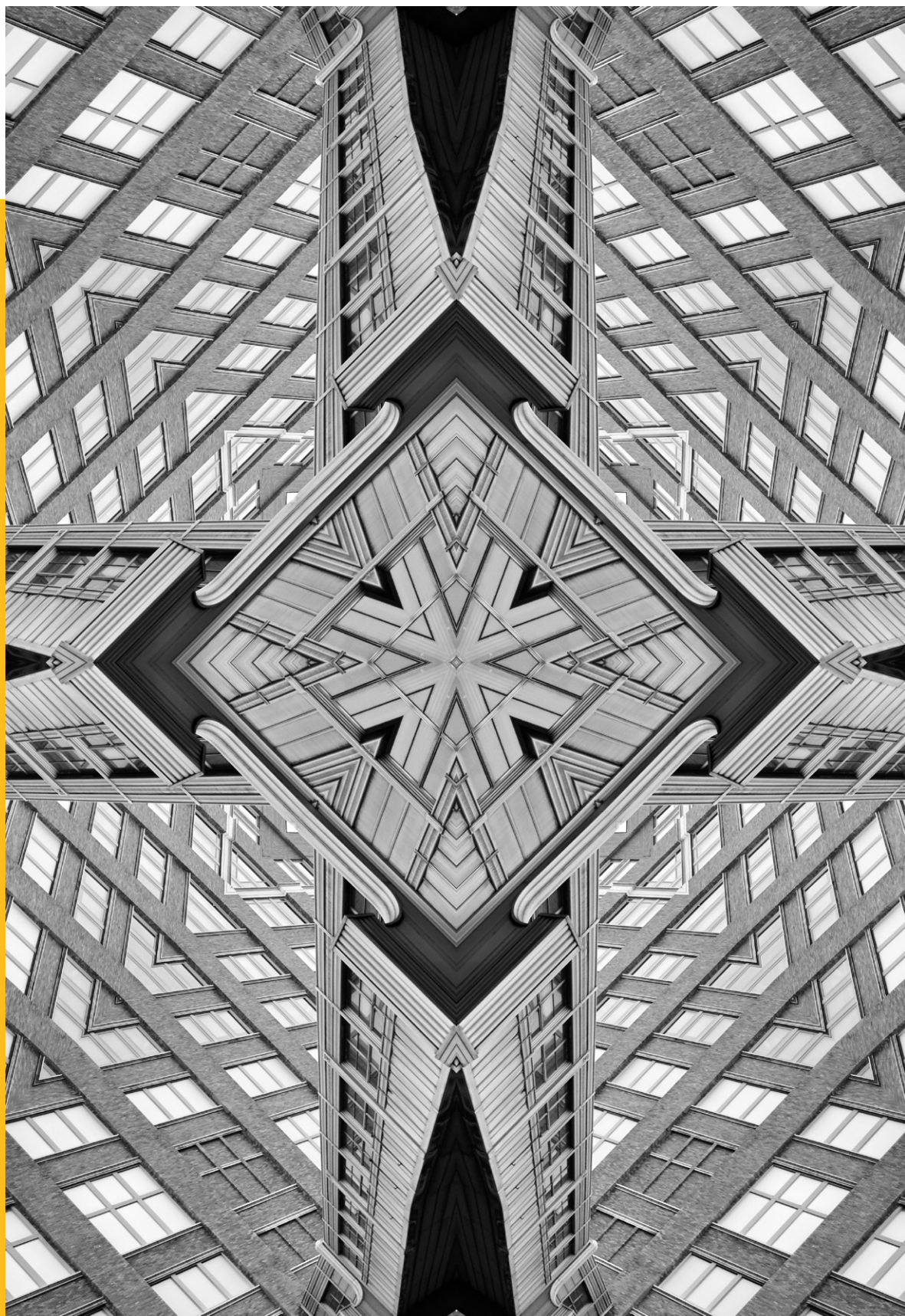


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Biden, Trump, and India-US Technology Partnership

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Abstract

This paper assesses United States (US) presidents Donald J. Trump's (2017-21) and Joe Biden's (2021-present) respective records on the India-US technology partnership. During the Trump years, this domain of bilateral cooperation saw the finalisation of foundational agreements, including those on force interoperability, and new precedents on US arms export designations for India. While these agreements pertained mostly to defence technology, the Biden administration oversaw a gradual expansion in the scope of India-US cooperation on technology. As India and the US today focus on critical and emerging technologies, this paper outlines relevant recommendations for the two sides to further harness the potential of their technology partnership.

The bilateral relations between India and the United States (US) are marked by engagements in areas ranging from security and counterterrorism to agriculture, health, and space. The India-US Comprehensive Global Strategic Partnership—which also includes cooperation at multilateral and regional platforms—is anchored by the stability of its ‘form and function’.¹ While this stability is primarily informed by its ‘function’—rapidly converging interests in the Indo-Pacific region, strengthening of defence relations, and deepening trade and investment linkages—the value of ‘form’ cannot be understated. This has led to an emphasis on institutional frameworks that help preserve the partnership’s function from short-term or unresolved divergences (such as market access).

In the current period of conflict and renewed inter-state rivalries, this emphasis is reflected in the results of consultative platforms such as the India-US 2+2 Ministerial Dialogue. The two sides have also revived a number of platforms in recent years, including the India-US Trade Policy Forum (TPF), the India-US Commercial Dialogue, and the India-US CEO Forum. These platforms serve as dedicated channels for cooperation, ensuring that divergences in one area do not impede progress in another; they have also helped expand the scope (i.e., ‘function’) of the partnership.

One such area is technology partnership. In 2022, India’s Prime Minister Narendra Modi and US President Joe Biden announced the India-US Initiative on Critical and Emerging Technologies (iCET).²

Although India-US space technology cooperation dates to the 1960s³ and the India-US Science & Technology (S&T) agreement was finalised in 2005,⁴ it could be argued that the domain of technology cooperation has remained underserved, especially due to the absence of an overarching roadmap to realise the potential of India-US tech cooperation. Moreover, this is an area that promises to be of mutual benefit. For the US, India can offer crucial lessons on scale, including the following:

- India’s success with Digital Public Infrastructure (DPI) for transparent and secure e-governance and financial inclusion
- India’s homegrown success in space exploration that is known for its cost effectiveness

Introduction

- India's fast-growing, vibrant tech start-up ecosystem, enabled by the JAM Trinity⁵ (i.e., *Jan Dhan* bank accounts, *Aadhaar* unique identification, and mobile ownership with access to affordable and high-quality data)
- India's long-standing record of nurturing high-skilled talent

For India, the US holds the potential for becoming its primary partner on tech transfers and innovation. The US tech ecosystem has outsized global influence, being home to 58 of the world's top 100 tech companies.⁶ Moreover, despite China making strides in displacing the US as the world's top tech manufacturer (chiefly of computers and smartphones), the US maintains an edge in the tech domain.⁷ US tech companies account for a sizeable majority (112 out of 187) of tech firms listed in the MSCI World Index, together representing 85 percent of the market value of the global tech ecosystem.⁸

Nevertheless, the belated attention to the India-US tech cooperation appears to have bipartisan underpinnings in the US. This is apparent in US presidents Donald J. Trump's (2017-21) and Joe Biden's (2021-present) respective records on the India-US technology partnership.

