

TAIWAN BEYOND SEMICONDUCTORS

Three Decades of India-Taiwan Relations and Emerging Collaborations

CSDR

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ABOUT THIS REPORT

This CSDR report examines three decades of India-Taiwan relations, arguing that despite significant growth from USD 5 billion to over USD 10 billion in bilateral trade, the partnership remains vastly underutilized. While traditional cooperation in semiconductors, trade, and education has flourished—exemplified by the Tata-PSMC chip fabrication partnership and 3,000 Indian students in Taiwan—the report identifies transformative potential in emerging areas.

Key untapped sectors include urban planning, where Taiwan's successful and widespread adoption of public-private partnership (PPP) models could address India's urbanization challenge of accommodating 600 million city dwellers by 2030; disaster management, leveraging Taiwan's world-class earthquake and typhoon response systems; and advanced technologies beyond semiconductors, including IoT, AI, quantum computing, and space technology.

The report attributes underperformance to India's cautious China policy, regulatory hurdles deterring Taiwanese investment, and stalled FTA negotiations. The report recommends fast-tracking trade agreements, establishing single-window facilitation mechanisms, and pursuing "whole-of-society" cooperation across depoliticized sectors. The central thesis of the report is that functional partnerships in multiple domains can gradually overcome diplomatic constraints, positioning this relationship as crucial for Indo-Pacific stability and prosperity.

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CSDR's Emerging Technologies and Policy Program focuses on the intersection of cutting-edge technologies and their profound implications for India's security framework, economic landscape, and energy systems. As India positions itself as a global technology leader, our program analyzes how technological advancements reshape national priorities and presents unique opportunities and challenges for policymakers, industry leaders, and citizens alike.

ABOUT COUNCIL FOR STRATEGIC AND DEFENSE RESEARCH

Founded in January 2020 by Lt. Gen. D.S. Hooda (Retd.) and Dr. Happymon Jacob, CSDR is an innovative think tank and consultancy specializing in foreign policy, geopolitical risk, connectivity, and critical areas of defense and aerospace. With a focus on the Indian subcontinent, Eurasia, and the Indo-Pacific, CSDR is committed to generating strategic insights that drive meaningful change. Read more at www.csdronline.com

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Executive Summary

- Over the past three decades, the India-Taiwan partnership has experienced steady growth in both scope and volume, transforming from tentative commercial interactions to robust engagement across economic, technological, and cultural domains. Despite the lack of formal diplomatic relations, among India's key relationships in the complex geopolitical landscape of the Indo-Pacific, perhaps no other country represents greater unfulfilled potential than Taiwan. The overemphasis on rigid political factors and the temptation to find a silver-bullet solution have arguably been the greatest obstacles to incremental and functional cooperation between them.
- The establishment of representative offices in 1995—the India-Taipei Association in Taipei and the Taipei Economic and Cultural Center in New Delhi—created an institutional framework that has fostered bilateral ties across multiple sectors. The economic logic of the relationship has not only remained intact but has significantly grown in salience, reflected in steady growth in bilateral trade, which surged from around USD 5 billion annually between FY2010-2020 to over USD 10 billion in FY24. Foreign Direct Investment from Taiwan into India has accelerated similarly, reaching well over USD 5.77 billion today, with some 300 Taiwanese companies operating across diverse sectors and creating roughly 200,000 jobs.
- Traditional areas of cooperation have centered on trade and investments, semiconductors, and knowledge exchanges. In semiconductors, Taiwan's unparalleled expertise has proven crucial for India's USD 10 billion domestic chip manufacturing push, exemplified by the Tata Group-PSMC partnership for India's first commercial semiconductor fabrication plant. Educational exchanges have also flourished, with over 3,000 Indian students studying in Taiwan and 41 Taiwan Education Centres established across Indian states, particularly gaining momentum after Chinese Confucius Institutes came under scrutiny following the 2020 India-China clashes.
- The report's core argument centers on emerging and untapped areas of collaboration that hold transformative potential. In urban planning and development, Taiwan's innovative approach to PPPs and smart city expertise directly aligns with India's challenge of managing rapid urbanization, with an estimated 600 million people residing in urban areas by 2030 and requiring nearly USD 60 billion annually in infrastructure investment. Taiwan's disaster resilience and management capabilities, developed through necessity given its vulnerability to earthquakes and typhoons, offer valuable lessons for India's disaster-prone geography.
- Medical and health-tech cooperation presents significant opportunities, from leveraging Taiwan's ageing population's demand for care-workers to joint ventures combining India's pharmaceutical production capabilities with Taiwan's strengths in novel drug development and precision medicine. Beyond the obvious semiconductor focus, emerging technologies offer vast collaboration potential across IoT, AI, and Big Data Analytics, Quantum Technologies, and Space Technologies, where complementary strengths create natural synergies.
- Key constraints limiting the relationship's full potential include India's understandably cautious approach due to perceived strategic costs of violating Chinese "red lines," India's broader business and regulatory environment that deters Taiwanese investment, and the stalled India-Taiwan FTA negotiations despite a completed feasibility study a decade ago. The bilateral trade represents just 1% of their overall foreign trade, indicating substantial untapped potential.

- The report concludes with a comprehensive set of recommendations spanning broad policy initiatives and area-specific proposals. These include fast-tracking FTA negotiations, creating a comprehensive policy approach to de-risk supply chains away from China, establishing a single-window "India-Taiwan Technology Partnership Facilitation Desk," and instituting formal high-level dialogue mechanisms. Area-specific recommendations encompass urban renewal policy advisory bodies, disaster resilience training programs, joint clinical trial platforms, IoT standards cooperation, AI collaboration frameworks, quantum technology partnerships, and space technology working groups.
- The report ultimately argues that the establishment of close partnerships in multiple relatively depoliticized sectors, delivering enormous mutual benefits, may be the only way to create incentives that gradually overcome the political and diplomatic shortfalls in the relationship. If realized, this optimized India-Taiwan partnership will play a meaningful and constructive role in "the Indo-Pacific century."

Introduction

Over the past three decades, and particularly in the last five years, the India-Taiwan partnership has experienced steady growth in both scope and volume. Despite the lack of formal diplomatic relations, the bilateral relationship has undergone a remarkable transformation—from tentative commercial interactions to a much more robust and comprehensive engagement in economic, technological, and cultural domains.

At the same time, among India's key relationships in the complex geopolitical landscape of the Indo-Pacific, perhaps no other country represents greater unfulfilled potential than Taiwan. Partly due to political limitations stemming from India's troubled relationship with China, diplomatic recognition remains a sore point between New Delhi and Taipei. However, overemphasis on these rigid factors, coupled with the temptation to find a silver-bullet solution, has arguably been the greatest obstacle to incremental and functional cooperation between them. This is somewhat ironic since the establishment of close partnerships in multiple relatively depoliticized sectors, which can deliver enormous mutual benefits to India and Taiwan, may be the only way to create incentives that gradually overcome the political and diplomatic shortfalls in the relationship.

The report begins with the historical trajectory of India-Taiwan relations, examining the key milestones and shifts in approach that have characterized engagement since the early 1990s. It also highlights the key pillars of cooperation that have traditionally defined the relationship. The core of this report lies in its exploration of new, and often, untapped areas of collaboration that hold great potential to redefine the future of India-Taiwan relations.

These include critical sectors such as urban infrastructure development, where Taiwan's expertise can significantly contribute to India's smart city ambitions; disaster resilience and management, an area of paramount importance for both given their shared vulnerabilities to natural calamities; and technology cooperation beyond the obvious realm of semiconductors, in areas such as quantum computing, AI, IoT, renewable energy, space technology, and others.

The selected areas of emerging cooperation contain natural complementarities, as applicable to the India-Taiwan relationship at a broad level, in terms of synergy in key national goals. Finally, the report culminates in a set of actionable recommendations that include policy suggestions, specific proposals for joint initiatives, and strategies to foster greater interaction. The report ultimately seeks to provide a comprehensive roadmap that can help optimally maximize the potential of the India-Taiwan partnership, which, if realized, will play a meaningful and constructive role in 'the Indo-Pacific century'.



Partly due to political limitations stemming from India's troubled relationship with China, diplomatic recognition remains a sore point between New Delhi and Taipei. However, overemphasis on these rigid factors, coupled with the temptation to find a silver-bullet solution, has arguably been the greatest obstacle to incremental and functional cooperation between them.

