India's Membership to the Missile Technology Control Regime

Analysing Causal Factors, Defence Self-Reliance, Defence Export Potential and Space Capabilities

Manisha Chaurasiya* and Vijay Kumar Yadav**

This article attempts to understand the key developments leading to greater acceptance for India into the multilateral export control regime. It focuses on the factors that led to the acceptance of India into a regime institution—the Missile Technology Control Regime. This is significant because for decades India shared a strained relationship with the export control regime and was often viewed as a target or outsider. In the last two decades, consequent to the prolonged and synergistic efforts of a generation of Indian policy-makers, India has been better integrated and normalised into the regime. The article studies the role of self-reliance or atmanirbharta in Indian indigenous defence capabilities, success of jointly developed weapon systems like BrahMos, increasing the overall likelihood of defence exports for India. The article also looks into the confident strides India has made in the space programme in the recent decades. With a Nuclear Suppliers Group waiver and full membership of three out of four

* Dr Manisha Chaurasiya is Assistant Professor at the School of Global Affairs, Dr B.R. Ambedkar University, New Delhi, India.

** Dr Vijay Kumar Yadav is affiliated to the Centre for Indo-Pacific Studies, Jawaharlal Nehru University, New Delhi, India.

ISSN 0976-1004 (print); 2583-7567 (online)

Journal of Defence Studies, Vol. 18, No. 4, October–December 2024, pp. 251–273

key institutions under the regime—the Missile Technology Control Regime, the Wassenaar Arrangement and the Australia Group—India stands firm. These are gradual but notable changes with strategic implications for India and its goal of becoming a developed nation or Viksit Bharat by 2047.

Keywords: *Multilateral Export Control Regime, Missile Technology Control Regime, Indigenous Defence Capabilities, Nuclear Non-proliferation, Space Technologies*

Introduction

The multilateral export control regime is a non-treaty-based informal group of states. It has often been dubbed as a club of great powers. Under it, there are four institutions—the Missile Technology Control Regime (MTCR), the Nuclear Suppliers Group (NSG), the Wassenaar Arrangement and the Australia Group (AG). The export control regime works more like an arrangement among groups of like-minded countries. It is formulated primarily amongst the supplier countries who seek to contribute to the non-proliferation of weapons of mass destruction, delivery systems, dual-use technologies and advanced conventional weapons. They attempt to do so through national implementation of guidelines and control lists for exports. The article analyses the developments in the recent decades in which India with an impeccable record for nuclear non-proliferation and ever-increasing Indian indigenous defence and space capabilities, obtained membership of three of the four key institutions and a waiver in NSG, short of full membership, under the multilateral export control regime.

Interestingly, India has long been the target of the regime as it is a non-signatory to the Nuclear Non-Proliferation Treaty (NPT). The NSG even mentions the Peaceful Nuclear Explosion conducted by India in 1974 as the background due to which creation of the informal institution became necessary. Various sanctions were put on India since then, but it was only after India conducted nuclear weapon tests in 1998 that it was dubbed as a *de facto* nuclear weapon state and also referred to as an illegal[1] nuclear weapon state. During the Cold War, India did not align with any of the great powers in the superpower rivalry and maintained an independent foreign and security policy. It maintained its sovereignty by non-aligning with the great powers during the superpower rivalry.

Later, India also resisted the pressures of the great powers from signing the NPT as it interpreted it a discriminatory treaty "disarming the unarmed" or the nuclear have-nots. This gave a further reason for the export control

regime institutions like the NSG and the MTCR to discriminate against and target India. In the late 1990s, India was faced with a multitude of security compulsions. On one side, there was a growing security threat from regional adversaries like China and Pakistan, where the former declared itself a nuclear weapon state through a nuclear weapon test much before the NPT came into force, and the latter was moving ahead with a clandestine nuclear weapon programme. India was required to build up its strategic deterrent capability to counter these potential nuclear threats in its South Asian neighbourhood. India was required to build up a credible deterrence to defend its national interests. Further, after the end of the Cold War, global security dynamics were fast changing with the emergence of unipolarity of the United States.

A turning point that marks an improvement in India's relationship with the nuclear non-proliferation and the export control regime was the Indo-US Nuclear Deal. Though it was a bilateral agreement, it had multilateral and international ramifications for India. The nuclear deal was possible because it had something important to offer to each of the two parties involved. The deal began with the premise that both the parties were looking for a breakthrough and wanted an improvement in bilateral relations. According to Itty Abraham, 'the primary obstacles in the way of a qualitative increase in better relations were U.S. statutory constraints related to India's nuclear status and Indian distrust of U.S. bona fides based on prior experience and historical conditioning'.[2] Once these were resolved, the nuclear deal emerged a game-changer re-defining the relationship between the world's oldest and world's largest democracies.

It recognised India for its long, impeccable non-proliferation record, its self-imposed moratorium on nuclear testing, commitment to global institutions for a world free of nuclear weapons and a discouragement of both vertical and horizontal proliferation. Therein, the United States recognised India as a 'responsible nuclear state with advanced nuclear capabilities'. It also helped grant a waiver from the Nuclear Suppliers Group (NSG), allowing New Delhi to engage in nuclear commerce with other countries. India became the first and the only non-signatory to the Nuclear Non-Proliferation Treaty (NPT) to be granted such an exemption. It was with this background that India started to actively pursue membership in institutions under the multilateral export control regime. Within a decade and a half of signing the Nuclear Deal, India obtained membership of three salient institutions under the umbrella of global nuclear non-proliferation and export control regime—the Missile Technology Control Regime (MTCR), the Wassenaar Arrangement and the Australia Group. The membership to the MTCR and

the Wassenaar Arrangement is crucial because they are amongst the key multilateral global institutions, which have been instrumental in regulating the export of missile technology and conventional weapons, respectively. Most recently, in 2018, India gained membership into the Australia Group, which focuses on preventing the proliferation of chemical and biological weapons.

