23 June. Available at <https://dsm.forecastinternational.com/wordpress/2021/06/23/a-boost-for-the-german-navy-as-parliamentary-defense-committee-green-lights-several-projects/>

threats from Russia and China by reforming the UNSC.<sup>99</sup> However, it may prove difficult to take a strong stance against Russia and China because of Germany's economic interdependence. Christian Democrat's candidate Laschet suggests a more balanced approach with China.<sup>100</sup> He wants to develop a National Security Council with a national strategy. Secondly, he wants an amicable interdependence with China. Laschet's policy towards Russia seems to be unaltered. However, he seconded the idea of military upgradation. Social Democrat's candidate, Olaf Scholz, appears not to take any strong narrative against Russia and China. Though he criticises China's actions in Hong Kong, Xinxiang, and Taiwan, he is very open to an economic relationship.<sup>101</sup> This shows that German politics does not take an active part in the US-China or the US–Russia rivalry. It might be correct to take a diplomatic stance as the coming technology era asks Germany to take advantage of every technological development across the world and protect its national interest.

During the pandemic, the role of the military in the research and development of areas like biotechnology, epidemiology, and bioinformatics has become of prime importance. China has been active in its efforts to recruit civilian scientists. Apart from conducting ground-breaking research, it is alleged that China is also involved in technology hacking.<sup>102</sup> It is a simple imperative to ask why Germany is not focusing on emerging technologies and their military applications.

## A Peek into Modernising Military from Germany's Science Policy

It is argued that Germany appears to have a low focus on emerging technology, but its high tech 2025 paper paints a different picture, particularly in the civilian environment. Research on AI, quantum computing, the Internet of Things, battery research shows its seriousness to engage in the emerging technology business.<sup>103</sup> The related content available on the internet does not explain how military up-gradation is being considered with these technologies. The fact that Germany has a high technology strategy and established research centres implies that the country's establishments know the implications of these emerging technologies. Furthermore, it can be assumed that these laboratories are under the scanner of the defence ministry, so any significant breakthrough that has the potential to assist the military will be roped up by the state. To follow and understand the military modernisations for the future, it is advised to closely follow the developments across institutes like:

1. Institute for Satellite Geodesy and Inertial Sensors of the German Aerospace
2. DLR Institute for Quantum Technologies in Ulm
3. DLR Galileo Competence Center in Oberpfaffenhofen
4. Quantum Technology Competence Centre (QTZ)
5. Orschungsfertigung Batteriezelle's new battery research center at Münster

## Conclusion

To understand Germany's military modernization further, it may be useful to study the technology research funded by the German state. Technological developments are very likely to occur in any of

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<sup>99</sup> Babst, Stefanie (2021). "Germany Is Unprepared for Strategic Simultaneity." *Internationale Politik Quarterly*, 4. Available at <https://ip-quarterly.com/en/germany-unprepared-strategic-simultaneity> (Accessed on July 7 2021).

<sup>100</sup> *ibid.*

<sup>101</sup> *ibid.*

<sup>102</sup> Lewis, Dyani (2020). "China's coronavirus vaccine shows military's growing role in medical research." *Nature.com*. 11 September. Available at <https://www.nature.com/articles/d41586-020-02523-x>. (Accessed on July 9, 2021).

<sup>103</sup> Polcumpally, Arun Teja (2020). "Science and Technology Policy of France", *Centre for Security Studies*. Available at [https://jgu.s3.ap-south-1.amazonaws.com/jsia/Arun+Teja++Technology+Policy+of+France\\_Germany.pdf](https://jgu.s3.ap-south-1.amazonaws.com/jsia/Arun+Teja++Technology+Policy+of+France_Germany.pdf).

the above-mentioned research institutes. A focused report made by close observation of the laboratory and its potential uses may be beneficial. Any breakthrough in those laboratories will have dual uses: Indian policymakers must be informed constantly regarding the latter. Any foreign policymaking should be accompanied by scientific data and analysis. In addition to the qualitative analysis of the data, an ex-ante analysis of the research trend and use cases may be useful. There are many methods to carry out such research, especially combining the Science, technology, and society approaches with International Relations approaches.<sup>104</sup> These approaches to understanding Germany's military modernisation may provide a scientific insight into the future.

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<sup>104</sup> Polcumpally, Arun Teja (2021). "Artificial intelligence and global power structure: understanding through Luhmann's systems theory", *AI & SOCIETY*, pp.1-17.

# Modernisation Post COVID-19 (2020-2021)

## France

Arun Teja Polcumpally

No matter how much devastation the pandemic has caused, the French government is all proceeding with its Scorpion program which started in 2016. Modernising its ground force appears to be a necessity for France, as they are allocating an unaltered budget even after the economic slump caused due to pandemic. While spending much on the military industry revival and armoured vehicle upgradation, they have also trickled down the effect to employment. Further, France has not left the issue of biological warfare. It is taking sufficient steps towards securitizing the new threats that are cyber, biological, and psychological. However, prime importance is being given to the Scorpion program. This article provides an insight into France's modernisation efforts and recommends designing a civil-military collaborative crisis management system.

## Increase in the Defence Expenditure in the Pandemic – A Qualitative Analysis

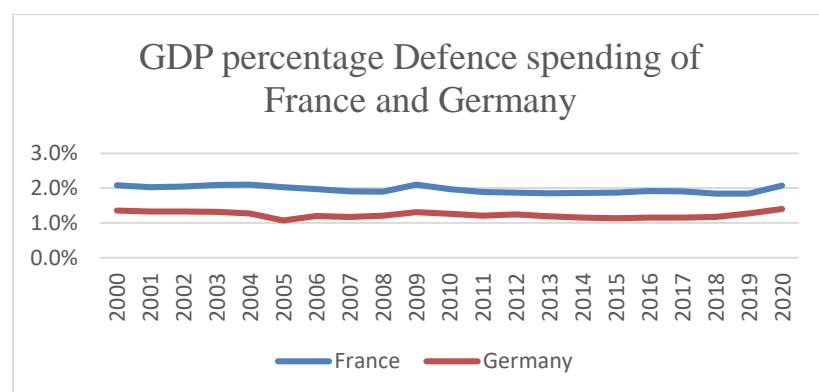


Figure 1: GDP percentage Defence spending of France and Germany (Data taken from SIPRI Military Expenditure Database, 2021)

France's defence spending in 2020 was 2.1% of GDP. It is highest in the decade while its competitor in the EU, Germany, is at 1.4% of GDP, which is its highest in two decades. When the amount spent is considered in the current USD, it gives a clearer picture. Both the big powers of the EU are spending alike on the military.