Trump's Record: New Precedents

During the Trump years, India-US bilateral relations faced challenges under President Trump's call for "fair and reciprocal" trade.⁹ This included the imposition of tariffs (i.e., on steel and aluminium in March 2018);¹⁰ offhanded comments on India's tariffs against specific US exports (e.g., Harley Davidson motorcycles);¹¹ and the suspension of India's benefits under the Generalized System of Preferences (GSP),¹² which led to India imposing retaliatory tariffs on 28 US products.¹³

At the same time, the Trump years also furthered India-US strategic ties through convergence-based institutionalisation, which insulated strategic ties from trade-related divergences (e.g., the India-US 2+2 Ministerial Dialogue and the India-US Strategic Energy Partnership).¹⁴ The Trump administration also oversaw the alignment of the US conception of the Indo-Pacific with India's emphasis on the north-west Indian Ocean region.¹⁵ In defence relations, the Trump administration oversaw the timely completion of defence deals finalised under his predecessor, Barack Obama (such as the 2015 sale of AH-64E Apache helicopters) and finalised additional force interoperability agreements (i.e., COMCASA and BECA).¹⁶

The Trump years also witnessed new precedents in the technology partnership, which were primarily concentrated in the defence tech domain. This included India becoming eligible for sensitive defence technologies. For instance, the Trump administration overturned the Obama administration's freeze¹⁷ on India's eligibility to acquire US-made unmanned systems and made India "the first non-treaty partner to be offered a MTCR Category-1 Unmanned Aerial System, the Sea Guardian UAS."¹⁸

This was followed by the Trump administration overseeing the Indian Navy's induction of two Sea Guardian MQ-9B Predator drones on lease from General Atomics in 2020. This was the first defence system acquired on lease under India's Defence Acquisition Procedure 2020.¹⁹

In addition, amid recommendations to "front-load" licenses for India²⁰—i.e., the US government clearing procurement licences in advance of India's request for proposal (RFP)—the Trump administration focused on Direct Commercial Sales (DCS) track for arms sales. During 2015-21, the US authorised over US\$3 billion in defence articles via the DCS track for India, which included critical components like military electronics and fire control, laser, imaging, and guidance equipment.²¹

Beyond Congressional purview of arms export designations, the Trump administration wielded its executive authority to designate India with the

Trump's Record: New Precedents

Strategic Trade Authorisation-1 (STA-1) status via a federal notification, making India the third Asian country after Japan and South Korea to get STA-1 status and paving the way for critical tech transfers in civil space and defence sectors.²² Further, the STA-1 status signalled US confidence in India's record of adhering to global export control regimes.^{a,23}

The Trump administration's federal notification rationalised India's STA-1 status, as being intended to bolster bilateral tech cooperation. The notification deemed it to be "realised in the two countries' mutually agreed upon steps to expand cooperation in civil space, defence, and other high-technology sectors."²⁴ Historically, the US has conferred the STA-1 status to only those countries that are members of all four export control regimes, i.e., the Missile Technology Control Regime (MTCR), the Wassenaar Arrangement, the Australia Group, and the Nuclear Suppliers Group (NSG). In the federal notification, the Trump administration noted that India is a member of three of the four export controls regimes (except NSG).²⁵

Table 1
Key Developments in India-US Strategic Ties Under Trump

Year	Developments	Significance
2017	US offers sale of Sea Guardian Unmanned Aerial System (UAS)	India becomes the first non-treaty partner to be offered US-made UAS ²⁶
2017	US-Japan-India Malabar Naval Exercise	First naval exercise to include aircraft carriers from all three participating nations ²⁷
2018	Strategic Trade Authorisation-1 (STA-1) status for India	Upgrade in US export designation, following MDP status under Obama ²⁸
2018	Communications Compatibility and Security Agreement (COMCASA)	Foundational agreement for India-US force interoperability ²⁹

^a This was noted in the response by India's Ministry of External Affairs (MEA): "[STA-1 status] is a logical culmination to India's designation as a Major Defense Partner of the U.S. and a reaffirmation of India's impeccable record as a responsible member of the concerned multilateral export control regimes."

Trump's Record: New Precedents

Year	Developments	Significance
2018	Inaugural India-US 2+2 Ministerial Dialogue	Convergence-based institutionalisation, amid trade frictions ³⁰
2019	Arrival of first batch of CH-47 (I) heavy-lift Chinook helicopters	Continuity on Obama-era (2015) US sale of 15 Boeing Chinook helicopters ³¹
2019	Arrival of first batch of AH-64E Apache combat helicopters	Continuity on Obama-era (2015) US sale of 22 Boeing Apache helicopters ³²
2019	Quad Foreign Ministers meet on the margins of UN General Assembly	First Quad meeting at the Ministerial level since revival efforts began in 2017 ³³
2019	Industrial Security Annex (ISA)	Agreement to enable sharing of sensitive tech information ³⁴
2020	Finalisation of India's acquisition of 24 MH-60 Romeo Seahawk helicopters	Critical acquisition for the Indian Navy's anti-surface and anti-submarine efforts ³⁵
2020	Positioning of a US Navy Liaison Officer at IFC-IOR and an Indian Liaison Officer at US NAVCENT in Bahrain	Amid India's eastward focus under the Indo-Pacific outlook, US acknowledgment of India's westward security concerns and IOR leadership ³⁶
2020	India inducts two Sea Guardian drones on lease from General Atomics	First defence system on lease under Defence Acquisition Procedure 2020 ³⁷
2020	Basic Exchange and Cooperation Agreement (BECA)	Foundational agreement for India-US force interoperability ³⁸

Another formal elevation in the India-US technology partnership included the Industrial Security Annex (ISA). The ISA was signed at the India-US 2+2 Ministerial Dialogue in 2019³⁹ to facilitate the exchange of sensitive information between the defence industries of both countries.

