

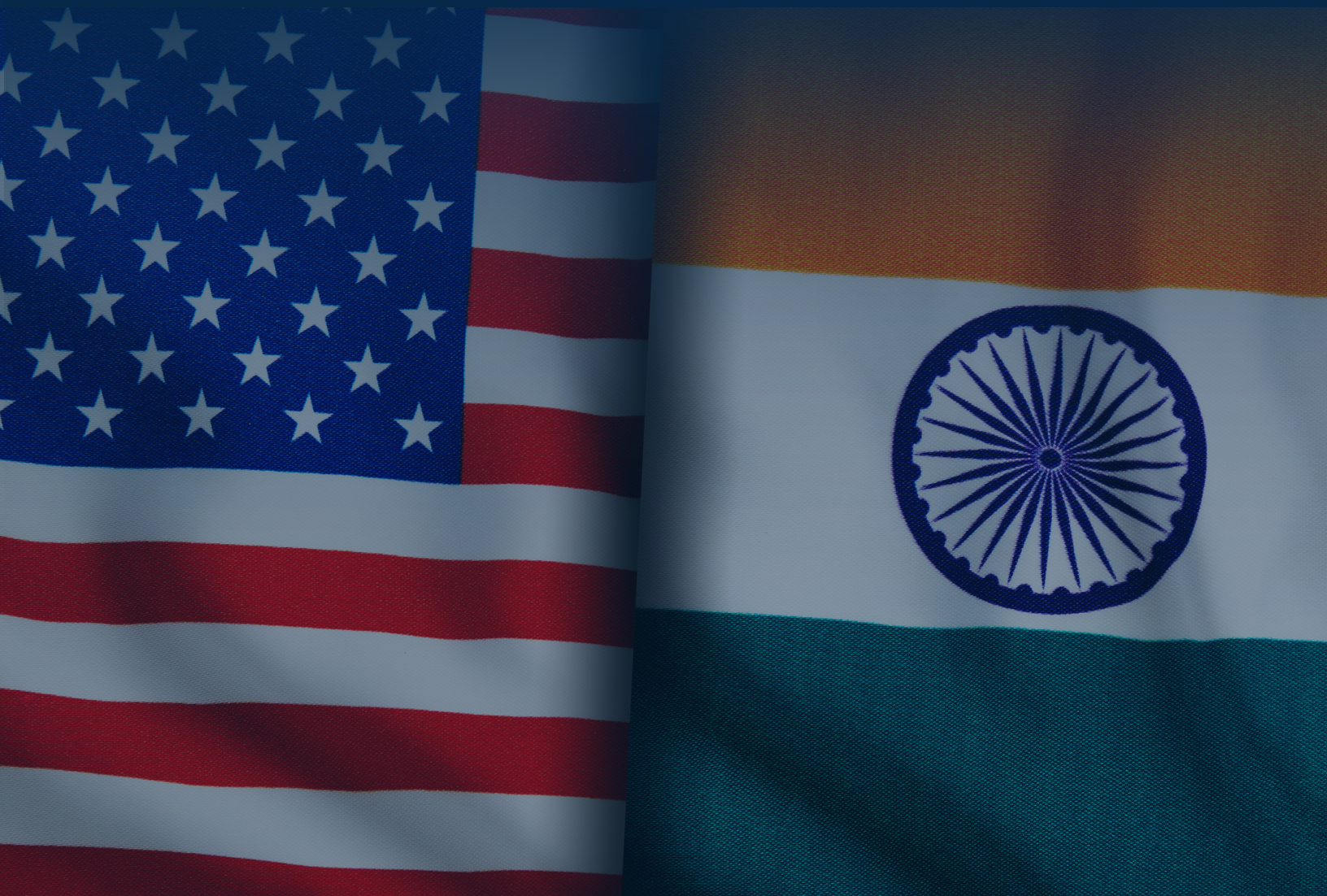
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US-India Dosti: Insights from the Next Gen

EDITED BY
ROB YORK AND AKHIL
RAMESH



US-India Dosti: Insights from the Next Gen

By
Rob York, Shalini Singh,
Garrison Moratto, Moirangthem
Sayaluxmi Devi, Nicholas
Shafer, Aadrina Deori, and Lake
Dodson

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Introduction: A Dosti (Friendship) for the 21st Century

Rob York

The relationship between India and the United States may be the most important bilateral in the 21st century. It's not just that the two countries are democracies that face a common obstacle in the People's Republic of China, but that both countries offer the other an enormous amount of resources, be it in technology, natural resources, and (most importantly) people. This volume includes six such people, all of them young minds capable of offering suggestions on how to nurture that relationship for years, even decades to come. Their ideas—on critical and emerging tech, nuclear energy, security, and even social problems like inequality—present the first round of such advice, which Pacific Forum looks forward to offering to the publics in both countries for many years. We are grateful for the support of the Hindu American Foundation in this effort. Together, we look forward to nurturing the *dosti* (friendship) across the social, economic, technological, and political spheres.

Rob York
Director for Regional Affairs
Pacific Forum

1

Strengthening US-India Ties through Cooperation in the Semiconductor and Critical Minerals Industry: A Counterweight to Chinese Hegemony?

Shalini Singh

Introduction

In an era defined by rapid digitalization and evolving technologies, the semiconductor industry has emerged as a critical component of global economic growth and national security. Semiconductors, the bedrock of modern electronic devices, have been thrust into the geopolitical spotlight due to global supply chain vulnerabilities. Coupled with this, the critical minerals necessary for their production have also become a point of international contention. China's existing hegemony in both the semiconductor and critical minerals industries raises concerns about overreliance and potential supply disruptions.

The US and India, two of the world's largest democracies, find themselves uniquely positioned to counterbalance this concentration of power. Their burgeoning strategic and technological ties offer the potential for collaboration in the semiconductor and critical minerals industries, fostering mutual economic benefits and strengthening their geopolitical stance.

This article will explore the current state of the global semiconductor industry, highlighting China's dominant role and its implications. It will shed light on the potential strengths and vulnerabilities of the US and India's semiconductor sectors. The critical role of minerals in this industry and the associated supply chain risks will be addressed. Furthermore, the strategic benefits of US-India cooperation in these industries, acting as a counterweight to China's influence, will be examined. Lastly, potential policy recommendations and future opportunities for strengthening this cooperation will be outlined. By fostering greater awareness of these unexplored trends, this discussion aims to illuminate potential paths toward a more balanced, resilient global tech industry.

Current State of the Semiconductor Industry and Critical Minerals: A Global Overview

The global semiconductor industry is worth trillions of dollars and is growing rapidly. Taiwan is the [leading producer](#) of semiconductors. United States is the fifth largest producer of semiconductors. Taiwan, South Korea, Japan, and mainland China accounts for 72% of global semi-conductor production in 2020. In December 2022, Taiwan Semiconducting Manufacturing Co. (TSMC) announced that it would triple investment in manufacturing capacity in the US signaled the changing geographic dynamics in the sector.

China, on the other hand, has currently the world's leading reserves of critical minerals, accounting for [over 34%](#) of the global market. Semiconductors and critical minerals are closely related in the context of modern electronics and technology. Critical minerals, some of them also known as rare earth elements and other strategic materials, are essential components in the production of semiconductors and other high-tech devices.

China's subsidiary dominance over the semiconductor industry due to abundance of critical mineral is a major concern for the US and other countries. China has been accused of using its dominance to restrict access to semiconductors for its rivals. In addition, it has been accused of engaging in intellectual property theft and other unfair trade practices in the semiconductor industry.

Figure 1: Semiconductor Fabrication Capacity

Semiconductor fabrication capacity (global share %)

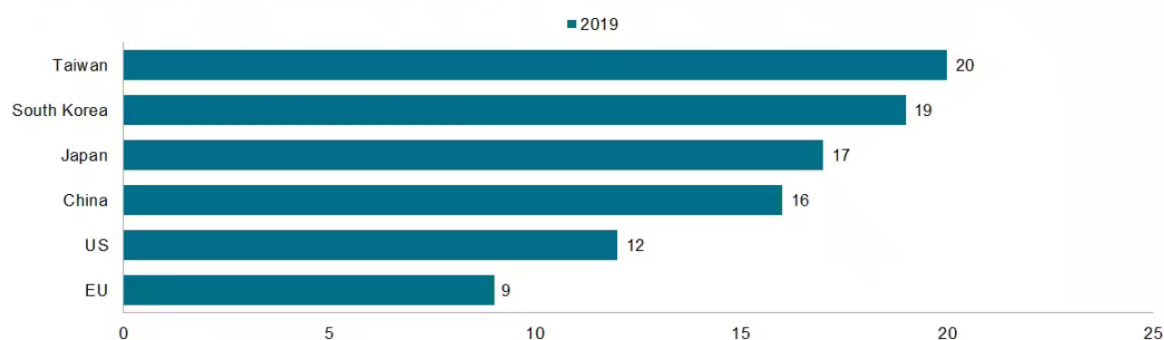
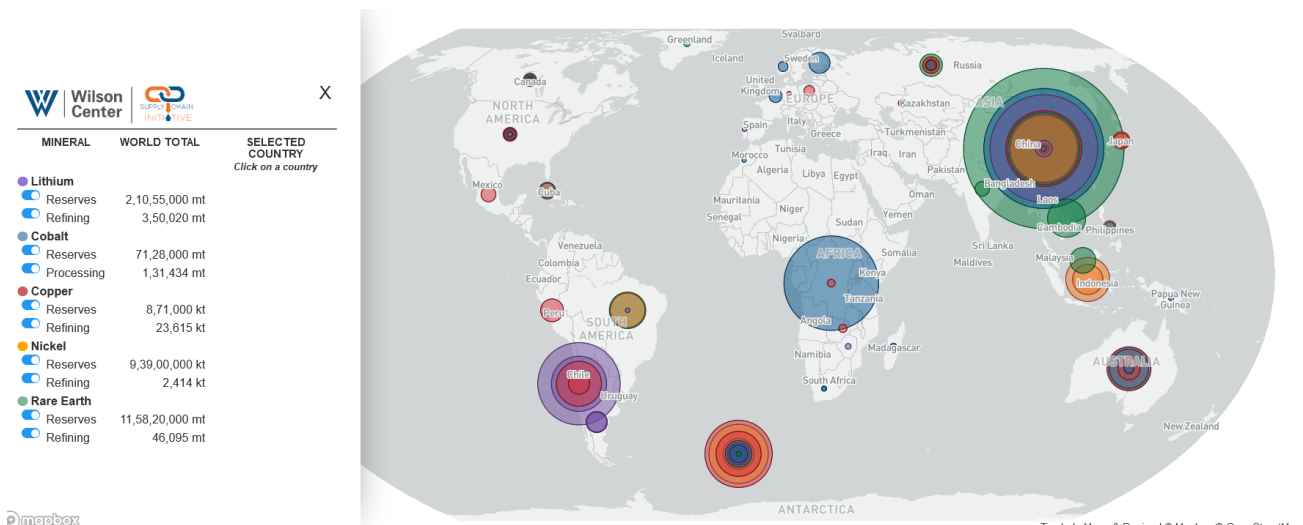


Figure 2: Geographic Concentration of Critical Minerals Reserves and Processing



Other reason for the US and other countries are to be concerned about China’s dominance of the semiconductor industry is that it could give China a strategic advantage in other areas, such as defense and national security. In addition, China’s dominance could make it more difficult for other countries to develop their own semiconductor industries.