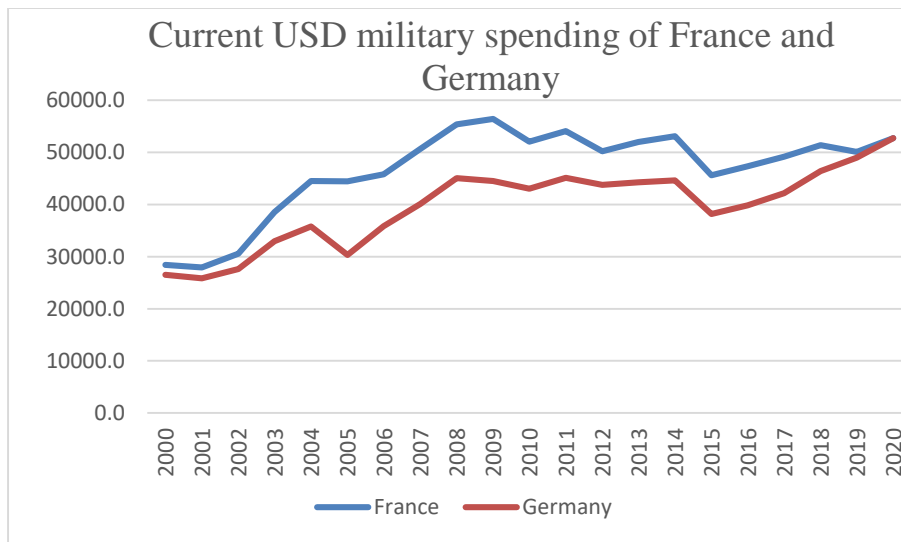


Figure 2: Current USD military spending of France and Germany (Data taken from SIPRI military expenditure database, 2021)

If the history of military spending is seen, the spikes in the military spending of France are found in 2002, 2005, 2010, 2015, and 2019. The rest of the places have a steady increase in military expenditure without a sudden spike. Before making any correlations with the pandemic and its rise in 2019, let's look at the major events around these years where the defence budget spiked. This will help us to establish that there might be a correlation between the spike in defence spending and global events. Though it paints a picture retrospectively, it provides an understanding of why France defence expenditure is spiked in 2019. The year 2002 is significant for France as its national currency became Euro from Franc. For Germany, that year's floods were a major event. France was among the major defence spending countries in the world in 2002.<sup>105</sup> It was spending US\$33.6 billion whereas Germany was spending US\$27.7 billion. The terrorist attacks of 11 September 2001 led Western nations to re-evaluate their security policies in 2002, resulting in upward pressures on military expenditure, both direct and indirect.<sup>106</sup> Apart from this, the rapid increase in the US (United States) defence expenditure resulted in the security dilemma situation encouraging France and Germany to increase their defence budgets. During the next spike, i.e., 2005, the major events which were the reason for the increase in military spending were the regional political instability in Bosnia and Herzegovina, Iraq, Kosovo, and Afghanistan.<sup>107</sup>

The spike in the year 2010 can be attributed to the recovery of Europe from the 2008 financial crisis. A significant spike from 2015 can be attributed to the war against ISIS.<sup>108</sup> The next spike has come during the pandemic and this time the enemy is not an extremist organization or a state but a virus. A traditional increase in expenditure focusing on armament is not seen. If the correlations made above (at the peripheral level) hold, then the recent spike in defence expenditure for France can be attributed to the COVID-19 pandemic. Though the modernisation program is underway for a decade and the Scorpion was kickstarted in 2016, it cannot be the sole reason for the spike. If we look at the global picture, there are four observations made by SIPRI yearbook 2021 on global defence expenditure.<sup>109</sup> Most countries have increased their military spending. Such an increase is substantiated by the security concerns of the nation.

<sup>105</sup> Elisabeth Sköns, Wuyi Omitoogun, Sam Perlo-Freeman, Petter Stålenheim (2003). "Military expenditure" in *SIPRI Yearbook 2003: Armaments, Disarmament and International Security*, pp. 301-334.

<sup>106</sup> Ibid. p. 313

<sup>107</sup> Petter Stålenheim, Damien Fruchart, Wuyi Omitoogun, Catalina Perdomo (2006). "Military Expenditure" in *SIPRI Yearbook 2006: Armaments, Disarmament and International Security*, pp. 295-324.

<sup>108</sup> Nan Tian, Aude Fleurant, Pieter D. Wezeman, Siemon T. Wezeman. (2017). "Global developments in military expenditure" in *SIPRI Year Book 2017*, pp. 321-338.

<sup>109</sup> Tian, Nan. 2021. "Military expenditure: in *SIPRI Year Book 2021: Armaments, Disarmament and International Security*. Available at <https://www.sipri.org/yearbook/2021/08>

1. Several countries (e.g.: Angola, Brazil, Chile, Kuwait, Russia, and South Korea) are known to have reduced or diverted military spending to address the pandemic.
2. One country—Hungary—took the opposite course and increased its military spending in 2020 as part of a fiscal stimulus package in reaction to the pandemic. Arguments linking higher military spending and economic recovery are likely to be made in more countries.
3. The military burden in most states increased in 2020.
4. Most countries have used military assets, especially personnel, to support their responses to the outbreak of Covid-19.

### France's Increase in Defence expenditure is an Economic Stimulus

The increase in defence spending in France was attributed to the economic stimulus being created to support defence industries.<sup>110</sup> Though it is generally opined that, due to the pandemic, a state would cut its defence spending, the reality was contrary. One of the SIPRI yearbook 2021 authors says this increase in defence expenditure is a 'burden'.<sup>111</sup> This can mislead us into thinking that France is overspending in the defence sector. France has also increased its arms exports. The latest five-year (2015-19) exports are the highest since 1990.<sup>112</sup>

In the period from 2019 to 2023, the French defence budget will amount to US\$110 billion. The 2021 defence budget is US\$49.7 billion. There is also a US\$15 billion aeronautics recovery plan. This plan will help all the top aeronautics companies and the benefits will trickle down the supply chain. About 1,300 companies, ranging from start-ups to major firms, are in the French aeronautics sector, and they employ approximately 300,000 people.

### Modernisation Details

The Scorpion program (*synergy of contact reinforced by versatility and info-valorisation*)

An inter-ministerial commission approved the start of the Scorpion R&D phase in 2010. Phase 1 was announced from 2014-19. In 2016, US\$6.7 billion was allocated for 11 years. From 2018, land-based armoured vehicle modernisation was kick-started. In a nutshell, the scorpion converts the existing army's armoury into advanced cloud-connected systems, incrementally and innovatively. Scorpion is being implemented in two phases. One from 2019 to 2025, and the second during 2035-2030.<sup>113</sup> This project brings the French army a new set of armouries. It consists of autonomous reiki drones, network-connected armoured vehicles, sensory mortars, and remotely manned robots.<sup>114</sup>The following are targeted for modernisation which will be centrally linked to the BMS (Battlefield management system).<sup>115</sup> BMS is a central command and control centre coordinating the troops, base station, headquarters, and vehicles.

- **1,872 Griffon VBMR APC**

<sup>110</sup> Global Data. 2021. *French defense spending to reach US\$56.1bn in 2021 as it bolsters its domestic defense industry*, says GlobalData. March 23. Available at <https://www.globaldata.com/french-defense-spending-reach-us56-1bn-2021-bolsters-domestic-defense-industry-says-globaldata/>. (Accessed on June 30, 2021).

