

Industry Report on Indian IT and Indian Solar Energy Segment

September 2025

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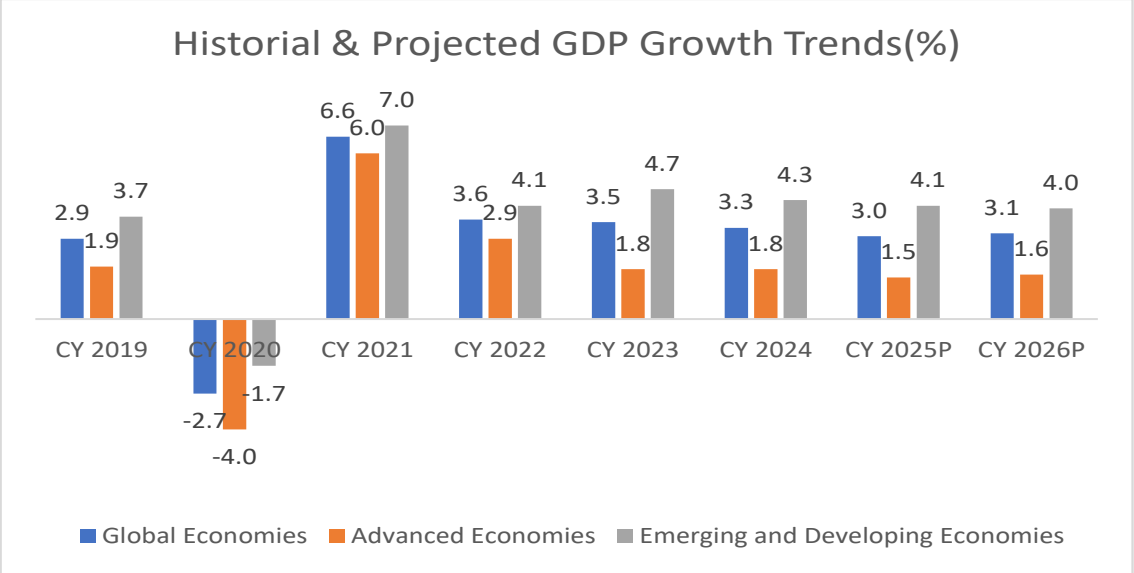
Global Macroeconomic Scenario

Global GDP Growth Pattern

The global economy, which recorded GDP growth at 3.3% in CY 2024, is expected to show moderation by growing at 3.0% in CY 2025. This marks the slowest expansion since 2020 and reflects a -0.3%point downgrade from January 2025 forecast. Moreover, the projection for CY 2026 has also reduced to 3.1%.

This slowdown is majorly attributed due to numerous factors such as high inflation in many economies despite central bank effort to curb inflation, continuing energy market volatility driven by geopolitical tensions particularly in Ukraine and Middle East, and the re-election of Donald Trump as US President extended uncertainty around the trade policies as well as overall global economic growth.

High inflation and rising borrowing costs affected the private consumption on one hand while fiscal consolidation impacted the government consumption on the other hand. As a result, global GDP growth is projected to slow down from 3.3% in CY 2024 to 3.0% in CY 2025.



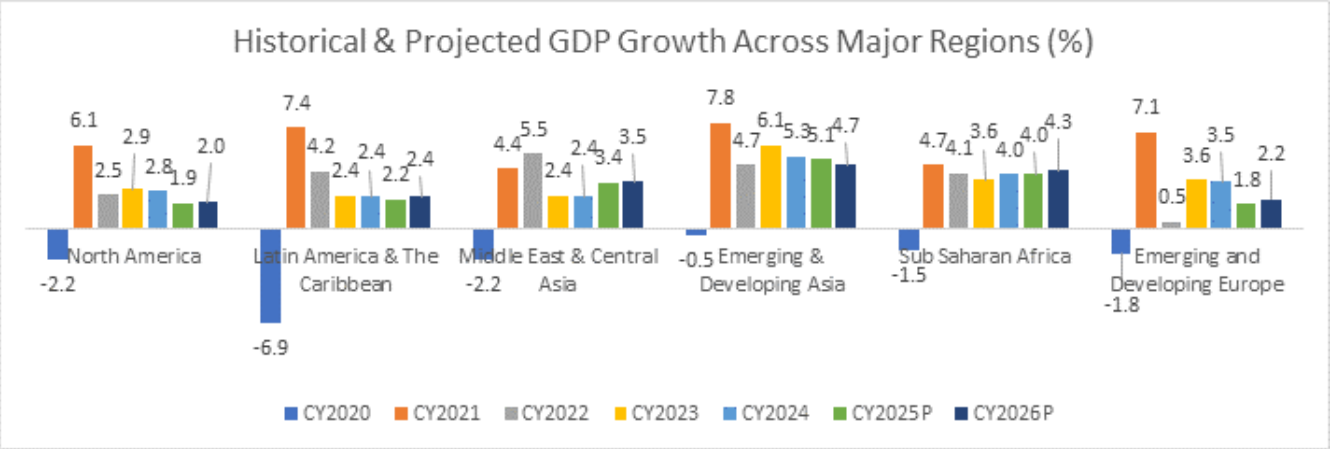
Source – IMF Global GDP Forecast Release July 2025, P-Projected