Similarly, fresh impetus was accorded to the Obama-era Defence Technology and Trade Initiative (DTTI).⁴⁰ At the 9th DTTI Group Meeting, the two sides signed a Statement of Intent (SoI) to pursue “detailed planning” and “measurable progress” on specific projects like Lightweight Small Arms

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Technologies (LSAT) and Air-Launched Small UAS.⁴¹ At the 10th DTTI Group Meeting, the two sides finalised a DTTI Standard Operating Procedure (SoP) for the identification and development of projects.⁴² The two sides also established the DTTI Industry Collaboration Forum (DICF) and published the “DTTI Initial Guidance for Industry”, which was distributed across Indian and American industry associations.⁴³

While these formal, executive, and bilateral efforts were crucial for deepening the confidence between India and the US on sensitive technologies, there was unfortunately little action on expanding bilateral tech cooperation beyond the realm of the defence sector. This was apparent in the February 2020 elevation of the bilateral relationship to a Comprehensive Global Strategic Partnership. The statement on this elevation’s “vision and principles” indicated little beyond usual factors such as the US push for India’s adoption of American nuclear reactor technology and progress in ISRO-NASA institutional cooperation on space technology.⁴⁴

Biden's Record: Greater Institutionalisation

India-US bilateral relations in the Biden years have experienced sustained continuity on the Trump-era precedents on defence tech. During PM Modi's state visit to the US in June 2023, the Biden administration reiterated US support for India's prospective acquisition of American MQ-9B drones.⁴⁵ In addition, building on Trump's push for deepening bilateral confidence on sensitive technologies, President Biden and PM Modi hailed a landmark development on co-production and technology transfer.⁴⁶ During the same visit, GE Aerospace and Hindustan Aeronautics Limited (HAL) signed a Memorandum of Understanding (MoU) to produce 99 F-414 jet engines in India for the HAL Light Combat Aircraft (LCA) Mk2.⁴⁷ The deal could result in 80 percent of prospective technology transfer;⁴⁸ HAL officials have noted that, when conversations began a decade ago, the US had agreed to only 58 percent technology transfer.⁴⁹

The Biden administration also maintained continuity on the Industrial Security Agreement (ISA) finalised during the Trump administration. In late 2021, in New Delhi, India and the US held the ISA summit to “develop protocol for the exchange of classified information between the defence industries of both the nations.”⁵⁰ The summit included both sides agreeing in principle to establish the Indo-US Industrial Security Joint Working Group to align policies and procedures “expeditiously that will allow the defence industries to collaborate on cutting edge defence technologies.”⁵¹ Similarly, at the 11th DTTI meeting in 2021, the two sides revised the SoI and announced the first project agreement for Air-Launched Unmanned Aerial Vehicle under the DTTI's Joint Working Group Air Systems.⁵²

The Biden years also led to an increase in bilateral consultative platforms, which either include or are entirely dedicated to new avenues of India-US tech partnership. For example, in view of the imperatives of clean energy transition, India and the US revamped their bilateral focus on energy to the India-US Strategic Clean Energy Partnership (SCEP). The SCEP introduced a new domain for tech cooperation alongside the US-India Climate and Clean Energy Agenda 2030 and the Climate Action and Finance Mobilization Dialogue. India and the US defined the contours of SCEP to include electrification and decarbonisation of processes and end uses; scaling up and accelerating the deployment of emerging clean energy technologies; and finding solutions for hard-to-decarbonise sectors.⁵³

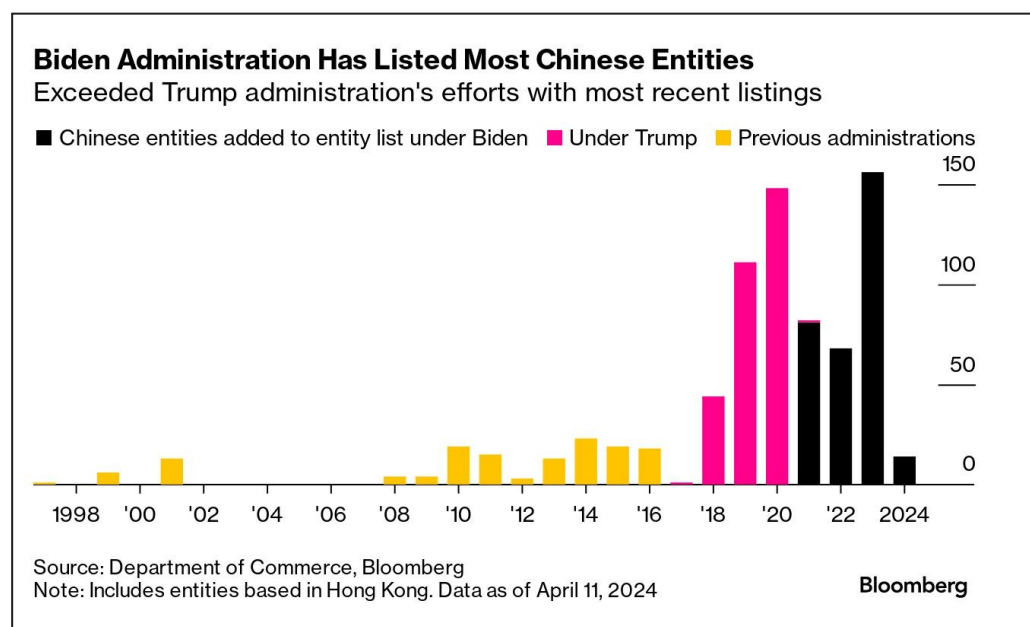
In mid-2023, the US Department of Energy and India's Ministry of New and Renewable Energy (MNRE) launched the India-US Renewable Energy Technology Action Platform (RETAP)—a bilateral platform that aims to develop a joint focus on critical clean technologies for green/clean hydrogen, wind energy, energy storage, geothermal energy, and ocean/tidal energy.⁵⁴

Biden's Record: Greater Institutionalisation

Apart from exploring untapped areas like clean energy technologies, the expansion in the scope of the India-US tech partnership must also be viewed in light of shifts in the macro-level operating environment.

Under Biden, US-China tech competition has intensified, including through Biden adopting the Trump playbook on limiting China's access to critical technologies. While the Trump administration employed export controls to limit the flow of sensitive technologies that were critical to China's 5G propositions, Biden expanded the restrictions to other sensitive technologies such as semiconductors. In April 2024, the Biden administration surpassed the Trump administration's tally of Chinese companies added to the US Commerce Department's 'Entity List' (319 under Biden compared to 306 under Trump).⁵⁵

Figure 1
Biden's Record on Listing Chinese Companies Under the 'Entity List'



Source: Bloomberg⁵⁶

Biden's Record: Greater Institutionalisation

Biden is several steps ahead of the Trump playbook. Under US National Security Advisor (NSA) Jake Sullivan's 'small yard and high fence' policy of tech competition with China,⁵⁷ the Biden administration has not only focused on other critical technologies but has also adopted other means to limit China's tech advances:

- **Targeting Chinese overcapacity:** The Biden administration has retained Trump-era tariffs against China (on around US\$300 billion Chinese imports).⁵⁸ Moreover, earlier in 2024, Biden announced additional tariffs, which were characterised as being "carefully targeted at strategic sectors" applicable to US\$18 billion worth of Chinese products. Primarily targeting Chinese "overcapacity" in clean technologies, the Biden administration raised tariffs on Chinese EVs from 25 percent to 100 percent; on lithium-ion EV batteries from 7.5 percent to 25 percent; and on solar cells (assembled or not into modules) from 25 percent to 50 percent.⁵⁹
- **Monitoring the flow of US capital:** Apart from restricting the flow of critical tech components, the Biden administration also limited US investments through an executive order requiring outbound US investors to notify the US Treasury Department in a bid to regulate US capital flows to China, especially in critical areas like semiconductors, quantum computing, and AI components.⁶⁰
- **Rallying international partners:** The Biden administration has sought support from US partners to limit China's tech advances. This primarily includes outreach to Japanese and Dutch companies (e.g., Netherlands' ASML Holding NV and Japan's Tokyo Electron Ltd) engaged in the production of machines required for chip manufacturing, to curb China's ability to manufacture high-end chips that are critical for AI applications.⁶¹

This amplification of tensions between the US and China in the tech domain has raised the imperatives of US tech cooperation with like-minded partners such as India.

An early indication of the elevation of the India-US tech cooperation during the Biden administration came at the India-US 2+2 Ministerial Dialogue. Held in April 2022 in Washington D.C., the 2+2 consultation included a focus on resilient supply chains. The joint statement noted the "vital role of secure, resilient, reliable, and diverse supply chains for Critical and Emerging Technologies (CET), and the need to enable regional and global innovation."⁶² The two sides also announced that India and the US will "put in place a framework to advance cooperation in CET such as advanced communication technology, artificial intelligence, quantum science, STEM, semi-conductors and biotechnology."⁶³

Biden's Record: Greater Institutionalisation

Subsequently, at the May 2022 bilateral meeting between PM Modi and President Biden, the two sides launched the India-US iCET to “expand partnership in critical and emerging technologies,” overseen by India’s National Security Council Secretariat (NSCS) and the US National Security Council (NSC).⁶⁴

Table 2
Crucial Developments on India-US iCET, 2023⁶⁵ and 2024⁶⁶

Domain	Development
Innovation Ecosystem	a. Implementation Arrangement for Research Agency Partnership b. Indo-US Quantum Coordination Mechanism c. Congressional push to lower barriers for US exports to India of High-Performance Computing (HPC) technology d. ‘Innovation Handshake’ to address barriers for start-ups
Defence Technology	a. Roadmap for Defense Industrial Cooperation b. India-US Defense Acceleration Ecosystem (INDUS-X) c. Cooperation between US Defense Innovation Unit and India’s Innovations for Defense Excellence (iDEX)
Semiconductor	a. Joint Semiconductor Readiness Assessment by US Semiconductor Industry Association (SIA) and India Electronics Semiconductor Association (IESA) b. Strategic semiconductor partnership between General Atomics and 3rdiTech
Space	a. Strategic Framework for Human Spaceflight Cooperation to deepen interoperability and commence advanced training for ISRO astronauts at NASA Johnson Space Center b. Preparing for launch of NASA-ISRO Synthetic Aperture Radar c. Partnership between US Space Force and Indian start-ups 114ai and 3rdiTech

Biden's Record: Greater Institutionalisation

Domain	Development
Talent	a. Joint task force of Association of US universities and Indian educational institutions, including IITs, for research partnerships
Telecommunications	a. US-India Open RAN Acceleration Roadmap b. US\$5 million USAID Edge Fund grant to Qualcomm and Mavenir to test its ORAN stack in India c. Promoting Open RAN workforce development in India d. US funding for public-private cooperation between vendors and operators, led by India's Bharat 6G Alliance and US Next G Alliance
Biotechnology	a. Track 1.5 Biopharmaceutical Supply Chain Consortium to enhance resilience in supply chains for active pharmaceutical ingredients, key starting materials, etc. b. Joint funding opportunity by National Science Foundation and Department of Biotechnology for research and innovation c. Launch of Bio-X initiative to promote biotech cooperation
Clean Energy	a. Establishing US-India Advanced Materials R&D Forum for collaboration between Americans and Indian universities, national laboratories, and private sector researchers b. Adding focus on critical mineral supply chains under US-India Commercial Dialogue and US-India CEO Forum c. Collaborative program between Geological Survey of India and US Geological Survey on exploration, characterisation, and evaluation of rare earth elements and critical mineral deposits
Quantum & AI	a. Workshop on post-quantum cryptography at the University of California and visits of Indian experts from academia and private sector to US national laboratories and quantum institutions b. Indian Centre for Development of Advanced Computing's membership at US Accelerated Data Analytics and Computing Institute

Biden's Record: Greater Institutionalisation

Since the launch of iCET, two iterations of the India-US iCET have been convened (in January 2023 and June 2024), co-chaired by India's NSA Ajit Doval and US NSA Jake Sullivan.

Towards a clear mandate for an enhanced scope of India-US tech partnership, the first iCET identified specific areas of mutual interest in line with respective strengths, including:

- Strengthening links between Indian and American innovation ecosystems
- Developing defence innovation and technology cooperation
- Building resilient semiconductor supply chains
- Strengthening cooperation on space
- Fostering partnerships on STEM talent
- Exploring cooperation on next-gen telecommunications

The second iCET resulted in the addition of three key domains:

- Combining capabilities in biotechnology and biomanufacturing
- Building a clean energy and a critical minerals partnership
- Pursuing quantum, AI, and high-performance computing collaboration

This clear enunciation of emergent priority areas and greater institutionalisation has stemmed from a newfound push for advancing bilateral tech partnership beyond the realm of the defence sector.

The Way Forward: Overcoming the “Hesitations of History”

In 2016, while addressing a joint session of the US Congress, PM Modi stated that India and the US are overcoming “hesitations of history” and presented his vision for strengthening India-US economic and defence relations.⁶⁷ Such a vision is also relevant for the India-US tech partnership. In recent years, bilateral tech cooperation has seen an unparalleled elevation, both in form and function, building on the precedents set during the Trump administration and greater institutionalisation in the Biden years. It is imperative that India and the US sustain this momentum by following through on developments that would help both nations look beyond the missteps of the past.