Historical Context and Current State of Relations

(British) India and the Republic of China (RoC) had formal relations that can be traced back to 1942, which were established, in part, due to the shared Japanese threat at the height of the Second World War.^[1] That year, Kuomintang (KMT) leader Chiang Kai-shek and his wife made a landmark visit to India.^[2] Notably, he became the first major non-European world leader to meet the Indian nationalist leaders, Nehru and Gandhi. However, the political and geopolitical status quo in the region underwent a dramatic shift with the British exit from India in 1947 and the Communist Party of China's (CCP) decisive victory over mainland China in 1949, which compelled the RoC to relocate from China to Taiwan until today. The reality of a large, insecure border with Communist China, coupled with PM Nehru's aspirations of Asian solidarity, prompted India to transfer diplomatic recognition from the RoC to the People's Republic of China (PRC) in 1950, which, in turn, severed relations with Taipei (the RoC was, at this point, entirely based in Taiwan).^[3] The drift in bilateral relations between India and Taiwan remained in place for nearly five decades.

In the early 1990s, the end of the Cold War, a new *modus vivendi* with China (the 1993 Border Peace and Tranquility Agreement), India's economic liberalization, and a diplomatic pivot towards East Asia (Look East Policy), collectively allowed for a new strategic logic, albeit with limitations, to engage with Taiwan, especially as the island nation had already emerged as an economic and technological powerhouse by this time. During the 1990s, Taiwan underwent democratization, and the government of the Republic of China no longer claimed sovereignty over all of China; its jurisdiction became clearly defined as limited to Taiwan, Penghu, Kinmen, and Matsu. In fact, the importance of economic relations with Taiwan was acknowledged and articulated at the highest levels by Prime Minister Narasimha Rao.^[4]

In 1995, India and Taiwan established representative offices in each other's capitals—the India-Taipei Association (ITA) in Taipei and the Taipei Economic and Cultural Center (TECC) in New Delhi. Given India's last commitment to the 'One-China Policy' was made in 2014, India has concentrated on promoting trade, investment, education, culture, and people-to-people ties with Taiwan. The ITA and TECC have created an institutional framework and have fostered bilateral ties in a wide range of areas.

Over this 30-year period, the economic logic of the India-Taiwan bilateral relationship has not only remained intact but has also significantly grown in salience. In large part, this is because the technological capabilities of Taiwan have rapidly advanced and the country has irreplaceably embedded itself into global supply chains, particularly in the vital semiconductor sector. This is reflected in steady growth (which has recently accelerated) in bilateral trade, FDI inflows from Taiwan into India, and the number of Taiwanese firms with operations in the



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country. Notably, these positive trends have been facilitated by various bilateral arrangements and agreements, including those on investment, avoidance of double taxation, and customs cooperation, among others.

Beyond trade, collaborations in science and technology have expanded, with over 100 projects carried out under various agreements to facilitate joint scientific research and technology transfers.^[5] Efforts are underway to deepen this partnership further, given its considerable potential. For instance, a Taiwanese semiconductor firm, PSMC, has partnered with (and transferred crucial technology to) the Indian MNC Tata Group to help build the first (commercial) chip fabrication plant in India; a major milestone for the country.^[6]

Similarly, Taiwan has leveraged its advanced education ecosystem to facilitate mutually beneficial academic exchanges, albeit with a tilt in favor of India, as a means for the former to expand its soft power influence over the latter. India has become one of the largest pools of international students benefiting from Taiwan's government scholarships, and within India, Taiwanese education centers have enrolled thousands of Indian students.^[7] For their part, Taiwanese enterprises have launched new and increasingly expansive programmes to train and upskill the Indian labor force. Even cultural ties have grown considerably. Yet, as this paper aims to show, the full potential of India-Taiwan relations remains largely unfulfilled, and much more can be done to optimize and extract mutually beneficial dividends.



Frank Huang (second from right), Chairman of PSMC, Hsien-Kuo Chu (first from right), Vice Chairman of PSMC, and Randhir Thakur (first from left), CEO of Tata Electronics, meet with Ashwini Vaishnaw (center), Minister of Electronics and Information Technology of India in Sept 2024. Source: EETimes India

While there are several reasons for this underperformance, India's understandably cautious approach to Taiwan has certainly been a key constraint. Perceived and real strategic costs of violations of Chinese "red lines" have played a predominant role in New Delhi's Taiwan policy since its very inception. Another key hurdle that has gained significance in recent years is India's broader business and regulatory environment. Taiwanese firms that wish to invest or expand operations into India cite familiar complaints—opaque regulations, slow approvals, unreliable contract enforcement, and uneven labor and land policies. Even cultural and language barriers (relative to China or other countries in East Asia) deter them from entry into India. Meanwhile, the India-Taiwan FTA, for which a feasibility study was completed a decade ago, remains stalled.^[8]

This is not to say that bilateral engagement (beyond economic ties) has not grown over the years. On the contrary, several noteworthy milestones have been achieved. For instance, in 2003, New Delhi and Taipei reached a landmark MOU on Civil Aviation Service between Taipei Airlines Association and Air India Charter to initiate direct flights between them, which was later upgraded in 2016 to an Air Service Agreement between the two governments to promote people-to-people connections. On the political level, in the same year, former Indian Defense Minister George Fernandes visited Taiwan, and in 2010, former President Abdul Kalam followed suit.^[9] In 2016, the India-Taiwan Parliamentary Forum was established as a “formal platform for friendship” by 22 Indian parliamentarians.

Notably, in 2018, India’s Parliamentary Standing Committee on External Affairs urged the government to reevaluate its “overly deferential” China policy in the context of Beijing’s repeated claims over Indian territory, and advised New Delhi to utilize all options, including “relations with Taiwan.”^[10] In the aftermath of the 2020 clashes, influential voices in the Indian strategic community have called for more active political engagement with Taiwan and pointed out the substantial Indian stake in a cross-strait crisis or a war over Taiwan (Indian experts have recently written extensively about the large-scale damage to the Indian economy in such a scenario).^[11]

Even as the GoI has more or less adhered to its traditionally cautious approach, in August 2022, New Delhi partially shed its ‘self-censorship’ when it expressed concern about developments in the Taiwan Strait following Chinese military maneuvers after US Speaker of the House of Representatives Nancy Pelosi visited the island. The statement itself was balanced and urged all parties towards “exercise of restraint, avoidance of unilateral actions to change the status quo, de-escalation of tensions and efforts to maintain peace and stability in the region.”^[12]

Limitations in the nature of India-Taiwan relations due to the China factor may be inbuilt and unavoidable for the foreseeable future. Moreover, India’s hard-power gap vis-à-vis China will continue to curtail its policy options. Nevertheless, India and Taiwan can embark on a pragmatic partnership that holds immense potential for mutual gains.



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Traditional Areas of Cooperation

