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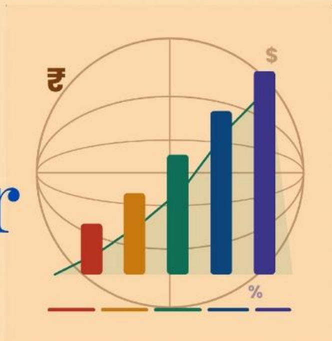

July 2026

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DIRECTOR'S INSIGHTS

Global Capability Centers in India: From Cost Arbitrage to Strategic Innovation Hubs

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India's Global Capability Centers (GCCs) have evolved from cost-driven back-office operations into strategic hubs for R&D, AI, and enterprise leadership. India now hosts more than 2,100 GCCs employing approximately 2.36 million professionals, generating over USD 100 billion in annual revenue and nearly USD 68 billion in direct gross value addition (NASSCOM & Zinnov, 2026). AI adoption is accelerating this shift, with GCC-led automation delivering roughly 10% cost savings and a 30% productivity gain (Boston Consulting Group, 2025). This growth has reshaped India's urban economic geography — Bengaluru alone hosts over 880 centers — while straining infrastructure, talent supply, and energy-intensive digital systems, and pushing expansion toward Tier-II cities. The authors argue India's GCC leadership is not guaranteed: sustaining it requires a National GCC Framework, deeper investment in specialised talent, green digital infrastructure, and deliberate urban diversification, shifting the model from cost arbitrage to innovation-led, sustainable growth.

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The SSE Economic Tracker

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Global Economy

- Global growth forecasts have weakened following the Middle East conflict. The IMF projects global growth of 3.1% in 2026, while the World Bank expects a sharper slowdown to 2.5%, reflecting uncertainty over geopolitical tensions and energy-market disruptions. Emerging markets are expected to experience the weakest per capita income growth since the pandemic.
- Advanced-economy central banks have adopted a more cautious policy stance as the energy shock complicates the disinflation process. While the ECB resumed tightening, the Federal Reserve signalled a more hawkish outlook and the Bank of England kept rates unchanged, highlighting continued concerns over inflation.
- Oil markets remain the principal transmission channel of the crisis. Renewed tensions around the Strait of Hormuz have kept crude oil prices volatile despite the ceasefire framework, sustaining inflationary risks.
- The impact of the shock remains uneven across regions. The Middle East and North Africa are expected to experience the largest slowdown, while South Asia remains comparatively resilient. The IMF continues to warn that risks remain tilted to the downside amid persistent geopolitical uncertainty.

Special Focus

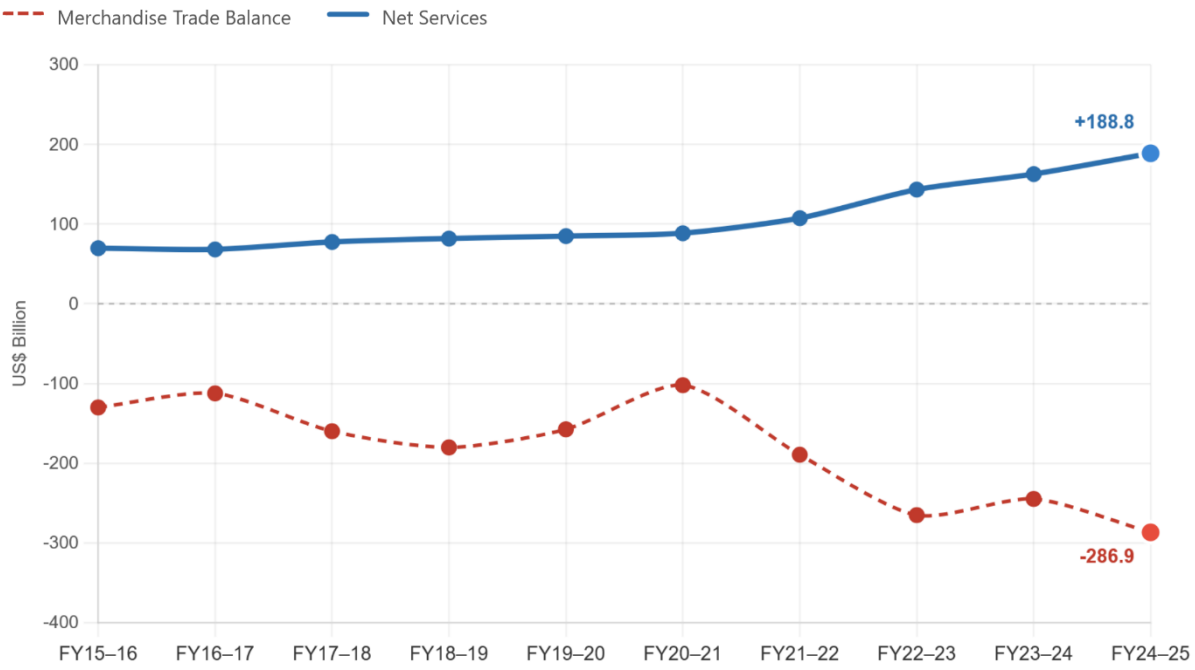
The Rise of Invisible Trade: India's New Oil

- For decades, discussions on exports have centred on ports, factories, shipping containers and merchandise trade. Yet one of the most important structural changes in India's economy is taking place largely out of sight. Increasingly, India's foreign exchange earnings are being generated by services that cross borders digitally rather than physically. While merchandise exports remain critical for employment and industrial development, the fastest-growing component of India's external sector is now increasingly based on knowledge, skills, data and digital connectivity.

- India's merchandise trade balance has remained structurally negative for most of the past two decades. In contrast, the services sector has consistently generated large trade surpluses. In FY2024–25, services exports exceeded US$380 billion across information technology, business services, consulting, engineering, finance, research and digital platforms. The services surplus has become a key stabiliser of India's balance of payments, offsetting a significant share of the merchandise trade deficit.

MERCHANDISE TRADE DEFICIT VS SERVICES TRADE SURPLUS

FY2015-16 to FY2024-25 | US$ Billion



Source: Balance of Payments, Handbook of Statistics on the Indian Economy, Reserve Bank of India.

- This shift matters because services exports differ fundamentally from merchandise exports. A software engineer in Pune or a financial analyst in Gurugram can generate export earnings without relying on ports, shipping routes or physical logistics. Instead, these exports depend on high-speed broadband, reliable power, cloud computing, data centers and international submarine cables. In an era of geopolitical tensions and trade fragmentation, this provides India with a degree of resilience against disruptions affecting global supply chains.
- Unlike the manufacturing-led export models followed by many East Asian economies, India is developing a more hybrid model in which services exports increasingly finance merchandise trade deficits while supporting external-sector stability. This was evident

in April 2026, when a merchandise trade deficit exceeding US$28 billion was substantially offset by a strong services surplus.