The following are some of the critical minerals that are essential for the production of semiconductors:

- Beryllium
- Indium
- Gallium
- Nickel
- Tantalum
- Cobalt
- Rare earth elements

The over-reliance on China for critical minerals could pose a major risk to the global semiconductor industry. If China were to restrict access to critical minerals, it could disrupt the global supply chain for semiconductors and cause prices to rise. This could have a major impact on a wide range of industries, including the automotive, defense, and electronics industries.

Chinese dominance in the semiconductor industry and critical rare earth mineral can impact areas such as defense and national security because semiconductors are essential for the production of weapons and other military equipment. Semiconductors are also indispensable for the production of a wide range of products, including smartphones, cars, and medical devices. China could disrupt the global supply chain and cause prices to rise.

The US and India’s Semiconductor Industry: Opportunities and Challenges

The US and India have both identified the semiconductor industry as a key area for growth. The US has launched many initiatives to boost its semiconductor industry, including the CHIPS for America Act, which would provide \$52 billion in funding for semiconductor research and development. India has also launched several initiatives to boost its semiconductor industry, including the Production Linked Incentive (PLI) scheme, which would provide financial incentives to companies that set up semiconductor manufacturing plants in India. The US Semiconductor Industry Association (SIA) and the India Electronics and Semiconductor Association (IESA) in [January 2023](#) announced plans to form a private sector task force to strengthen collaboration between the two countries in the global semiconductor ecosystem.

The United States and India signed a [memorandum of understanding](#) in March 2023 to collaborate in the semiconductor industry. It will focus on the [areas](#) of:

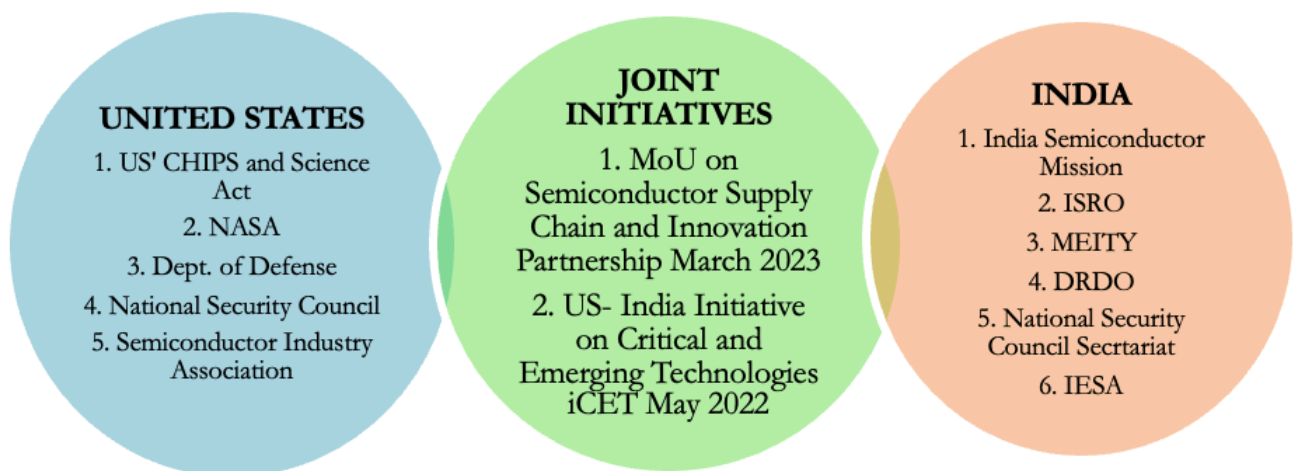
- Research and development
- Manufacturing
- Supply chain security
- Workforce development
- Fostering private sector cooperation

The MoU is a significant step forward in the relationship between the United States and India in the semiconductor industry. It will help to create a more resilient and secure semiconductor supply chain for both countries. The United States and India have complementary strengths in the semiconductor industry. The United States has a strong research and development base, while India has a large and growing pool of skilled labor. The MOU between the United States and India provides a framework for cooperation in the semiconductor industry.

still in the announcement or MOU stages, they indicate a promising direction for reinforcing [collaborations](#).

The US-China trade war, coupled with the disruptions caused by the COVID-19 pandemic, highlighted the vulnerabilities of over-relying on a single nation for critical supply chains. The move of companies like Micron Technology to invest in India is indicative of this diversification strategy. By strengthening economic ties with India, the US can reduce its economic dependence on China, thereby mitigating risks related to supply chain disruptions, trade barriers, and geopolitical tensions. Though the facility will primarily focus on testing and packaging semiconductor chips rather than manufacturing them, Micron’s investment still underscores India’s growing significance as a potential hub for semiconductor [operations](#).

Figure 3: Collaborations by US and India in the semiconductor industry and the institutions involved from both the countries



Source: Author’s compilation

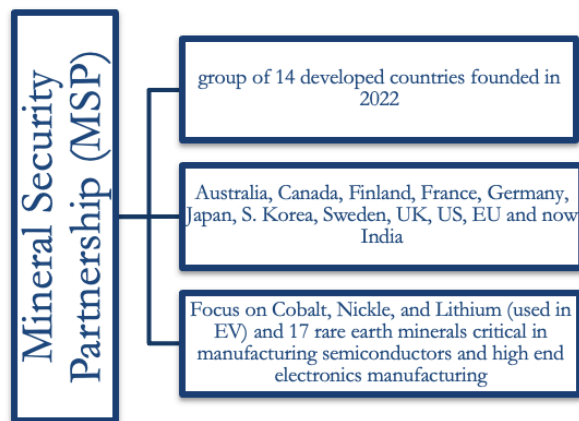
During Indian PM’s visit to US in June 2023, a deal has been signed for a new semiconductor assembly, testing, marking, and packaging (ATMP) facility to be established in Gujarat with a \$2.75 billion investment. Micron Technology will contribute \$800 million, with the remaining funds provided by the Indian Semiconductor Mission. This initiative is distinct from setting up a fabrication unit. The recently unveiled critical and emerging technology (CET) initiative aims to foster collaborative research in fields such as quantum, advanced computing, and artificial intelligence. While many of these efforts are

The burgeoning relationship between India and the US, particularly in the tech sector, signifies a paradigm shift in global trade dynamics. India has the potential to successfully replace China’s consumer base for US companies. India’s democratic system provides a level of predictability and transparency in governance, which can be appealing for US businesses accustomed to operating within democratic frameworks. The rule of law ensures that contractual and business disputes can be addressed in a structured legal environment. As both countries view each other as strategic counterbalances to

China's growing influence, there's an implicit push for tighter economic integration. Growing tensions along the border and increasing skirmishes, along with increasing dependency on imports has also forced India's hands into searching for a reliable, democratic, and strong alternative.

India has also been admitted in the US-led 14 countries' group called Mineral Security Partnership. Discovery of 5.9 million tonnes of lithium in the Salal-Haimana area of the Reasi district in Jammu and Kashmir and another 1.4 million tons of lithium resources in the Mandya district of Karnataka by Geological Survey of India in 2023 has made India a strong player in the [critical mineral supply chain](#).

Figure 4: Mineral Security Partnership



However, there are numerous challenges that India and US continue to face and that must to be addressed:

- Lack of investment and innovation- a significant investment in research and development, manufacturing, and infrastructure
- A highly competitive industry with few companies monopolizing the market
- Subject to supply chain disruptions that can be caused by natural as well as man-made reasons
- Lack of technology-sharing initiatives
- Differing national, regional, and global aspirations.

Despite these initiatives, both the US and India face challenges in developing their semiconductor industries. The US faces challenges such as high labor costs and a shortage of skilled workers. India faces challenges such as a lack of infrastructure and a complex regulatory environment. The US and India

have the potential to become a major force in the global semiconductor industry. The MoU between the two countries provides a framework for cooperation and collaboration. This cooperation will help to strengthen the semiconductor industry in both countries and create jobs and economic growth.

Critical Minerals: A Potential Bottleneck and its Impact on the Semiconductor Industry

Critical minerals, including rare earth elements and others like lithium and cobalt, play a pivotal role in the manufacturing of semiconductors. They are used in a variety of semiconductor applications, from high-k dielectrics to semiconductor lasers, due to their unique magnetic, electrochemical, and luminescent properties. However, their procurement poses a significant bottleneck that could impact the semiconductor industry's growth and resilience.

Primarily, the problem lies in the fact that the supply of these minerals is geographically concentrated, leading to potential supply chain vulnerabilities. As of now, [China](#) is the world's leading producer of rare earth elements, controlling more than 60% of its global production and around 90% of its processing. This gives China a significant influence over the global supply and prices of these critical minerals.

When it comes to the semiconductor industry, an interruption in the supply of these minerals could cause significant delays in the production of semiconductors, leading to a ripple effect across multiple industries dependent on these chips. For instance, the recent global chip shortage has disrupted the automotive industry, among others, demonstrating the far-reaching consequences of semiconductor [supply chain vulnerabilities](#).

Moreover, potential geopolitical disputes could exacerbate this situation. As seen in the past, China has leveraged its dominant position in rare earth during political conflicts, illustrating the potential for supply disruptions amidst geopolitical tensions.

The critical minerals bottleneck, therefore, poses significant challenges to the global semiconductor industry, highlighting the urgent need for diversified supply chains, increased recycling and substitution efforts, and international cooperation. These measures could help mitigate the risk of supply disruptions, ensuring the steady production of

semiconductors and the smooth functioning of the digital economy.

The Strategic Importance of US-India Cooperation

US-India cooperation in the semiconductor and critical earth minerals sector is pivotal for several reasons. Firstly, it offers a strategic means to diversify the currently concentrated supply chain, reducing global overreliance on a single region—particularly China. By pooling their resources, technological prowess, and market capacities, the US and India can create a more resilient supply network, mitigating risks associated with potential supply disruptions.