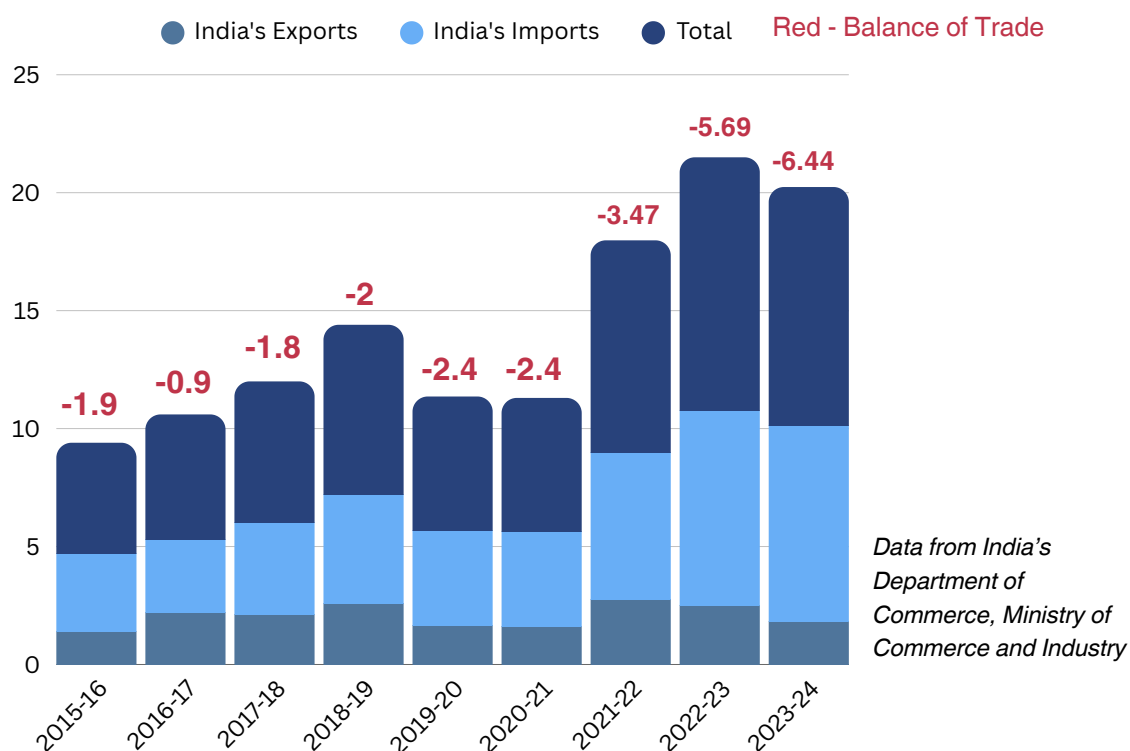
Trade and Investments

Bilateral trade and investments have acted as the bedrock for the India-Taiwan relationship, enabled by a series of agreements: the Avoidance of Double Taxation Agreement, and the Customs Cooperation Agreement (2011); SME Cooperation (2015); the Bilateral Investment Agreement (2018); MRA for AEO Programs (2018); the Mutual Recognition Agreement (MRA) for Organic Products (2021); IPR Cooperation (2022); Standardization and Conformity Assessment Cooperation (2022).^[13]

At the economic framework level, India's Act East Policy 2014 aligns with Taiwan's 'New Southbound Policy' (NSP) 2016. Various dialogues have also been institutionalized and are conducted regularly, including the annual India-Taiwan Economic Consultation (ITEC, Secretary-Deputy Minister level), the Taiwan-India CEO Roundtable, the Taiwan-India Industrial Collaboration Summit, the Taiwan-India Joint Business Councils Meeting, and the Taiwan-India SME Cooperation Forum.^[14] Over the last decade, particularly, these efforts have led to steady and compounded growth in both trade and investment numbers.

Between FY2010 and FY2020, the total bilateral trade was consistently around USD 5 billion per year. However, since FY21, it has surged, reaching over USD 10 billion in FY24. India's key imports include IC chips, electronics, and machinery, while its main exports comprise mineral fuels, aluminum, iron and steel, organic chemicals, and plastics.^[15]

India Taiwan Trade (in USD Billion)



Trends in Foreign Direct Investments (FDI) from Taiwan into India are equally positive. Between 2000 and 2019, the cumulative investments grew slowly up to USD 800 million. Still, today, the FDI into India is estimated at well over USD 5.77 billion. Some 300 Taiwanese companies operate within the country across a wide range of sectors: electronics, IT, petrochemicals, steel, automotive components, finance, construction, etc.^[16]

Apart from the creation of roughly 200,000 jobs, the presence of some Taiwanese companies in India carries strategic significance for New Delhi in the context of its key objectives around domestic production and technology development. For instance, Foxconn's expansion of operations in India has been widely celebrated as a boost for high-end electronics manufacturing and bolstered Indian efforts to present itself as an alternative production powerhouse to China.^[17] Last year, the GoI symbolically recognized the Taiwanese firm's significance for India when it awarded its CEO, Young Liu, the Padma Bhushan—the third-highest civilian award in the country, usually reserved for Indian citizens.^[18]



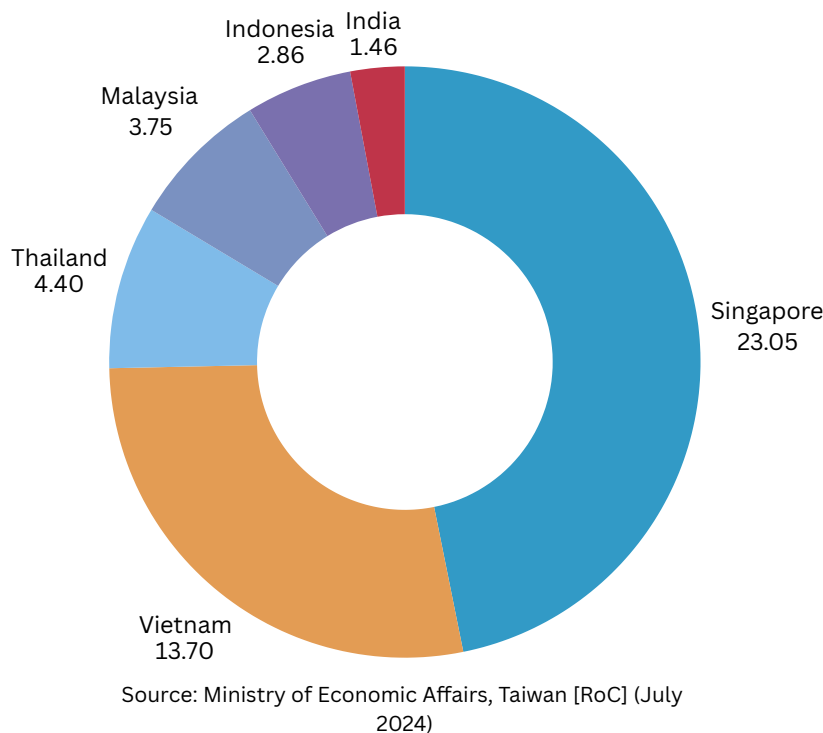
*Director General Mr Manharsinh Yadav, India Taipei Association, handing over Padma Bhushan to Foxconn Chairman Mr Young Liu in Taipei in July 2024.
Source X @ita_taipei*

More recently, in June 2025, Foxconn received approval to invest over USD 2.2 billion in India, and a significant amount (USD 1.5 billion) will reportedly be used to establish an iPhone facility, in line with Apple's efforts to shift supply chains away from China amidst global turmoil in trade.^[19] Apart from Foxconn, other Taiwanese tech giants, such as Pegatron and Wistron (which has since sold its Indian operations to the Tata Group), have also made significant contributions to India's domestic production objectives, especially in the smartphone sector.

Moreover, Taiwan is a hub for the manufacture of intermediary electronic and IC products, given its vast MSME ecosystem. These include the production of metal fasteners, functional fabrics, optical panels, machinery, petrochemicals, and chemicals. Relatedly, Taiwanese investments in India have also targeted complementary sectors, such as metal production, chemical feedstock, plastic and rubber materials, medical equipment, non-leather footwear, textiles, banking, and sea and air freight services. Therefore, Taiwan can emerge as a natural and key partner in India's stated vision of Aatmanirbharta (self-reliance), and the bilateral partnership can help India build a domestic ecosystem for electronic components and materials.

For this reason, Taiwan has been a key target country for New Delhi's Production Linked Incentive (PLI) and the 'Made in India' schemes. However, stalled FTA negotiations and long-held Taiwanese concerns about 'unease of business' conditions in India have inhibited the true potential of economic relations. Despite positive momentum, for instance, the bilateral trade represents just 1% of their overall foreign trade, with India's overall numbers close to USD 1.1 trillion and Taiwan's at USD 900 billion. Similarly, Taiwanese FDI inflow into India, remains much lower than in other target countries in the New Southbound Policy (NSP) framework.

Taiwan's Investments in Southbound Policy (Target) Countries, 2024, in USD Billion



The 1.46 billion listed in the graph represents the direct FDI from Taiwan to India; however, FDI is often channeled through a third country, hence, the total amount is estimated at over 5.77 billion USD.