- However, sustaining this advantage will require continued investment in human capital, digital infrastructure, research, innovation and regulatory competitiveness. Artificial intelligence will reshape global services markets, making it essential for India to move further towards high-value activities such as engineering services, semiconductor design, healthcare, fintech, cybersecurity and AI development.
- India's external resilience is therefore being built not only through what it manufactures, but also through what it knows and how effectively it connects to global networks. As global trade becomes increasingly fragmented, the ability to export knowledge, skills and digital services may become one of India's most important strategic advantages. In many ways, the infrastructure of India's future exports will be measured not only in ports and factories, but also in fibre-optic cables, data centers and global professional networks.

Indian Economy: Agriculture, Rural Demand & Consumption

- India's agricultural sector faced significant stress in June due to a severe 43% deficit in monsoon rainfall, primarily driven by the delayed onset and sluggish progress of the southwest monsoon, compounded by prevailing El Niño conditions. The rainfall shortfall disrupted the sowing of key Kharif crops, particularly paddy, pulses, and soybeans, placing agricultural production at considerable risk across large parts of the country.
- The Indian Council of Agricultural Research (ICAR) and the Ministry of Agriculture identified 315 districts as vulnerable to deficient rainfall and inadequate irrigation, including 111 high-priority districts where irrigation coverage is below 25%. By late June, Kharif sowing remained significantly behind schedule, with dry soil conditions forcing farmers in states such as Karnataka and Maharashtra to postpone planting or face the risk of seed failure.
- Water availability has emerged as an additional concern. As of 25 June, the country's 166 major reservoirs held only 26% of their total live storage capacity, raising apprehensions over irrigation and drinking water supplies should rainfall remain inadequate. In response, the Union Agriculture Ministry established an El Niño Monitoring Cell and advised states to promote short-duration, drought-tolerant, and

low-water-intensive crops, including coarse cereals, pulses, and oilseeds. Extensive farmer outreach is being undertaken through the Krishi Vigyan Kendras to facilitate timely adoption of these contingency measures.

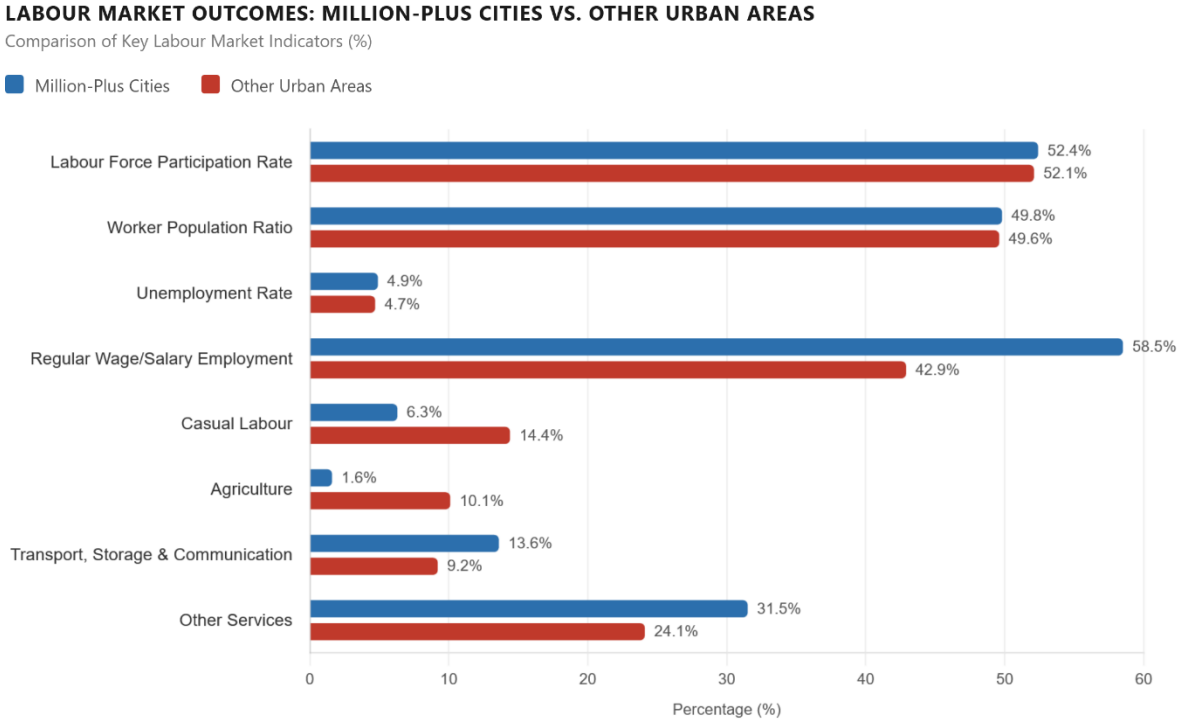
- A June 2026 NABARD survey, based on a stratified multi-stage sample of 20,000 rural households across 29 states and Union Territories, highlights persistent structural challenges in rural credit markets. High borrowing costs continue to be the most significant constraint, with nearly half of surveyed households reporting that formal credit remains prohibitively expensive. Many respondents indicated that lower interest rates and enhanced interest subvention schemes would substantially improve access to institutional finance.
- The survey also revealed limited financial literacy, with fewer than one-fourth of rural households aware of the concept of credit scores and their implications for borrowing. Among respondents familiar with credit scores, nearly 31% reported experiencing a deterioration in their own credit profile.
- Importantly, the findings suggest that improved access to credit has not translated into higher incomes for a majority of borrowers, underscoring concerns regarding the productive deployment of borrowed funds. On a positive note, the share of informal borrowing declined from 25% in 2022 to 16% in 2026, reflecting gradual progress in financial inclusion and greater reliance on formal credit channels.

Indian Economy: Labour Market

- Labour force participation climbed steadily over the years. Overall LFPR in million-plus cities rose from 47.7% in 2017-18 to 52.4% in 2025, with female LFPR nearly doubling to 27.2% in 2025.
- Unemployment fell sharply, especially among men. The male unemployment rate dropped to 4.5% in 2025, down from 7.5% in 2017-18, while the overall unemployment rate declined from 7.9% to 4.9% across the same period.
- Earnings turned out notably higher in million-plus cities compared to urban India as a whole. Self-employed workers earned roughly 34% more, regular salaried employees earned about 9.7% more, and casual labourers earned around 13.5% more than their counterparts across urban India.
- These 46 cities punch above their weight economically. Despite accounting for a smaller share of establishments nationally, they contribute 13% of establishments, 16%

of employment, and 21% of the Gross Value Added (GVA) of India's unincorporated non-agricultural sector.