At this juncture, it is also important to understand why the membership of this regime is important for India. It has been of considerable strategic importance for India to enter the multilateral export control regime, given the salient technological controls and monopoly it maintains over exports of key technologies. For strategic reasons, an amicable relationship between India and the institutions of the regime would form the foundation of the Prime Minister Modi's Vision 2047 for a *Viksit Bharat*. This is pivotal as there are growing demands for civilian nuclear infrastructure, the use of dual-use technologies in diverse areas and the need to diversify energy generation sources, to meet commitments made to tackle climate change. India is also required to make a gradual shift to cleaner sources of energy generation such as nuclear energy. To equip India to do so in a sovereign manner, being a signatory of the regime facilitates a predictable and stable supply of the enabling goods and technologies.

Interestingly, the benefits of India acceding into the regime institutions like the MTCR were reciprocal. India being accepted by the regime as a full member of three institutions and as a *de facto* beneficiary through a waiver in the NSG, served two purposes. First it provided an opportunity for New Delhi to showcase itself as a responsible participant in the global community and to garner greater acknowledgment for its impeccable track record in nuclear non-proliferation and second, to gain predictability and supply security. This was essential as India is already on a path to civilian nuclear energy. This brings confidence in the supply of crucial materials such as enriched uranium, missile parts, spares, etc., and other dual-use[3] technologies over which the regime continues to maintain a monopoly.

From the perspective of the regime and its institutions like NSG and MTCR, acceptance of India brought benefits to the member states. Given the massive growth in India in civilian nuclear infrastructure, missiles, dual-use technologies and space capabilities, India emerged as a large potential market. It made compelling economic sense to not overlook India as in the last two decades, India has already been recognised as a promising and potential market for selling dual-use goods and technologies which the institutions under the regime have been controlling. Even on the normative side, the

member states could confidently support the Indian bid given the impeccable record of nuclear non-proliferation the country has maintained over the years. This has been complemented with participation in multilateral international institutions like the Nuclear Security Summit, mature infrastructure, and prioritisation of nuclear safety and security. This gave another reason for the regime to trust India, and decide in favour of opening exports to it.

The present article follows the following structure. First, it analyses the relationship India has shared with the export control regime and its institutions over the years. Second, it focuses on why the missile technology control regime, one of the key institutions under the umbrella of the export control regime, is important for India. It studies the technology controls under the ambit of the MTCR, the Indian capabilities and ambitions in those realms and the overall salience of it for India. This also includes developments made in the previous decades that led to Indian ascendance to the MTCR. Third, the article discusses the key factors that brought India closer to the MTCR full membership.

In this regard, three developments are studied. First, the Indo-US Civilian Nuclear Cooperation or the Nuclear Deal. This was pivotal in changing tides. India was accommodated and re-introduced to the nuclear non-proliferation regime with the help of the United States. The credit for it also goes to the Indian political leadership and its diplomatic community in achieving the civilian nuclear cooperation agreement. The nuclear deal redefined the relationship between India and the world in non-proliferation and export control circles and thus made MTCR membership possible for India in the subsequent decade. The second development the article analyses is India's capabilities in the development and manufacture of missiles. A pivotal role was played by developments in the indigenous defence manufacturing. The section focuses on BrahMos as a success story of a joint venture that helped elevate the Indian missile capabilities and manufacturing and also opened the possibility of defence exports. The third development is the great transformation in the Indian space capabilities in the recent decades. The space sector for India is another noteworthy development. From successful satellite launches to India achieving Anti-satellite weapons (ASAT) technology and inter-planetary explorations and successful landings in the Chandrayaan and Mangalyaan Missions, the Indian Space Research Organisation (ISRO) displayed robust technology and capabilities. Fourth, the article briefly comments on the future of Indian nuclear diplomacy and the indigenous defence technology and capabilities in the near future. At the end, the conclusion evaluates major findings of this article.

Relationship between India and the Multilateral Export Control Regimes

After conducting nuclear tests in the summer of 1998, New Delhi declared itself a nuclear weapon state. However, at the same time, it was dubbed as an 'illegal possessor'[4] of nuclear weapons by the nuclear non-proliferation regime. Even after decades since the Nuclear Non-Proliferation Treaty came into force, the world has not come any closer to the achievement of a world free of nuclear weapons. On the other hand, the gulf between nuclear haves and have-nots has increased to alarming levels. India by going nuclear did not violate the NPT as it was and continues to remain a non-signatory. India over these years has attempted to balance its national security interests with the global non-proliferation efforts. It has been a forerunner in the demand for a world free of nuclear weapons and a founding member of the International Atomic Energy Agency (IAEA) and other related multilateral bodies on nuclear non-proliferation and disarmament. It has actively participated and contributed in the negotiations for the NPT and has long supported the achievement of multilateral, time-bound, global nuclear disarmament. However, India being a non-signatory of the nuclear non-proliferation treaty has often been misunderstood on its intentions.

This has remained a reason for the distance between India and the regime of non-proliferation and export control. The Peaceful Nuclear tests conducted by India in 1974 further increased the gulf and misunderstandings. The Indian nuclear tests in 1998 resulted in intense diplomatic pressure and sanctions against India. Herculean attempts were made by the great powers to make India roll back its nuclear programme. India and the United States relationship came to an all-time low in the years following the tests. The association and acquaintance of India with the multilateral export control regimes can be traced back to the early 1980s when it first embarked on the path of nuclear disarmament and non-proliferation. The following is an analysis of the relationship between India and each of the four institutions under the regime of multilateral export control. One of the key institutions under the multilateral export control regime is the Wassenaar Arrangement (WA). It aims at regulating the transfer of conventional weapons and dual-use goods and technologies. Indian bid for membership was accepted in 2017 after prolonged negotiations conducted amongst the members of the institution. Full membership to India was significant as it allowed the country to participate more actively in regulating the global trade of sensitive technologies and strengthen its non-proliferation credentials. The

membership into the Wassenaar Arrangement also supports the Indian vision of 'atmanirbharta' in defence technologies as India would be sovereign in its decision-making in regard to the conventional and dual-use technologies.

The Australia Group is an informal forum of countries established in 1985 with the aim of coordinating efforts to prevent the proliferation of chemical and biological weapons. The group has export control over certain chemicals and biological agents that could be used in the production of chemical or biological weapons. India gaining membership of this body was long due given the non-proliferation record India had in these technologies and goods. Throughout the 20th century, many great powers have used chemical weapons in war against their adversaries. The United States use of chemical weapons in the war on Vietnam is well known. However, India has an impeccable record and abhorrence towards the use of chemical and biological weapons.