<sup>111</sup> France 24. 2021. *World military spending grows despite pandemics*. April 26, 2021. Available at <https://www.france24.com/en/live-news/20210425-world-military-spending-grows-despite-pandemic> (Accessed on June 28, 2021).

<sup>112</sup> SIPRI. 2020. *USA and France dramatically increase major arms exports; Saudi Arabia is the largest arms importer*, says SIPRI. March 9, 2020. Available at <https://www.sipri.org/media/press-release/2020/usa-and-france-dramatically-increase-major-arms-exports-saudi-arabia-largest-arms-importer-says>. (Accessed on June 29, 2021).

<sup>113</sup> Ben, McLennan (2020). *Benchmarking the French Army's 'model' modernisation program*. December 4. Available at <https://researchcentre.army.gov.au/library/land-power-forum/benchmarking-french-armys-model-modernisation-program> (Accessed on June 30, 2021)

<sup>114</sup> Janes. 2020. *Brief on Scorpion Modernisation Programme*. March 4. Available at <https://www.youtube.com/watch?v=8rrD4tA4M1o>. (Accessed on July 1, 2021).

<sup>115</sup> Finabel. 2020. *Progress on the Scorpion Program: France's plan to upgrade its motorised capacity*. February 26. Available at <https://finabel.org/progress-on-the-scorpion-program-frances-plan-to-upgrade-its-motorised-capacity/> (Accessed on June 30, 2021)..

This will be replaced by the new Griffon F6.<sup>116</sup> The Multi-Role Armoured Vehicle GRIFFON is a 6x6 wheeled armoured vehicle developed as part of the SCORPION EBMR program launched in 2014. It will mainly be used as a troop transport vehicle to replace the VAB currently used by the French Army.

- **978 SERVAL vehicles**

These vehicles will replace the existing fleet of Véhicule de l'avant Blindé (VABs), which have been in service since the 1970s.<sup>117</sup> It is a troop carrier vehicle with a mounted gun.

- **300 new JAGUAR-type armoured vehicles**

This will be replaced by the new Arquus Jaguar.<sup>118</sup> It is a reconnaissance and combat vehicle, equipped with Hornet S weapon system. It has a 360° rotation capacity, with an elevation from -20° to +60°. Equipped with a 500hp engine, allowing a maximum speed of 90 km/h and a range of 800 km, as well as an automatic gearbox, the JAGUAR demonstrates high-performance mobility. Its three independent running gears, rear steering and 6-wheel drive give it exceptional manoeuvrability for a 25T vehicle (GVWR).

- **200 upgraded Leclerc Main Battle Tank (MBT)**

This MBT comes with One 120mm cannon, one 12.7mm coaxial machine and one remote weapon station armed with a 7.62mm machine gun. It is developed by Nexter systems.<sup>119</sup> Valued at approximately €330 million, the contract provides for the delivery of 200 “Renovated Leclerc” tanks and 18 “Renovated DCL” armoured recovery vehicles based on Leclerc MBT from 2020.<sup>120</sup>

- **625 new VBCI (*Véhicule Blindé de Combat d'Infanterie*) IFV (Infantry Fighting Vehicle)**

Earlier France used tracked armoured vehicles or battle tanks. This new addition will reduce the cost and provide a multipurpose IFV. It can carry similar firepower to a battle tank with more sophisticated additions like improved visionary sensors, BMS connectivity.

- **2,038 new Serval VBMR-L**

French DGA approved its procurement of the first batch of 4x4 lightweight multi-role armoured vehicles from Nexter Systems and Texelis.<sup>121</sup> Under the first tranche (part) of the scorpion program, 978 Serval vehicles are being brought.

## Need for Securitising New Threats

Undoubtedly, the world is entering into a phase where it must securitise new threats like data theft, misinformation, psychological control, biological warfare, etc. Just carrying out modernisation of the old armoury and network connecting them to a main an effective command centre might not provide holistic national security. Of course, the Scorpion program is a necessity and cannot be sidelined. We have seen that it carries a trickle-down effect and provides employment and enhances

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<sup>116</sup> Arquus. n.d. *ARQUUS : HEAD OF MOBILITY FUNCTION GRIFFON*. Available at <https://www.arquus-defense.com/scorpion-program/multi-role-armored-vehicle-griffon> (Accessed on July 1, 2021).

<sup>117</sup> Lye, Harry. 2020. *Scorpion: new vehicles for a new era*. March 24. Available at <https://www.army-technology.com/features/scorpion-new-vehicles-for-a-new-era/>. (Accessed on July 1, 2021).

<sup>118</sup> Arquus. n.d. *ARQUUS : HEAD OF MOBILITY FUNCTION GRIFFON*. Available at <https://www.arquus-defense.com/scorpion-program/multi-role-armored-vehicle-griffon> (Accessed on July 1, 2021).

<sup>119</sup> Army recognition. (2020). *RENOVATED LECLERC SCORPION XLR MBT*. September 14, 2020. Available at [https://www.armyrecognition.com/main\\_battle\\_tank\\_heavy\\_armoured\\_france\\_french\\_army/leclerc\\_scorpion\\_xlr\\_mbt\\_main\\_battle\\_tank\\_technical\\_data\\_sheet\\_specificationsPictures\\_video\\_10704171.html](https://www.armyrecognition.com/main_battle_tank_heavy_armoured_france_french_army/leclerc_scorpion_xlr_mbt_main_battle_tank_technical_data_sheet_specificationsPictures_video_10704171.html) (Accessed on July 1, 2021).

<sup>120</sup> Army recognition. (2020). *RENOVATED LECLERC SCORPION XLR MBT*. September 14, 2020. Available at [https://www.armyrecognition.com/main\\_battle\\_tank\\_heavy\\_armoured\\_france\\_french\\_army/leclerc\\_scorpion\\_xlr\\_mbt\\_main\\_battle\\_tank\\_technical\\_data\\_sheet\\_specificationsPictures\\_video\\_10704171.html](https://www.armyrecognition.com/main_battle_tank_heavy_armoured_france_french_army/leclerc_scorpion_xlr_mbt_main_battle_tank_technical_data_sheet_specificationsPictures_video_10704171.html) (Accessed on July 1, 2021).

<sup>121</sup> The Shephard News (2021). *Serval deliveries to begin in 2022*. January 21. Available at <https://www.shephardmedia.com/news/landwarfareintl/serval-deliveries-begin-2022/> (Accessed on July 2, 2021).

revenue to the state. There cannot be any criticism for the steps taken by the French government in spending 2.1% of GDP on defence. However, France has to consider new securitisations against virus outbreaks and unwanted cyber hacks. A securitisation is a communicative act performed by the state (generally in the context of national security). Through the communicative act, an intersubjective understanding is constructed within a political community to consider something as a threat to society and enable urgent measures to deal with it.<sup>122</sup> This securitisation involves three facets.

1. The securitising actor.
2. Securitising the audience.
3. Facilitating conditions that influence the success of a securitising move.