- Women's entrepreneurship stands out in a handful of cities. Proprietorships owned by women exceed 40% in Surat, Vadodara, and Pune, and female workers make up over 30% of the unincorporated sector workforce in 19 out of the 46 cities studied.



Source: Ministry of Statistics and Programme Implementation (MOSPI), Million-Plus Cities Press Note (PLFS, January–December 2025; released June 2026).

Indian Economy: Inflation (WPI & CPI)

CPI

- Provisional figures show All-India CPI (2024 base year) inflation at 3.93% Year-on-year (YoY) for May 2026 compared with May 2025. Broken down by sector, rural inflation came in at 4.25%, while urban inflation stood at 3.53%.
- For the last five consecutive months, the YoY inflation in the 'Personal care, social protection & miscellaneous' category has been in the double digits (CPI 2024 base data is available since Jan 2024).
- The high YoY in the 'Personal care, social protection & miscellaneous' category is prevalent in both rural and urban areas.
- In both urban and rural areas, the 'Personal care, social protection & miscellaneous' category achieved a peak in the month of February (20.60% and 18.41% respectively

for rural and urban areas). February is the month when the wedding season reaches its peak in India.

- The only concern is that the weightage of 'Personal care, social protection & miscellaneous' in CPI estimation is 5.038%. However, people are increasingly consuming products and services of this category. This is the category where we do expect relatively faster change in prices, compared to the housing, fuel, gas and electricity, where the price change takes some months.
- The energy price hike in the recent past was due to an extraordinary event, the war in the Middle East. Otherwise, fuel, gas and electricity take some time to witness the price rise.
- We have to imagine the size of the consumption item when we talk about the YoY inflation figures. A person in a family spends 3 lakh rupees on food & beverages and 6 lakh rupees on education in a year. In this case, even 2 or 3 per cent inflation (YoY) ends up affecting the family in a significant manner. Particularly, given the fact that the real wage/salary growth is not so impressive, the impact of inflation must be very problematic for certain households.

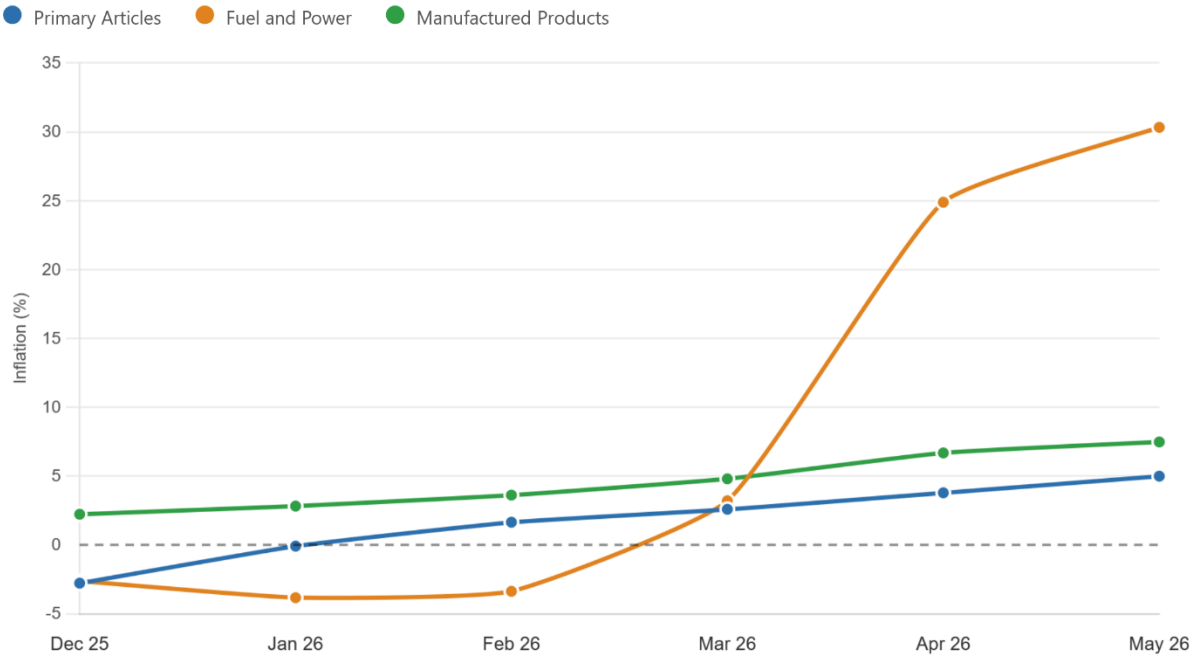
WPI

- The WPI is being launched with the new base year (2022-23). The changes are being introduced, including revision of weights, an increase in items, inclusion of new and renewable energy under electricity and improvement in the method for imputing missing price data.
- The new announcement that came on June 15, 2026, from the Office of Economic Adviser, DPIIT, is that WPI will be discontinued in the next five years. This decision is in view of the launch of the new Producer Price Index (PPI).
- The segregation of PPI for input and output is a welcome change. This would help us to know what is happening with the rise in input prices. Whether firms are passing increased input prices on to consumers or not (output price).
- As far as YoY WPI (base 2022-23) is concerned, it is 9.68% in May 2026. We have reported a trend earlier that the rising cost due to fuel and other input prices will be visible in the upcoming months.
- The April 2026 inflation figure was 8.3% (over the period 2025); however, WPI for March 2026 was 3.88% over March 2025. For May 2026, the YoY WPI (base 2022-23)

is 9.68%. As we can clearly see from the graph, the WPI increment is clearly led by the primary articles.