Semiconductors

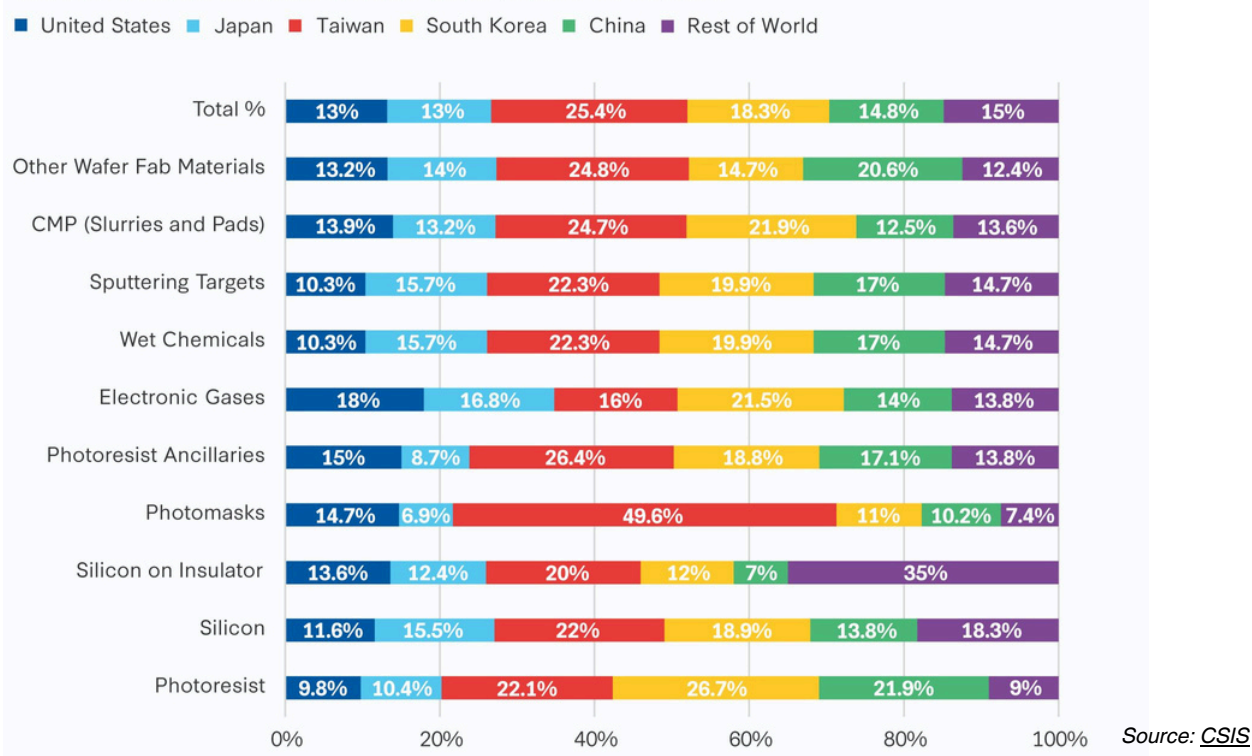
As the country where more than 90% of advanced chips are fabricated, Taiwan holds singular significance in global semiconductor supply chains, and strategic importance for India, given New Delhi's USD 10 billion push to manufacture chips domestically. India's first commercial semiconductor fabrication plant is already under construction in Dholera, Gujarat, and is a result of joint cooperation between Indian conglomerate Tata Group and Taiwanese semiconductor company Powerchip Semiconductor Manufacturing Corporation (PSMC). As per the terms of the partnership, PSMC will transfer key fab and process technologies, as well as help train the workforce in technical know-how.^[20] Without tech transfers and support from PSMC, the chip plant would have been a non-starter.

Given Taiwan's unparalleled expertise and ecosystem, there are dozens of potential areas for semiconductor cooperation. From academic partnerships in nanofabrication research to corporate partnerships in yield optimization techniques or fab floor experience, there are many lessons for India, which has only just begun its semiconductor journey. In fact, Taiwan has already emerged as a source of skill development in semiconductor processes and production technologies.

Source: [CSIS](#)

Wafer Fabrication Materials Market Share of Sales by Country (2022)

Total materials market share in 2022: \$44.7 billion



For instance, on the sidelines of the India-Taiwan Semiconductor Forum, the All-India Council for Technical Education signed multiple MoUs with Taiwanese institutions on May 10.^[21] Directed towards cooperation in skills development, student exchanges, and R&D, cooperation with Taiwan has played a role in the development of the AICTE curriculum, which has been widely adopted by Indian institutions that will train the country's semiconductor workforce. Meanwhile, the Tata Group has sent hundreds of its employees to Taiwan, where PSMC will teach them the technical know-how needed to operate India's first chip plant.^[22] This trend is likely to grow in significance, and for the foreseeable future, Indian engineers or skilled workers who train and gain experience in Taiwan will be a key asset for the country's nascent semiconductor sector.

Moreover, Taiwanese MSMEs or ancillary industries on the island have been central to its success in semiconductors, as they produce vital and specialized components, materials, and equipment needed by chip giants. Given the lack of an equivalent ecosystem in India, New Delhi will need to cooperate with Taipei to source these in the short term, and over the long term, attract Taiwanese suppliers to set up in India, through joint ventures with Indian firms or otherwise. Already, industry giants such as Applied Materials, Lam Research, KLA, and TEL have announced plans to set up equipment production or R&D facilities in India.^[23] It's in India's clear interest to help these plans materialize as a means towards creating a comprehensive domestic semiconductor ecosystem. In this context, India announced a USD 2.7 billion PLI scheme for components in March 2025, which may further help attract Taiwanese investments into relevant ancillary industries.^[24]

Government incentives by major region (left to right by size of GDP)

	US	Mainland China	EU	Japan	South Korea	Taiwan	
Guidance	Target	Achieve resiliency in semiconductor supply chain	Reach 70% self-sufficiency by 2025	Gain 20% global share by 2030	Earn \$112B sales by 2030	Secure foothold in Logic, bolster fab leadership	Breakthrough 1 nm by 2030
	Guiding policy	CHIPS and Science Act, 100-Day Supply Chain Review	National IC Outline, 14th Five Year Plan	Digital Compass 2030	Strategy for Semis and the Digital Industry	K-Belt Semiconductor Strategy	Angstrom Semiconductor Initiative, Moonshot program
Measures	Key Incentive amounts	\$39B in grants ¹	\$142B in equity funds	\$47B in grants	\$17.5B in grants	\$55B in tax incentives	\$16B in tax incentives ⁴
	Key Initiatives	25% investment tax credit Grants under the CHIPS Act State-level support	Big Fund I, II, III and local funds State-owned enterprise leaders National science fund	Grants and loans under EU Chips Act Tax credits State aid allowances ²	National fiscal funding Leading-Edge Semiconductor Technology Center	Tax incentives under K-Chips Act Private-public education programs	Financial subsidies under the Chip Innovation Program Industry-academia co-op, tax credits
Impact	New fab & ATP investments since 2020 ³	26	~30 ⁵	8	4	3	7

1. \$39B for manufacturing; \$13.2B for R&D and workforce development

2. Important Projects of Common European Interest (IPCEI)

3. Comprises fab and ATP projects that have been announced, started, or completed since 2020

4. 25% tax credit pledging to give back \$2.25B per annum over 7 years.

5. May undercount the total number of sites in China.

Source: Gartner; SIA; Press releases; Company disclosures; Government websites; BCG analysis

Source: *BCG and SIA Report, May 2024*

However, fundamental ecosystem-level differences between India and Taiwan, along with multiple challenges such as Indian tariffs on electronics component imports, the talent gap, and “cumbersome” administrative structures, will continue to constrain cooperation. These hurdles are particularly significant in the semiconductor sector, where returns require long gestation periods.^[25] At the very least, progress in this particular partnership will be slow, while crucial, as the Indian semiconductor industry takes several years to mature. Consequently, even as much attention is focused on this sector, it cannot be a magic bullet (as many policymakers and observers hope) to upgrade ties between India and Taiwan, and the case for multi-sectoral cooperation remains paramount.