France must introduce these types of securitisations. Even the bio-information of the citizens is vulnerable to hacking and has to be protected. France unveiled its cyber policy in 2015. Its five strategic objectives cover the security needed within cyberspace. However, it must quickly bring out the measures to combine civilians and the military to bring out a collaborative framework to work in a crisis like the COVID pandemic.

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<sup>122</sup> Stritzel, Holger (2007). "Towards a Theory of Securitization: Copenhagen and Beyond", *European Journal of International Relations*, pp. 357-383.



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# Modernisation Post COVID-19 (2020-2021)

## United Kingdom

*Mehak Dhiman*

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### INTRODUCTION

The process of military modernization is on-going and is at its very formative stages. Recently terms such as sharp forces or smart forces have come to be used frequently when talking about strategic warfare. A Smart Force can operate in a fast and well-coordinated way in order to put out a synthesized output. These forces are more technology oriented and have less manpower. It is now becoming a trend where all countries, including superpowers, are modernizing their forces by limiting man-power and cutting extra costs to procure latest technology weapons. The concept of Smart Force also gives rise to Smart Defence, Smart Frigates, Smart logistics, and Smart Soldiers. There have been suggestions to use 3D printers to create the required weapons at the destination itself to reduce the cost of logistics.

This report looks at how the UK Defence sector is aiming to make such cardinal changes in order to best utilize their material resources to achieve operations and goals. More specifically, it will look at the new advancements made by the Ministry of Defence in the post-pandemic period (2020-2021) in order to achieve a desirable teeth to tail ratio along with the necessary technological sophistication. The UK military will focus on strengthening its digital backbone by developing and synergizing various new technologies to combat novel and dynamic threats. The UK will be one of the most capable NATO Allies as it bears nuclear, offensive cyber power, precision strike weapons, and fifth-generation strike aircraft. Additionally, it will focus on space awareness and resilience, along with chemical, biological, radiological, and nuclear resilience along with missile defence. The UK will also continue to keep the North Atlantic open with the help of new generation warships. Its allies will also be better assisted with such developments along with the highly mobile airborne and amphibious forces. The land force will go through heavy modernization in the coming future and will be better equipped and better integrated with other forces to carry out functions effectively and better defend themselves from electronic, air and Unmanned Aerial Vehicle threats. The air force and navy will also be modernized and the defence acquisition patterns will be optimized. These changes in general will enable the UK military's multi-domain operations and inter-operability with allies and partners.

### DEFENCE BUDGET

The defence budget is an important indicator of the military capability of a country. UK's defence budget for the year 2020 was \$59.2 billion, which is 2.2% of the country's total GDP.<sup>123</sup>

The country has increased its spending on Research & Development as noticeable in the Spending Review 2020 and the Integrated Review. £6.6 billion will be invested over technologies like direct energy weapons and swarming drones which are said to shape modern air and naval warfare. The British government also announced a £16.5 billion budget boost for 'defence' which secures their largest investment since cold war. This will fund the shipbuilding and expansion of Royal Navy vessels to construct the biggest surface fleet of modern warships in Europe. The £16.5-billion

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<sup>123</sup> SIPRI. 2021. "Reassessing SIPRI's military expenditure estimate for the United Kingdom" STOCKHOLM INTERNATIONAL PEACE RESEARCH INSTITUTE. 9 February, 2021. <https://www.sipri.org/commentary/topical-background/2021/reassessing-sipri-military-expenditure-estimate-united-kingdom>

investment will also enable the acquisition of 8 Type 26 and 5 Type 31 frigates along with the next generation Type 32. This will also support the future support ships to supply Carrier Strike Group. Additionally £1 billion will be spent to support overseas buyers of UK defence and security goods and services. £100m will be spent on defence R&D, £50m for National Security Strategic Investment Fund (NSSIF), £3m for Southampton Spitfire Memorial, £10m for the Armed Forces Covenant Fund Trust, to support charitable endeavours and £800m for the creation of a UK ‘DARPA’.<sup>124</sup>

## THREAT ASSESSMENT

The threat assessment by the defence sector and the policy makers is a major indicator of how the country will choose to modernise its armed forces. The Command Paper of 2021, “Global Britain in a competitive age: The Integrated Review of Security, Defence, Development and Foreign Policy”, mentions four overarching trends which will be under focus for the UK in this changing international order. These are geo-political and geo-economic shifts, systemic competition, rapid technological change, and transnational challenges requiring collective action.

Russia continues to pose the greatest threat to European security and stability. China’s military modernization and economic supremacy – both of which are growing at an unstoppable rate – contribute to its international assertiveness within the Indo-Pacific region. Iran and North Korea will also pose regional challenges and threaten global security. Apart from these states the proliferation of CBRN weapons and advanced conventional weapons pose grave challenges as the possibility of conflict increases along with the aggressive behaviour of states.

Transnational challenges like terrorism and climate change will continue to threaten the UK’s security. The report describes climate change as a multifold threat which also drives instability, increases migration, desertification, competition, and conflict. The UK will also focus on improving their offensive cyber capabilities and development in the space domain.<sup>125</sup>

## MODERNIZATION OF FORCES

The paper claims that the modernization changes being made will make the armed forces more lethal, integrated and efficient.

### *The Royal Navy*

The Royal Navy will be considerably transformed as it will acquire ships, submarines, sailors, and marines. More of these will be deployed in an enduring fashion as it will bolster modernization. The procurement patterns and deployment will be optimized to best use the resources invested. Offshore patrol vessels will be permanently deployed in the Falklands, the Caribbean, Gibraltar, and East of Suez in the Indo-Pacific region. The forces will also deploy a Bay class support ship which will be converted to have a more lethal littoral strike capability. The Royal Navy will recommit to eight Type 26 and five Type 31 frigates along with seven Astute class submarines and three Fleet Solid Support ships. A Type 83 destroyer will replace the type 45 destroyers in the late 2030s.<sup>126</sup> The deployment of two Littoral Response Groups in the Euro-Atlantic in 2021 and in the Indo-pacific in 2023 is a part of a broader initiative which will enhance the amphibious forces to function in a more dispersed and agile way.<sup>127</sup> A new Multi-Role Ocean Surveillance capability will also be achieved to bolster the maritime capability by defending the critical undersea infrastructure and the Multi-

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<sup>124</sup> Lye, H. L. 2020. “What’s in the Budget for UK Defence in six tweets.” Army Technology. 11 March, 2020. <https://www.army-technology.com/features/whats-in-the-budget-for-uk-defence-in-five-tweets/>

<sup>125</sup> Global Britain in a Competitive Age: The Integrated Review of Security, Defence, Development and Foreign Policy.” n.d. Gov.Uk. Accessed November 14, 2021. <https://www.gov.uk/government/publications/global-britain-in-a-competitive-age-the-integrated-review-of-security-defence-development-and-foreign-policy/global-britain-in-a-competitive-age-the-integrated-review-of-security-defence-development-and-foreign-policy>.

<sup>126</sup> Ibid.