The US, a global leader in chip design, and India, with its growing digital economy and substantial technical talent pool, are poised to complement each other's strengths. By jointly investing in research, development, and manufacturing, they could stimulate technological innovation, create jobs, and secure a more self-reliant semiconductor supply chain. This cooperation supports the shared objective of both nations to counterbalance China's growing influence in the technology and semiconductor industry. India's ambitious plans to develop its semiconductor manufacturing capabilities, combined with the US's advanced technology and investment, can present a viable alternative to China's dominance.

This partnership can stimulate economic growth, innovation, and job creation in both countries, enhancing their competitive edge in the global technology landscape. Lastly, such a collaboration sends a powerful signal to other Indo-Pacific nations. It reinforces the potential benefits of collective action and could pave the way for broader regional cooperation in technology, trade, and security. By fostering this partnership, the US and India could lay the groundwork for a more balanced and stable technological ecosystem in the Indo-Pacific.

The Roadmap Ahead: Policy Recommendations and Future Opportunities

The US and India, despite their growing strategic and technological ties, have yet to tap the immense potential for cooperation in the semiconductor and critical minerals sectors. While both nations have

shown significant strides in their respective initiatives, these efforts remain largely disconnected. For instance, the US has been instrumental in fostering the ["Chip 4" alliance](#) with top semiconductor makers—Taiwan, Japan, and South Korea. Concurrently, India, alongside Japan and Australia, announced a semiconductor supply chain initiative in September 2021, designed to secure access to semiconductors and their components. These disparate efforts highlight a significant opportunity for convergence. If the US were to play a nurturing role, it could foster synergies among partner countries, possibly integrating India into mainstream chip alliances and avoiding overlapping efforts.

India's critical minerals scenario is further complicated by its dependence on other countries for certain heavy rare earth elements (HREE), like dysprosium, terbium, and europium, not available in extractable quantities in domestic deposits. This dependency underscores the need for enhanced international cooperation.

While it is suggested that India may lack the technological prowess for mineral extraction and processing compared to other MSP members, the country's inclusion could facilitate technology transfers and joint investments, enhancing its capabilities in this domain. Thus, fostering US-India cooperation in the semiconductor and critical minerals sectors could be a strategic move, providing economic benefits and strengthening their collective geopolitical stance.

US-India cooperation in the semiconductor and critical minerals industry is a strategic opportunity that could benefit both countries. By working together, the US and India can address the challenges they face and build a more sustainable and equitable global semiconductor industry.

2

“The New Special Relationship”: A Framework for US-India Relations in the 21st Century

Garrison Moratto

The Defining Feature of the 21st Century

The 21st century will be defined by the relationship between the United States and India. No two other powers are better positioned for a partnership that can encompass all facets of geopolitical cooperation at a truly global scale. Events drive policy, and this partnership is no exception. After the sometimes frosty and usually distant interactions of the Cold War, America spent its “[Unipolar Moment](#)” on a policy preoccupation with expanding free trade and conducting the Global War on Terror. The former saw US policymakers embrace China, and the latter resulted in a desire to influence Pakistan. Now in the face of rising protectionism, cyclical tensions with Beijing, and the stunning conclusion of the Afghanistan War, America has reoriented to a new view of Asia: it is now very much the Indo-Pacific.

Today, the US and India are increasing their cooperation across all policy domains. The Biden administration achieved [meaningful progress](#) in the most recent state visit by Prime Minister Modi. Yet paradoxically, and as a reflection of the early stage of this newfound interactivity, a clear, compelling, and positive framework to define the future contour of this burgeoning partnership is lacking. Indeed, the renewed interest between Washington and New Delhi over recent years is pigeonholed by some into a necessary but [incomplete focus](#) of countering China’s increasing power. In a sense, this view portrays the new Indo-American ties as a reactionary necessity rather than intrinsically useful. Such framing sees the US-India relationship as *ad hoc*, reduced to such [utilitarian limits](#) that certain negative perceptions take hold, whereby India represents little more than a ready-made security and industrial expedient to act as a counterweight to China. This inherently circumscribed view has brought with it misaligned expectations, which in turn have led to a [sequence of warnings](#) about the likely [shortfalls of the relationship’s future](#). Independent views and divergent priorities of the partner state are often treated as potential liabilities in the relationship to be managed, rather than reasonable positions to be bridged, or more importantly, even asymmetric strengths to be leveraged.

To bridge these policy asymmetries with a nation as large and potent as India, America must adapt its diplomatic framework. The era of viewing a globally

relevant India as a distant future question is over. A successful accommodation of an independent and rising power by a plateauing and established power is now necessary. The historical precedent already exists: the Special Relationship between the U.K. and US in the 20th century.

Indeed, New Delhi represents to the United States a rising companion in much the same manner the US itself once represented to Great Britain a hundred years ago, a power whose day in the sun is coming and whose influence will be felt on the course of this century. The US can do as London once chose to do for our own, then-dawning American Century, and seek a [New Special Relationship](#) with the rising power. This relationship views India’s independent and differentiated approach to global affairs as an asset, rather than an impediment, to future cooperation, and recognizes that expansive ties with India provide substantial and lasting mutual gains for both parties, where the natural strengths of each one can backfill the inherent weaknesses of each other.

The Original “Special Relationship”

To define this new partnership, consider its analogous antecedent. The 20th century, was in many respects, defined by the relationship between the United States and Great Britain. From their joint efforts in the two world wars and their foundational role in global institutions ranging from the UN to NATO, to the ripple effects of the conservative economic revolution of the 1980s and their ongoing cultural soft power, the arc of global affairs, at least in what was then known as the “First World”, was dominated by policies crafted in tandem between Washington and London. Their cooperation was founded upon a strategic alignment that ran deeper than the shifting equations of national power.

The relationship was not a unification of policy; disagreements between No. 10 and the White House were perennial across a spectrum of decisions and punctuated by low points, such as the [Suez Crisis](#). But what remained throughout the course of the relationship was a determination by both capitals to time and channel their differentiated efforts and respective national self-interests with parallel moments of agreement with those across the Atlantic, maximizing leverage and creating mutual gains. From tightly linked economic trade to diplomacy operated in tandem, from defense

cooperation to joint partnerships in science, the Special Relationship yielded vast benefits to both participants. Henry Kissinger once claimed that history taught by analogy; here lies an analogous parallel for US policymakers towards India. Like all analogies, the comparison is not exact; India need not become a formal American ally to establish this partnership for instance. However, the New Special Relationship between the US and India can consist of similar core elements, tailored specifically to the needs and possibilities of the modern day, and with adjustments for the unique differences between these two democratic giants.

An Economically Opportune Intersection

The US and India are at a point of economically opportune intersection. India is entering a [historic boom](#) at the exact window of time when American investment capital and supply chains are decoupling from the Chinese market. This is a generational shift. China is feeling the first pangs of economic stagnation, with a crimped GDP growth tightening the CCP's freedom of maneuver at home and abroad; sooner or later, funding for its numerous global projects, including its vaunted Belt and Road Initiative, will begin to slow down. Its geopolitical attitude will likely become more destabilizing, and capital across Asia will flee to safer havens as conflict over Taiwan looms. While there will be multiple competing destinations for this relocated direct investment, India represents a unique combination of massive scale, relatively young population, political democracy, and comparably stable geopolitical outlook. In recent years, nations across the globe from Australia to the U.A.E. to the U.K. have seen these advantageous and [inked new free trade agreements](#) with New Delhi.

America's current [bipartisan focus](#) is on investment efforts at home; if the experience with China taught anything, it's that manufacturing in the most critical of industries cannot be allowed to remain overseas. Yet not all products can be made stateside at profit or at scale. What cannot be reasonably manufactured domestically should at least be [ally-shored](#), as John C. Austin of Brookings has argued. The US ought to centralize India in this process of reinvestment, knowing with confidence that putting dollars to work in a fellow democracy is a more prudent bet than funding an ideological rival in Beijing. Apple, perhaps the clearest distillation of American post-industrial economic success, [has](#)

[already begun](#) a major new chapter by re-balancing its longstanding bet on Chinese manufacturing in favor of diversification across Asia. India will be one of the largest beneficiaries of CEO Tim Cook's plans, a symbolic representation of a larger, more significant trend than simply smartphone supply chains.

Now is the time for a bipartisan and lasting consensus on an expansion of trade with India across all sectors. America will gain a dynamic new developing market for goods and investments; India will receive much needed capital and better integration with the dollar, still the world's primary financial medium. No sacrifice of individual, national economic policy is necessary; the US can still trade with the EU, with its North American partners via USMCA, and others; India can still participate in BRICS and so on. A general alignment based on mutual gains can be achieved without a total unification of outcomes, provided leaders on both sides are willing to not merely tolerate flexibility, but foster it.

Leveraging A Differentiated Amplification of Diplomacy

A multipolar world requires navigating differentiated applications of diplomacy, not simply applying a demand for rigid uniformity. A New Special Relationship can provide that.

Pressure is being applied on India from the United States to follow Washington's lead on China. The problem is India lives next to China and proximity fosters not only vigilance but also caution. India will act to counter China in some forums such as the [QUAD](#), but within limits. Further afield, New Delhi has the unique capacity to have its phone calls answered as readily in Moscow as in Washington, a rare feat in the Ukraine War era, and one that should not be [compelled to change](#). It is clear that the two nations will not exist in lockstep foreign policies - and that is a good thing.

America and India can function as mutual amplifiers of diplomacy. There is ample room for differentiation. Each independent party can agree to play off the strengths and priorities of the other in a way that permits greater influence in areas of weakness and greater restraint in areas of strength. The United States holds a seat at the U.N.S.C., maintains the strength of NATO, and has close ties with Japan, South Korea, and Australia. It

has drawn a hard line in Ukraine. Yet, in the Global South, its reputation is bruised by the Global War on Terror, trade politics, and a general neglect for culturally sensitive diplomacy. Conversely, India has no seat at the U.N.S.C. and its relations are strong across the Global South, through its varied bilateral ties and multilateral forums, such as the soon-to-be-expanded BRICS. It has been criticized for resisting efforts to isolate Russia, but India's keen soft power management and post-colonial historical experience permit it the trust of fellow post-colonial states across Sub-Saharan Africa, Latin America, and [West Asia](#).