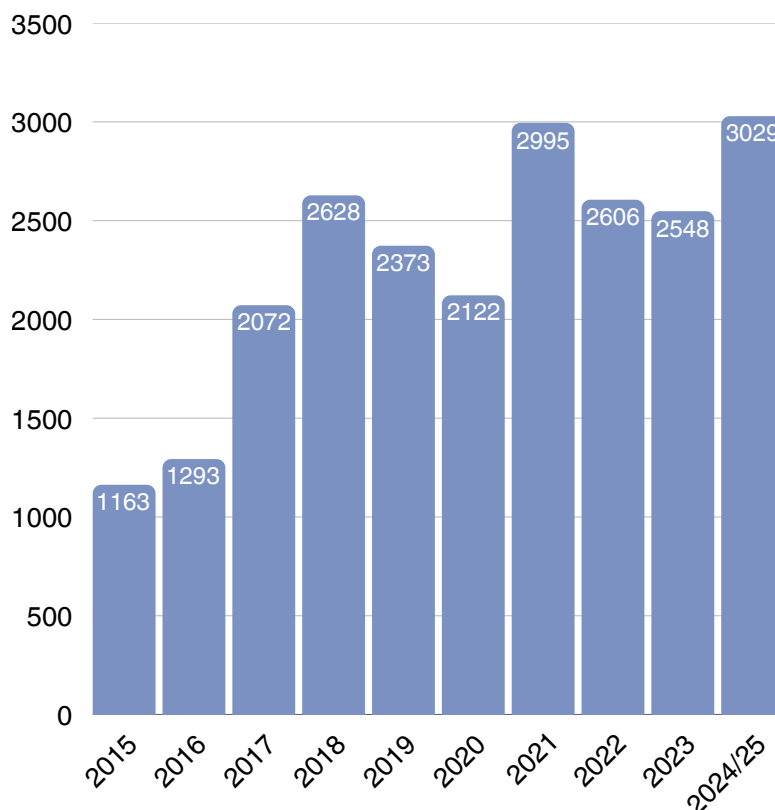
Fundamental ecosystem-level differences between India and Taiwan, along with multiple challenges such as Indian tariffs on electronics component imports, the talent gap, and “cumbersome” administrative structures, will continue to constrain cooperation.

Knowledge and Student Exchanges

Out of an estimated 5,500 Indians that live in Taiwan, over 60%, or 3,000, are students—a testament to Taiwan as a destination for high-quality higher education. Between 2016 and 2019, Indian enrolments in Taiwanese universities went up by 116%, a positive trend driven by multiple factors: over 28 Taiwanese universities are ranked in QS World University Rankings, indicative of quality (particularly in STEM fields), and it's cheaper to live in Taiwan relative to other Western countries. A key enabler is the existence of scholarships and internship programmes in Taiwan, under the broad framework of the Ministry of Education's New Southbound Talent Development Program, launched in 2017.^[26]

According to the TECC, in 2024, the Taiwanese government offered 140 scholarships to Indian students, a record number that surpasses the scholarships awarded to any other country. This number is expected to rise annually. At the same time, Taiwan has also introduced initiatives like the 'Taiwan Experience Education Program,' which provides short-term internship projects and helps Indian students familiarize themselves with Taiwan's job market and society.^[27] Apart from valuable hands-on experience, a cohort of young Indians with first-hand knowledge of Taiwan is also likely to have long-term positive implications for the bilateral partnership.

Number of Indian students in Taiwan



Source: Ministry of Education, Taiwan [RoC]

Meanwhile, the number of Taiwanese students (or professionals) in India is negligible, but over the last decade, Taiwan has established 41 Taiwan Education Centers across several Indian states.^[28] These centers, housed within Indian universities, play a crucial role in promoting academic exchanges and familiarizing Indian students with opportunities in Taiwan. For instance, they offer Mandarin courses taught by Taiwanese instructors.

Importantly, in the aftermath of the 2020 India-China clashes, Chinese Confucius Institutes came under the scanner, and the New Education Policy removed Mandarin from its list of foreign languages.^[29] Consequently, Taiwan's 'Education Diplomacy' in India gained momentum, as the Indian strategic community advocated for TECs as an alternative. Notably, the MEA also decided several years ago to send Indian diplomats who want to learn Mandarin to Taiwan instead of China. As a prominent Indian analyst recently argued in the context of India, "Taiwan has employed various strategies to expand its influence. Among these efforts, its initiatives in the field of education have emerged as its most powerful tool."^[30]



Former Representative to India Baoshuan Ger, fourth left, poses with Indian recipients of scholarships from Taiwan during a ceremony at the New Delhi-based Taipei Economic and Cultural Center in Aug 2024.

Source: Taipei Times

In recent years, a number of high-level exchanges between Taiwan's MoE and top Indian universities and academic institutions have also taken place. In 2025, Taiwan's Foundation for International Cooperation in Higher Education (FICHET) signed an MoU with India's Association of Indian Universities (AIU). Separately, Taiwanese universities, such as the National Taiwan University and National Chung Hsing University, have signed MoUs with Indian counterparts such as the Indian Institutes of Technology (IITs). According to reports, over 100 Indian schools have joined Taiwan's international education programs.

Emerging and Potential Areas of Cooperation

Beyond traditional pillars of the India-Taiwan relationship, as outlined above, both sides have increasingly explored new areas of cooperation that hold the potential to deepen their partnership and address contemporary challenges, particularly in areas where Taiwan's niche expertise aligns with India's key developmental goals.

Urban Planning and Development

The management of rapid urbanization, at rates faster than anywhere else in the world today, is a key national challenge for India, and is likely to grow in salience in the near future. By 2030, the World Bank estimates that over 40% of India's population, or approximately 600 million people, will reside in urban areas.^[31] Another World Bank report, prepared in collaboration with the Indian Ministry of Housing and Urban Affairs, notes that 70% of new jobs will come from cities by the same year.^[32] On the one hand, such a trend is positive as cities emerge as organizers of the demographic dividend and engines of economic growth, but on the other, it will also severely exacerbate challenges that are already widespread in Indian cities and towns. To begin with, estimates suggest that nearly half of India's urban population lives in slums.^[33] Add to this, traffic congestion, air and water pollution, inadequate infrastructure and basic utilities, a shortage of affordable houses, climate change impacts, and so on.



In Aug 2025, National Chung Cheng University (CCU) inaugurated the “Taiwan-India Integrated Command and Control Centre for Sustainable Smart Cities” at Saintgits College of Engineering in India. The inauguration ceremony was witnessed by Dr. Yang Lung-Jieh, Counselor and Director of the Science and Technology Division, Taipei Economic and Cultural Center in India. This milestone demonstrates Taiwan’s successful export of cutting-edge research capabilities and further deepens Taiwan-India collaborations in the fields of smart cities and AI, establishing a significant international benchmark for cross-national AI platforms.

Source X @TWIndia2

As a latecomer to urbanization, India could potentially benefit from technological innovations and expertise in areas such as clean energy, construction materials and practices, new modes of transport, and integrated 'smart' city design. A predominant challenge would be to mobilize resources to invest in the requisite infrastructure and technologies. As per one estimate, India will need to invest nearly USD 60 billion per year in urban infrastructure (or a total of nearly USD 900 billion over the next 15 years) to sustain current trends.^[34]

This, in turn, demands a shift in finance models, since the central and state governments finance over 72% of city infrastructure, local urban bodies finance 15%, and only 5% of infrastructure needs are financed through private sources.^[35] Another key requirement is to develop frameworks and models that effectively leverage India's domestic technological strengths for smart city development, as outlined in the 100 Smart Cities Mission. In other words, India needs to create a public-private partnership (PPP) model for smart city development.

In this context, Taiwan's strengths closely align with India's needs. It stands out as a global leader in urban innovation and has successfully and widely adopted the PPP model to enhance urban conditions, driven by the necessity of managing its high-density and rapidly ageing population.

In recent decades, Taiwan's urban development strategies have evolved considerably to focus on urban renewal and smart city infrastructure. The 1988 Urban Renewal Act has been amended not just to protect ownership rights but also to create financial incentives to make urban renewal projects a profitable venture for the private sector and address funding bottlenecks in the process.^[36] These include considerable tax reductions on land value tax, house tax, and deed tax, but even more importantly, floor area bonuses and transferable development rights that generate value appreciation and lucrative returns for developers.^[37] Taiwan has demonstrated that the Build-Operate-Transfer model can de-risk and unlock vast amounts of private capital for a project, evident in the highly successful examples of Taiwan High Speed Rail and Taipei Central Station.^[38]

Meanwhile, Taiwan's model of smart city development is even more innovative. To begin with, Taiwan's approach is both top-down and bottom-up; apart from projects identified by the central government, local governments are also asked to identify urban needs and then collaborate with the private sector to create solutions.^[39] In either case, the country approaches



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smart city development (through the 2017 'Smart City Taiwan' and other policies) from the perspective of technology creation rather than use, even if, in some cases, it may simply include the customization of international solutions for Taiwanese cities.^[40] For instance, between 2017 and 2020, Taiwan allocated a special budget of TWD 6 billion to fund over 200 projects in smart city technologies.