<sup>127</sup> Bentham J.B., & Childs NC. 2021. “UK Littoral Response Group: The Shape of Things to Come?” Accessed November 14, 2021. <https://www.iiss.org/blogs/military-balance/2021/06/uk-littoral-response-group>.

Role Support Ships will soon be available to deliver Littoral Strike 2. These developments show how UK is set out to be Europe's most powerful maritime force.<sup>128</sup>

### ***UK Army***

The UK government has decided to reduce the army from 82,040 to 72,500 by 2025. The army will be restructured and four divisions will be introduced in the infantry to reorganize it. These divisions will consist of a balanced number of battalions offering the full range of infantry roles. Additionally, no cap badges will be removed except for one single infantry battalion.

The Defence Secretary's statement to the House suggests that 2nd Battalion the Mercian Regiment will be amalgamated with the 1st Battalion to form a new Boxermounted battalion. A new Ranger Regiment will operate in order to take on some tasks traditionally done by Special Forces. The creation of Combat Service Support Battalions will require fewer separate units of logisticians, electrical and mechanical engineers. A new experimentation battalion, drawn from the Yorkshire Regiment, will lead in the trialling of cutting-edge technology. A new Security Force Assistance Brigade will be established to build capacity of allied and partner nations. A Global Response Force, consisting of 16 Air Assault Brigade and a newly formed 1st Combat Aviation Brigade, will support the army's increased forward presence. The newly formed Land Operations Command will coordinate the Army's global engagement.<sup>129</sup>

In addition to these new developments the 3rd (UK) Division will remain at the heart of warfighting and will have two modernised heavy brigades with the introduction of Boxer armoured personnel carriers. 1st (UK) Division will be able to operate independently or as part of multilateral deployments. 6th (UK) Division will deliver cyber, electronic warfare, information operations, and unconventional capabilities designed for warfighting and operations conducted below the threshold of war. The army will be reorganised into Brigade Combat Teams, drawing on their own dedicated logistics and combat support units. The Paper lists five teams: deep recce (reki) strike, air manoeuvre, heavy brigade, light brigade and combat aviation brigade combat teams. An additional £3 billion will be invested in new army equipment. This includes Ajax and Boxer. 148 main battle tanks will be upgraded to Challenger III. Watchkeeper will be retained and upgraded, while the four medium lift helicopter platforms will be consolidated to one.<sup>130</sup>

The armed forces will get the attention it deserves and will be optimized. The reduction of forces will attract criticism from the allies of UK; however, the modernization and its increased deployability of the army will lead to lesser personnel being required for greater tasks. The strength of the British army has not been 82,000 since the middle of the last decade, so it is only realistic to reduce the number to 72,500. Despite this the command paper mentions how £3bn will be used for new vehicles, long-range rocket systems, drones, electronic warfare, and cyber capabilities. These investments depict UK's commitment to supporting its allies overseas to deter hostile powers like Russia. This paper is the true assessment of the resources the UK military has and how much they can be stretched unlike most of the papers in the past.<sup>131</sup>

The Royal Air Force will go through vigorous cerebral restructuring and transformation in professional recognition, equipment, training and estate. The air capability will be boosted with the seven operational Typhoon squadrons. UK will also "spiral develop" its Typhoon capabilities with the new weapons which will be acquired along with the Radar 2 programme. The Lightning fleet will be increased beyond the 48 aircraft. A generous amount of £4 billion will be put in the Future Combat Air System (Tempest). Several aircrafts will be replaced by three E-7A Wedgetail in 2023. The paper suggests the RAF will further explore ways to build the capacity of partner nations' air

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<sup>128</sup> Ibid.

<sup>129</sup> Ministry of Defence. 2021. "Defence Secretary oral statement on the Defence Command Paper." GOV UK. 22 March, 2021. <https://www.gov.uk/government/speeches/defence-secretary-oral-statement-on-the-defence-command-paper>

<sup>130</sup> Ibid.

<sup>131</sup> BBC News. 2021. "Defence Review: British Army to Be Cut to 72,500 Troops by 2025." *BBC*, March 22, 2021. <https://www.bbc.com/news/uk-56477900>

force, as it is currently doing with the joint Typhoon Squadron with Qatar. The UK will achieve the right academic underpinning, partnerships and investment to transform the RAF.<sup>132</sup>

### ***UK Strategic Command***

The three services are vulnerable without proper integration and synergy between them. Hence, £1.5 billion will be spent over the next decade on cloud and secure networks along with synthetics and simulation which will provide a transformation in training. National Cyber Force and defence intelligence will be at the heart of this enterprise. The Strategic Command will also partner with the RAF to enhance the space capabilities.<sup>133</sup>

## **SCIENCE & TECHNOLOGY**

For a considerable amount of time the difference between ‘Science and Technology’ and ‘Research and Development’ has been blurry. The MOD Science and Technology Strategy 2020 has made an effort to distinguish between the two in order to use it for strategic advantage instead of just problem solving. According to the paper “S&T generates the enabling technology and system building blocks required for R&D,” and “R&D then integrates and matures these building blocks to operational capability.” S&T will assist offensively rather than defensively. It will assess and pin point opportunities and pre-empt future threats. The strategy paper suggests that UK will go further by using S&T as a part of a broader approach focused on delivering advantage.<sup>134</sup>

## **RESEARCH & DEVELOPMENT**

UK ranks fourth in the Global Innovation Index 2020. It has a wide research base and is believed to attract significant venture capital, more than that of Germany, France, and Sweden combined. The government aims to increase the economy-wide R&D investment to 2.4% of the GDP by 2027. New independent body for high-risk-reward research: the Advanced Research and Invention Agency (ARIA) will be set up.<sup>135</sup> International science partnerships will put S&T at the centre of UK’s alliances and will also use Official Development Assistance to bolster R&D partnerships. The EU-UK deal will continue collaborations through Horizon Europe, the Euratom Research and Training programme, and Copernicus.<sup>136</sup>

When it comes to the defence spending on R&D, £1.5 billion is spend on defence R&D by MoD and at least £6.6 billion of defence budget over the next four years will go to next-generation R&D which will provide enduring military edge in space, directed energy weapons, and advanced high-speed missiles. The 2020 government budget also includes £100m which is to be devoted for defence R&D and also support overseas buyers of the UK defence and security equipment. The private sector, specifically the defence manufacturing industry will also be urged to raise its R&D spending. The defence R&D spending needs to be ramped up and looked at more enthusiastically.<sup>137</sup>

## **NATIONAL CYBER FORCE**

The UK is expanding its cyber and offensive cyber capabilities. The immediate depiction of this is the National Cyber Force established in 2020. It aims to conduct targeted, responsible offensive cyber operations to bolster UK’s national security interests. It brings together defence and

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<sup>132</sup> Ibid at 7.

<sup>133</sup> Ibid.

<sup>134</sup> Ibid.

<sup>135</sup> Department for Business, and Energy & Industrial Strategy. 2021. “UK to Launch New Research Agency to Support High Risk, High Reward Science.” GOV.UK. February 19, 2021.

<https://www.gov.uk/government/news/uk-to-launch-new-research-agency-to-support-high-risk-high-reward-science>.