America should push for a Security Council seat for India, assist in negotiating even greater economic multilateral ties for India with the West, provide counter-terror resources and so on. In return, India should offer assistance to American diplomatic activities in the Global South, offering its good faith backing to US diplomacy, development aid, and political assistance to states around the globe who have been historically wary of the US. Furthermore, India could act as an objective mediator and good faith broker between the United States and Russia on recent and severe disputes such as the Ukraine War, and more perennial considerations such as nuclear arms control.

Establishing A Multilateral Diffusion of Power

A world in which the only major centers of power are arrayed around China on one side and the United States on the other is a second Cold War, an outcome which [all parties have expressed](#), at least on paper, a [desire to avoid](#). By viewing India solely as an instrument to check China, American policymakers would be depriving the current elasticity of maneuver available in the dawning multipolar world in favor of a return to an outmoded Cold War rigidity. Washington ought to utilize India's defense cooperation in stabilizing Asia writ large, rather than as an express containment of China. New Delhi is more likely to cooperate with a plan that sees an expanded role for its military security coupled with a caution about being drawn into a war on Washington's coattails. America ought to expand defense arrangements such as [Exercise Malabar](#) and the QUAD in order to foster a theater-scale sense of power diffusion in the Indo-Pacific. The general aim is continental stability, not containment of China per se; an aim more likely to be met in New Delhi and less likely to provoke a response in Beijing.

Creating A Democratic Monopoly on Research

The COVID-19 pandemic demonstrated that national power resides in scientific prowess. The ability to produce new medications, new energy systems, and artificial intelligence will all be critical components of future state security. In research, a nation needs an integration of top-class facilities in the hands of large numbers of highly trained researchers, which in turn, depends on education, on R&D investment, and on raw numbers of people. America has the world's best universities. India has the world's most dynamic new pharmaceuticals industry. America has Silicon Valley. India has 1.5 million engineers [graduating every year](#). India has the capacity to advance the development of biologics and cell and gene therapies much more cheaply than in the West, [according to G.V. Prasad](#). America is among the leaders on new green energy technologies, but at risk of [falling behind](#) in cutting-edge artificial intelligence research to China. Aligning ends and means across these fields would yield vast gains for both sides.

Emerging technologies offer dictators unprecedented capacity for domestic coercion and international disruption. A clear effort should be made to combine India and America's efforts on research; not merely on a project-by-project basis, but on a multi-decade, strategic basis that will see the world's most important future technologies and discoveries happening in democracies first, and autocracies in distant second. What is needed is a clear democratic monopoly on research. By combining the efforts of India and America, alongside auxiliary research and funding inputs from Europe, Japan, and others, the technological arms races of the 21st century will be won by freedom and not tyranny. Some may point to current research leaders like Berlin and Tokyo and say that the US has the partners it needs already. Yet Japanese [population](#) [dynamics](#) and German [economic realities](#) have demonstrated that the twin engines of this new system can only be sustainably powered in India and America; the opportunity must not be allowed to pass.

Avoiding a US-China Redux

Skeptics in both Washington and New Delhi may point to the rise and fall of US-China relations as a warning against expansive cooperation between Great Powers, and the concerns are well-

founded. There is a reason Thucydides is still being read in university courses over two thousand years later. In just the last couple of decades, unfulfilled expectations on democracy and overeager economic investment catapulted the PRC into a geopolitical rival that left American leadership retreating from what historian Niall Ferguson once called “Chimerica” to what he now calls “[Cold War II](#)”. China sees America’s new skepticism as proof it will restrain Beijing’s legitimate rise. America sees China’s new assertiveness as proof its bet that democracy would follow free trade has failed. Now two powerful states with deeply harbored suspicions sit in uneasy tension across the Pacific. Why would US-India be different?

It is important to note three key differences between the US-China relationship and that of a New Special Relationship between US-India. First, China is still ruled by a Communist party with absolute social control. It’s an obvious fact, but one whose strategic relevance is often downplayed; American ideals will never rest easily in a relationship with a nation governed by totalitarian instincts. With India, America finds a fellow representative democracy, culturally distinctive but ideologically aligned. Second, India and especially America, will both carry with them a fresh caution about outsourcing vital, core industries and investments in sensitive sectors to the other, allowing this new relationship to be built with wiser guardrails and fewer entanglements than US-China. Third and finally, the issue of Taiwan has been the unresolved crack in the foundation of US-PRC ties since President Nixon opened China in the 1970s. There is no analogous parallel in US-India relations, and therefore substantially less risk of a future rupture over an inherent geopolitical controversy.

Why It Matters

The New Special Relationship is not a subsuming of national interest. It is not merely a new label for old or even current policies. It is a holistic approach to a problem that is at once urgent and perennial: the world needs diplomatic stability and economic growth in an environment of public health and global security. The best route for achieving those aims is to align the separate but cooperative efforts of the world’s two largest democracies, the US and India, in a partnership drawing inspiration from that of America and Britain in the last century. Paradoxically, the best argument for why

such a strategy is essential may be found with Leon Trotsky, an ideologue whose ideology was defeated by the first Special Relationship last century: “You may not be interested in strategy, but strategy is interested in you.” Leaders may shrink back from sweeping strategic aims, but they would be wise to recall that the forces of global disorder are not lacking in will. The strategic successes of American foreign policy in the last century were never based in timid defensiveness of the status quo, but in bold, proactive articulations of global influence in coordination with aligned partners. The opportunities of an expansive partnership with India are too great to ignore; it’s time for a New Special Relationship.

3

India-US Civil Nuclear Partnership: Paving the Way for Peaceful Nuclear Energy Utilization

Moirangthem Sayaluxmi Devi

Introduction

The relationship between India and the US has progressed significantly, evolving from a historically strained engagement to one of strategic partnership. The bilateral relationship between the two nations is now a broad-based and multifaceted engagement, encompassing trade and investment, security and defense, education, science and technology, cyber security, high technology, civil nuclear energy, clean energy, environment, agriculture, and health. Shared democratic values and increasing convergence of interests on bilateral, regional, and global issues have helped further strengthen the relationship between the two countries, making them among the closest partners in the world.

The 2008 India-US [Civil Nuclear Partnership](#) marked an important milestone in fostering Indo-US relations, putting an end to the US' three-decade moratorium on nuclear trade with India and bringing India out of nuclear isolation. The agreement paved the way for deeper engagement between the two nations, with the United States amending its nuclear energy laws to allow for closer cooperation on civil nuclear energy issues. The nuclear agreement, concluded successfully amid domestic oppositions from both the countries and concerns over India being a non-signatory of the Nuclear Non-proliferation Treaty underscores how far India's relations with the United States have come since the end of the Cold War.

Genuine cooperation in the civil nuclear energy sector, however, is hampered by disagreements between the two nations over liability issues. The Civil Liability for Nuclear Damage Act (CLNDA) of 2010 was enacted by the Indian Parliament in the aftermath of the [Bhopal Gas Tragedy](#). This legislation, a response to the tragic incident, introduced a provision that could hold suppliers of nuclear equipment jointly and severely liable for damages in the event of a nuclear accident, posing the risk of substantial financial burdens. In 2015, a contact group was [established](#) by India and the US to address the specific concerns and challenges associated with the liability issue. While some progress was made, a conclusive resolution was not achieved. As a result, there has been no progress in the last 14 years.

Faced with growing global concerns about energy security, India and the United States need to revisit

the agreement and seek practical cooperation in the civil nuclear energy sector.

India-US Civil Nuclear Agreement: An Overview

The Civil Nuclear Cooperation Agreement was signed on March 2, 2006, in New Delhi following an initiative by US President George W. Bush and Indian Prime Minister Manmohan Singh during their July 2005 summit in Washington regarding civilian nuclear cooperation. It is a broad framework agreement allowing American and Indian companies to collaborate in ways that will promote the development of India's civil nuclear sector, produce a clean energy source that will benefit the environment, and give India greater energy security by providing reliable sources of energy for its big and expanding economy. The two countries share three primary objectives in undertaking this initiative: To eliminate core differences that have hampered their strategic relationship for more than 30 years, to support India's economic growth and energy security in an environmentally responsible manner, and to strengthen the global non-proliferation regime.

As a part of the provisions of the agreement, India will expand international safeguards, abide by international nuclear and missile export regulations, maintain its voluntary moratorium on nuclear testing, and guarantee that all civil nuclear trade will be used solely for peaceful purposes. As a result, the Indian government [announced](#) a plan in May 2006 that would separate its military and civilian establishments. In August 2008, six reactors, including key facilities like Tarapur Atomic Power Station and Rajasthan Atomic Power Station, were put under IAEA safeguards. Subsequently, additional reactors were incorporated into the monitoring framework. By 2014, a total of 14 reactors were under IAEA supervision.

After the separation plan was agreed upon, President Bush signed the Henry J. Hyde US-India Peaceful Atomic Energy Cooperation Act into law in December 2006. Because India is not a party to the NPT, the [Hyde Act](#), considered the parent act of the 123 Agreement, provides the legal basis for nuclear commerce between India and the United States. The 123 Agreement, signed in August 2007, makes it abundantly clear that the Indo-US nuclear deal will have no impact on India's strategic weapons program. Critics claim that the agreement's conditions favor

India excessively and don't include enough safeguards to stop New Delhi from continuing to develop nuclear weapons. While the US-India nuclear deal did not impose constraints on India's strategic program, the US wanted to make sure that no technology or fuel provided to India for its civilian program could be utilized for its military programme.

Following the finalization of the 123 Agreement, the next steps involved signing an India-specific IAEA Safeguards Agreement in July 2008 and a waiver of NSG rules in September 2008. The United States has maintained its support for the next stage of India's integration into the global non-proliferation architecture. In all the joint statements released by India and the US since 2010, particularly between 2011-2015, the US administration has commended India's efforts to strengthen the global non-proliferation framework and emphasized that India is prepared to join the NSG.

The agreement stalled for a long time, and the two countries made no substantial progress toward closer cooperation in the civil nuclear sector. The two sides established a Contact Group in September 2014, during Prime Minister Modi's visit to the United States to advance the full and prompt implementation of the India-US Civil Nuclear Cooperation Agreement and to address pending concerns like the nuclear liability issue. In June 2016, the Nuclear Power Corporation of India (NPCI) and Westinghouse, a US private business involved in energy-related projects, [agreed](#) to complete the contractual conditions for six reactors by June 2017. These reactors were expected to provide India with access to clean energy, lessen its reliance on fossil resources, and create thousands of employment opportunities for the US. The project would be one of the biggest of its kind when it is completed. [Project delays](#) were caused by the complexity of nuclear power plants, which includes safety requirements, governmental approvals, environmental clearances, engineering procedures, and lastly, financial difficulties faced by Westinghouse exacerbated the delays.