India's involvement with the Biological Weapons Convention (BWC) and the Chemical Weapons Convention (CWC) reflects its commitment to disarmament and non-proliferation efforts. It has been a founding member of the BWC and the CWC. India signed the CWC in 1993 and ratified it in 1996. The CWC aims to eliminate chemical weapons worldwide. India has declared its stockpiles of chemical weapons and has cooperated with international organisations for prohibiting their development, production, acquisition, stockpiling, retention and use. By participating in these conventions, India demonstrates its adherence to disarmament norms and its willingness to collaborate with the international community to address proliferation challenges. Its record for non-proliferation of WMDs and adherence to multilateral conventions has helped in India getting membership of the Australia Group. India gaining full membership was long overdue. It was a result of years of diplomatic effort and the country's commitment to non-proliferation norms and practices.

The MTCR aims to prevent the proliferation of missiles and missile technology. India voluntarily has been adhering to the MTCR guidelines for export controls since 2008. This self-imposed restraint was crucial as India was in possession of technologies under the purview of the MTCR but was a non-member to the regime. India's accession to the MTCR came after it successfully conducted a series of space-related activities, including the launch of its own satellites and the anti-satellite (ASAT)[5] test. In contemporary times, ISRO has been recognised amongst the few notable space agencies in the world. The MTCR membership marked global recognition of India's space capabilities and its commitment to non-proliferation.

The relationship between India and NSG is far more interesting than the other three institutions. The case is also more complicated as the NSG was created as a reaction to the Peaceful Nuclear Explosion conducted by India. The Indian bid for membership into the institution was made in 2008 and has been pending since. India's quest for NSG membership is rooted in its desire for international recognition as a responsible nuclear power and to gain access to advanced nuclear technologies for peaceful purposes. Also, having a regular and predictable supply of nuclear fuel is essential for civilian nuclear energy generation. The NSG functions like a group or a club of countries, which aims to prevent the proliferation of nuclear weapons and related technology. Even after having a clean reputation for nuclear non-proliferation, India's NSG membership bid has faced challenges due to political reasons. However, India has taken the NSG denial in the right spirit as India appears confident on NSG entry at a sooner date and has acknowledged the fact that 'the current situation is a hurdle and "not a diplomatic failure"'.[6]

It could be said that the overall relationship between India and the export control regime has improved considerably. The changes the last two decades have witnessed have been for the better for India. The positive response India has received on the membership front at several institutions under the export control regime is indeed a result of a combination of factors like India's impeccable record of nuclear non-proliferation, and also the combined efforts and prolonged hard work of generations of Indian leaders and diplomats who have worked for greater recognition and acceptability for the Indian nuclear exceptionalism. Despite the challenges and delays, India's association with multilateral export control regimes reflects its commitment to non-proliferation and nuclear disarmament. India gaining full membership of three of the four institutions under the export control regime on its non-proliferation credentials except the NSG is an accomplishment. This, on one hand signifies confidence of the international community that India is in a position to positively contribute to the regime with its best practices in the related realm. On the other, it proves that there is no major problem with the Indian record as it has already garnered membership of the three sister institutions to the NSG.

After all, the four institutions under the export control regimes are informal in character and are not treaty-based undertakings but rather arrangements among groups of like-minded countries. Given the impeccable nuclear non-proliferation record India has been in possession of, it would not be completely incorrect to believe that India's NSG membership bid failing to generate consensus within the members has less to do with Indian credentials

and more about NSG's origins in the aftermath of the 1974 Indian peaceful nuclear explosion (PNE), the great power politics within the forum and its structure, its ambiguous relationship with the Nuclear Non-Proliferation Treaty (NPT), and the changing geopolitics overshadowing the politics of nuclear non-proliferation. India is confident that its improved relationship with the regime would help in its participation in these regimes and overall further streamline the country's global efforts towards non-proliferation of WMDs, sensitive and dual-use technologies.

India and the MTCR Membership

Each of the four nodal multilateral export control regime institutions are dedicated to the prevention of proliferation of WMDs and related technology in the world. The MTCR is a dedicated institution to curb the transfers in WMD delivery systems, missiles and Unmanned Aerial Vehicles (UAVs). It aims at discouraging and disrupting the exports and overall proliferation of technologies and goods related to missiles, UAVs and other such technologies. Its expectation from a member state is to strengthen international nuclear non-proliferation efforts and demonstrate a sustained and sustainable commitment to non-proliferation.[7] India, since 2015 when it officially made its membership bid into the MTCR was confident of acceptance as it has had a respectable and long record of nuclear non-proliferation of the technologies and goods under the purview of the MTCR and has been a vocal and early advocate of a world free of nuclear weapons.

India is in possession of robust capability in missile technologies alongside space systems, conventional weaponry and a variety of dual-use technologies. This is certain of the interest of the MTCR. Yet, due to several political roadblocks and bilateral differences with some states, India's formal entry to this multilateral export control institution had been pending. For instance, earlier India encountered some resistance from Italy due to purely bilateral reasons. Consensus building on India's inclusion into the MTCR was stalled by Italy owing to an unpleasant incident where two of its marines charged with murdering two Indian fishermen were detained in India.[8] A similar *déjà vu* was felt when the NSG plenary meeting could not decide on admitting India as a member due to lack of consensus on the matter.

However, instead of deciding to deny India membership, they have simply delayed the decision on the matter due to internal reasons. India is, however, hopeful that NSG membership will happen soon.[9] In 2016 China stone-walled the building up of the required consensus when a majority of

the members of the NSG were in support of the Indian case. Pakistan, a non-member of the group also attempted dissuading India's inclusion. Sartaj Aziz[10] stated that the Pakistani Prime Minister Nawaz Sharif personally wrote to 17 Prime Ministers in order to prevent India from gaining entry into the NSG.[11] These instances reinforced the belief that the Indian membership has been blocked for purely 'political reasons'. However, the whole experience of the Indian bid at the NSG has proved to be a good learning for Indian nuclear diplomacy at other export control forums.