Past Missteps

The India-US DTTI, which was conceptualised under the Obama administration, had a focus on progressing India-US defence ties towards co-development and co-production. However, progress was slow on account of the delayed finalisation of joint frameworks to link the two nations’ defence ecosystems. Moreover, the DTTI’s four joint working groups (on land systems, naval systems, air systems, and aircraft carrier technology cooperation) registered little progress as the two countries gradually finalised foundational agreements and developed confidence on tech sharing (as eventually witnessed in the Trump years). Until then, projects identified under the DTTI were limited to low-tech and ancillary equipment areas.⁶⁸

Course Correction

The iCET offers an overarching framework for tech cooperation, which can also lend direction to defence tech cooperation in the wider context of bilateral synergies.⁶⁹ For instance, with the June 2023 launch of the India-US Defence Acceleration Ecosystem (INDUS-X), India and the US are attempting to link their national defence ecosystems, i.e., Innovation for Defence Excellence (iDEX) and Defence Innovation Unit (DIU). However, this time around, India and the US are focusing on cross-linking defence start-ups with key manufacturers on either side.⁷⁰

This “protégé-mentor” approach may help look beyond the approach of convergence among peers. The approach emphasises gradually going towards co-development and co-production avenues,⁷¹ coupled with an accelerator program for start-ups, innovation partnerships with universities, and defence

The Way Forward: Overcoming the “Hesitations of History”

majors exploring supply chain collaborations with start-ups.⁷² The proof-of-concept for this approach was evident in the first round of INDUS-X Joint Challenges (held shortly after June 2023 launch of INDUS-X), wherein companies competed to identify commercial tech solutions to address war-fighter challenges.⁷³

This approach is also yielding industrial partnerships. At the 2024 iteration of INDUS-X, US-based Skydio and India-based UAS manufacturer Aeroarc announced a partnership on developing AI applications in defence capabilities.⁷⁴ General Atomics also announced a partnership with Bharat Forge to manufacture UAS components in India for MQ-9B aircrafts worldwide.⁷⁵

Beyond the defence sector, space is another domain that offers immense potential, especially in view of ISRO’s reported discussions with several US private-sector players like Boeing to explore collaboration on satellite launches.⁷⁶ In this context, NewSpace India Limited’s (NSIL) privatisation of LVM3 (Launch Vehicle Mark 3) production can help India-US collaborations attain reduced costs to jointly make such launch vehicles accessible to the global industry.⁷⁷

In addition, knowledge partners and business councils are included alongside the INDUS-X Senior Advisor Group to not only convene follow-on programming but also help identify barriers to implementation.⁷⁸ The inclusion of such entities will also help draw recommendations from latest thought leadership and industry best practices.

Increased Consultation

Moving beyond the missteps of the DTTI era, the India-US iCET’s emphasis on early-stage innovation linkages must be strengthened with additional consultations that go beyond the INDUS-X Gurukul Education Series, Industry Workshops, and Investor Strategy Sessions.⁷⁹ This could include a specialised focus on private-sector players that have their own infrastructure and channels (such as incubators, accelerators, or market access partners) on supporting start-ups—chiefly those that focus on dual-use tech with offtake potential across industry and defence domains.

Identifying the best of such start-ups will help build a cross-sectional community that will, over time, serve as a fertile ground for co-development avenues—something that was elusive under DTTI’s “pathfinder” focus.

Such an effort may be taken up by the Indo-US Joint Innovation Fund, which is already tasked with engaging private players under INDUS-X.⁸⁰

The Way Forward: Overcoming the “Hesitations of History”

Anticipating Hurdles

With iCET, India-US tech partnership is now rightly expanding beyond defence. However, challenges remain, despite the strong US bipartisan support for deepening India-US ties. Washington’s efforts to stem Beijing’s tech strides may pose foreseeable hindrances and are increasingly impacting US allies and partners.

- In July 2024, Bloomberg reported that the Biden administration’s effort to seek cooperation from Japan and the Netherlands to restrict the flow of chip-making tech to China may include punitive actions, whereby the US may target Japanese and Dutch companies—chiefly Tokyo Electron Ltd. and ASML Holding NV—with the Foreign Direct Product Rule (FDPR), which would permit the US to impose controls on foreign-made products that use American technology.⁸¹
- In April 2024, Microsoft announced an investment of US\$1.5 billion in the United Arab Emirates’s (UAE) key AI firm, G42. According to open-source reports, the investment materialised only at the culmination of “behind-the-scenes negotiations” with the US government, requiring G42 to divest from China, including ending links with suppliers like Huawei.⁸²
- In December 2023, the Biden administration forced Aramco Ventures’ Prosperity7 Fund to sell its shares in a Silicon Valley AI chip start-up, Rain AI. This followed a review by the Committee on Foreign Investment in the United States (CFIUS), which has increased its scrutiny of Middle Eastern sovereign wealth funds’ links with China.⁸³

The India-US iCET has not only outlined emergent areas of cooperation but also registered progress on multiple counts, including signing new research partnerships for early-stage innovation, identifying prospects for joint funding, announcing workforce development programmes, and finalising joint readiness assessments. Beyond early-stage research partnerships at the institutional level, these steps can also help develop a bridge between Indian and American tech ecosystems on the mobilisation of skilled talent.

With the two nations’ NSAs serving as iCET’s chief architects, there is now scope for the platform to assume a troubleshooting mandate.

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Some line ministries possess direct control over this function. For example, in the US, the Commerce Department’s Bureau of Industry and Security (BIS) oversees the Entity List. However, dealing with the US on tech transfers is known to be a cumbersome exercise, considering that there are “as many as 11 separate export screening lists” also run by other entities like the US Treasury Department.⁸⁴

Similarly, in the case of India, its Control List, i.e., the SCOMET list (Special Chemicals, Organisms, Materials, Equipment, and Technologies),⁸⁵ is overseen by the Directorate General of Foreign Trade (DGFT), while investments are overseen by the Department for Promotion of Industry and Internal Trade (DPIIT) and the Cabinet Committee on Investment and Growth.⁸⁶

However, the iCET could draw upon the India Rapid Reaction Cell (IRRC), which was established in 2015 to “ramp up the operational tempo” of the DTTI. Such an added focus under the iCET can include developing an ahead-of-the-curve screening mechanism to flag emergent divergences and impediments to expanding the scope of the India-US tech partnership.

India and the US have elevated their technology partnership both in form and function. During the Trump years, India and the US gradually finalised foundational agreements (including force interoperability agreements), which set the necessary frameworks for handling sensitive tech between the two nations. The Trump administration also oversaw critical precedents on US arms export designations for India.

The Biden administration continued these Trump-era precedents and introduced new cooperation areas to go beyond the traditional bilateral focus on defence tech. Most importantly, the Biden years have included a focus on greater institutionalisation, chiefly with the iCET serving as an overarching framework for India-US tech partnership.

Apart from deepening India-US synergies in emergent areas like clean energy technology, the push for greater institutionalisation is also informed by intensifying US-China tech competition, which has raised the imperatives for US tech cooperation with partners like India.

With their focus on developing early and cross-sectional linkages between the two nations' tech ecosystems, new platforms like the iCET and INDUS-X are also more consultative and inclusive.

Going forward, these attributes can be harnessed by deepening links with the incubators and accelerators of private-sector players that focus on dual-use tech with relevance for industry and defence domains.