Future Prospects of the Agreement

The historic civil nuclear deal between the United States and India has failed to move forward due to challenges related to non-proliferation concerns as India is not a signatory to the Nuclear Non-proliferation Treaty, domestic opposition in India,

political hurdles in the US Congress. India's [2010 Civil Liability for Nuclear Damage Act 2010](#), which makes nuclear operators and suppliers liable for accidents discouraged foreign companies from entering the Indian market due to perceived financial risks. While there is room for expanding cooperation in this sector, the deal has remained stagnant for the past years. Considering growing global concerns over energy security sparked by the conflict between Ukraine and Russia, India and the US are exploring practical cooperation in the civil nuclear energy sector with renewed interest after failing to make progress since signing the agreement in 2008.

India's nuclear energy sector [contributed](#) 1.1% of primary energy, 1.6% of generation capacity, and 2.8% of power generation in 2021. The installed capacity for nuclear power generation was 6,780 MW from 22 reactors, including the 700 MW pressurised heavy water reactor at Kakrapar nuclear power plant. Fifteen more units are expected to follow in fleet mode, and eight nuclear power plants of 8,700 MW are under construction. India's growing energy needs and the recent energy crisis posed by the recent Ukraine-Russian war, India and the US are giving a fresh look to the agreement. The US civil nuclear industry, with 93 [operating reactors](#) across 29 states, has a unique strength but also faces contemporary challenges. As of July 2021, the industry has a smaller fleet of 57 reactors, down from over 110 in the mid-2000s. However, it remains the largest nuclear reactor fleet globally, producing 789.92 TWh of energy in 2021.

[Discussions](#) between US Assistant Secretary of State for Energy Resources Geoffrey R Pyatt and Indian counterparts in Delhi in February 2023 focused heavily on ways for bilateral collaboration in clean energy, including nuclear commerce under the guidelines of the 2008 India-US nuclear deal. Assistant Secretary Pyatt said that the United States supports Prime Minister Narendra Modi's "incredibly ambitious" goal of producing 500 gigawatts of energy from non-fossil fuel sources by 2030 and that India is a crucial partner for the United States in ensuring global energy security. "I am very focused on how we can develop opportunities for future civil nuclear cooperation, recognising that if we are stuck at issues, we have to work them through, the famous liability question," he said.

In their [joint statement](#) of June 2023, President Joe Biden and Prime Minister Narendra Modi reaffirmed their commitments to the agreement. The

two leaders reiterated their support for the International Energy Agency's (IEA) mission, with President Biden pledging to continue working with the government of India, IEA members, the IEA Secretariat, and other relevant stakeholders towards India's IEA membership in accordance with the provisions of the [Agreement](#) on an International Energy Programme. President Biden and Prime Minister Modi emphasised the critical role of nuclear energy in international efforts to reduce carbon emissions and underscored nuclear energy as a vital resource to meet the needs of the countries in relation to the climate, the energy transition, and energy security.

They urged enhanced consultations between the US Department of Energy and India's Department of Atomic Energy to help the WEC prepare a techno-commercial offer for the Kovvada nuclear project in Andhra Pradesh in southern India. President Biden and Prime Minister Narendra Modi acknowledged the ongoing discussion of developing next-generation compact modular reactor technologies collaboratively for both the home and foreign markets.

While the two have formed a strong partnership and are making progress on strategic issues, there is still room for expanding opportunities in the civil nuclear sector of both the countries. The civil nuclear agreement between India and the United States has tremendous potential for engagement if the challenging hurdles faced by the two countries are worked out. India's Civil Liability for Nuclear Damage Act (CLNDA) has complicated efforts to supply advanced nuclear reactors envisioned under the US-India civil nuclear agreement. Despite attempts to address concerns through clarifications and financial terms, [supplier anxieties persist](#), particularly hindering private companies' entry into the Indian nuclear market. A clear CLNDA amendment, aligning with international norms, would eliminate ambiguity and assure suppliers unlike the current patchwork of clarifications and documents which lack legal weight. This is crucial for India to attract international nuclear technology suppliers. In relation to the United States, a distinct and equally pressing challenge remains: aligning policy with vision. Considering President Joe Biden's dedication to enhancing India's influence in the ongoing competition with China, Washington's intention to regard New Delhi's nuclear weapons program as distinctive, a fundamental premise of the 2005 accord, must now be actively realized to shape

the administration's choices on fostering a more ambitious partnership with India. This agreement represents a cornerstone of their strategic partnership, offering mutual benefits. Continued collaboration can help India's economy develop and ensure its energy security while also addressing the country's rising energy needs and lowering its carbon emissions. Through this agreement, the US can increase its civil nuclear commerce, strengthen its economic and geopolitical influence in the Asian region.

Conclusion

The civil nuclear deal marked a significant turning point in the bilateral relationship between India and the US. However, issues related to liability provisions have thwarted progress on that front. The deal was criticized in both the countries and the global non-proliferation regime. Critics in the US were of the view that the deal had given away too much to India and lacked sufficient comprehensive safeguards to prevent New Delhi from continuing its production of nuclear weapons. India's opposition parties during that time, mainly, the BJP and the Communist Party of India opposed the agreement calling it an "assault on the nuclear sovereignty and foreign policy options" of India. Many experts believe that other nations seeking to develop nuclear technology will now follow suit with the Indo-US nuclear agreement setting as a precedent. It was argued that the US has adopted double standards on the non-proliferation issue, and it has hampered non-proliferation efforts. The civil nuclear agreement between India and the United States marked an important milestone in their bilateral relations reflecting increased trust and collaboration. It has major implications for energy security, economic expansion, and international stability which are mutually beneficial. Despite its complexities and multiple challenges, it is a noteworthy accomplishment that indicates a mutual motivation for both parties to question their longstanding assumptions about each other to build a partnership that is beneficial to both the countries. India and the US must approach the agreement with renewed interest working towards successful and enhanced cooperation to reap the potentials of the deals that have a complex and multifaceted significance for both countries, encompassing economic, strategic, diplomatic, and geopolitical considerations.

4

Beyond Silos and Reinforcing the Future of US - Indian Cooperation in the Middle East

Nicholas Shafer

On May 4, 2023 at the Washington Institute for Near East Policy, Jake Sullivan—the national security advisor and trusted presidential confidant—had [an important speech to give](#). A little over two years had passed since the Biden administration arrived in Washington, and the world whispered that American commitment in the Middle East was waning after the fall of Kabul and with domestic polarization casting shadows over American security guarantees. With the Abraham Accords changed the [strategic landscape](#) of the region at the end of the Trump administration, and the Biden administration needed to assuage partners and allies that Washington would have their back while laying out a thematic, consistent, and achievable vision for regional progress that competes with Chinese [political and economic inroads](#) in the region. In a fractured Washington wrestling with grueling—and seemingly endless—wars in Ukraine and Gaza, the competition with China and quest for Israeli normalization in the Middle East remains one of the few areas of bipartisan support (despite shifts in [the youth vote](#) of the Democratic Party).

After laying out a laundry list of the Biden administration’s regional achievements, Sullivan paused for extra emphasis:

We try to get creative. We’ve worked to deepen the Abraham Accords and forge new coalitions like I2U2—which I can’t decide is a great acronym or terrible acronym, but it certainly can be memorable. If you remember nothing else from my speech, remember I2U2, because you will be hearing more about it as we go forward. This is a partnership with India, Israel, the United States, and the United Arab Emirates, and the fundamental notion is to connect South Asia to the Middle East to the United States in ways that advance our economic technology and diplomacy.

It is an overused maxim, but the world is indeed changing. The I2U2 Group—the new framework for economic cooperation and engagement across West and South Asia launched in October 2021—was built and designed to navigate those shifting sands by leveraging aligned interests to advance on strategic priorities. It laid the political groundwork and momentum that led to the [India-Middle East-Europe Economic Corridor](#) (IMEC), a proposed economic corridor announced at the G20 Summit in New Delhi.

As Sullivan noted, this new strategic approach in Washington perceives India as an increasingly important Middle Eastern actor and crucial security partner beyond its traditional sphere of influence in South Asia. Despite its increasing importance, Delhi remains an often-unnoticed partner in Middle Eastern affairs, particularly when it comes to Israel and the Gulf. While the UAE has surged to become Israel’s [14th-largest trading partner](#) in just two years—at more than \$2.5 billion at the end of 2022 from only \$1.2 billion in 2021—India has seen a similar renaissance. In just the past few years Delhi has reinforced policy on its Western frontier by signing important [free trade agreements](#), deepening [security and civil cooperation](#) with Saudi Arabia, and expanding defense ties with Israel. This is one of the best examples of the increasing Indian-Israeli relationship: India holds [about 42%](#) of the global Israeli arms trade, and Israeli tech companies thrive [across the Indian market](#) in critical areas including defense, aerospace, energy, telecoms, and security.

It is impossible to understand Indian policies in the Middle East without understanding how the Modi administration has [rapidly reshaped](#) the Indian relationship with both Israel and the Gulf States from one dominated by labor flows to a rapidly maturing economic, political, and security relationship. As India [continues to emerge](#) as a confident political and economic broker, buoyed by a successful G20 Summit and predicted annual growth rate of more than 7% for 2023, it must pursue [new proactive strategies](#) that secure its food, energy, technological, and national security in an increasingly tense region threading the needle between the US and China. There has been a decided shift as well in Delhi to understand that deepening leverage and ties in the Gulf can lead to strategic leverage over Pakistan, especially given [increased Chinese](#) financial—and potential future defense—activity. Greater Indian focus and attention in the Middle East opens new avenues to approach national security while at the same time building upon existing sociocultural, geographic, and historical continuities.

Bringing India into the broader Middle East has emerged as a strategic priority for the Biden administration and on the Hill, who have increasingly linked the regional architecture advanced by the Abraham Accords into its Indo-Pacific Strategy, including through [landmark legislation](#) passed in July 2023. While the Oct. 7 Hamas attack and unfolding tragedy in Gaza present a delicate strategic landscape, [the geopolitical drivers](#)

pulling India westward into the broader Middle East will continue as the dust settles following elections in the United States and likely political turmoil in Jerusalem. A self-assured Modi with strong electoral confidence sees strong, predictable allies in Abu Dhabi and Riyadh that can both help maintain a financial and diplomatic check on Pakistan and improve collective strategic autonomy threading between Washington and Beijing by banding together. Although their fates remain to be seen, both the IMEC and I2U2 Group remain indicative of the direction that regional relationships are headed in and what they will be prioritizing in the coming years.