WHOLESALE PRICE INFLATION ACROSS MAJOR GROUPS

Dec-2025 to May-2026 | YoY Inflation (%) | Base Year: 2022–23

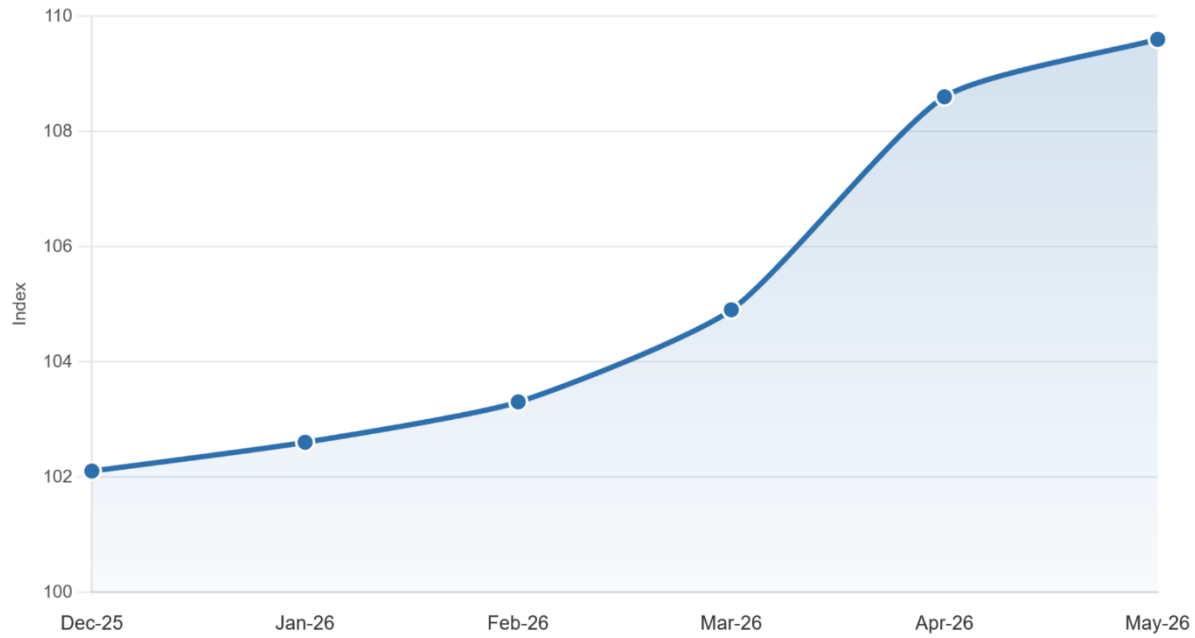


Source: Office of the Economic Adviser, Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce & Industry, Wholesale Price Index Press Release (Base Year 2022–23), released June 2026.

- The trend of Output PPI does not show any large variation compared to WPI.

OUTPUT PRODUCER PRICE INDEX (ALL COMMODITIES)

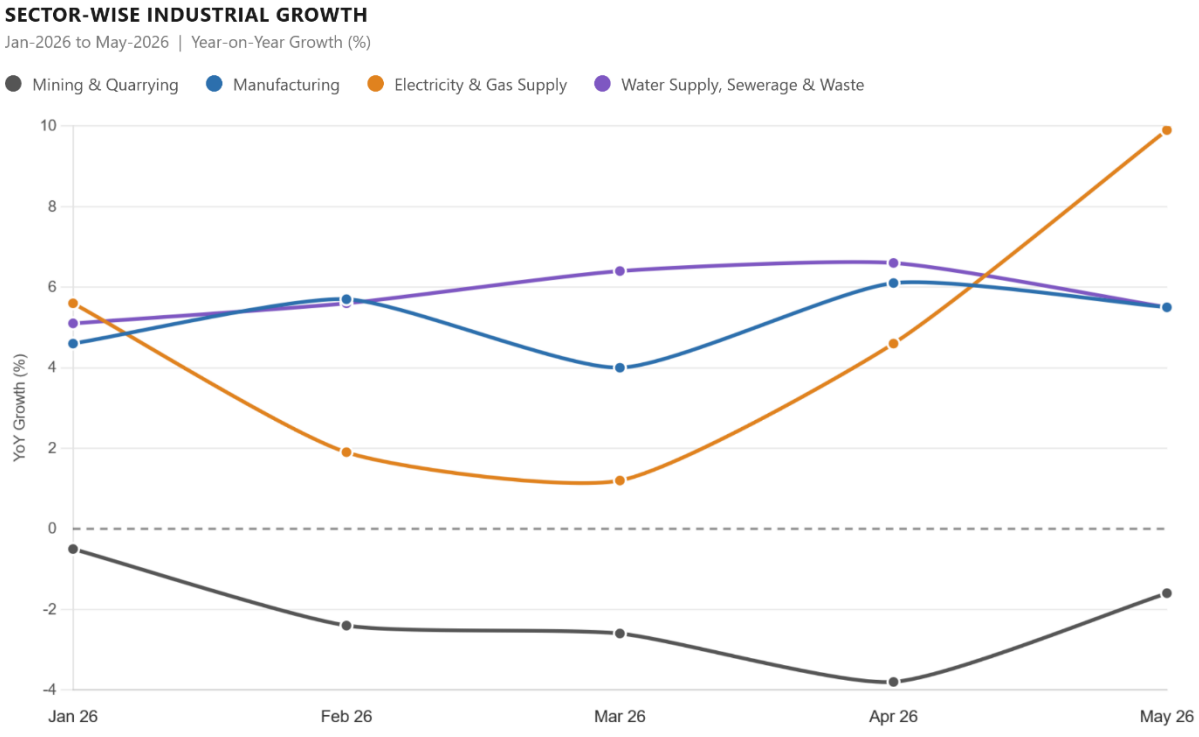
Dec-2025 to May-2026 | Base Year: 2022–23



Source: Office of the Economic Adviser, Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce & Industry, Output Producer Price Index Press Release (Base Year: 2022–23), released June 2026.

Indian Economy: Industry & IIP

- In the last newsletter, we discussed the newly released IIP (01 June 2026) with the base year 2022-23.
- As mentioned in the above (WPI) section, DPIIT has announced that WPI is being replaced by PPI.
- The Output PPI was subsequently released on 15 June 2026. Therefore, MoSPI decided to use Output PPI in the IIP estimation.
- For comparison purposes, MoSPI has re-released the IIP 2022-23 series with Output PPI, which was earlier WPI-based.
- The YoY in IIP was recorded at 5.1% in May 2026. This is the fifth consecutive month where the YoY IIP (Mining & Quarrying) growth is in the negative zone.
- While the YoY growth in IIP (Manufacturing and Sewerage & Waste Management) has been around 5 per cent for the last five months, the IIP (Electricity & Gas Supply) fluctuates a lot.
- Such fluctuations are attributed to the fact that Electricity & Gas Supply blends fossil generation (weather-driven), renewables (capacity-driven), and gas (its own demand cycle), three pieces that rarely move together.



Source: Ministry of Statistics and Programme Implementation (MoSPI), Index of Industrial Production – Sector-wise Growth Rates, June 2026.