Importantly, Taiwan also leverages an export-oriented model to optimize technology development. Local governments may first purchase or support (with central funds) urban solutions created by Taiwanese tech firms, and thus, provide a domestic market as a testbed to mitigate the risk of innovation at the initial stages.^[41] While there may not be adequate profits at this stage, if a smart city technology can reach economies of scale, Taiwan encourages its export, under its New Southbound Policy, to countries in Southeast Asia or elsewhere.^[42] This type of controlled 'pick-the-winners' approach is a key reason behind Taiwanese success.

Various Taiwanese agencies also act to enable smart city technology innovation. When a project involves the use of public data, which is critical for smart city development, agencies with the appropriate authority coordinate with tech companies. For instance, the National Development Council built the 'T-Road platform' and the NSTC launched a program to create a 'Civil IoT Taiwan' to integrate data governed by several different ministries in a secure manner for use by industrial value-added development and application.^[43]

Taiwan's urban renewal policies also emphasize the preservation of history and cultural heritage when needed, rooted in a history of socio-cultural movements. For instance, renewal projects in Old Taipei have focused on renovation and repurposing of historic sites for integration into modern urban life; Bopilua Historical Block is a prime example. Here again, there are important lessons for India's HRIDAY (Heritage City Development and Augmentation Yojna) scheme.

Disaster Resilience and Management

Situated in a seismically active zone and frequently battered by typhoons, Taiwan experiences between 700 and over 2,000 perceptible earthquakes every year. In 1999, a 7.7 magnitude earthquake led to the tragic deaths of over 2400 people. Since then, driven by sheer necessity, Taiwan has developed some of the best disaster management and response systems in the world today, anchored in the Disaster Prevention and Protection Act 2000, which has been amended several times since then. Taiwan's progress in disaster resilience was on display in April 2024, when the worst earthquake since 1999, at a magnitude of 7.4, killed at least 18 people and injured over 1,000. In contrast, the 7.8 magnitude earthquake that had struck Turkey and Syria in February that year took the lives of over 55,000 people.^[44]

Taiwan's strengths in disaster resilience and management are multi-layered, with the Central Disaster Prevention and Protection Council (chaired by the Premier of the Executive Yuan) at the apex of its structure, but operational responsibilities diffused across different levels of government (based on specialization but also first responder-driven authority). The island is heavily invested in early warning systems, with AI-driven seismic sensors and satellite imagery that can predict and track natural hazards. A key feature of the Taiwanese model is emphasis on proactive preparedness, which allows for timely evacuation and optimal deployment of response resources. Another layer involves resilient infrastructure with stringent building codes, regular structural audits, and the use of standardized earthquake-resistant construction technologies. Finally, Taiwan has highly efficient emergency response mechanisms that include well-trained and equipped search and rescue teams, a centralized command and control system, and a robust communication network that ensures seamless coordination between various agencies.^[45]

These aforementioned sets of expertise align with Indian needs, as the country's vast and diverse geography makes it highly disaster-prone. The Indian and Eurasian tectonic plates, which collided to form the Himalayas, make the region prone to earthquakes. Meanwhile, the Indo-Gangetic plains witness regular floods, Indian coastlines are prone to cyclones, and the country's arid regions are vulnerable to droughts. Disaster challenges in India are further compounded by high population density, lack of disaster awareness, poorly built infrastructure, rapid and often unplanned urbanization, and the broader impacts of climate change. While India has made significant strides in its disaster response capabilities, particularly through the establishment of the National Disaster Response Force (NDRF) and State Disaster Response Forces (SDRFs), there remain large gaps in its disaster resilience framework, which a partnership with Taiwan can go a long way to fill.

Medical and Health-Tech Cooperation

Bilateral medical cooperation between India and Taiwan is a low-hanging fruit that offers many avenues for collaboration. To begin with, Taiwan's ageing population has resulted in increased demand for care-workers, among other forms of skilled labor. Last year, New Delhi and Taipei signed a 'labor pact' which can allow Indian blue-collar workers to seek lucrative employment opportunities in Taiwan, and in the process, strengthen people-to-people ties.^[46]

In May 2021, when India's COVID-19 crisis was at its peak, Taipei supported India's healthcare response through a shipment of 150 oxygen concentrators and 500 oxygen cylinders, and its representative office in New Delhi expressed "strong friendship with India in its fight against a new wave" of the pandemic.^[47] This earned Taiwan enormous goodwill in India. Taiwan has worked with like-minded democracies, including India, to provide vaccines to its diplomatic ally, Paraguay.^[48] In any case, the pandemic highlighted a notable example of the value of medical cooperation between the two countries.



In Aug 2025, A team from Kaohsiung Medical University carried out a "Field Investigation and Research Project on the Cultivation of Indian Medicinal Plants." The research team visited Delhi and Himachal Pradesh, where they met with the Ministry of Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy (AYUSH), the National Medicinal Plants Board (NMPB), Jamia Hamdard University, as well as pharmaceutical companies and herbal farmers, to study the industry chain from cultivation to pharmaceutical production.

Source X @TWIndia2

There are many synergies between India and Taiwan in health technologies. As the world's largest producer of generic drugs, the Indian pharmaceutical industry can benefit immensely from Taiwan's strengths in novel drug development and clinical trials, as well as precision medicine and functional genomic research. Last year, Taiwan announced a comprehensive set of biotech policies and approved the Regenerative Medicine Act to rapidly climb the global biotech value chains.^[49] Joint ventures and technology transfers with India can lead to novel therapeutics and be a force for global good, especially in the Global South. Another area of collaboration is 'smart healthcare,' where Taiwanese prowess in ICT can be (and is) applied in diagnostics, telemedicine, and wearables. In particular, collaborations in smart healthcare can help address India's healthcare accessibility challenges in rural or semi-urban areas.^[50]

Meanwhile, Taiwan can benefit from India's large pool of vaccine expertise across the stages of research, production, and deployment. The two countries can further advance cooperation in traditional medicines, such as Ayurveda (India) and Traditional Chinese Medicine (Taiwan), and identify ways to test their utilities and safety, as well as standardize their production.^[51] Finally, India can learn institutional lessons from Taiwan's impressive healthcare system that includes digitized patient records, universal healthcare access, and affordable insurance models, for the modernization of its own domestic health services.^[52]

Emerging Technologies and Innovation Beyond Semiconductors

While semiconductor cooperation stands out as an obvious target area, given Taiwan's predominant role in the global supply chains, the island's tech prowess and production strengths extend into multiple other areas, such as AI and IoT. Taiwan has historically maintained one of the highest gross domestic expenditures on research and development (GERD) rates in the world (just behind South Korea), currently at 4% of its GDP, which has helped create a vibrant innovation ecosystem.^[53] In contrast, India's GERD remains lower than 1% of its GDP. However, the GoI has recently announced plans to spend over USD 12 billion to create an R&D ecosystem in India, led by private capital, which is likely to create many new avenues for high-tech and scientific cooperation with Taiwan.^[54] Meanwhile, India has considerable strengths in areas of strategic significance for Taiwan, such as IT services and space technologies. For its part, Taiwan's highly advanced ecosystem for electronics has specialized production firms that can build components for a range of new technologies beyond semiconductors, for instance, quantum chips or space tech. Therefore, a strong rationale exists for both sides to institute high-level tech cooperation in new, largely unexplored areas.



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As far back as 2007, Taiwan's National Science and Technology Council (NSTC) and India's Department of Science and Technology (DST), a unit in the Ministry of Science and Technology, signed an MoU on Scientific and Technological Cooperation. This has since laid the institutional foundation for collaborative projects and high-level forums, such as the annual Taiwan-India Joint S&T Cooperating Meetings, which act as key platforms to review achievements and plan new initiatives.

There are multiple technology avenues where India and Taiwan can collaborate with mutual benefits:

Internet of things (IoT)

The Internet of Things (IoT) represents a critical new frontier of modernization, underpinning technological upgrades across sectors ranging from smart cities and industrial automation to smart agriculture and smart healthcare. The Indian market is poised for exponential growth in the segment, with estimates projecting it will reach USD 114 billion by 2035. This growth is driven by market demand and large-scale government initiatives, including the Digital India Program and the 100 Smart Cities Mission.^[55] At present, India's IoT ecosystem is primarily led by large system integrators and IT service companies, and their core strengths are software development and deployment. India's telecom giants also fill in the network layer (connectivity) of the IoT.