As the Indian Ocean region rapidly emerges as a frontline of [21st century great and middle power competition](#), more nuanced policy that fully leverages comparative advantage is needed in both Delhi and Washington. The landscapes getting more crowded as other Asian middle powers—especially [Japan](#) and [South Korea](#)—deepen relationships and investment in West Asia, and the Gulf States—especially Saudi Arabia, the UAE, and Qatar—[increasingly engage across both South Asia and East Africa](#). There is a dire need to reinvent and reinvigorate analysis of dynamics in the broader Indian Ocean region—from the Swahili Coast to Malabar and from Gwadar to Malacca. The United States should invest significant attention to the evolving and rapidly deepening relationship cutting across the traditional silos of American foreign policy, especially in the greater Indian Ocean region. While the rise of [China House and the Regional China Officer Program](#) has helped institutionalize bureaucratic coordination on China, there is currently no dedicated interagency program focused on the middle power rise in the Indian Ocean. This cross-cutting approach would also be impactful as America pursues [expanded security operations](#) in the Red Sea given the recent ship seizures by the Houthis, reinforcing just how interconnected the region is to arteries of global trade.

The proliferation of new limited multilateralism in the northern Indian Ocean—and the American and Indian preference for the model—are quickly revealing the spokes of an emerging Gulf-Indian-Israeli [strategic triangle](#), with Saudi-Israeli normalization constituting one of the last foundational blocks of a viable governance order. For Washington, minilateralism offers the ability to maintain [strong and unified positions](#) on core priorities, while gaining cooperative operational capacity with middle powers that will not always

follow the American lead. For regional middle powers—and especially for India—it also offers the possibility of [advancing aligned interests](#), yet falling short of a committed alliance structure including formal security, defense, or political commitments. Many spoilers remain, including a broader war in the Middle East, the start of a hot conflict between the US and China, and stalled Saudi-Israeli normalization (to name a few). As the current crisis in Gaza shows, silence is not equivalent for peace and perennially unresolved challenges such as the Palestinian question, Yemen, Syria reconstruction, and Pakistan threaten the institutional viability of an emergent regional order. Another fundamental question is whether the nexus between India, Israel, and the Gulf States would adequately meet American priorities vis a vis Beijing, or whether these states—by deepening their own independent relationships and integrating together—advance American interests in the medium-long term, especially on questions of democracy, human rights, or regional influence.

However, while the Hamas attack and unfolding tragedy in Gaza present a delicate strategic landscape, [the geopolitical drivers](#) pulling India westward into the broader Middle East will continue as the dust settles following elections in the United States and likely political turmoil in Jerusalem. A self-assured Modi with strong electoral confidence sees strong, predictable allies in Abu Dhabi and Riyadh that can both help maintain a financial and diplomatic lever on Pakistan and improve their collective strategic autonomy threading between Washington and Beijing by banding together. India is an increasingly favored partner in Washington on both sides of the aisle, and is deepening its [defense and broader technology ties](#) with the Americans through programs like Indus-X and iCET. Thinking between the seams has not been as important in almost any moment since the end of the Cold War, and the time is now for Washington to both recognize and respond creatively to the emerging dynamics of the Indian Ocean region rather than rely on outdated heuristics, assumptions, and processes.

The challenge of Indian Ocean policy—and the new geopolitical, security, and economic activity in the region—is that it breaks down the traditional bureaucratic silos Washington has become accustomed to, and the metrics of successful “delivery” [remain elusive](#) at the same time, as both strategic competitors (Iran, Russia, China, etc.) and “complicated friends” (Saudi Arabia, the UAE, Israel, etc.) rapidly reinforce and deepen their relationships.

A systematic survey of American Indian Ocean policy would be both timely and warranted, with benchmarks drawn from across the South Asian, East African, and Middle Eastern policy spheres. Another smart investment is to devote serious financial and political resources behind the I2U2 Group and initiatives like INDUS-X and iCET, while continuing to expand professional exchange programs that bring more Americans, Indians, and Middle Eastern partners together, perhaps along models such as the recent [Quad Fellowship](#) launched by Schmidt Futures.

Despite being never considered a Middle Eastern power, India is [increasingly operating](#) as an emerging cusp power in its western frontier that builds upon its cultural, geographic, technological, and economic foundations. It is rapidly making diplomatic inroads and overcoming decades of relational neglect. By situating India into its West Asian context—and treating its agency and vision seriously—Washington can think and act more creatively in a turbulent region of how it can *prove* the value of an American-led order by *delivering* tangibly through cooperation with partners when and where we can. At the same time, by continuing to invest in diplomatic personnel and expanding economic ties with the Middle East, India can expand its own [strategic autonomy](#) and potential to operate in a tense, competitive environment. In addition to clear and immediate benefits like energy security and defense contracts, there are broader political gains as well—for example, in the event of a crisis with China along the contested Line of Actual Control (LAC) or with Pakistan, the Saudis or the Emiratis would be perfectly positioned to provide negotiating room for New Delhi in ways the Americans simply cannot. Maintaining political attention and investments, particularly as the Gaza crisis continues to unfold and elections pull foreign policymakers' attention back home, is critically important for medium and long-term policy success for both Washington and New Delhi.

As Sullivan said [in his speech](#) at the Washington Institute: “in a world of great power competition, in a world of accelerating transnational challenges—we have to increasingly look to the region as a source of the kinds of partnerships that will help us solve the significant problems of the period that lies ahead.” Global governance and multilateral institutions of the 20th century are in the middle of a Schumpeterian process, whereby the ordering logics that have balanced politics within the northern Indian Ocean region are being reimagined, reinvented, and

repurposed. The Indian Ocean matters and will continue to matter more and more, and new thinking and novel approaches are sorely needed heading into 2024, no matter who comes out of the elections on top.

5

Forging a Technological Alliance: The India-US Partnership for Innovation and Growth

Aadrina Deori

The trajectory of India-US relations has transitioned from a historically distant and occasionally tenuous affiliation to a resilient strategic partnership, characterized by shared interests across domains such as diplomacy, defense, trade, and technology. In a world where technology bridges not only geographical distances but also traverses the realms of space, including the cosmos and the intricate domain of cyberspace, the strained and remote relationship is bound to undergo a process of profound transformation. The initial collaboration, notably marked by the partnership for the [Green Revolution](#), has subsequently evolved. In an era defined by the ceaseless march of technological innovation, the emergence of a partnership between the United States and India holds immense promise for both nations and the world at large. This dynamic alliance, rooted in shared values and driven by mutual interests, is poised to reshape the global technological landscape.

Rationale of the Study

This research paper examines the US-India technological alliance, providing a balanced assessment of its prospects and its role in shaping global technology. It explores:

- How the increasing importance of technology has impacted the mutual ties between the United States and India, especially considering China's advancements in technology
- What the specific objectives and components of the [US-India Initiative on Critical and Emerging Technology](#) are, and how it aims to enhance the strategic partnership between the United States and India
- What potential implications and global impacts might arise from the US-India technological alliance, and how it can shape the future of global technology

I. Tracing the Historical Technological Alliance between India and US amid Concerns over China's Technological Advancements

The collaborative efforts between India and the United States in technology have undergone a remarkable transformation since the inception of the Green Revolution in the 1960s. During this pivotal period, institutions like the Rockefeller Foundation

and the Ford Foundation from the United States [partnered with India](#) to introduce advanced agricultural practices, high-yielding crop varieties, and efficient irrigation techniques, heralding a new era of agricultural productivity. This initial success laid the groundwork for subsequent developments. In the 1980s and 1990s, India emerged as a global hub for information technology and software services, attracting significant engagement from major US tech giants like IBM and Microsoft. This era not only bolstered India's IT sector but also facilitated knowledge transfer, the initiation of software development projects, and the establishment of research and development centres, establishing a solid foundation for a robust IT collaboration between the two nations.

As the new millennium dawned, crucial agreements and memoranda of understanding were signed to promote scientific research and technological development. Of particular significance was the US-India Science and Technology Agreement of 2005, which enabled collaborative research projects and exchange programs across diverse fields including space exploration, energy, and climate science. In the subsequent years, ground-breaking partnerships in nuclear energy, space exploration, and defence technology further strengthened the ties between the two countries. The 2008 US-India Civil Nuclear Agreement opened doors for India to access civilian nuclear technology and fuel supplies. Moreover, renowned organizations such as NASA and ISRO (the Indian Space Research Organization) embarked on joint space missions and satellite launches.

The 2010s witnessed a pronounced shift towards deepening collaborations in defense and security technology, exemplified by the initiation of the Defense Technology and Trade Initiative. The bilateral partnership assumed a proactive role in addressing climate change and advancing clean energy solutions.

During the Indian Prime Minister Narendra Modi's recent visit to the United States, Prime Minister Narendra Modi and President Joe Biden, on June 23, 2023, [reaffirmed](#) a shared vision of positioning India and the United States as among the most intimate allies globally describing it as: "A partnership of democracies looking into the 21st century with hope, ambition, and confidence."

In May 2022, at the margins of the Quad Summit in Tokyo, President Joe Biden and Indian Prime

Minister Narendra Modi had jointly [launched](#) the US-India Initiative on Critical and Emerging Technology (iCET) to strengthen their strategic partnership. The emergence of iCET marked a significant accomplishment, underscoring the crucial role of technology in the relationship between the United States and India, especially in light of China's technological advancements.

II. Gaining Insight into the Goals and Elements of the US-India Initiative on Critical and Emerging Technology

The formalization of the iCET accord transpired in January 2023 during the official visit of Ajit Doval, India's national security advisor, to Washington. After this milestone, both entities unveiled an array of collaborative research initiatives meticulously devised to fortify cooperative endeavours across a spectrum encompassing artificial intelligence, quantum technologies, advanced wireless systems, high-performance computing, space technologies, and next-generation telecommunications. Through the strategic deployment of these initiatives, both nations strategically harness and synergize their respective technological and defence competencies, thereby [laying the groundwork](#) for reciprocal enrichment between the robust innovation environment of Silicon Valley and the burgeoning technology and defense innovation landscape of India.

Semiconductors

Semiconductors are the bedrock of modern technology, powering everything from smartphones to artificial intelligence. Given their prominent positions as global frontrunners in technology and innovation, both India and the US have substantial potential for mutual gain through semiconductor sector collaboration. The iCET initiative aims to [bolster](#) India's position in the global semiconductor value chain and contribute to the US-India Commercial Dialogue. This provides an opportunity for both nations to revamp their semiconductor trade strategies. Simplifying the exchange of semiconductor goods, including essential manufacturing equipment, eliminating export control limitations, and facilitating the seamless movement of skilled professionals between the two countries could establish a robust trade network for the worldwide industry. Utilizing the iCET platform is crucial for introducing open trade policies within

the semiconductor supply chain, fostering international involvement, and diminishing current interdependencies.