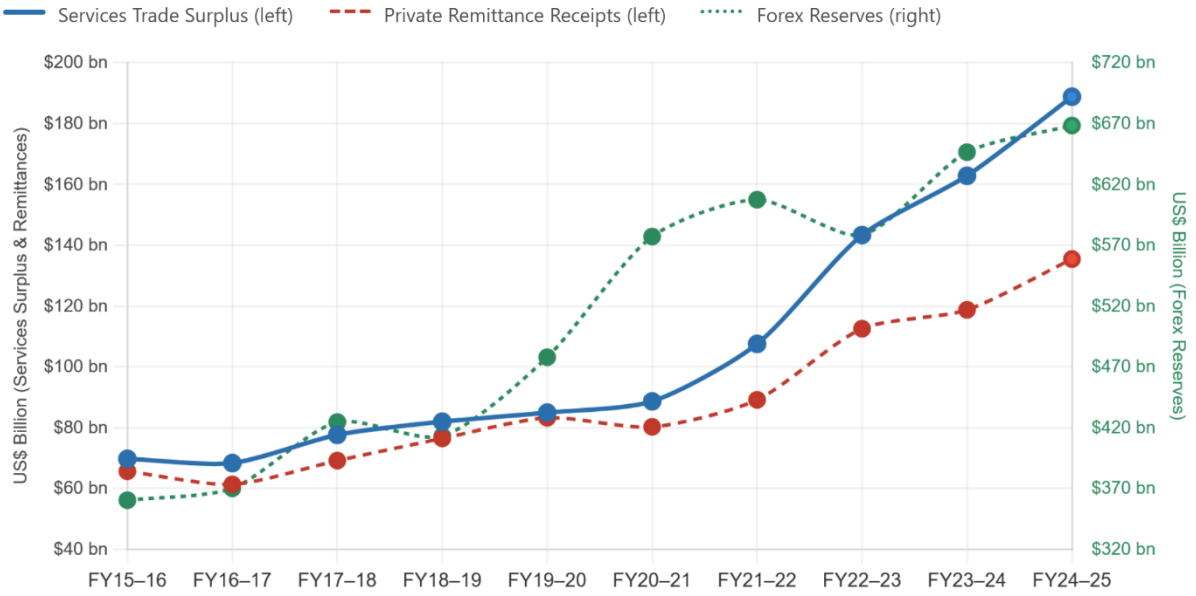
- The new series of IIP (2022-23) requires some more time to serve analytical, research, and policy purposes. With the 2022-23 base only starting in April 2023, YoY comparisons are still working off a short and sometimes unusual base period (e.g., 2023's monsoon-driven Renewable dip made 2024 comparisons look artificially strong or weak in spots).

Indian Economy: External Sector & Financial Markets

- India's external-sector story is increasingly characterised by a divergence between goods, services and capital flows. Merchandise trade remains structurally in deficit, services exports continue to generate substantial surpluses, while capital flows have become more volatile in response to global interest rates, geopolitical uncertainty and changing investor sentiment. This evolving composition of external balances is reshaping the way India's economy absorbs external shocks.
- Merchandise trade continues to be the principal area of vulnerability. Elevated crude oil prices, rising gold imports and continued dependence on imported electronics have kept import demand strong. While merchandise exports have shown resilience, external demand remains uneven amid slower global growth and persistent geopolitical uncertainty. As a result, pressure on the merchandise trade balance is likely to remain a feature of India's external sector in the near term.
- However, focusing solely on the merchandise trade deficit risks missing a more important structural development. India's services exports have emerged as a critical source of external resilience. Information technology services, business services, engineering services, consulting, financial services and digital platforms continue to generate substantial foreign exchange earnings. Increasingly, India's ability to earn foreign exchange depends not only on what it manufactures, but also on the knowledge-intensive services it provides to the rest of the world.
- This transformation is visible in the balance of payments. Even during periods of elevated oil prices and widening merchandise trade deficits, services exports and remittance inflows have helped contain current-account pressures. The growing contribution of invisible exports has become one of the most important buffers protecting India's external stability.

INDIA'S THREE EXTERNAL BUFFERS

FY2015-16 to FY2024-25 | Annual | Services Surplus & Remittances: left axis | Forex Reserves: right axis

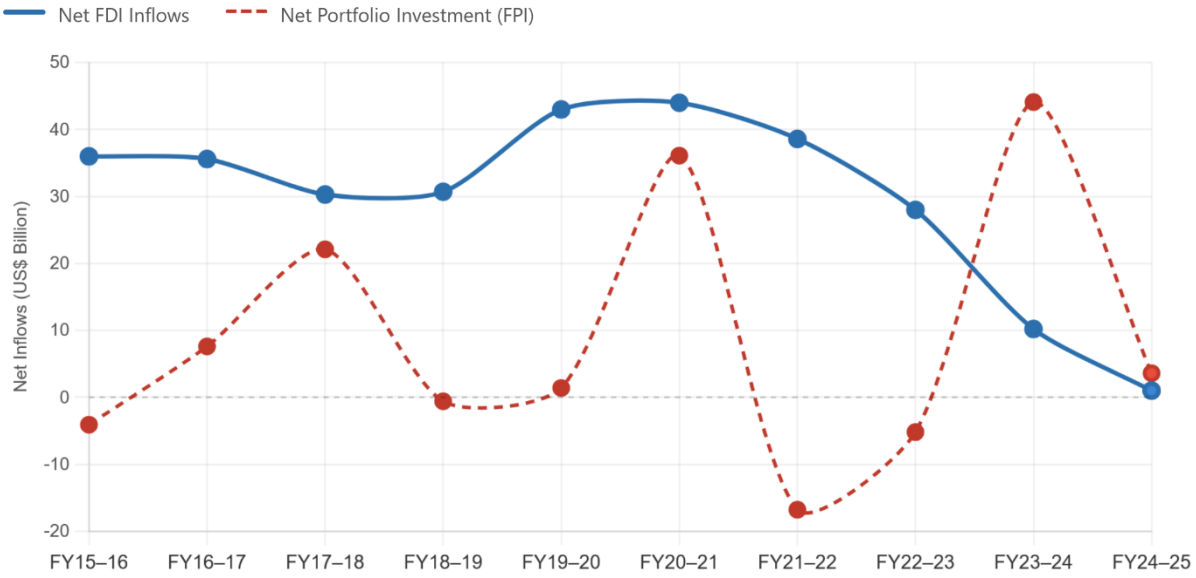


Source: Balance of Payments; Foreign Exchange Reserves, Handbook of Statistics on the Indian Economy, Reserve Bank of India.