The ambitious path of defence modernisation, indigenisation and exports are three interwoven steps. The Indian case, as an emerging global power with vision for becoming a developed economy soon and a rapidly accelerating economy and sprawling and mature defence infrastructure and capabilities was respected. India dedicated its efforts to the cause by committing itself on a larger and ambitious project of indigenisation called 'Make in India' , under whose umbrella structure, the indigenous defence production, international joint collaborative projects and the related Research and Development (R&D) have assumed a totally new *avatar*. The BrahMos Cruise missile, the Agni Series of ICBMs, the Mangalyaan (Mars Orbiter Mission), the 4+ Generation Fighter Aircraft Tejas, etc., are developments of the previous two decades which have become the hallmark features of the potential of holistic development and exposure of the Indian indigenous industry in a multitude of related fields.

BrahMos has emerged as a leading supersonic cruise missile, a technology that has received much acclaim in the recent decades. Being jointly produced by India and the Russian Federation, it displays the strength of their joint production and also the maturity of indigenous defence capabilities of both the countries. The Agni series of intercontinental ballistic missiles and the Mangalyaan mission explicitly display the mature Indian capabilities in the space sector too. These developments have also further strengthened the need for India to be a part of the multilateral export control regimes, from the MTCR and export control regime perspective. Adding to this, India has had a clean track record in nuclear non-proliferation and a responsible international conduct.

The MTCR membership opens the long-shut door for Indian nuclear mainstreaming, courtesy the hard work of the Indian diplomats and the vision of the political leadership. The Indian nuclear non-proliferation credentials and the country's missile, space and other indigenous defence technological capabilities played a decisive role in getting into the nuclear non-proliferation regime institution. The country's prospective defence

exports and indigenisation capabilities in related technologies and goods was valued and acknowledged.

Key Factors leading to the Indian membership into the MTCR

There has been a gradual change in the approach of the world and the export control and nuclear non-proliferation regime towards India. And the visible indicators of the development were seen throughout the first two decades of the 21st century. The following three factors contributed phenomenally and formed a positive background as per which India and its membership bid was evaluated by the MTCR.

Beginning of the change: The Indo-US Nuclear Deal

The thaw in the bilateral relationship between India and the United States of America occurred in the early 2000s with the cementing of trust in the form of nuclear deal and recognising India as a responsible nuclear state. According to Kate Sullivan, 'Nuclear responsibility is a characteristic of states that fulfil norms of legitimate nuclear behaviour, and whose fulfilment of those norms is recognised by others.'[12] The nuclear deal provided India with the recognition and it started with the United States of America and later many other members of the nuclear non-proliferation regime.

Domestically, a sense of continuity was visible in the Indian foreign and security policy around the early 2000s, which is commendable and appreciable. Even after immense international pressure to roll back India, under different Prime Ministers, did not even contemplate stepping back on its nuclear odyssey. The nuclear tests were conducted in 1998 under the then Atal Bihari Vajpayee and the NDA government. Soon the move resulted in international sanctions targeting India in the post-nuclear tests years. After the nuclear tests came the government of UPA under the Prime Ministership of Manmohan Singh. The background developments and diplomatic engagements continued for years before the nuclear deal was achieved. It helped cement the Indian nuclear weapon status and global position. It was the US–India Civilian Nuclear Cooperation Agreement, also referred to as the Indo-US Nuclear Deal, which paved the way for greater acceptance for India into the key multilateral export control bodies and also in the United States foreign policy priorities. It was a prerequisite for the realisation of Indian civilian nuclear energy generation dreams and vision for future self-reliance in defence. According to Kate Sullivan, what the international non-proliferation community gave attention to was that, 'since 1998, India has upheld a voluntary moratorium on testing...dimension of

India's proliferation: its record on the export of nuclear weapon materials, technology, and expertise.'[13] This amongst other things worked in India's favour.

The nuclear deal paved the way for India's MTCR membership years later because it provided a background in which India witnessed greater international acceptance for its nuclear non-proliferation record and the aspect of recognition. What has been the overall diplomatic gain to India through the nuclear deal? The diplomatic implications of the nuclear deal were several. First, India gained a strategic partnership with the United States with closer cooperation in areas including trade, technology, defence, etc. The bilateral relationship moved towards a broader strategic partnership, whereas in the last decade the bilateral relationship was literally at an all-time low. Second, the deal recognised India as a de facto nuclear-armed state. This was a huge diplomatic success as no other state, non-signatory to the NPT has till date been given such a unique status. This was a significant departure from the traditional treatment of the nuclear non-proliferation regime and attitude towards India.

In the 21st century, India is all set to diversify its energy generation and opt for cleaner sources for the same. The nuclear deal opened the doors for India getting the essentials for civilian nuclear energy generation for the country's growing energy needs. The nuclear deal provided India access to civilian nuclear technology, fuel and equipment from the international market, which had been restricted previously due to it being a non-signatory to the NPT. India received overall endorsement of India's civil nuclear programme. Third, and most importantly, the nuclear deal helped integrate India into the global nuclear non-proliferation regime. Now, India was free to engage more actively in international nuclear forums and negotiations, export control bodies and contribute to efforts towards strengthening global nuclear security and non-proliferation norms as a respected and equal partner. India's overall international standing enhanced giving it confidence on its ability to negotiate and engage constructively with great powers on issues of global significance, high political issues like nuclear weapons. The nuclear deal overall had these implications for India which in the long run furthered its integration into the nuclear non-proliferation and multilateral export control institutions.

Indigenous defence capabilities: Changing the Indian story forever

Defence is as much a game of capabilities and preparedness as it is of signalling and optics. Success in indigenisation signifies a country's confidence,

capabilities and commitment to self-reliance in defence. India's journey from being a huge arms importer to gradually over the years becoming a defence exporter is a positive and welcome transition. India has also simultaneously promoted its indigenisation of defence production displaying its scope and potential to grow in the future and its aspirations to emerge as a major global player in defence technology.