Meanwhile, Taiwan excels across the IoT value chain with end-to-end capabilities in all four layers: the sensor layer (hardware, devices, sensors), the network layer, the platform layer (data management), and the application layer (software solutions). Its foundational strength lies in its semiconductor industry, which gives Taiwanese MSMEs enormous capabilities to manufacture IoT hardware, such as sensors and Ultra Low-Power (ULP) technology-based IoT devices needed for long-term solutions.^[56] Taiwan also excels in data management and use, which, in turn, is essential for the creation of innovative software solutions.

Consequently, Taiwan is well-positioned to address the key gaps in India's IoT ecosystem, particularly at the hardware and data-management levels. Meanwhile, India provides the market necessary for Taiwanese IoT companies to enhance their export margins and test their products at scale.



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AI and Big Data Analytics

As Artificial Intelligence emerges as a foundational technology for the next 'industrial revolution,' all major powers are keen to develop advanced capabilities to enable productivity gains and reap other strategic dividends. India and Taiwan are no exception, and a meaningful AI partnership between the two can offer

significant mutual benefits. India is both the world's largest source of data and AI talent, whereas Taiwan has a niche in customization of AI applications as well as its expertise in Big Data Analytics. Taiwan has ambitious plans to launch a major AI infrastructure initiative, targeted at USD 500 billion in value creation.^[57] Consequently, India and Taiwan have immense potential to collaborate in the development of AI applications. For instance, Taiwanese firms can customize AI solutions for the Indian market and scale them up in a manner that can be highly lucrative.

Similarly, a key part of the USD 1.2 billion IndiaAI Mission is the IndiaAI Dataset Platform, which aims to create one of the world's largest repositories of anonymized, non-personal datasets for training AI models and research.^[58] Consequently, if data regulations can be streamlined, then Indian datasets (especially in the English language) can be invaluable assets for Taiwanese AI companies, especially since they can help turn large amounts of 'raw data' into high-quality datasets, which, in turn, can enable both countries to build competitive AI services and applications.

Finally, India's stated ambition of creating a comprehensive AI ecosystem will likely be incomplete without Taiwan, given that the island nation is, by far, the most advanced producer of AI hardware, or specialized chips such as GPUs, TPUs, etc., and India is still decades away from developing the fabrication technologies needed to produce 'indigenous AI chips'. While this is highly ambitious at present, if Indian chip designers (who represent 20% of the global talent pool) can be incentivized (through the DLI and other schemes) to design AI chips for the countries' domestic firms (instead of foreign firms based in India, as is the current norm), they can be fabricated in Taiwan and unleash enormous value addition in AI supply chains. This will assume even further significance if incumbent powers, such as the US and China, continue to use export restrictions (such as Washington's AI Diffusion Rules, albeit now revoked) to maintain their lead to the disadvantage of other AI powers.

Quantum Technologies

Both India and Taiwan have recognized the potential value of and placed a strategic premium on the development of Quantum tech (QT) for a myriad of reasons, but key among them is the threat quantum computers are likely to pose to cybersecurity upon sufficient advancement. This alone creates a strong logic, albeit unarticulated, for both to cooperate in the field of QTs, especially quantum communications (for instance, Quantum Key Distribution (QKD) based cryptography can secure systems from quantum computer attacks), given that both are particularly vulnerable to consistent cyberattacks by China today.^[59]

Moreover, their nascent strengths in QTs complement each other. India has had success with quantum communication systems and quantum sensors, which are areas yet to be advanced in Taiwan, even as the latter has considerable strengths in quantum optical



India and Taiwan have placed a strategic premium on the development of Quantum tech (QT) for cybersecurity. Given that both are particularly vulnerable to consistent cyberattacks by China, there exists a strong logic for cooperation in the field of QTs, especially quantum communications.

technology, quantum software, and application developments, which are relatively unexplored in India.^[60] Importantly, while India has developed QKD network technology and is even close to a quantum communication satellite, Taiwan has established a strong niche in post-quantum cryptography (PQC) algorithms, which have been shortlisted for standardization by the US NIST, for instance.^[61] This indicates the potential of joint production in standardized quantum communication systems (given the early stage of the technology). In any case, Taiwan's specialized semiconductor ecosystem is likely to give it an advantage over other competitors when it comes to the fabrication of quantum chips (or semiconductor-based qubits) and the production of other specialized components, which is likely to make the island nation a valuable future partner in QT. At the framework level, India's National Quantum Mission and Taiwan's National Quantum Team have structural similarities that can help build interlinkages, especially between academia.

Space Technologies

Taiwan's space trajectory has accelerated in recent years, as Taipei plans to expand satellite technologies for scientific research and develop space tech for communications, guided by national and economic security concerns. Taiwan has Earth Observation capabilities, such as its FORMOSAT series of satellites, and now seeks to develop capabilities such as Synthetic Aperture Radar satellites, and in the long term, establish its own LEO satellite communications constellation.^[62]

In this context, India, as a space power with end-to-end capabilities, has much to offer Taiwan. The logic of bilateral space cooperation has also considerably grown with New Delhi's efforts to privatize the country's space sector, through the Indian Space Policy 2023, and liberalization of FDI (up to 100% through the automatic route in certain sub-sectors). B2B collaborations can circumvent some key legal hurdles presented by India's non-recognition of Taiwan, and thus the inability of ISRO to cooperate with TASA beyond a point (given the dual-use and sensitive nature of many space technologies).

In 2023, 8 out of 16 start-ups selected for collaboration by Taiwan Acceleration Plus (TACC+) International SpaceTech Startup Supporting Programme were Indian start-ups, an indication of already existing synergy between their respective space sectors.^[63]

Moreover, Taiwan's world-class ICT and precision machinery industries can allow Indian players (in joint ventures with Taiwanese firms) to produce critical space-grade components, such as high-reliability sensors, avionics, communication systems, and ground station equipment.

Recommendations

Broad Recommendations

- **Fast-track FTA negotiations and sign an interim FTA**

Amidst the threat of arbitrary US tariffs and de-globalization trends, India and Taiwan have a shared interest in deepening trade and investment ties. However, Taiwan has long cited trade barriers imposed by New Delhi as a key deterrent for the entry of Taiwanese MSMEs in particular, despite their considerable interest in the Indian market. Further, as India attempts to establish a semiconductor industry and upgrade its electronics industry, the value of key high-tech inputs in the form of components, as well as specialized equipment and materials, cannot be understated. Consequently, India and Taiwan should sign an interim FTA on a priority basis and fast-track negotiations for a comprehensive FTA.

- **Comprehensive policy approach to de-risk supply chains away from China**

Both India and Taiwan have increasingly recognized the economic security risks from their respective inter-dependencies with China's economy, especially given China's strategy to 'weaponize' supply chains through export restrictions and other means. Ironically, economic security risks from China are both a key motivator for, and a key hurdle to, a deeper India-Taiwan economic partnership, particularly in high-tech sectors (such as ICT) where Taiwanese firms are deeply interlinked with China's, and thus highly vulnerable to both Chinese coercion and Indian policy changes on trade with and investments from China. Consequently, New Delhi and Taipei should establish a high-level group to develop a comprehensive strategy for building resilience and mitigating China-specific financial risks that could undermine the potential of deeper economic ties. This can include, but may not be limited to, mechanisms to protect Taiwanese investments in India from abrupt trade policy changes aimed at China, as well as a longer-term policy framework to diversify sub-component and other supply chains away from China-dependent sources.

- **Create a single-window 'India-Taiwan Technology Partnership Facilitation Desk'**

A primary obstacle to deeper technology collaboration is India's cumbersome administrative structure that repels Taiwanese firms accustomed to a highly efficient and predictable regulatory environment. Moreover, even for Taiwanese firms that enter India, there is a real risk of failure (in joint ventures or otherwise) that emanates not from strategic misalignment but operational hurdles on the ground (created by an alien administrative culture). Consequently, India should institute a dedicated body—a single-window "India-Taiwan Technology Partnership Facilitation Desk" under the Department for Promotion of Industry and Internal Trade (DPIIT), which can:

- **Fast-Track Approvals:** Act as a single point of approval for Taiwanese companies that wish to invest in priority technology sectors.
- **Regulatory Guidance:** Provide clear, consistent, and up-to-date guidance on India's legal, labor, data, environmental, and other forms of applicable regulations.
- **Dispute Resolution:** Serve as a first-level mediation body to resolve (largely operational) issues that can arise between Taiwanese investors and their local partners or government agencies.