- Capital flows present a more complex picture. While gross foreign direct investment remains relatively resilient, portfolio flows have become increasingly sensitive to global financial conditions. This distinction is important. FDI tends to be long-term and linked to productive investment, whereas portfolio flows can reverse rapidly during periods of uncertainty. Recent volatility in global markets has once again highlighted the differing stability characteristics of these two forms of capital inflow.
- Financial markets continue to reflect this global uncertainty. Higher crude oil prices, shifting expectations regarding US interest rates and geopolitical risks have contributed to periodic volatility in equity, bond and currency markets. The Indian rupee remains sensitive to movements in both energy prices and global dollar liquidity, reflecting India's position as a major energy-importing economy.
- Foreign exchange reserves remain a critical line of defence. India's reserve position continues to provide significant import cover and allows the Reserve Bank of India to manage episodes of excessive currency volatility. Importantly, the RBI's approach has focused on smoothing market disruptions rather than defending any specific exchange-rate level, preserving flexibility in an increasingly uncertain global environment.

COMPOSITION OF CAPITAL INFLOWS INTO INDIA

FY2015-16 to FY2024-25 | Annual | Net Inflows (US$ Billion)



Source: Foreign Investment Inflows, Handbook of Statistics on the Indian Economy, Reserve Bank of India.

- A notable feature of the current external environment is that the risks facing India are becoming more financial than trade-related. During earlier periods, external vulnerability was often driven by trade deficits and reserve adequacy concerns. Today, the interaction between global capital flows, energy prices, exchange-rate movements and investor sentiment plays a far greater role in determining short-term external stability.
- Looking ahead, India's external resilience will increasingly depend on three factors: the strength of services exports, the stability of capital inflows and the ability to manage imported inflation arising from energy markets. Merchandise trade will remain important, but the future of India's external sector may be shaped just as much by software code, data flows, business services and global professional networks as by ships, ports and physical goods.
- The broader lesson is that India's external sector is undergoing a structural transition. The economy is gradually moving from a model in which resilience depended primarily on merchandise exports and capital inflows to one in which services exports, digital integration, knowledge-intensive activities and external financial management play an increasingly central role. Understanding this transition will be critical for assessing India's long-term macroeconomic stability and global competitiveness.

Indian Economy: Fiscal Developments & Investment

- India successfully achieved its FY2025–26 fiscal deficit target of 4.4% of GDP, corresponding to an absolute deficit of ₹15.2 lakh crore, reflecting continued fiscal discipline despite elevated expenditure pressures. However, rising fuel prices and subsidy requirements arising from geopolitical tensions have prompted discussions around allowing the FY2026–27 fiscal deficits to widen from the budgeted 4.3% to approximately 4.8% of GDP, should external pressures persist.
- On the revenue front, gross GST collections stood at ₹1.95 lakh crore in June 2026, representing 13.9% year-on-year growth. Collections remained robust and essentially flat compared with ₹1.94 lakh crore collected in May, with growth driven largely by a 34.6% surge in import-related GST revenue.
- India witnessed a strong resurgence in investment activity during the period. According to RBI data, net foreign direct investment (FDI) reached US$6.6 billion during April–May 2026, supported by a 65% increase in gross FDI inflows. Overall, India recorded an 18% increase in FDI inflows during FY2025–26, with total investments reaching US$58.85 billion, reflecting sustained investor confidence in the country's long-term growth prospects.
- Domestic investment momentum also strengthened considerably. According to an SBI Research report, private sector investment announcements increased sharply to ₹56 lakh crore in FY2025–26, up from ₹37 lakh crore in the previous year. This improvement suggests renewed confidence in capital expenditure despite ongoing geopolitical uncertainties, concerns regarding private investment, and structural shifts within the industrial sector. Further reinforcing infrastructure financing, the Union Cabinet approved an additional capital infusion of ₹30,000 crore into the National Investment and Infrastructure Fund (NIIF) to accelerate infrastructure development and crowd in long-term private investment.

What to Watch Out For

- The durability of the ceasefire in West Asia will remain the key factor shaping global inflation and growth. Any renewed escalation could disrupt energy supplies, raise shipping costs and reverse the recent moderation in crude oil prices, with implications for inflation and monetary policy worldwide.

- Markets will closely monitor upcoming US inflation data and Federal Reserve communications for signals on the future policy path. Any shift towards further tightening could affect global capital flows, emerging-market currencies and investor sentiment, including in India.
- Global oil prices and shipping conditions through the Strait of Hormuz will remain critical indicators. Any disruption to energy supplies or maritime trade could quickly raise transportation costs, fuel inflationary pressures and increase India's import bill.
- Domestically, the RBI will need to balance easing inflation with continued uncertainty in global energy markets. Any sustained rise in crude oil prices could limit the scope for further monetary easing and influence the outlook for growth and inflation.

Director's Insights

Global Capability Centers in India: From Cost Arbitrage to Strategic Innovation Hubs

Dr Jyoti Chandiramani | Director, Symbiosis School of Economics

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Introduction

Global Capability Centers (GCCs) have progressed from cost-efficient back-office operations to strategic hubs of innovation, research and development (R&D), artificial intelligence (AI), digital engineering, and enterprise leadership. This shift reflects the broader transition from labour-intensive outsourcing to knowledge-intensive value creation.

India has emerged as the world's leading GCC destination, hosting more than 2,100 centers that employ approximately 2.36 million professionals, generate over USD 100 billion in annual revenues, and contribute nearly USD 68 billion in direct gross value addition to the economy (NASSCOM & Zinnov, 2026). This growth has been driven not only by cost competitiveness but also by India's deep talent pool, expanding digital infrastructure, mature technology ecosystem, and growing innovation capabilities. Increasingly, multinational corporations are assigning their Indian GCCs global mandates in product engineering, AI, cybersecurity, data analytics, and enterprise transformation.

The significance of GCCs extends well beyond employment generation. They are strengthening India's knowledge economy, accelerating technological innovation, reshaping urban growth, and deepening integration into global value chains. At the same time, the rapid expansion of AI-enabled GCCs raises new challenges relating to digital infrastructure, environmental sustainability, resource consumption, and regional development. GCCs are poised to become strategic institutions driving productivity, innovation, and long-term economic competitiveness. In this sense, GCCs exemplify Schumpeterian creative destruction, where knowledge, technology, and innovation increasingly replace labour-cost arbitrage as the principal drivers of economic growth.