Similarly, with Washington's heightened efforts to stem Beijing's tech strides increasingly impacting US allies and partners, platforms like the iCET could assume a troubleshooting role, which can help streamline coordination on exhaustive export-control lists and ensure compliance from both sides. With the two nations' NSAs at the helm, iCET is well-placed to develop an ahead-of-the-curve screening mechanism to flag impediments to the India-US tech partnership. 

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- 1 MEA, “India-US Bilateral Relations,” October 2023, https://www.mea.gov.in/Portal/ForeignRelation/Bilateral_Brief_as_on_09.10.2023.pdf
- 2 PIB, <https://pib.gov.in/PressReleseDetailm.aspx?PRID=1827885>
- 3 Kartik Bommakanti, “US-India Space Cooperation: Moving Away from the Burden of the Past,” Observer Research Foundation, December 2019, <https://www.orfonline.org/expert-speak/us-india-space-cooperation-moving-away-burden-past-59282>
- 4 US State Department, “United States and India Sign Science and Technology Cooperation Agreement,” October 17, 2005, <https://2001-2009.state.gov/r/pa/prs/ps/2005/55198.htm>
- 5 Aishwarya Narayan, “What is the Jan Dhan Account-Aadhaar-Mobile’ Trinity & Has it Aided India’s War on Poverty?” *The Print*, December 12, 2022, <https://theprint.in/economy/what-is-the-jan-dhan-account-aadhaar-mobile-trinity-has-it-aided-indias-war-on-poverty/1257768/>
- 6 Sadanand Dhume, “India Could Help the U.S. to Tech Victory Over China,” *The Wall Street Journal*, June 19, 2024, <https://www.wsj.com/articles/india-could-help-the-u-s-to-tech-victory-over-china-dd624fe6>
- 7 Graham Allison et al., “The Great Tech Rivalry: China vs the U.S.,” Belfer Center for Science and International Affairs, December 7, 2021, <https://www.belfercenter.org/publication/great-tech-rivalry-china-vs-us>
- 8 Matthew A. Winkler, “In Jamie Dimon’s America, the Stock Market Has Already Voted,” *Bloomberg*, May 2, 2024, <https://www.bloomberg.com/opinion/articles/2024-05-02/in-jamie-dimon-s-america-the-stock-market-has-already-voted>
- 9 PTI, “US Wants India to Embrace Fair and Reciprocal Trade, Lower Barriers,” *The Economic Times*, June 26, 2019, <https://economictimes.indiatimes.com/news/economy/foreign-trade/us-wants-india-to-embrace-fair-and-reciprocal-trade-lower-barriers/articleshow/69957812.cms?from=mdr>
- 10 Shayerah Ilias Akhtar and K. Alan Kronstadt, “U.S.-India Trade Relations,” Congressional Research Service, October 2, 2019, https://www.everycrsreport.com/files/2019-10-02_IF10384_b3743c130d4d6060e35b91088e7867c8882c9c5d.pdf
- 11 PTI, “50% Tariff on US Motorcycles by India Unacceptable, Says Donald Trump,” *The Economic Times*, June 11, 2019, <https://economictimes.indiatimes.com/news/economy/foreign-trade/50-tariff-on-us-motorcycles-by-india-unacceptable-says-donald-trump/articleshow/69735534.cms>
- 12 USTR, <https://ustr.gov/about-us/policy-offices/press-office/press-releases/2019/march/united-states-will-terminate-gsp#:~:text=Trump%2C%20U.S.%20Trade%20Representative%20Robert,with%20the%20statutory%20eligibility%20criteria>

- 13 Gireesh Chandra Prasad, "India's Retaliatory Tariffs on 28 US Products Comes into Effect," *LiveMint*, June 16, 2019, <https://www.livemint.com/politics/policy/india-imposes-tariffs-on-28-us-goods-as-global-trade-war-heats-up-1560616982719.html>
- 14 Angad Singh and Kashish Parpiani, "Third India-US 2+2 Dialogue: Breaking the Mould on Post-War Model of Bilateral Ties," Observer Research Foundation, October 26, 2020, <https://www.orfonline.org/expert-speak/third-india-us-22-dialogue-breaking-the-mould-on-post-war-model-of-bilateral-ties>
- 15 ORF, "Coalitions and Consensus: In Defense of Values that Matter – Raisina Dialogue 2020," Observer Research Foundation, January 19, 2020, <https://www.youtube.com/watch?v=gotKrQTVKQ4>
- 16 Harsh V. Pant and Kashish Parpiani, *America and the Indo-Pacific: Trump and Beyond* (New Delhi: Routledge India, 2021).
- 17 Varghese K. George, *Open Embrace: India-US Ties in the Age of Modi and Trump* (New Delhi: Penguin Viking, 2018), 145.
- 18 US State Department, "U.S. Security Cooperation with India," Bureau of Political-Military Affairs – US Department of State, January 20, 2021, <https://www.state.gov/u-s-security-cooperation-with-india/>
- 19 Snehesh Alex Philip, "Indian Navy Inducts Two American Drones on Lease, Could Add More Later," *The Print*, November 25, 2020, <https://theprint.in/defence/indian-navy-inducts-two-american-drones-on-lease-could-add-more-later/551931/>
- 20 Cara Abercrombie, "Removing Barriers to U.S.-India Defense Trade," Carnegie Endowment for International Peace, January 10, 2018, <https://carnegieendowment.org/research/2018/01/removing-barriers-to-us-india-defense-trade?lang=en>
- 21 US State Department, "U.S. Security Cooperation with India"
- 22 Lalit K. Jha, "India Third Asian Nation to Get STA-1 Status from US," *LiveMint*, August 4, 2018, <https://www.livemint.com/Politics/GvUiFqQuVzLnBYuM5mwFuK/India-third-Asian-nation-to-get-STA1-status-from-US.html>
- 23 MEA, https://www.mea.gov.in/press-releases.htm?dtl/30203/India_moved_to_Tier1_of_Department_of_Commerces_Strategic_Trade_Authorization_licence_exception
- 24 Jha, "India Third Asian Nation to Get STA-1 Status from US"
- 25 Jha, "India Third Asian Nation to Get STA-1 Status from US"
- 26 MEA, https://www.mea.gov.in/bilateral-documents.htm?dtl/28560/United_States_and_India_Prosperty_Through_Partnership