Quantum Computing

India and the United States have laid the foundation for extensive collaboration in quantum computing, expressing a strong commitment to driving their joint initiatives forward. The establishment of a shared Indo-US Quantum Coordination Mechanism serves as a pivotal step, aiming to facilitate cooperation across industry, academia, and government in both nations. This coordination platform provides a means for the exchange of ideas, research, and expertise in quantum computing, creating the groundwork for transformative advancements in this field. Moreover, their resolve to forge a comprehensive Quantum Information Science and Technology agreement underscores their shared determination to collectively shape the future of quantum technologies. By pooling their resources and knowledge, they can collaboratively develop quantum computing capabilities with the potential to revolutionise various industries, including cryptography, materials science, and artificial intelligence.

India's active participation in initiatives like the Quantum Entanglement Exchange and the Quantum Economic Development Consortium aligns both countries with leading quantum-focused nations, facilitating the exchange of knowledge and fostering commercial collaboration. This participation not only promotes quantum research but also accelerates the practical application of quantum technologies.

Additionally, the introduction of a grant program under the US-India Science and Technology Endowment fund for the joint development and commercialization of artificial intelligence and quantum technologies demonstrates their commitment to nurturing innovation. Within India, there is an ongoing dialogue about the means through which domestic start-ups and research institutions can align with these investment efforts. The enthusiasm within the scientific community for the Quantum Mission stems from its ability to enable India to participate in a global technology development race at a relatively early stage.

As Rajamani Vijayaraghavan from the Tata Institute of Fundamental Research, who will be a key player in the mission's computing node has [expressed](#), "We are in the game. We have rarely been in the game

(with regard to other technologies). Work on quantum technologies has been going on in India for the past 10 years, more vigorously in the last four-to-five years, whereas groups in some other countries have been working for close to three decades. We have some catching up to do, but this mission will help us do that. We have a fairly large pool of people with the right skills.”

Space

India and the United States have embarked on an ambitious journey to bolster their collaboration in the realm of space exploration. President Biden and Prime Minister Modi have laid out a multifaceted plan for cooperation that spans various facets of space exploration. Notably, both nations are working towards a strategic framework for human spaceflight cooperation, with plans to send Indian astronauts to the International Space Station in 2024. Moreover, the delivery of the NASA-ISRO Synthetic Aperture Radar satellite to India and its impending 2024 launch signify a significant milestone in satellite technology collaboration. The leaders have also stressed the importance of enhancing commercial collaboration between the [private sectors](#) of both countries, encompassing the entire space industry value chain. Addressing export controls and facilitating technology transfer are also on the agenda to foster technological advancements. Furthermore, India's signing of the Artemis Accords aligns with the shared vision of global space exploration for the benefit of humanity, opening doors to potential joint missions to the Moon and beyond. This comprehensive approach underscores the commitment of both nations to advancing their space programs and contributing to the greater global space exploration community.

Telecommunications

In the realm of telecommunications, India and the United States are deeply engaged in collaborative efforts to establish secure and reliable networks, robust supply chains, and universal digital access. This partnership includes the establishment of dedicated Joint Task Forces for advancing Open RAN and 5G/6G research and [development](#), under the leadership of India's Bharat 6G Alliance and the US Next G Alliance. Together, they are coordinating Open RAN field trials and implementation, supported by funding from the US International Development Finance Corporation. Indian firms are also participating in the “US Rip and Replace Program,” underscoring the significance of network

security. The two nations jointly envision ambitious 6G networks characterized by standards cooperation, accessible chipsets, and collaborative research initiatives. President Biden and Prime Minister Modi underscore the importance of a bilateral framework focused on “Trusted Network/Trusted Sources” which will ensure the establishment of secure and dependable telecommunications infrastructure to shape an interconnected digital era.

Artificial Intelligence

India and the United States are well aware of the transformative potential and the associated challenges of artificial intelligence. They are committed to fostering joint and international efforts in responsible and trustworthy AI, with a particular focus on generative AI. This collaboration aims to advance AI education and workforce development, create commercial opportunities, and address issues related to discrimination and bias in AI systems. Furthermore, the United States is actively supporting India's leadership as the chair of the Global Partnership on AI, emphasizing their commitment to global cooperation in AI advancement. The leaders have also lauded Google's substantial investment in India's digital ecosystem, including early-stage start-ups, and Google's AI Research Centre in India, which focuses on developing AI models to support over 100 Indian languages. This multifaceted collaboration reflects a shared commitment to harnessing AI's potential for the benefit of both nations and the world at large.

III. The Global Implications of the US-India Technological Alliance

The US-India technological alliance carries profound implications for the global arena, signifying a transformative shift in technology innovation, trade dynamics, and international collaboration. Both nations' prioritization of technological resilience lends paramount importance to this partnership. India, aspiring to establish itself as a global technology innovator, stands to accrue substantial benefits from this collaboration. Traditionally, Indian enterprises have predominantly focused on scaling and deploying innovations created elsewhere. However, through collaboration with American counterparts, they can transition into authentic technological leaders, fostering original intellectual property.

In this collective endeavor, it is imperative for the United States to recalibrate its perspective of Indian companies, transitioning beyond viewing them merely as outsourcing facilitators to embracing them as strategic collaborators. This transition involves engaging in value-added tasks across the value chain and cultivating multinational teams with deep legal integration. As a consequence, India can fortify its local capabilities, especially in emerging sectors such as artificial intelligence and healthcare.

Conversely, the United States relies on India to realize its potential in the technology sphere, particularly amidst ongoing US-China trade disengagement. This collaborative stance is already bearing fruit, evident in Indian firms' innovative strides in domains like semiconductors and software. Illustrative instances include India's Aadhaar system and the transformative impact of Jio's telecom disruptions, which have significantly expanded digital services.

To fully [harness](#) the potential of this alliance, both nations must confront outdated paradigms and policy frameworks. US business leaders must shift from viewing India through a lens of cost-effective labour outsourcing to recognizing it as an innovation hub. Investments, particularly venture capital, should be channelled more substantively into India, bolstered by an intimate understanding of local dynamics. Policymakers should facilitate the relaxation of export controls, streamline technology transfer, and promote a culture of open innovation. Similarly, India's protectionist policies and barriers to foreign investment necessitate recalibration. Transparent communication and the dismantling of entry barriers are vital in fostering genuine partnerships. In an era characterized by re-globalization, protectionist measures prove counterproductive. The overarching objective should be to cultivate a dynamic economy capable of global competitiveness.

The US-India technology corridor possesses the potential to equip India with essential skills, technology access, market penetration, and the confidence to assume a significant global role. Beyond traditional dynamics of admiration, tension, and rivalry in bilateral relations, this alliance signifies a mutually beneficial arrangement across technological, economic, political, and geopolitical dimensions. In an increasingly interconnected world, the collaborative efforts of the two largest democracies, both proponents of open economies

and shared values, hold the capacity to establish a constructive framework for the evolving global order, yielding benefits not solely for the involved nations but for the broader global community.

IV. Conclusion

In an era defined by technological innovation, the evolving global order is witnessing transformative shifts in power dynamics, particularly concerning the acquisition and utilisation of cutting-edge technologies, with significant implications for both civilian and military domains. While technology has long played a pivotal role in shaping global power, the 21st century introduces a new layer of complexity, epitomised by the multifaceted capabilities and challenges posed by all-encompassing technologies like artificial intelligence. The governance of these technologies has emerged as a critical subject of debate across multilateral and bilateral forums. India's presidency of the G20, coupled with its growing alignment with Western nations, positions it as a key player in shaping 21st-century technogeopolitics alongside the United States and other like-minded countries.

The commitment demonstrated by India and the US to collaborate in shaping a technology-driven future characterised by responsible development and deployment is poised to be of paramount importance. The opportunities and risks inherent in emerging technologies will largely define the contours of their partnership for global betterment. In the face of China's ambitious drive to dominate technology production and application, the synergy between the well-established technology ecosystem of the United States and the untapped potential of India's vibrant tech sector becomes consequential. As such, the collaborative resolve of these two democratic nations stands as a central pivot in navigating the implications of the evolving technological landscape on the global stage.

6

Inequality: America and India's Shared Problem, and What to Do About It

Lake Dodson

The cool ocean breeze gently floats from the clear waters of the Arabian Sea into the crowded streets of India's most prosperous cities. Businessmen rush to catch the Aqua Line on the Mumbai Metro, hoping to snag an open seat and monitor the Bombay Stock Exchange on the way to Mumbai Central Station. As the sleek tramcar rushes to its various destinations, waves of pedestrians wander about the vast streets; sleep-deprived university students stumble out of lecture halls, tourists crowd around the massive arches of the Gateway to India for obligatory vacation pictures, and the advertisements and lights hang over open doors, beckoning anyone to come and see what is being sold.

At night, the fluorescent lights fight against the darkness and Mumbai refuses to sleep. The night is young enough for exploration among the narrow corridors, or perhaps one could hop aboard a train bound for the ancient UNESCO World Heritage caves of Ajanta and Ellora, sample the sweetest fruits from the mango orchards of Ratnagiri, or relax over the rolling vineyards of Nashik Valley drinking the local wines.

This is the state of Maharashtra, but is this representative of India as a nation?

Likewise, the crashing waves of New York Harbor beat upon the strong foundation of America's most famous landmark: the Statue of Liberty. The everpresent skyscrapers which stand behind Lady Liberty contain the offices of the most profitable Fortune 500 companies in the world, CEOs, analysts, day traders, and marketing experts occupy floors thousands of feet above the ground. For some, their monthly salary exceeds what an average American could ever hope to see in a whole year. On the streets, people from every nation on Earth compete in a mad dash to achieve the American dream. Here, the city attracts ambitious people who believe anything is possible for anyone as long as you got the guts to do it.

Moving away from the concrete jungle and into Long Island, the quiet and expensive estates of the Hamptons allow a serene retreat for the ultra-wealthy from the hustle and bustle of the city that never sleeps. Jewish delis, Italian wineries, and French bakeries dot the street corners of idyllic, white-picket-fence neighborhoods. Upstate offers a rugged change of pace with small villages and snowy

vistas complimenting the countryside all the way to Niagara Falls.

This is the state of New York, but is this representative of America as a nation?

The answer is no to both questions. America and India both suffer problems of wealth disparity across state boundaries.