There are several examples that highlight India's progress in indigenous defence capabilities in the recent decades. This has been across various domains of defence manufacturing and research, ranging from land-based systems, naval warfare, aerospace and outer space capacity to incapacitate or destroy satellites, and electronic warfare. This progress overall builds the 'atmanirbharta' or self-reliance quotient of a country. India has achieved a variety of indigenous defence developments in the recent decades like the Tejas Light Combat Aircraft (LCA), Agni Series Ballistic Missiles, INS Arihant Nuclear Submarine, Arjun Main Battle Tank (MBT), Advanced Towed Artillery Gun System (ATAGS), Integrated Electronic Warfare System (IEWS) and the BrahMos Supersonic Cruise Missile (jointly developed by India and Russia). The way the Indian story appears to the international community post-successful indigenisation in these key technologies and weapon systems is important. It also shows the strategic imperatives that drove these developments, to enhance national security and provide freedom from supply disruptions. This promotes overall self-reliance in defence production with a sharp reduction in dependence on foreign suppliers. Policies like the 'Make in India' initiative, Strategic Partnership Model, etc., played a positive role in this regard.

These developments gave India confidence, from being a young post-colonial state in South Asia known for being a big 'arms buyer' to pledging and moving in the direction of becoming an arms exporter. This is a contrast from the 'traditional' image associated with India for the Western world, as one of the biggest defence importer or arms buyer in the world. In the particular realm of missile technology, India has shown considerable growth and self-sufficiency. From the angle of India being considered for MTCR membership, the indigenisation of missile technologies played a key role as MTCR was about a state's missile and dual-use technological capability. In this regard, the BrahMos missile is further discussed as a case study.

THE BRAHMOS

The BrahMos Aerospace was formed in 1998 as a joint venture entity between India's Defence Research and Development Organisation (DRDO)

and Russia's NPO Mashinostroyeniya (NPOM). The aim was to 'design, develop, manufacture and market'[14] the supersonic cruise missile system. In just 18 years since its inception, BrahMos has not just helped in achieving self-sufficiency in missile programmes but has also emerged as a symbol of technological strength of both the countries. The missile system has four launch platforms: the Ship-based weapon complex system, the Land-based weapon complex system, the Air-launch weapon system, and the Submarine-launch system. This makes it versatile for a variety of operations irrespective of hard terrain or geographical hurdles. The recent test flight included a 2,500 kg supersonic BrahMos missile integrated with a Sukhoi SU-30 MKI aircraft.[15]

'BrahMos is a two-stage missile with a solid propellant booster engine as its first stage which brings it to supersonic speed and then gets separated and the liquid ramjet or the second stage closer to around 3 Mach speed in the cruise phase.'[16] It can carry a conventional warhead weighing 200–300 kg across a flight range of 290 km. In that way it is well inside the MTCR's scope, as defined by the 'Guidelines and Equipment and Technology Annex',[17] which simply means that India would not be in violation of the MTCR, which it is already a member now, if it exports the BrahMos to other states. These transfers would fall simply in the defence exports and imports category. BrahMos connects both 'Make in India' and the rising Indian defence exports. The former has provided the latter an element of reinforcement and encouragement. On these lines as stated by Sudhir Kumar Mishra, the CEO and MD of BrahMos Aerospace, they have 'prioritized indigenization of missile development in India, capacity building for larger production and meeting the production orders ahead of schedule to ensure delivery of missiles on time.'

The implications of the BrahMos success story are in being one of the leading supersonic cruise missiles and its probabilities of reaching greater heights through maturing into the realm of defence exports. For the sake of clarification, it is essential to add that BrahMos Cruise Missile flies at 'supersonic speeds throughout its flight range of about 290 km'[18] and therefore it falls well within the MTCR prescribed guidelines, range and payload limits. Yet, its success is unparalleled in defining the present stature of the Indian defence capabilities. It was recently cited by the Bharatiya Janta Party (BJP) that 'the MTCR membership will provide a boost to India's space and missile technology, besides the government's Make in India initiative.'[19] Adding to this, the MTCR membership has also been largely a result of mature Indian space and missile technology and the defence exports

of indigenous defence technologies and equipment would certainly further the 'Make in India' initiative. The implication of BrahMos as a hallmark of the Indian capabilities and its export probabilities has actually catalysed the 'Make in India' initiative.

Under Prime Minister Narendra Modi, India has witnessed a paradigm shift in the defence sphere[20] by first acknowledging the fact that India has the third largest armed forces in the world, 31.5 per cent of its budget is spent on capital acquisitions and 60 per cent of its requirements are met by imports,[21] and second, by dedicating required attention to indigenisation of defence equipment and furthering self-reliance in manufacturing. Manufacturing holds the key to nation build-up as it helps in achieving self-sustenance and security. Security signifies invulnerability against politically loaded slowdowns, denials and delays in delivery of defence equipment in times of need. The potential of defence exports also widens when the country reaches a systemic indigenisation of its major defence requirements. BrahMos in this light dons the role of a 'role model'[22] for the 'Make in India' initiative. The joint venture dates back to 1998 when it was signed as an inter-governmental agreement between former Indian President APJ Abdul Kalam and Russian first Deputy Defence Minister NV Mikhailov. Till date it has already contributed significantly in strengthening the defence capabilities and the overall security of the nation. Recently, there has been integration of the BrahMos cruise missile with Su-30 MK-I fighter aircraft, which has qualitatively diversified the available platforms for BrahMos. It has given a major boost to the BrahMos air launch flight test programme.[23] With many countries expressing interest in purchasing the supersonic, boldly proving the larger 'Make in India' dream true, the BrahMos has displayed a confident side of the Indian defence manufacturing. 'Make in India' is bound to reach greater heights as and when the negotiation on the export of the BrahMos missile to Vietnam finalises into an agreement. Vietnam won't be the first country to buy BrahMos as India has already signed a deal worth US$ 375 million for delivering BrahMos to the Philippines.[24] Defence scholars and experts believe that 'selling the supersonic BrahMos missile, made through an Indo-Russian joint venture, would mark a shift for the world's biggest arms importer, as India seeks to send weapons the other way in order to shore up partners' defences and boost revenues'.[25]

BrahMos has brought the possibilities of export for India. The export of a defence system, technology and equipment has always been a source of both economic gain and psychological pride for a country. When a country enters the market as a defence exporter, it signifies that it has reached closer to not

just self-sufficiency of defence production of that particular technology or equipment but also has mature expertise and command over it. Described as synonymous to 'innovation, achievement and success'[26] BrahMos has stood the test of time and in a short period of less than two decades has elevated itself into a success story for several joint ventures in defence technology and development. Presently, BrahMos has matured into an aerospace initiative, which is ready to enter the defence export business. Several countries including Vietnam, Indonesia, South Africa, Egypt, Oman, Brunei and Venezuela have expressed interest in the BrahMos missiles.[27] Hanoi has shown interest in BrahMos to bolster its defence capabilities in the face of ever-increasing Chinese activities in the South China Sea. The discussion with Vietnam has been ongoing for a few years now.