From Cost Arbitrage to Strategic Innovation: The Evolution of GCCs in India

The evolution of GCCs in India mirrors the broader transformation of the Indian economy since 1985, when the Texas Instruments (TI) became the first multinational to set up a wholly owned R&D center in Bengaluru (GCC Pulse, n.d.). TI used satellite communication links to collaborate with its U.S. headquarters, demonstrating that high-end engineering work could be performed from India. The first phase of GCC development gained momentum and emerged during the economic liberalisation period of the 1990s and early 2000s (Bagri et al., 2024). Multinational corporations established captive centers in the leading cities such as Bengaluru, Mumbai, Chennai, Hyderabad, and Pune to leverage India's large pool of English-speaking talent and comparatively lower operating costs. During this period, GCCs primarily performed back-office functions including finance and accounting, customer support, transaction processing, and IT maintenance. The principal value proposition was cost arbitrage and operational efficiency. The evolution of India's GCC ecosystem broadly follows a progression from cost arbitrage to innovation-led enterprise capabilities, a transition documented by Bagri et al. (2024).

Table 1: The Evolution of GCCs in India

Phase	Period	GCC Characteristic
Phase I	1990–2005	Cost arbitrage and business process outsourcing
Phase II	2005–2015	Knowledge services and R&D
Phase III	2015–2025	Digital transformation and strategic integration
Phase IV	2025 onwards	AI-driven innovation and enterprise leadership

The second phase, spanning approximately over a decade from 2005 to 2015, witnessed a gradual shift towards higher-value activities. As India's engineering talent pool expanded and digital infrastructure improved, GCCs began undertaking business analytics, product development, research and development (R&D), engineering design, risk management, and consulting support. India increasingly emerged as a destination not merely for service delivery but also for specialised knowledge work. The expansion of sectors such as banking and financial services, healthcare, manufacturing, automotive engineering, and telecommunications further diversified GCC operations.

The third phase, beginning around 2015, accelerating significantly after the COVID-19 pandemic, transformed GCCs into strategic business partners within global enterprises. Many GCCs today lead global mandates in product innovation, customer experience, software engineering, digital transformation, and business strategy. Increasingly, multinational corporations are locating their Centers of Excellence (CoEs) in India to support enterprise-wide innovation initiatives.

The current phase may be characterised as the era of intelligence-led and innovation-driven GCCs accounting for over half of the global GCC ecosystem. These centers are increasingly involved in emerging technologies such as Generative AI, machine learning, quantum computing, semiconductor design, sustainability analytics, and digital product development. Rather than functioning as peripheral units, GCCs have become integral components of global corporate value chains.

This evolution reflects a deeper structural shift in India's competitive advantage. While cost efficiency remains relevant, India's attractiveness today is increasingly driven by the availability of factor resources and an evolving and maturing ecosystem, which includes highly skilled talent, a mature digital ecosystem, strong engineering capabilities, and a growing innovation culture. Consequently, GCCs are no longer simply instruments of operational optimisation; they have emerged as strategic assets that contribute to knowledge creation, intellectual property generation, and long-term enterprise competitiveness. According to Zinnov (2024), GCCs have evolved from captive offshore centers into globally integrated enterprise capability hubs.

2. GCCs, Artificial Intelligence and India's Emerging Knowledge Economy

Multinational corporations increasingly entrust their Indian GCCs with research and development (R&D), digital product engineering, enterprise analytics, customer experience transformation, and strategic decision-making. The growing establishment of Centers of Excellence (CoEs) demonstrates India's transition from an outsourcing destination to a global source of innovation, specialised expertise, and intellectual capital.

The growth of GCCs has also strengthened India's human capital ecosystem. India's large STEM talent pool, coupled with collaboration between multinational corporations, universities, start-up ecosystems, and research institutions, has generated significant knowledge spillovers that enhance innovation capacity and entrepreneurial activity. Professionals trained within GCCs frequently contribute to India's start-up ecosystem, creating a virtuous cycle of talent development, technology diffusion, and enterprise creation.

Additionally, the adoption of Artificial intelligence is accelerating this transformation by fundamentally redefining the role of GCCs within multinational enterprises. The GCC - MNCs are increasingly centred on intelligence, automation, and enterprise innovation, by establishing AI-focused Centers of Excellence in India. They develop and embed Generative AI, intelligent automation, cybersecurity solutions, machine learning applications, and enterprise-scale digital platforms, which according to the Boston Consulting Group (2025), have successfully achieved approximately 10% cost savings, a 30% increase in productivity, and significantly improved workforce utilisation. Rather than replacing human talent, AI is augmenting capabilities by enabling employees to focus on higher-value activities such as innovation, strategic analysis, product development, and business transformation.

The growing adoption of AI has also intensified the strategic relationship between GCCs and digital infrastructure. Modern AI applications require substantial computational power, data storage, and high-speed connectivity, making data centers indispensable to the functioning of AI-enabled GCCs. While GCCs provide the talent, expertise, and innovation capabilities, data centers constitute the physical backbone supporting cloud computing, AI workloads, and enterprise-scale digital operations (Cisco, 2019; ST Telemedia Global Data Centers, 2025).

However, this rapid expansion also presents emerging sustainability challenges. AI-enabled data centers are highly energy-intensive, require significant quantities of land and water for cooling systems, and contribute to increasing electricity demand and carbon emissions. As India continues to expand its GCC ecosystem, investments in renewable energy, green data centers, energy-efficient computing, and sustainable digital infrastructure will become increasingly important to balance technological growth with environmental sustainability.

The evolution of AI-powered GCCs also raises important governance challenges relating to data privacy, cybersecurity, algorithmic bias, ethical AI, and workforce reskilling. Addressing these concerns while sustaining innovation will determine India's ability to maintain its competitive advantage in the global GCC landscape. As multinational corporations increasingly reposition their Indian operations from centers of execution to centers of intelligence, GCCs are emerging as one of the most significant institutional pillars supporting India's transition towards a resilient, knowledge-driven, and innovation-led economy.

3. GCCs and India's Urban Growth Story

The expansion of GCCs has significantly reshaped India's urban economic geography, transforming metropolitan regions into globally competitive knowledge and innovation hubs. Beyond generating high-skilled employment, GCCs have stimulated investments in commercial real estate, digital infrastructure, transportation, housing, hospitality, and professional services, creating substantial multiplier effects across urban economies. Their concentration in cities such as Bengaluru, Hyderabad, and the Mumbai–Pune corridor reflects how agglomeration economies can result in economies of agglomeration, where proximity to skilled talent, research institutions, suppliers, start-ups, and innovation networks enhances productivity and competitiveness.

Bengaluru continues to lead India's GCC landscape with more than 880 centers, followed by Hyderabad, while the Mumbai–Pune corridor has emerged as a major hub for banking, financial services, automotive engineering, manufacturing, and technology. These cities demonstrate how specialised industrial ecosystems, supported by robust educational institutions and enabling public policies, can attract sustained global investment and strengthen regional competitiveness. However, the concentration of GCCs has also intensified pressure on urban infrastructure. Rising demand for Grade A office space, premium housing, transport

networks, utilities, and social infrastructure has contributed to escalating real estate prices, traffic congestion, infrastructure stress, and increasing operational costs, particularly in established metropolitan centers.