The Severity of the Problem and Why It Is Happening

As the most prosperous regions of India enjoy modern delicacies, economic prosperity, and funding to further advance themselves, nearly [22%](#) of all Indians live below the Multidimensional Poverty Index. Of that 22%, 35% of all poverty exists in 5 of the 28 Indian states.

In the state of Bihar, the [majority](#) of the population falls under the poverty line and lacks proper nourishment and food access. 30% of men and 47% of women in the state cannot read or write. This development is not new, in 2004 [The Economist](#) reported that the word Bihar had become a slang term in India, describing something that is "an area of darkness like an armpit." Little industrial investment from the Indian government created a power vacuum that allowed mafias to flourish in the state since the 1970s.

The United States faces a similar dilemma with nearly [15%](#) of all Americans below the Multidimensional Poverty Line. Of that 15%, roughly 16% of all poverty exists in 5 of the 50 US states. Of course, because America has almost double the amount of states that India has, poverty is more evenly distributed throughout the country.

While Mississippi's level of poverty is nowhere close to Bihar, almost [one in every five](#) Mississippians lives in poverty. Considering America's aging population and low workforce participation, the current levels of poverty are likely to be exacerbated as America's overall standard of living is [predicted](#) to decrease by 9% by 2030. Disproportionally affecting poorer states and worsening already dire states of financial destitution.

Compared to Maharashtra and New York, Bihar and Mississippi are lower in every conceivable metric pertaining to the quality of life for citizens, economic

prosperity, upward mobility, or the ability to attract investment from their national governments.

While international business and cooperation could remedy the problem, cooperation itself cannot produce success at a rapid enough pace to significantly solve the issue. However, should the process of international interactions be created to be simpler, more business could flow into areas in need and increase exponentially.

Through such integration between India and America on a federal and state level, interaction in various private and public sectors, and utilizing the specialties of each region, mutually beneficial internal integration is possible.

What is Internal Integration?

“Internal Integration” is a term much more commonly used in business than in international relations. It [refers](#) to a company’s ability to unify all processes of what makes the company function as smoothly as possible, both for itself and the customer. For example, a company that makes furniture would have a vested interest in working with or purchasing another company that deals in the production of fabrics and leather. Companies like Apple Inc. do this [frequently](#), as their customer satisfaction department has a direct line of communication with their research & development team to understand what their customers may want in the next iPhone.

Replace “company” with “nation” and the same rules and strategies apply to uplift less privileged regions. This can be achieved in a variety of ways depending on the region, however, several common through lines have proved immensely successful in the past.

1. Optimize Expertise and Resources

No two regions on Earth are the same. Every stretch of beach or woodland expanse has its unique geographic location and notable characteristics. Collaborative efforts can pool together the strengths of diverse regions and hone in on what makes that region unique.

The United States and India have been improving in this category, especially during the last decade. The US-India Strategic Partnership Forum, founded in 2017, was [created](#) to be a facilitator for all Indian or American stakeholders to reach out to the other

country's counterparts. Over its six years of operation so far, the USISPF helped to facilitate bilateral talks on [emerging technologies exchange](#) between Karnataka and California, [Punjabi farmers](#) in Punjab and various US States, and other such cooperative talks operating on the state level.

Similarly, Gujarat and Texas have also increased their interaction, such as the recent Texan investment in the [Vibrant Gujarat Summit](#) in petrochemicals and manufacturing, as both states have a strong agricultural sector in their rural areas with a more tech-focused economy in their urban areas.

While the US and India seem to only cooperate in this way in states of significant wealth, this is a promising beginning for more prosperous states of one nation to assist the poorer state of another nation. There is no “one-size-fits-all” solution for this interstate cooperation, but through identifying areas of possible improvement such as infrastructure, education, or healthcare, a rich state could help fill in the gaps that poor states lack to progress the quality of life. This would create a symbiotic relationship between the states, where the seller profits from the benefits, the buyer profits from the advancements, and all benefit from international cooperation.

2. Talent Retention and Brain Gain

The exodus of smart, industrious, and youthful people from a disenfranchised region will doom that state to perpetual stagnancy. By creating attractive opportunities for a better quality of life, underdeveloped regions can not only retain their local talents but source other talented people across the country to join them. While there are no institutions focused solely on this goal, collaborations in several academic fields achieve this by proxy.

The Boren and Fulbright scholarships available to US university students offer significant grants to pay for expenses when learning a new language to study abroad, with specialized programs for learning [Hindi and Punjabi](#) introduced across universities in Michigan, Wisconsin, Washington, and more.

For Indians in India, the Chief Minister’s Good Governance Associates [promotes](#) young people to work directly with the state government of Haryana through Ashoka University. This program offers temporary employment in the state government that could lead to a prolonged career in politics or serve as work experience for young college students to

apply to a higher-paying job after graduating from university. More broadly, the Jharkhand Skill Development Mission [funds](#) youth programs that teach valuable technical, communication, and specialized skills to make applicants more competitive for job applications in the future. Both of these initiatives offer Indian citizens an opportunity to increase their chances of being selected in India's rigid job market, thus retaining intelligent people in their respective communities.

As for Indians in the US, the Indian Professionals Network ([IPN](#)) offers networking, mentorship, and professional development opportunities for Indian immigrants and descendants of the various Indian diasporas to America in their local communities, assisting both disenfranchised and affluent areas.

Organizations such as these ensure that bright Indians or Americans do not need to flee communities in distress, but stay to create a better one through interesting academic incentives.

3. Optimize Expertise and Resources

The most promising large-scale infrastructure vision between the two countries was the [India-United States Nuclear Agreement of 2005](#), breaking over 30 years of US-imposed sanctions on India after their first nuclear weapon test in 1974.

This monumental arrangement not only allowed for nuclear trade between each other's governments but civilian industries as well. [Nuclear technology sharing](#) was likewise included in the agreement, meaning that India stood to benefit from US technology and the US stands to benefit from Indian advancements in Thorium-based power and Fast Breeder Reactors. While this may be a project for states with the wealth to invest in nuclear energy, poorer states have an equal opportunity to take advantage of large-scale infrastructures with even more to gain.

In rural areas of the US, such as Mississippi and other states with agriculture-centered economies, improving broadband internet access is essential for economic growth and education. Indian investments in increasing and strengthening broadband infrastructure in these American states could provide new opportunities for improving education, business, and further international projects.

In India, advanced agricultural systems such as mechanized irrigation, modern storage facilities, and sanitation instruments could be offered by the aforementioned agricultural-centered US states to boost productivity and income.

This assistance could lead to more relaxed trade between these countries, and limit commercial complications. A perfect example of such a complication would be India's [recent embargo](#) on non-basmati rice exportation, which caused Americans of South Indian descent to panic buying different varieties of Indian rice, hurting American rice growers with lower sales than usual.

Internal Integration: The Bilateral Gift that Keeps on Giving

In a world where disparity persists, the shared problems of wealth inequality in both India and the United States showcase the urgent need for transformative solutions. Amid these challenges, the potential for internal integration offers a beacon of hope and progress. As the winds of change and innovation continue to benefit successful states in India and America, it becomes clear that optimizing expertise, retaining talent, and investing in infrastructure are more than just strategies—they are the catalysts for societal transformation and reveal the power of sharing knowledge with the boundless potential of regional cooperation.

As the sun rises over the sun rises over the Gateway of India and sets on the Statue of Liberty, the promise of internal integration shines as more than simply a promotion of international cooperation, but a way to streamline the process to be smooth, easy, and facilitate bilateral action at a faster and stronger pace. Through internal integration, there is a shared purpose and goal with boundless potential for continuous improvement—for every state, every city, and every individual.

ABOUT THE AUTHORS

AADRINA DEORI holds a bachelor's degree in Political Science from Indraprastha College for Women, University of Delhi. In her prior engagements, she assumed leadership roles and played an active role in initiatives such as Pink Legal Ayyanna, where she championed the cause of women's legal rights in India. Her intellectual pursuits extend to exploring the intricate interplay of gender dynamics, governance, public policy, and administration. Additionally, she aspires to delve into the realm of international relations, with a keen focus on the burgeoning significance of the Indo-Pacific region.

MOIRANGTHEM SAYALUXMI DEVI is from Manipur, a state in the north-eastern region of India. She completed her BA in Political Science from Indraprastha College for Women, University of Delhi. She is currently pursuing her Master's degree in Political Science from Department of Political Science, University of Delhi. Her research interests revolve around the study of geopolitical developments in East and South Asia. In addition, she is keen in studying on topics related to gender and politics and socio-political issues in the North-Eastern part of India.

LAKE DODSON is a senior Political Science student currently studying at the University of Mississippi. His interests are Korean-American relations, cybersecurity policy, and nuclear energy/weapons policy. Lake is a published writer, with pieces published by the Realist Review, the Commandant Military Journal of the University of Toronto, and Threo Defense Journal.

GARRISON MORATTO holds a Master's of Science in International Relations from Liberty University, where he previously graduated Summa Cum Laude with a Bachelor's of Science in Government: Public Administration. He currently works as an independent consultant to a foreign policy think tank in Washington D.C.

NICHOLAS SHAFER is [a Fulbright Scholar at Ashoka University in New Delhi](#) where he works on rising powers in the multilateral system with a regional focus on West & South Asia. He previously served as a Program Officer at the Meridian International Center and as a Yemen & Gulf Affairs Desk Officer at USAID, and previously worked at the State Department, Smithsonian Institution, and Mercy Corps. A former Boren Scholar at the Center for Arabic Studies Abroad in Jordan, his current work focuses principally on US Foreign Policy and evolving forms of multilateralism and regional governance and also works on emerging technologies, critical minerals, and defense at the US - India Business Council. Nick studied West Asian Studies, Governance, and Public Policy at Oxford and the Institute of Development Studies as a Marshall Scholar and holds a B.A. in Anthropology, Arabic, and Public Policy from the University of California at Berkeley. A proud multigenerational Californian, Nick remains actively engaged with Californian institutions cultivating global affairs capacity and currently serves as a Strategic Advisor at UC Berkeley. Nick is also the Co-Executive Director of [Global Community College Transfers](#) and loves mentoring community college, transfer, and non-traditional students to break into public service, fellowships, and professional life.

SHALINI SINGH is currently pursuing Ph.D. in International Relations from Amity Institute of International Studies, Amity University Noida, India. Her research interests revolve around great power politics- focusing on US and China. She has also keen interest in South Asia and Africa.



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1003 BISHOP ST. SUITE 1150, HONOLULU, HI 96813

(808) 521-6745 • PACIFICFORUM@PACFORUM.ORG • WWW.PACFORUM.ORG