In 2016, the then Indian Defence Minister Manohar Parrikar met the Vietnamese President, Prime Minister and Defence Minister to discuss several matters of the military cooperation[28] and the equipment sale, including the BrahMos. The export of the supersonic cruise missile is on the horizon. In April 2024, India delivered the first batch of BrahMos supersonic cruise missile systems to the Philippines.[29] This marks the first delivery of BrahMos that India has made till date. Strengthening defence cooperation with the Philippines is strategic for India amid the ever-increasing military activities of China in the South China Sea. It is an achievement for the joint venture but as a defence equipment manufacturer India would require to fast-track production of the missile system. Besides the delivery to the Philippines and the deal reaching a near conclusion with Vietnam, other countries like Chile, Brazil, Indonesia, Malaysia, Thailand and United Arab Emirates[30] have also shown interest in buying BrahMos. Furthermore, it is believed that the BrahMos Aerospace is actively working on the design, development and production of some futuristic variants of the world-class missiles such as the BrahMos Next-Generation (NG) and Hypersonic BrahMos-II (K),[31] which will contribute further to the Indian success story.

Indian Advanced Space Capabilities: The sky's the limit

Apart from the efforts of the Indian nuclear diplomacy, a decisive role has been played by the scientific community of the country and their prolonged hard work in proving that Indian missile and space technology are equivalent to any other advanced state. This transition has been made in a matter of three decades. India's space capabilities have witnessed significant advancements since the 1990s, in satellite technology, launch vehicle development, space exploration and interplanetary missions. According to Matheswaran, in the

recent times, India's 'satellite launch capability is well established, with its PSLV vehicle clocking more than 50 launches with exceptional reliability and at an amazingly low cost'.[32] Though the MTCR has been an important and authoritative institution in the technology and dual-use goods transfer related to missiles yet, as Dishaw Mistry notes, India was not much affected by the 'highly publicized imposition of U.S. nonproliferation sanctions in 1992–94 against ISRO and a Russian firm, Glavkosmos, for the latter's supplying of cryogenic engines to the former'.[33] It delayed but did not significantly derail the Indian space research programmes.

> India's space activities did not come to a halt when foreign assistance was restricted by the MTCR. ISRO and Indian industry indigenously developed many space and missile technologies after being denied their import. These included shell catalysts for rocket fuel, magnesium plates for the Prithvi, radiation-hardened integrated circuits for satellites, and maraging steel for rocket motor casings. This indigenous construction typically took five years and resulted in an approximately 10% increase in expenditures.[34]

Optimistically, one can see India getting into the MTCR as the fruition of diplomatic hard work. This results in an avenue for greater integration of India into the nuclear non-proliferation regime at large and the multilateral export control regimes in particular. Indian nuclear non-proliferation impeccable record and responsible nuclear behaviour has resulted in the world recognising and believing that the Indian nuclear story is one of 'exceptionalism'. But India has advanced technological sophistication in both missile and space technologies. Most of these technologies have dual-use purposes. Often the civilian uses of space technology trace their roots back to military origins.[35] At least this was the case in the Cold War great power rivalry.

Historically, outer space has been categorised into two parts—first, the near-earth space, which serves as the foundation for various utilities, and second, the deep space dedicated to exploration. Indian space research with the persistence of efforts of the ISRO, backed by the government has performed satisfactorily in the near-earth space utilisation for communication, navigation, terrestrial monitoring, deep-space observation, time-keeping and direct-broadcast activities.[36] Between 2020 and 2024, ISRO had around 19 satellite launches.[37] ISRO has performed well on the crucial role of providing space-based services as utilities to its citizens. To name a few, Chandrayaan-1 and the Indian Regional Navigation Satellite System 1A (IRNSS) attracted

wide media coverage and attention, both national and international. But it was the Mars Orbiter Mission or the Mangalyaan that brought India into the great power club as it was in the realm of deep space exploration technology, which has long been a privilege commanded only by the great powers.

It was India's first interplanetary mission, to Mars,[38] and was launched from a PSLV-C25, marking the 25th flight of PSLV. Gp Capt Vivek Kapur notes that India 'after developing its workhorse PSLV rocket has gone on to develop more powerful rockets such as GSLV and its improved variants, the GSLV Mk-2 and GSLV Mk- 3 (and by doing so it has achieved remarkably) low launch costs in terms of per kilogram to orbit as compared with other more advanced space agencies'.[39] Lately, Indian space research has also been actively engaged with other countries' space agencies like joint satellite launches and collaboration between India and France on the satellite mission (Megha-Tropiques), etc.[40]

Thus, India's story has been both surprising and inspiring for many. The progress and accomplishments of Indian space research and exploration were finally acknowledged and recognised internationally for the significant strides it was making.[41] Indian space capabilities gave India impetus for the MTCR to take it with greater seriousness. India also has mature capabilities in ballistic missiles alongside advanced space systems and these together have caught the attention of the regime of the MTCR. India became a curious case that was impossible to ignore, as it had 'formal space cooperation programmes with thirty five MTCR countries even prior to joining the MTCR'.[42] As Dinshaw Mistry notes, interestingly, even as a non-member to the MTCR. With the formal membership of the MTCR, India is set to play an even bigger role as a natural leader and provider of space applications to the global community,[43] especially attending to the needs of several Global South countries by assisting them in satellite launches, etc. The overall report card of India on Indian advanced space and defence capabilities had made the Indian entry into the multilateral export control regime of the MTCR not just needed and urgent but inevitable.