- **Establish a formal High-Level Dialogue Mechanism in areas such as trade & investment and science & technology**

India and Taiwan could also enormously benefit from a formal high-level dialogue mechanism, which attempts to foster a ‘whole of society’ approach to trade and technology cooperation. Such a dialogue can provide strategic direction, ensure political buy-in, reduce policy uncertainty, resolve regulatory bottlenecks, and implement an ambitious roadmap to deepen the India-Taiwan technology partnership across several verticals.

Sector Specific Recommendations

Urban Planning and Development

- **Establish an Urban Renewal Policy Advisory Body:** A dedicated team of Taiwanese experts can study India's urban development policies and conduct policy advisory work on institutional design, given Taiwan's successes in the PPP model. Such a group should also study Taiwan's financial tools, such as Transferable Development Rights and Floor Area Ration bonuses, and explore how they can be adopted into the Indian legal and market context. Such a body can also help create blueprints for effective and professional urban renewal authorities at both the central and city level (modeled on the success of HURC), as well as provide guidance on a more comprehensive long-term framework to incorporate private sector participation, with technology creation in mind, into Indian urban development.
- **Technology pilot programs overseen by a joint task force:** They aim to identify, fund, and execute two to three flagship smart city projects. These projects will apply Taiwanese urban solutions to an Indian city, building momentum and fostering bilateral trust. Taiwanese technology firms interested in testing their smart city solutions, such as smart water meters or traffic management software, in an Indian environment to scale up their products, can be invited on a priority basis. At first, a regulatory sandbox approach can be taken, with a joint task force to oversee the implementation, overcome regulatory hurdles, streamline data regulations, and so on, in a timely manner.
- **India-Taiwan Centre for Urban Excellence and Urban Excellence Fellowship:** Establish a long-term hub for academic study and R&D on urban infrastructure in India, with a particular emphasis on the application of Taiwanese solutions in urban India, and comprising academics, experts, and urban professionals from both countries. The India-Taiwan Centre for Urban Excellence could encompass various verticals, including smart city technologies, cultural heritage preservation, and urban policy studies. An Urban Excellence Fellowship can be granted in each area of study, enabling recipients to undertake specific research projects on India-Taiwan urban development cooperation.

Disaster Resilience and Management

- **Annual roundtable to deepen disaster tech collaborations and knowledge exchange:** An annual exchange between Indian and Taiwanese companies to jointly develop innovative solutions in areas such as EWS, disaster resilient infrastructure, resource management, volunteer coordination, damage assessment, and so on, which leverages Taiwan's prowess in

AI, IoT, etc. At the academic level, the scope of the partnership between IIT Roorkee and Taiwan's NCDR can be expanded beyond EWS, and similar knowledge collaborations can be instituted between other research institutions, based on this template.

- **Invite Taiwan to join India's initiatives within the Coalition for Disaster Resilient Infrastructure (CDRI)**, and consider India's participation in Taiwan's proposed World Alliance for Disaster Management (WADM).
- **Specialized training for India's NDRF**: A mechanism can be created for the Indian National Disaster Response Force and its state counterparts to engage in joint training with Taiwanese disaster response teams, with a special focus on the use of innovative technologies and best practices in various areas such as urban search and rescue, etc. It should also involve joint disaster response drills and exercises in various simulations of disaster scenarios, such as a major earthquake in the Himalayas or a major cyclone in the Bay of Bengal, to test joint response protocols and communications channels.
- **Policy Advisor Group on Institutions of Disaster Management**: A policy advisory group, composed of Indian and Taiwanese experts, former officials, and disaster management professionals, can study and help make recommendations to fill policy gaps in India at the institutional level. Such a group can explore, inter-alia, the need to adopt Taiwan's 'whole-of-society' approach to disaster resilience, and look into specifics, such as granting financial autonomy to district disaster management authorities, a need to create a national-level tech driven platform that integrates data from all relevant agencies, or a national disaster review commission to conduct binding post-disaster audits, and so on.

Bilateral Medical Cooperation

- **MoU to Facilitate Joint Clinical Trial Platforms and Advance Bilateral Health Cooperation**: A formal framework to leverage India's large, genetically diverse patient population and its well-established clinical trial infrastructure for tests by Taiwan's innovative new drug therapies, driven by AI, novel biotechnologies, genetic engineering, etc. The first step involves setting up a joint regulatory task force by the Indian Central Drugs Standard Control Organisation (CDSCO) and the Taiwan Food and Drug Administration (TFDA) to establish appropriate protections for volunteers and streamline the approval process. A separate MoU can also explore cooperation in traditional medicine, aimed at efficacy, safety standards, and clinical trials.
- **Joint Working Group to Facilitate Joint Ventures**: A dedicated working group, under the existing India-Taiwan MoU on Scientific and Technical Cooperation, tasked with promoting joint ventures between Indian pharmaceutical and other healthcare companies and Taiwanese biotechnology firms working in biologics, smart healthcare, etc., to collaborate on the

development of new tools and novel therapies that need to be scaled up. Inter alia, this group can also explore the integration of Taiwanese AI-driven diagnostic tools (and other smart solutions) into India's public health programs, such as Ayushman Bharat, supported by India's digital health data infrastructure and initiatives like Genome India Programme. A long-term aim can be the establishment of state-of-the-art facilities in India for the joint production of complex biologics, cell therapies, and other biotechnologies for both the Indian and global markets.

IoT

- **MoU for cooperation in Joint IoT Standards and Security:** To address the critical challenges of device interoperability and assuage cybersecurity concerns, India and Taiwan should sign an MoU to establish mechanisms, such as a joint certification lab, responsible for the development of common standards for device communication protocols and the creation of cybersecurity frameworks for IoT networks. This can allow IoT ecosystems in their respective countries to build partnerships for secure and scalable deployment of solutions, as well as foster a more open and competitive market beyond proprietary systems.
- **Annual B2B Dialogue for Joint Collaborations in IoT:** An annual dialogue would foster joint collaborations between Taiwanese and Indian companies, especially in projects where their complementary strengths align. The rollout of 5G networks in India provides the high-speed, low-latency connectivity required for next-generation IoT applications. A joint program should be launched to combine Taiwan's expertise in 5G hardware and components with India's software capabilities and large-scale urban and industrial testbeds. This program would focus on co-creating and validating advanced IoT solutions for sectors like autonomous mobility, smart logistics, and remote surgery.

AI and Big Data Analytics

- **Annual 'India-Taiwan AI Players' Roundtable:** An annual roundtable should be conducted, where Indian and Taiwanese AI firms, startups, and industry representatives can strengthen collaborations in AI ecosystems across verticals. An early target should be the co-development of customized AI solutions, tailored for the Indian market (as a testbed for Taiwanese AI firms), but with export potential once scaled.
- **Policy Advisory Group on India-Taiwan AI cooperation:** A team of Indian and Taiwanese experts should be brought together to research AI policies in both countries, with a particular focus on streamlining data governance and adopting common AI safety standards, to unlock the synergistic potential between their AI ecosystems.

Quantum Technologies

- **Include Quantum Technologies in the India-Taiwan Programme of Cooperation in Science and Technology:** To provide financial support to joint R&D projects, QTs should be included in the framework, especially since the DST (India) and NSTC (Taiwan) are in charge of the same, as well as responsible for the execution of their respective quantum initiatives at home, namely the National Quantum Mission (NQM) and National Quantum Team (Taiwan).
- **A Joint Working Group on QTs:** Establish a JWG focused on promoting collaborations between Indian and Taiwanese institutions and companies working with QT. This group can be composed of prominent academics and senior officials who help build academic exchange programs, for instance, a Quantum Talent Exchange Programme, facilitate joint publications, and create new ties between startups working in the field.
- **An MoU between India's NQM T-Hub (IISC) and Taiwan's NQT partners, such as Academia Sinica and ITRI:** A formal mechanism should be set up between these relevant QT institutions to collaborate on the development and adoption of common Post-Quantum Cryptographic Standards, which will help protect both countries' respective digital infrastructures, and importantly, allow for future interoperability between their digital economies. This partnership can simultaneously explore other avenues of future collaborations, for example, in the joint fabrication of semiconductor-based qubits in Taiwan.

Space Technologies

- **A Joint Working Group on Space Tech Collaboration:** A JWG, composed of former officials from ISRO and TASA, as well as industry representatives from each country's space sector, should be mandated to help build collaborative ties between Indian and Taiwanese space companies. The JWG can help facilitate Taiwanese FDI into the Indian space sector and explore the legality and pathways for more formal collaboration between ISRO and TASA in the future.

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