- 27 Steve George and Huizhong Wu, "US, India and Japan Begin Naval Exercises, as China Looks On," *CNN*, July 12, 2017, <https://edition.cnn.com/2017/07/11/asia/india-japan-us-malabar-exercises/index.html>
- 28 Jha, "India Third Asian Nation to Get STA-1 Status from US"
- 29 "What is COMCASA? Security Agreement Between India-US Signed During 2+2 Summit a Boost for Defence Preparedness," *Financial Express*, September 6, 2018, <https://www.financialexpress.com/business/defence-what-is-comcasa-security-agreement-between-india-us-signed-during-22-summit-a-boost-for-defence-preparedness-1304439/>
- 30 PIB, <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1557922>
- 31 Rahul Singh, "First Batch of Heavy-Lift Chinook Helicopters Arrives from US," *The Hindustan Times*, February 11, 2019, <https://www.hindustantimes.com/india-news/first-batch-of-heavy-lift-chinook-helicopters-arrives-from-us/story-QuZPtNzotvWOrp901alZtI.html>
- 32 "Boost to IAF as US Delivers First Batch of 4 Apache Attack Choppers," *The Indian Express*, July 27, 2019, <https://indianexpress.com/article/india/apache-attack-helicopters-indian-air-force-us-5856572/>
- 33 "Minister-Level Quad Meet an Elevation of Indo-Pacific Dialogue," *The Hindustan Times*, September 28, 2019, <https://www.hindustantimes.com/india-news/minister-level-quad-meet-an-elevation-of-indo-pacific-dialogue-says-us/story-JU7P3AT9Vmd6tUjiumZJCM.html>
- 34 Debanish Achom, "India-US Sign Defence Pact to Share Sensitive Info on Military Hardware," *NDTV*, December 19, 2019, <https://www.ndtv.com/india-news/2-2-meeting-india-us-sign-defence-pact-isa-to-share-sensitive-info-on-military-hardware-2151082>
- 35 "MH-60 Seahawk: Why India is in Love with this 'Romeo' Helicopter," *The Economic Times*, February 27, 2020, <https://economictimes.indiatimes.com/news/defence/mh-60-seahawk-why-india-is-in-love-with-this-romeo-helicopter/articleshow/74220157.cms?from=mdr>
- 36 MEA, https://www.mea.gov.in/bilateral-documents.htm?dtl/33145/Joint_Statement_on_the_third_IndiaUS_2432_Ministerial_Dialogue
- 37 Philip, "Indian Navy Inducts Two American Drones on Lease, Could Add More Later"
- 38 Vishnu Som and Arun Nair, "India, US Sign Major Defence Pact BECA, Days Before Presidential Polls," *NDTV*, October 27, 2020, <https://www.ndtv.com/india-news/india-us-sign-landmark-defence-pact-basic-exchange-and-cooperation-agreement-during-2-2-dialogue-2316370>
- 39 Achom, "India-US Sign Defence Pact to Share Sensitive Info on Military Hardware"

- 40 US Embassy Factsheet, “U.S.-India Defense Relations Fact Sheet,” US Embassy and Consulates in India, December 9, 2016, <https://in.usembassy.gov/u-s-india-defense-relations-fact-sheet-december-8-2016/>
- 41 US Embassy, <https://in.usembassy.gov/indian-and-u-s-defense-delegations-meet-to-discuss-defense-cooperation/>
- 42 PIB, <https://pib.gov.in/PressReleasePage.aspx?PRID=1654856>
- 43 US DoD, “India-U.S. Defense Technology and Trade Initiative (DTTI) – Initial Guidance for Industry,” July 14, 2020, <https://www.acq.osd.mil/ic/docs/dtti/DTTI-Initial-Guidance-for-Industry-July2020.pdf>
- 44 MEA, https://www.mea.gov.in/bilateral-documents.htm?dtl/32421/Joint_Statement_Vision_and_Principles_for_IndiaUS_Comprehensive_Global_Strategic_Partnership
- 45 White House, <https://www.whitehouse.gov/briefing-room/statements-releases/2023/06/22/joint-statement-from-the-united-states-and-india/>
- 46 Prashant Jha and Rahul Singh, “US Congress Clears Landmark India-US Fighter Engine Deal,” *The Hindustan Times*, August 31, 2023, <https://www.hindustantimes.com/india-news/us-congress-clears-landmark-india-us-fighter-engine-deal-101693418713191.html>
- 47 GE, <https://www.geaerospace.com/news/press-releases/defense-engines/ge-aerospace-signs-mou-hindustan-aeronautics-limited-produce-fighter>
- 48 Singh, “GE Engine Deal to Help Overcome Striking Tech Gap, Says HAL Chief”
- 49 Singh, “GE Engine Deal to Help Overcome Striking Tech Gap, Says HAL Chief”
- 50 PIB, [https://pib.gov.in/PressReleasePage.aspx?PRID=1759911#:~:text=The%20Industrial%20Security%20Agreement%20\(ISA,industries%20of%20both%20the%20nations](https://pib.gov.in/PressReleasePage.aspx?PRID=1759911#:~:text=The%20Industrial%20Security%20Agreement%20(ISA,industries%20of%20both%20the%20nations)
- 51 PIB, [https://pib.gov.in/PressReleasePage.aspx?PRID=1759911#:~:text=The%20Industrial%20Security%20Agreement%20\(ISA,industries%20of%20both%20the%20nations](https://pib.gov.in/PressReleasePage.aspx?PRID=1759911#:~:text=The%20Industrial%20Security%20Agreement%20(ISA,industries%20of%20both%20the%20nations)
- 52 PIB, <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1770443>
- 53 US Embassy, <https://in.usembassy.gov/joint-statement-u-s-and-indian-ministers-revitalize-the-strategic-clean-energy-partnership/>
- 54 PIB, <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1953550>
- 55 “Biden Surpasses Trump’s Record for Blacklisting Chinese Entities,” *Bloomberg*, April 12, 2024, <https://www.bloomberg.com/news/>

articles/2024-04-12/biden-surpasses-trump-s-record-for-blacklisting-chinese-entities?utm_medium=social&cmpid=socialflow-twitter-business&utm_content=business&utm_source=twitter&utm_campaign=socialflow-organic