<sup>136</sup> Catlow, R. C., & Purvis, B. P. 2021. “What does the UK-EU deal mean for science?” Royal Society. The Royal Society. 11, February 2021. <https://royalsociety.org/blog/2021/02/what-does-the-uk-eu-deal-mean-for-science/>

<sup>137</sup> Ibid at 7.

intelligence capabilities by bringing together personnel from Government Communications Headquarters (GCHQ), MOD, the Secret Intelligence Service (SIS) and Technology Laboratory (Dstl), under one unified command for the first time.<sup>138</sup> The National Cyber Security Strategy 2016 to 2021 says that UK will invest a total of £1.9 billion over the next five years to significantly transform the UK's cyber security. Along with this the Military Cyber Security Operations Centre will work closely with National Cyber Security Centre (NCSC) to strengthen and develop the cyber space.<sup>139</sup>

## UK SPACE AGENCY

UK has issued a UK Space Agency Corporate Plan 2020-21. This corporate plan aims to focus on 5 high priority programs, namely; the National Space Innovation Programme which is the new flagship programme of investment in space-based technology, innovation and international delivery priorities. The UK Spaceflight Programme – a £50 million programme to kick-start small satellite launch and sub-orbital flight from UK spaceports – will continue to create the right conditions to enable the UK to be the first country in Europe to achieve commercial spaceflight. UK Space Based PNT Programme's (SBPP) Department for Business, Energy and Industrial Strategy put a recommendation to reset the GNSS (Global navigation satellite system) programme into SBPP which was endorsed by the Prime Minister on 8 September 2020. The SBPP launched on 1 October 2020 and it aims to deliver outline solution options for the development of a UK space based PNT capability. Lastly and most importantly a UK Space Strategy will be established. This priority programme is focused on bringing together the newly formed National Space Council to take ownership, at the highest levels of Government, for developing the UK Space Sector. As part of this the forthcoming UK Space Strategy will inform strategic space priorities across Government.<sup>140</sup>

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<sup>138</sup> Ibid.

<sup>139</sup> National Cyber Security Strategy 2016 – 2021. 2020 “Progress Report” Cabinet Office. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/937702/6.6788\\_CO\\_National-Cyber-Security-Strategy-2016-2021\\_WEB3.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/937702/6.6788_CO_National-Cyber-Security-Strategy-2016-2021_WEB3.pdf)

<sup>140</sup> UK SPACE AGENCY CORPORATE PLAN 2020–21. 2021. United Kingdom Space Agency. <https://www.gov.uk/government/publications/uk-space-agency-corporate-plan-2020-21>

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# Modernisation Post COVID-19 (2020-2021)

## Brazil

*Kritika Karmarkar*

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Brazil is one of the largest military spenders in Latin America. With a robust defence industry and the high levels of investments, Brazil has managed to create its own niche. However, in 2020 when the COVID-19 pandemic hit the nation, Brazil experienced huge losses in terms of its population and overall economy. The pandemic has affected every aspect of the Brazilian administration, with some decisions taken up by the current government doing more harm than good. This includes the lack of measures put in place to combat the virus, eventually leading to political unrest within the nation.<sup>141</sup> Moreover, a common trend of militarized responses to the COVID-19 pandemic has been noted throughout Latin America, including Brazil. Regarding the management of the crisis, Brazil has been ranked as one of the nations with the highest military involvement in the region. Currently, around twenty positions in the Ministry of Health are filled with military officers, with the army general being nominated to become the Minister of Health till mid-May of 2021.<sup>142</sup>

This hyper focus on the military has also been reflected in the nation's economy and budget allocation. As of 2019, Brazil's military expenditure stood at 27.9 billion USD and was expected to grow to 29.8 billion USD in 2020.<sup>143</sup> However, due to the COVID-19 pandemic, these numbers have significantly changed. In 2020, a 3.1 percent drop in Brazil's military spending contributed to military spending in South America falling by 2.1 percent to 43.5 billion USD. Given economic setbacks, actual military spending amounted to about 88 percent of its initial military budget.<sup>144</sup> This eventually hampered some of Brazil's planned modernization. Nevertheless, some reforms were carried out in some of the armed forces sectors.

## Naval reforms and modernization efforts

On 10th September 2020, the Strategic Plan was publicly released. As per this plan, new measures were to be implemented over the course of the next 20 years. The new measures included an increased investment in the research and development of shipboard systems, which consisted of communication systems, detection, navigation, and electronic warfare. This heightened focus on the R&D is also said to contribute towards the Defence Technological and Industrial Base (DTIB). Apart from the emphasis on R&D, the Brazilian Navy also aims to achieve a minimum of 65 percent of ships and aircraft in operational availability. It also aims to create a cyber warfare squadron and boost its satellite ability to intercept maritime communications, in addition to

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<sup>141</sup> "Brazil: Political Crisis And Covid Surge Rock Bolsonaro," *BBC News*, March 31, 2021.

<https://www.bbc.com/news/world-latin-america-56581131>.

<sup>142</sup> Anaís Medeiros Passos and Igor Acácio, "The Militarization of Responses to COVID-19 in Democratic Latin America," *Revista de Administração Pública* 55, no. 1 (February 2021): 261–72, <https://doi.org/10.1590/0034-761220200475>.

<sup>143</sup> "The 2019 Brazilian Defense Market: Attractiveness, Competitive Landscape and Forecast to 2024 -

ResearchAndMarkets.com," *Businesswire.com*, November

2019, <https://www.businesswire.com/news/home/20191101005295/en/The-2019-Brazilian-Defense-Market-Attractiveness-Competitive-Landscape-and-Forecast-to-2024---ResearchAndMarkets.com>.

<sup>144</sup>da Silva, Diago Lopes, Nan Tian and Alexandra Marksteiner. "Trends in World Military Expenditure" Stockholm International Peace Research Institute, 26 April 2021. [https://www.sipri.org/sites/default/files/2021-04/fs\\_2104\\_milex\\_0.pdf](https://www.sipri.org/sites/default/files/2021-04/fs_2104_milex_0.pdf)

updating its organizational structure.<sup>145</sup>

Furthermore, many steps have been taken towards bettering the navy's equipment and modernization efforts. This can be seen in the way the Plan has considered the range of modernization projects that were previously planned or initiated but were not effectively implemented. Such projects include the procurement of mine-hunting ships, aircraft carriers, escort ships, logistical support ships, offshore patrol ships, Unmanned Aerial Vehicles (UAVs), training ships, fighter jets, and lightweight and utility helicopters in order to enlarge the marine corps. Additionally, the *Míssil Antinavio de Superfície* (MANSUP) and *Míssil Antinavio Aéreo* (MANAER) anti-ship missiles are also being developed, as well as the local construction of Brazil's very first nuclear powered submarine: the SN Álvaro Alberto.<sup>146</sup> The navy is now directing its attention towards the South Atlantic Ocean, whilst concentrating more on issues such as illegal fighting, natural resources dispute, cyber warfare, terrorism, natural disasters, environmental issues, and pandemics.<sup>147</sup>