The Way Forward

The way forward for Indian nuclear diplomacy appears to be promising. The development of India's association with these export control regimes has been seen as a positive signal for Indian nuclear diplomacy. It reflects a growing acceptance of India as a responsible nuclear power with advanced capabilities. It also highlights the recognition of India's unique position as

a non-NPT signatory with significant civilian nuclear energy objectives and as an emerging power whose success story has been recognised by the export control regime. Certainly, there is increased recognition and more takers for India's nuclear 'exceptionalism' than two decades ago. Going forward, there appears to be light at the end of the tunnel with a future of nuclear normalisation for India. India's inclusion in these export control regimes demonstrates a level of trust and confidence. This also opens up opportunities for increased cooperation in areas such as trade and technology transfers. In conclusion, India's association with multilateral export control regimes has evolved over several decades. While India was once viewed as a target or outsider, it has gradually gained acceptance and membership in key institutions. As highlighted in the article, a crucial role in the same was played by the diplomatic community and also the on-ground enhancements in the technology of both defence and space. The shift can be attributed to factors such as the Indo-US Nuclear Deal and India's recognition as a responsible nuclear state with advanced capabilities. India in the case of MTCR was further confident because it was formally in adherence to the MTCR guidelines and control list since 2008.[44] In the past it had not been involved in any transfers of technologies and goods under the purview of the MTCR.

The story of Indian defence exports is ongoing and the best is yet to come. As suggested by the Ministry of Defence's recent booklet, *Department of Defence Production: In Pursuit of Self-Reliance*,[45] the overall picture in indigenisation of defence appears positive. One missile that has 'stood out distinctly as the most shining emblem of a highly successful military collaboration programme between two most trusted allies, India and Russia, is the BrahMos missile'.[46] India has historically been favouring a more inclusive global order and expected a better non-political inclusion into the nuclear non-proliferation and export control regime. With the developments in the recent years and with an exception of the NSG, India has won the membership of three out of four of these institutions. There is optimism for India's future in the export control regime. The developments signify that the efforts are in the correct direction to increase overall 'atmanirbharta' in a variety of sectors leading to the Vision 2047 becoming a reality and the dream of India becoming a developed country.

Notes

1. From a strict Nuclear Non-Proliferation Treaty perspective, the states which participated in the negotiations after testing their nuclear weapons, and were

recognised as the Nuclear Weapon States (NWS) of the treaty were the only states legally in possession of the nuclear weapons. This also helps them reach the conclusion that any other state except the P-5, either a Non-Nuclear Weapon States (NNWS) member of the NPT or a non-party to the NPT, in case goes the path of nuclear weaponisation would then be referred to as an illegal nuclear weapon state or a blatant case of nuclear proliferation. Thus, according to some scholars in support of the NPT and the nuclear non-proliferation regime, Indian nuclear tests and later its nuclear weapon status was understood as illegal.

2. Itty Abraham, 'Origins of the United States-India Nuclear Agreement', Working Paper No. 9, East-West Center, May 2007, available at http://www.jstor.org/stable/resrep06496, accessed on 17 March 2024.
3. Dual-use technologies in the language of arms control and disarmament refer to technologies intended for civilian application that can also be used for military purposes. The export controls and other such related international regimes are put in place to control and overview the transfers in these technologies. They also work to prohibit transfers to those states who have had a history of proliferation or there is a likelihood that they could use the technologies and goods for a military purpose. This then would not only increase the risks of proliferation and arms race but also the likelihood of these technologies someday reaching the wrong hands or even non-states.
4. Refer to Note 1. Some critics of the nuclear non-proliferation regime also question the double standards of the regime in using a blanket term 'illegal' for every state that has gone for nuclear weapons after the NPT. North Korea for instance was a NPT NNWS member, it withdrew and then tested its nuclear weapon before declaring itself a nuclear weapon state. This was preceded by a clandestine nuclear weapon programme. The case of the Indian nuclear weapon programme for instance is qualitatively different from the North Korean case. India never pledged allegiance to the NPT and was never a member thus did not violate any of its clauses and rules. It also did not illegally receive transfers of goods and technologies to reach its nuclear weapons like North Korea and Pakistan. Therefore, understanding India as an illegal nuclear weapon state by definition is problematic and inappropriate.
5. India conducted an anti-satellite (ASAT) test in March 2019. So far, the United States, Russia and China have tested and demonstrated ASAT capability. However, Israel is known to have ASAT capability but has not yet tested the same.
6. As stated by Vikas Swarup, the Ministry of External Affairs Official Spokesperson. See 'India Confident on NSG Entry, Current Hurdle "Not a Diplomatic Failure": MEA', *The Indian Express*, 26 June 2016, available at http://indianexpress.com/article/india/india-news-india/india-confident-on-nsg-entry-current-hurdle-not-a-diplomatic-failure-mea-vikas-swarup-2877337/, accessed on 26 June 2016.
7. Manisha Chaurasiya, 'Challenges to India's Membership of Multilateral Export Control Regimes', in Vinod Patney (ed.), *Asian Defence Review 2016*, Knowledge World, New Delhi, 2016, p. 195.