- 56 “Biden Surpasses Trump’s Record for Blacklisting Chinese Entities”
- 57 Jake Sullivan, “Remarks by National Security Advisor Jake Sullivan on Renewing American Economic Leadership at the Brookings Institution,” The White House – Joe Biden Administration, April 27, 2023, <https://www.whitehouse.gov/briefing-room/speeches-remarks/2023/04/27/remarks-by-national-security-advisor-jake-sullivan-on-renewing-american-economic-leadership-at-the-brookings-institution/>
- 58 Hans Nichols, “Scoop: Biden Preparing to Keep Many of Trump’s China Tariffs,” *Axios*, January 5, 2024, <https://www.axios.com/2024/01/05/biden-keep-many-trump-china-tariffs>
- 59 White House Factsheet, “President Biden Takes Action to Protect American Workers and Businesses from China’s Unfair Trade Practices,” The White House – Joe Biden Administration, May 14, 2024, <https://www.whitehouse.gov/briefing-room/statements-releases/2024/05/14/fact-sheet-president-biden-takes-action-to-protect-american-workers-and-businesses-from-chinas-unfair-trade-practices/>
- 60 Amanda Macias, “White House Restricts US Investments in Some Chinese Tech, Citing National Security Concerns,” *CNBC*, August 9, 2023, <https://www.cnbc.com/2023/08/09/biden-to-sign-executive-order-aimed-at-restricting-china-investments.html#:~:text=Biden%20signed%20an%20executive%20order,and%20certain%20artificial%20intelligence%20capabilities>
- 61 Mackenzie Hawkins, Cagan Koc, and Yuki Furukawa, “US Seeks Allies’ Help in Curbing China’s AI Chip Progress,” *Bloomberg*, June 18, 2024, <https://www.bloomberg.com/news/articles/2024-06-18/us-to-seek-curbs-on-asml-tokyo-electron-support-for-china-s-ai-memory-chips>
- 62 US State Department, “Fourth Annual US-India 2+2 Ministerial Dialogue,” April 11, 2022, <https://www.state.gov/fourth-annual-u-s-india-22-ministerial-dialogue/>
- 63 US State Department, “Fourth Annual US-India 2+2 Ministerial Dialogue”
- 64 White House, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/24/readout-of-president-bidens-meeting-with-prime-minister-modi-of-india/>
- 65 White House Factsheet, “Fact Sheet: United States and India elevate strategic partnership with the initiative on Critical and Emerging Technology (iCET)”, *The White House – Joe Biden administration*, 31 January, 2023, <https://www.whitehouse.gov/briefing-room/statements-releases/2023/01/31/fact-sheet-united-states-and-india-elevate-strategic-partnership-with-the-initiative-on-critical-and-emerging-technology-icet/>

- 66 White House Factsheet, “Joint Fact Sheet: The United States and India Continue to Chart an Ambitious Course for the Initiative on Critical and Emerging Technology,” The White House – Joe Biden Administration, June 17, 2024, <https://www.whitehouse.gov/briefing-room/statements-releases/2024/06/17/joint-fact-sheet-the-united-states-and-india-continue-to-chart-an-ambitious-course-for-the-initiative-on-critical-and-emerging-technology/#:~:text=Since%20the%20launch%20of%20iCET,%2C%20biotechnology%2C%20and%20clean%20energy>
- 67 “Modi Says India, U.S. Have Overcome ‘the Hesitations of History’,” *PBS News*, June 8, 2016, <https://www.pbs.org/newshour/politics/watch-live-indian-pm-burnishes-his-standing-with-address-to-congress-at-11-a-m-et>
- 68 Javin Aryan, “The Defence Technology and Trade Initiative (DTTI): Lost in the Acronym Bowl,” Observer Research Foundation, December 10, 2020, <https://www.orfonline.org/expert-speak/defence-technology-trade-initiative-dtti-lost-acronym-bowl>
- 69 Girish Luthra, “The India-US Defence Industrial and Technology Cooperation: From Aspirations to Outcomes,” Observer Research Foundation, June 28, 2023, <https://www.orfonline.org/expert-speak/the-india-us-defence-industrial-and-technology-cooperation>
- 70 DoD Factsheet, “Fact Sheet – India-U.S. Defense Acceleration Ecosystem (INDUS-X) 2023,” June 21, 2023, <https://media.defense.gov/2023/Jun/21/2003244837/-1/-1/0/FACTSHEET-INDUS-X-FINAL.PDF>
- 71 Girish Luthra, “The India-US Defence Technology and Industrial Cooperation: It’s Time for Delivery,” Observer Research Foundation, February 26, 2024, <https://www.orfonline.org/expert-speak/the-india-us-defence-technology-and-industrial-cooperation-its-time-for-delivery>
- 72 DoD Factsheet, “Fact Sheet – India-U.S. Defense Acceleration Ecosystem (INDUS-X) 2023”
- 73 DoD Factsheet, “Fact Sheet: India-U.S. Defense Acceleration Ecosystem (INDUS-X) 2024,” February 21, 2024, <https://www.defense.gov/News/Releases/Release/Article/3682879/fact-sheet-india-us-defense-acceleration-ecosystem-indus-x/>
- 74 DoD Factsheet, “Fact Sheet: India-U.S. Defense Acceleration Ecosystem (INDUS-X) 2024”
- 75 DoD Factsheet, “Fact Sheet: India-U.S. Defense Acceleration Ecosystem (INDUS-X) 2024”
- 76 Sandhya Ramesh, “Big Projects, Joint Lunar Station – ISRO Chairman on Potential of India-US Space Collaboration,” *The Print*, May 22, 2024, <https://theprint.in/science/big-projects-joint-lunar-station-isro-chairman-on-potential-of-india-us-space-collaboration/2100406/>

- 77 Sandhya Ramesh, “Big Projects, Joint Lunar Station – ISRO Chairman on Potential of India-US Space Collaboration”
- 78 DoD Factsheet, “Fact Sheet – India-U.S. Defense Acceleration Ecosystem (INDUS-X) 2023”
- 79 DoD Factsheet, “Fact Sheet: India-U.S. Defense Acceleration Ecosystem (INDUS-X) 2024”
- 80 DoD Factsheet, “Fact Sheet – India-U.S. Defense Acceleration Ecosystem (INDUS-X) 2023”
- 81 Mackenzie Hawkins et al., “US Floats Tougher Trade Rules to Rein in China Chip Industry,” *Bloomberg*, July 17, 2024, <https://www.bloomberg.com/news/articles/2024-07-17/us-considers-tougher-trade-rules-against-companies-in-chip-crackdown-on-china>
- 82 Abeer Abu Omar and Dina Bass, “Microsoft Invests \$1.5 Billion in UAE’s G42 in Pivot from China,” *Bloomberg*, April 16, 2024, <https://www.bloomberg.com/news/articles/2024-04-16/microsoft-invests-1-5-billion-in-uae-s-g42-will-get-board-seat>
- 83 Jane Lanhee Lee, “US Compels Saudi Fund to Exit AI Chip Start Up Backed by Altman,” *Bloomberg*, December 1, 2023, <https://www.bloomberg.com/news/articles/2023-11-30/us-compels-saudi-fund-to-exit-ai-chip-startup-backed-by-altman>
- 84 Manoj Joshi, “A Survey of India-US Defence Cooperation,” Observer Research Foundation, March 15, 2024, <https://www.orfonline.org/research/a-survey-of-india-us-defence-cooperation>
- 85 MEA, “India’s Export Control List (SCOMET) Latest Version,” August 28, 2023, <https://www.mea.gov.in/Images/CPV/SCOMET-List-2023.pdf>
- 86 “Govt Forms 8 Cabinet Committees; Security, Appointments Panels Remain Unchanged,” *The Indian Express*, July 4, 2024, <https://indianexpress.com/article/india/govt-cabinet-committees-appointment-9430712/>

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Endnotes



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