To modernize the Marine Corps, the Navy has also unveiled another plan which aims to merge three previous modernization programmes into a new single effort known as the *Programa de Meios de Fuzileiros Navais* (PROADSUMUS). The goal of PROADSUMUS is to increase the Fleet Marine Force's Riverine Operations Battalion, as well as the district's Marines Group capability by the year 2040. This would enable the nation to better protect its judicial waters, along with its naval and ports facilities and the surrounding archipelagos. This would ultimately extend the military control on the waters and can be used for civil-defence roles, as well as humanitarian and peacekeeping missions.<sup>148</sup>

## The Brazilian army

With regards to modernization efforts, the Brazilian army is aiming to upgrade its Krauss-Maffei Wegmann (KMW) Leopard 1A5BR main battle tank (MBT). However, instead of relying on international markets, the nation is increasing competition among local companies to aid in the modernization process. It is said that the vehicles will receive a fully electric turret drive system, a modernized EMES 18 fire-control system, commander's independent sight, as well as other amenities such as drives' thermal imager, climate control unit, and an automatic fire suppression system for the engine compartment. These requirements also include provisions to add a combat dozer blade, full-width surface clearance divide, an add-on armor protection kit along with a remote weapon station. Other amenities such as inertial navigation systems, a 360-degree laser warning system, active or passive protection system, situational awareness, an auxiliary power unit, and a CBRN defence kit.<sup>149</sup>

## Modernization efforts in the Brazilian Airforce

Even though no significant modernization efforts have been made within the Brazilian Airforce, some of the equipment has been given an upgrade. For example, the first E-99 airborne early warning aircraft which got revamped to the EMB 145 AEW&C by the Embraer of the Brazilian air

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<sup>145</sup> Barreira, Victor. "Brazilian Navy Releases New 20-Year Plan," *Janes.com*, September 18, 2020, <https://www.janes.com/defence-news/news-detail/brazilian-navy-releases-new-20-year-plan>.

<sup>146</sup> Ibid.

<sup>147</sup> "Brazilian Naval Expansion Plan," *New-ships.net*, September 24, 2020, <https://www.new-ships.net/prospects-orders/detail/news/brazilian-naval-expansion-plan.html>.

<sup>148</sup> Barreira, Victor. "Brazilian Marines Pursue Additional Modernisation Capabilities," *Janes*, November 16, 2020, <https://www.janes.com/defence-news/news-detail/brazilian-marines-pursue-additional-modernisation-capabilities>

<sup>149</sup> Barreira, Victor. "Brazil to Launch Tender for Modernising Leopard 1A5BR MBTs," *Janes*, June 14, 2021, <https://www.janes.com/defence-news/news-detail/brazil-to-launch-tender-for-modernising-leopard-1a5br-mbts>.

force. The EMB 145 AEW&C is essential for aerial operations, considering its flexibility of positioning the aircraft together along with its ability to detect traffic at a lower altitude, which allows for radar coverage of the areas of interest of the air force command (COMAER). This modernization of the E-99's airborne sensors will allow the air force to expand on its capability to carry out flight control, alarm missions, and electronic reconnaissance, in addition to its other features.<sup>150</sup>

## Changes in cybersecurity laws

Not much progress has been made with regards to Brazil's cybersecurity. However, on 5 February 2020, Brazilian president Jair Bolsonaro approved the National Cybersecurity Strategy also known as the Decree or E-Ciber. The aim of this legislation is to guide Brazil's actions in the digital sphere whilst making it more resilient to cyber threats and strengthening its performance internationally.<sup>151</sup> The strategy is allocated from the year 2020 to 2023. It lays down 10 main strategic actions that Brazil will undertake to be a "country of excellence" in the sector. As per these guidelines, the centralization of the national cybersecurity system will occur along with increased international cooperation and the strengthening of cyber governance in both public and private spheres. Moreover, the protection for critical infrastructure will be enhanced. However, the law has been criticized for its vagueness as it does not clearly lay down the process of implementation of these steps by the Brazilian government.

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<sup>150</sup> "Another Stage In E-99 Modernization Project Concluded," *Defense-Aerospace.Com*, 28 November 2020. <https://www.defense-aerospace.com/articles-view/release/3/212748/embraer-completes-upgrade-of-first-brazilian-e-99-aw-aircraft.html>.

<sup>151</sup> "Brazil: President Approves National Cybersecurity Strategy," *DataGuidance*, February 6, 2020, <https://www.dataguidance.com/news/brazil-president-approves-national-cybersecurity>.



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# Modernisation Post COVID-19 (2020-2021)

## Canada

*Khushi Mahendru*

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The unleashing of the COVID-19 virus caused great turbulences in the world in terms of economy, defense, security, and politics. From a global perspective, the pandemic has intensified several long-term tendencies while posing new problems. Throughout the last decade, we have seen the disintegration of the rules-based global order that evolved after World War II. This order was characterized in its final iteration by the propagation of liberal political ideals such as freedom of expression, poverty alleviation, and democracy preservation.

In today's world, the security sector is one of the clearest indicators of the approaching era of the global power struggle. Major armed forces have launched a substantial modernisation drive over the last decade, including increased financing, reassessment of force positions, and the implementation of new technologies. Canada, along with the world, is approaching the process of reassessing and advancing its approaches and initiatives, particularly in defense, security, and developmental technologies.

Canada's defence strategies and investments are of great importance, with the core being the Canadian Armed Forces (CAF). The Government of Canada can use the Forces to both protect Canada and its citizens and to maintain world security. The National Defence must first have excellent capability and capital budgeting to guarantee that the Canadian Armed Forces can succeed on missions with the necessary services and support. The uncertainty and volatility of the post-COVID world affected the CAF's strategies.

According to the Defence Investment Plan 2018, the Independent Review Panel for Defence Acquisition offers advice to the Minister of National Defence on all significant procurement projects valued at over a \$100 million. This occurs prior to seeking Treasury Board's approval or practicing the Minister's expenditure authority. Canadian defence procurements, in air, sea, and land sectors, remain much the same. In 2020, the IRB (Industrial and Regional Benefits Programme), has spent over a \$105 million for utility aircrafts itself. Canada's defence policy, SSE (Strong, Secure and Engaged)<sup>152</sup>, continues to provide the necessary funding, new investments in National Defence (as outlined in the Defence Investment Plan 2018), and continues to enable an agile, multi-purpose, war force led by a well-trained, well-equipped, and well-supported personnel. These investments are critical in assisting members of the Forces, whether protecting Canadian sovereignty or displaying global leadership.