Recognising these constraints, the next phase of GCC expansion, especially in the post COVID period, since 2023 is extending towards Tier-II cities. These include cities such as Kochi, Coimbatore, Madurai, Mysuru, Indore, Vadodara, Mohali, and Bhubaneswar, where improving infrastructure, lower operating costs, expanding educational ecosystems, and supportive state policies offer new investment opportunities. This geographical diversification of GCCs, can reduce pressure on existing metropolitan hubs while promoting and decentralising growth and more balanced regional development – creating new urban agglomerations. The emerging GCC hubs will influence and nudge infrastructure planning, and drive the emergence of knowledge cities that act as innovation corridors, making urban competitiveness a critical determinant of the country's future GCC growth.

4. Challenges, Risks and Spillover Effects

Despite its remarkable growth, India's GCC ecosystem faces a new generation of challenges that extend beyond cost competitiveness. The foremost challenge is the growing demand for highly skilled professionals in artificial intelligence, cloud computing, cybersecurity, semiconductor design, and advanced engineering. Although India continues to produce one of the world's largest STEM talent pools, rapid technological change, high employee mobility, wage pressures, and the need for continuous upskilling are intensifying competition for specialised talent.

Simultaneously, the expansion of GCCs has placed considerable pressure on urban infrastructure, commercial real estate, housing, and digital connectivity, particularly in major metropolitan centers. Sustaining future growth will require expanding high-quality infrastructure and innovation ecosystems across Tier-II and Tier-III cities. Industry experience suggests that long-term GCC success increasingly depends on talent retention, leadership capability, governance, and organizational maturity rather than labour-cost advantages alone (Stanton Chase, 2025).

The rapid adoption of AI also presents important technological, regulatory, and environmental challenges. As GCCs increasingly rely on hyperscale data centers to support AI

workloads, cloud computing, and enterprise-scale digital operations, concerns regarding energy consumption, water use for cooling systems, land availability, and carbon emissions have become increasingly significant. While data centers constitute critical digital infrastructure, they are highly capital-intensive and generate relatively limited direct employment compared with GCCs, despite occupying substantial land parcels and consuming significant urban resources. This creates an important policy challenge, particularly in rapidly urbanizing regions where land, energy, and water are increasingly scarce.

India also faces increasing competition from emerging GCC destinations such as Poland, Vietnam, the Philippines, Mexico, and Eastern Europe, all of which are strengthening their talent ecosystems and investment climates.

Over the years GCCs have challenged the competitive landscape for Indian IT services firms – the likes of Wipro, Infosys, TCS, Tech Mahindra and others. Both Indian IT firms and GCC compete for the same talent pool – with GCCs offering higher salaries, exposure to global teams, opportunities for international career pathways. Further, the IT firms face reduced outsourcing opportunities. However, the flip side also occurs wherein GCCs have provided opportunities for collaboration – IT firms are helping GCCs scale up, supporting them with digital consultancy opportunities, AI and Engineering Services, Innovation ecosystem and other opportunities.

5. Policy Priorities for Sustaining India's GCC Leadership

Presently, GCCs have surpassed the total workforce employed with the entire banking system in India (Zinnov, 2025). Given its significant role played in India, four strategic priorities deserve immediate attention.

i) India should establish a comprehensive **National GCC Framework** that provides long-term policy certainty, strengthens coordination between the central and state governments, academia, and industry, streamlines regulatory processes, and promotes investments in emerging technologies such as AI, semiconductor design, cybersecurity, and digital engineering (CII–Deloitte, 2025) It should also plan and build supporting infrastructure for GCC, thereby creating an environment which can facilitate the ease of doing business for GCCs. Given the global competition, the National GCC Framework should be mindful that India's long-term competitive advantage does not convert into comparative disadvantage.

ii) **Strengthening the talent ecosystem** must remain a national priority. Beyond producing STEM graduates, educational institutions and industry should collaborate to develop expertise in AI, cloud computing, cybersecurity, data analytics, and digital product engineering while promoting continuous reskilling, interdisciplinary learning, leadership, and innovation capabilities. This will require Indian Universities to be agile and plan for just-in-time revised course curriculum, preparing graduates with skill sets, highly trained and prepared to enter the GCC and allied sector job market.

iii) **Investments in green digital infrastructure** are essential both economic and environmental sustainability. Future GCC competitiveness will depend on secure digital networks, cloud infrastructure, AI computing capabilities, and robust cybersecurity. Therefore, India should promote renewable-powered green data centers, powered by renewable energy, energy-efficient computing, sustainable land use, planning, and water-efficient cooling systems to minimise the environmental footprint of digital expansion

iv) **Urban diversification** should become a strategic objective – moving away from the highly concentrated cities like Bengaluru, Hyderabad, Mumbai, Pune, Chennai, and the National Capital Region. States should prepare a strategic plan expanding into Tier-II and Tier-III cities, with investments in infrastructure, higher education, digital connectivity, and innovation clusters, thereby reducing the pressure on existing metropolitan centers while fostering balanced regional development.

By aligning policy reforms with investments in human capital, digital infrastructure, environmental sustainability, and regional development - collectively, these priorities represent a strategic shift from a cost-driven GCC model towards an innovation-led, sustainable, and knowledge-based ecosystem.

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Appendix: GCCs in India

The following table provides a sector-wise overview of major Global Capability Centers (GCCs) operating in India, including key companies and their primary functions.

Sector	Key Companies	Primary Functions
Technology	Microsoft, Google, Amazon, Intel, SAP, Adobe	Cloud, AI, Product Engineering, R&D
BFSI	J.P. Morgan, Goldman Sachs, American Express, BNY Mellon, MetLife, Vanguard	Digital Banking, Risk, Analytics, FinTech
Engineering & Manufacturing	Bosch, Rolls-Royce, Mercedes-Benz, BMW, Eaton	ER&D, Industry 4.0, Robotics, Automation
Healthcare & Pharma	AstraZeneca, Agilent, Medtronic	Drug Discovery, Clinical Trials, Digital Health
Retail & E-commerce	Walmart, Amazon, Best Buy	Supply Chain, Digital, AI
Energy	Chevron, Vestas	Subsurface Modeling, Engineering
Consulting	EY, Accenture, Deloitte	Digital Transformation, Automation
Cybersecurity	Deepwatch	AI-driven Threat Detection

Source: NASSCOM GCC Annual Report 2024, Zinnov–NASSCOM India GCC Landscape Report 2024, EY GCC Pulse Survey 2025

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