8. Ibid., p. 195.
9. Nidhi Razdan, 'India's Hope for Nuke Club Entry Alive, NSG to Meet Again This Year: Sources', *NDTV*, 26 June 2016, available at http://www.ndtv.com/india-news/us-to-push-for-indias-inclusion-in-nuke-club-nsg-this-year-sources-1423518, accessed on 26 June 2016.
10. Sartaj Aziz is a Pakistani economist, statesman, strategist and a senior member of Pakistan›s federal cabinet in-charge of Foreign Affairs.
11. 'Nawaz Sharif Wrote to 17 Countries Against India's NSG Membership: Sartaj Aziz', *The Economic Times*, 28 June 2016, available at http://economictimes.indiatimes.com/news/defence/nawaz-sharif-wrote-to-17-countries-against-indias-nsg-membership-sartaj-aziz/articleshow/52947253.cms, accessed on 29 June 2016.
12. Kate Sullivan, 'Is India a Responsible Nuclear Power?', Policy Report, S. Rajaratnam School of International Studies, 2014, available at http://www.jstor.org/stable/resrep05864, accessed on 17 March 2024.
13. Ibid.
14. 'History of BrahMos', BrahMos Aerospace, available at http://www.brahmos.com/content.php?id=1&sid=2, accessed on 29 June 2018.
15. Sumita Sarkar, 'BrahMos Missile Integrated with Sukhoi Fighter', *The Times of India*, 26 June 2016, available at http://timesofindia.indiatimes.com/india/Brahmos-missile-integrated-with-Sukhoi-fighter/articleshow/52921890.cms, accessed on 28 June 2016.
16. BrahMos Aerospace, 2018.
17. 'MTCR Guidelines and the Equipment, Software and Technology Annex', MTCR, available at http://www.mtcr.info/english/guidelines.html, accessed on 29 June 2016.
18. Ravi Gupta, 'The Saga of Indian "Weapons of Peace"', *Defence and Security Alert*, Vol. 7, No. 7, April 2016, p. 51.
19. 'India's MTCR Membership Will Boost Space, Missile Technology: BJP', *FirstPost*, 29 June 2016, available at http://www.firstpost.com/politics/indias-mtcr-membership-will-boost-space-missile-technology-bjp-2863504.html, accessed on 1 July 2016.
20. As mentioned by Sudhir Kumar Mishra in an interview. See 'PM Modi Has Brought a Paradigm Shift in Defence; "Make in India" an Imperative: BrahMos' Sudhir Mishra', *The Economic Times*, 14 July 2018, available at http://economictimes.indiatimes.com/news/defence/pm-modi-has-brought-a-paradigm-shift-in-defence-make-in-india-an-imperative-brahmos-sudhir-mishra/articleshow/50848593.cms, accessed on 23 June 2016.
21. 'Defence Manufacturing', Make in India, available at http://www.makeinindia.com/sector/defence-manufacturing, accessed on 30 June 2016.
22. 'PM Narendra Modi Praises BrahMos Joint Venture', BrahMos Aerospace, February 2016, available at http://www.brahmos.com/newscenter.php?newsid=203.

23. 'BrahMos Firepowers SuKhoi Aircraft of the Indian Air Force', BrahMos Aerospace, 25 June 2016, available at http://www.brahmos.com/pressRelease.php?id=65, accessed on 29 June 2016.
24. 'The Business of BrahMos: How India's Defence Exports Blasted Off', *The Economic Times*, 13 June 2023, available at https://economictimes.indiatimes.com/news/defence/the-business-of-brahmos-how-indias-defence-exports-blasted-off/articleshow/100961603.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst, accessed on 17 March 2024; 'India to Export BrahMos Supersonic Missile Systems to Philippines in Next 10 Days: DRDO Chief', *The Economic Times*, 25 January 2024, available at https://economictimes.indiatimes.com/news/defence/india-to-export-brahmos-supersonic-missile-systems-to-philippines-in-next-10-days-drdo-chief/articleshow/107139068.cms?from=mdr#:~:text=The%20first%20set%20of%20BrahMos,into%20with%20a%20foreign%20nation, accessed on 17 March 2024.
25 Pradeep Sagar, 'India Plans to Export BrahMos to Vietnam', *The New Indian Express*, 10 June 2016. Available at http://www.newindianexpress.com/nation/India-plans-to-export-Brahmos-to-Vietnam/2016/06/10/article3475122.ece, accessed on 29 June 2016.
26. Praveen Pathak, 'Supersonic Missile System', *Defence and Security Alert*, Vol. 7, No. 7, April 2016, pp. 25–27.
27. Debidatta Aurobinda Mahapatra 'BrahMos Missile Exports a Challenging Proposition', 2014, available at http://in.rbth.com/economics/2014/11/10/brahmos_missile_exports_a_challenging_proposition_39615, accessed on 20 December 2015.
28. 'Parrikar Holds Talks with Vietnamese President, Prime Minister and Defence Minister', *The Indian Express*, 6 June 2016, available at http://indianexpress.com/article/india/india-news-india/manohar-parrikar-vietnam-president-prime-defence-minister-military-india-2838016/, accessed on 30 June 2016.
29. 'India Sends a Deterrent for Bully China in its Backyard', *The Economic Times Online*, 22 April 2024, available at https://economictimes.indiatimes.com/news/defence/india-sends-a-deterrent-for-bully-china-in-its-backyard/articleshow/109438311.cms?from=mdr.
30. Pradeep Sagar, 'India Plans to Export BrahMos to Vietnam', n. 25.
31. Praveen Pathak, 'Supersonic Missile System', n. 26.
32. M. Matheswaran, 'Emerging Contours of Space Security: Options for India', *Indian Foreign Affairs Journal*, Vol. 11, No. 1, January–March 2016, pp. 31–50.
33. Dinshaw Mistry, 'The Geostrategic Implications of India's Space Program', *Asian Survey*, Vol. 41, No. 6, 2001, pp. 1023–43, available at https://doi.org/10.1525/as.2001.41.6.1023, accessed on 17 March 2024.
34. Ibid.
35. M. Matheswaran, 'Emerging Contours of Space Security: Options for India', n. 32.
36. Ibid., p. 33.

37. 'Launches from SDSC SHAR, Sriharikota, India', ISRO, 2024, available at https://www.isro.gov.in/LaunchMissions.html#, accessed on 9 August 2024.
38. 'Mars Orbiter Mission Spacecraft', ISRO, available at http://www.isro.gov.in/Spacecraft/mars-orbiter-mission-spacecraft, accessed on 1 July 2016.
39. Vivek Kapur, 'India Progresses Development of Advanced Space Technology', Centre for Air Power Studies, 30 May 2016, available at https://capsindia.org/wp-content/uploads/2021/10/CAPS_Infocus_VK_42.pdf.
40. 'India-France Joint Vision for Space Cooperation (New Delhi, 10 March 2018)', Ministry of External Affairs, Government of India, available at https://www.mea.gov.in/bilateral-documents.htm?dtl/29597/IndiaFrance+Joint+Vision+for+Space+Cooperation+New+Delhi+10+March+2018, accessed on 16 March 2024.
41. Vivek Kapur, 'India Progresses Development of Advanced Space Technology', n. 39.
42. 'India-France Joint Vision for Space Cooperation (New Delhi, 10 March 2018)', n. 40.
43. Ibid.
44. Ibid.
45. 'Department of Defence Production- In Pursuit of Self-Reliance', Make in India, May 2016, available at http://makeinindiadefence.com/MOD_BOOKLET_27.05.2016.pdf, accessed on 29 June 2016.
46. Praveen Pathak, 'Supersonic Missile System', n. 26.