Moving forward to the military operations, The Canadian Armed Forces (CAF) has personnel deployed across Canada and around the world, with approximately 2000 personnel deployed on more than 20 different operations. The Canadian Department of National Defense claims that "given the nature of our missions, we must be always ready to conduct military operations, at home and abroad" The Department goes on to add that "the CAF has taken an aggressive approach to mitigate the spread of COVID-19 within our force and to those we work with while conducting

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<sup>152</sup>"Strong, Secure, Engaged: Canada's Defence Policy." *Government of Canada*, June 10, 2021. [https://www.canada.ca/en/department-national-defence/corporate/policies-standards/canada-defence-policy.html?utm\\_source=dgpaapp&utm\\_medium=referral&utm\\_campaign=redirect](https://www.canada.ca/en/department-national-defence/corporate/policies-standards/canada-defence-policy.html?utm_source=dgpaapp&utm_medium=referral&utm_campaign=redirect).

operations.”<sup>153</sup> During operation ‘ILLUMINATION’, CAF sent soldiers and a mobile air-monitoring radar equipment to Iceland by strategic airlift, from the beginning of February until the 15th of May 2020. Owing to this operation, the radar system covers the Greenland-Iceland-United Kingdom gap, which is a vital North Atlantic Ocean transit route. Canada also had various military exercises around the year of 2020, including three domestic operations and two international operations. With the Biden administration’s diplomacy, Canada has upped its defence and security involvement to avoid further reliance on the multilateral global order. Canada, being one of the founding members of NATO, may offer CAF troops to a NATO-led operation on request.<sup>154</sup> Overall, Canadian exports of restricted military products and technology was \$1.966 billion in 2020, dropping from \$3.757 billion in 2019. The decreasing trend of military exports to Saudi Arabia in 2020, which decreased by \$1.553 billion compared to 2019, is primarily to blame for the year’s decline in export value.

With the post-COVID regulations, Canada’s determination towards the 17 SDGs have also emerged. The Defence Energy and Environment Strategy (DEES) aims to help the Canadian military grow as an ecologically sustainable organisation, better manage its energy usage, and reduce its environmental imprint across a wide range of operations. Therefore, the DEES aligns the defence sector with the Canadian and UN policies regarding sustainability and the environment. The Canadian military is responsible for the management of roughly 2.1 million hectares of land and 20,000 structures in Canada, as well as for the duty of demonstrating energy-related sustainability and the requirement to administer assets and operations. The defence sector promotes Public Services and Procurement Canada’s (PSPC) pledge to award at least 5% of government contracts to Indigenous-owned and operated businesses. In the 2020-2023 DEES, the Department of Defense has committed to 16 goals, with initiatives organised into four themes:

1. Energy efficiency
2. Climate change
3. Sustainable real property
4. Green procurement

One of the most prominent modernisation trends is digital transformation. COVID-19 has had a variety of effects on the Canadian economy, including how firms have prioritized expenditure on existing and new IT projects and technology. COVID-19 has created several business problems, with digital transformation emerging as a viable answer. Canadian expenditure on digital transformation reached close to \$28 billion in 2020, with a growth rate of 7%, according to the latest IDC Worldwide Digital Transformation Spending Guide. Nevertheless, due to the pandemic, the anticipated growth is significantly slower than in 2019. But it can rebound fast in the following years (2021-2023) with a 13% CAGR.<sup>155</sup> Robotic manufacturing, intelligent and predictive grid management power, and 360-degree customer/stakeholder management drive the most DX investment in Canada in 2020. For instance, in 2020, \$813 million was expected to be spent on robotic manufacturing. Visualized labs, digital visualization, and robotic process mechanization are expected to experience the most year-over-year increase, with CAGRs of 83%, 62%, and 31%, accordingly. The growth thus, severely was affected; however, it has led to opening further into a digital era. IT has also been through a transformation. ADM Data, Innovation, Analytics [ADM(DIA)] has been collaborating with ADM Information Management [ADM (IM)]<sup>156</sup> to

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<sup>153</sup> “Current Operations and Joint Military Exercises list” *Government of Canada*. <https://www.canada.ca/en/department-national-defence/services/operations/military-operations/current-operations/list.html>

<sup>154</sup> Adlakha-Hutcheon, Gitanjali and Peter Johnston, “The Future Impacts of COVID-19 on the North Atlantic Treaty Organization – a Futures Framework” Accessed June 30, 2021. [https://cradpdf.drdc-rddc.gc.ca/PDFS/unc349/p812285\\_A1b.pdf](https://cradpdf.drdc-rddc.gc.ca/PDFS/unc349/p812285_A1b.pdf).

<sup>155</sup> “Canadian Spending on Digital Transformation Forecast to Grow By 7% in 2020, Despite the Challenges Presented by the COVID-19 Pandemic.” *International Data Corporation*. Accessed June 30, 2021. <https://www.idc.com/getdoc.jsp?containerId=prCA46542820>.

<sup>156</sup> “Beyond 2020 Defence Team Stories: Innovative IT Tools for Analytics,” *Government of Canada*, June 29, 2021. *Modernisation Trends Post COVID-19* *Centre for Security Studies*

implement change to expand access to digital technologies, particularly those that enable data integration, analytics solutions, and entrepreneurial ventures, during the previous fiscal year.

Through such huge shifts in the working models and economies, the complexities in any country's existing economic, security, and even political structures are quite comprehensible. Canada is forecasting a deficit of 343 billion Canadian dollars, over 1,000 percent over the previous year's deficit, putting the country's national debt above one trillion Canadian dollars for the very first time<sup>157</sup>. As the pandemic subsides, governments will need to find out how to deal with their budgetary woes. Despite the fact that interest rates are now low, this might entail boosting taxes or reducing spending, or a combination of the two. This might also stifle the recovery and provoke political retaliation. Canada needs to reform their defence procurements while keeping the military expenditure in mind. As weak governments succumb to the outward forces generated by the challenging economic and political climate, and developed powers reluctant to aid in stabilization efforts, the Canadian Armed Forces (CAF) will undoubtedly face more external requests in the future years. The CAF is also at risk because of the complexity of these disputes. With China and Russia constantly emerging as key actors that question Canada's operations, CAF programs need to be streamlined and comprising of fewer cost overruns.

As for the post-COVID global setting, frameworks are not meant to be prescriptive; rather, they are hypothetical scenarios for how the next six years may play out in response to the ongoing pandemic and the speed of vaccinations and treatments dissemination. Furthermore, irrespective of vaccine, unforeseen scenarios might arise and result in alternative paths ahead. Canada may anticipate the hostile states to stay the same in all these scenarios, as they were previously recognized. Conflict is likely to be more common and increasingly violent in a baseline scenario, and much more so in the worse scenario than in a best scenario. Hybrid warfare, which includes cyber-attacks and influence operations, will most certainly be seen in all three scenarios to various degrees, owing to the fact that it is typically less expensive than conventional combat and the difficulty of detection may be reduced. Hence, all the planning needs to be effective enough, while having the NATO alliances in consideration.

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<https://www.canada.ca/en/department-national-defence/maple-leaf/defence/2021/06/beyond-2020-defence-team-stories-innovative-it-tools-for-analytics.html>.

<sup>157</sup> Shimooka, Richard, "Canada Should Stand on Guard in the Post-COVID Era," *Macdonald-Laurier Institute*, December 9, 2020. <https://www.macdonaldlaurier.ca/canada-stand-guard-post-covid/>.