Note: Advanced Economies and Emerging & Developing Economies are as per the classification of the World Economic Outlook (WEO). This classification is not based on strict criteria, economic or otherwise, and it has evolved over time. It comprises of 40 countries under the Advanced Economies including the G7 (the United States, Japan, Germany, France, Italy, the United Kingdom, and Canada) and selected countries from the Euro Zone (Germany, Italy, France etc.). The group of emerging market and developing economies (156) includes all those that are not classified as Advanced Economies (India, China, Brazil, Malaysia etc.)

Economic Growth Trends Across Key Economies

GDP growth across major regions exhibited a mixed trend between 2022-23, with GDP growth in many regions including North America, Emerging and Developing Asia, and Emerging and Developing Europe slowing further in 2024. In 2025, GDP growth rate in Emerging and Developing Asia (India, China, Indonesia, Malaysia, etc.) is expected to moderate further to 5.1% from 5.3% in the previous year, while in the North America, it is expected to moderate to 1.9% in CY

2025 from 2.8% in CY 2024. Similarly in Emerging and Developing Europe is expected to moderate further to 1.8% from 3.5% in the previous year.



Source-IMF World Economic Outlook July 2025 update;P-Projected

Except Middle East & Central Asia, all other regions like Emerging and Developing Asia, Emerging and Developing Europe, Latin America & The Caribbean, Sub Saharan Africa and North America, are expected to record a moderation in GDP growth rate in CY 2025 as compared to CY 2024. Further, growth in the United States is expected to come down at 1.9% in CY 2025 from 2.8% in CY 2024 due to lagged effects of monetary policy tightening, gradual fiscal tightening, and a softening in labour markets slowing aggregate demand.

Global Economic Outlook

The global macroeconomic environment remains shaped by divergent regional trends and continued geopolitical and policymaking uncertainties. A wave of new U.S. tariffs, mostly effective from August 7,2025 has shaken markets and raised costs for global trade. On August1,2025, the U.S. announced higher tariff rates for countries from which it imports goods, with most of the rates effective from August 7 2025 itself. A 15% rate will act as a baseline floor for countries with which the U.S. has a trade deficit; a 10% rate applies for those with which the U.S. has a trade surplus. However, there are some countries that are subject to higher U.S. tariffs.

In North America, the United States continues to engage in trade negotiations with multiple countries and has announced plans to introduce sector-specific tariffs, targeting industries such as copper and pharmaceuticals. However, talks with Canada have stalled, despite Canada's decision to withdraw its Digital Services Tax in an effort to ease tensions. As a result, the U.S. imposed a 35% tariff on Canadian goods that do not meet USMCA compliance standards, effective August 1. This move has further strained bilateral relations and added complexity to the regional trade landscape.

By August 7,2025 the U.S. had announced increased tariffs of 15-50% on Asian economies, with most rates around 20%. Although these tariffs are lower than the levels announced in April, they remain higher than those applied to most Western counterparts, impacting exporters such as Taiwan Region (20%) and India (25%, with the U.S. saying this could rise to 50% at the end of August). Moreover, earlier in the year 2025, on July 28, the US imposed a 15% tariff on most EU imports under a new trade agreement, impacting Nordic countries such as Denmark, Finland, and Sweden. Key exemptions include aircraft parts and semiconductor equipment, while steel and aluminum continue to face 50% tariffs.

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Tariffs and their unpredictable application have weighed on consumer and business sentiment, sunk global stock markets, raised recession risks, and made a global slowdown more likely. Our latest Global Business Optimism Insights report for indicates a further decline in business optimism as firms continue to grapple with trade-related policy uncertainty and its broader economic implications. Export-driven sectors reported sharp declines in optimism. Financial risk perceptions remain elevated as businesses contend with high borrowing costs and persistent inflation expectations. More broadly, the uncertainty is reflected in delayed capital expenditure and a pullback in hiring.

Tariffs have begun to exert pressure on central banks by contributing to inflationary pressures and increasing financial market volatility. Central banks are adjusting forward guidance and policy frameworks and may begin to consider the likelihood of softer growth being a bigger priority than high inflation by starting to cut interest rates to support economies. For businesses, this uncertainty translates into unpredictable cost structures, fluctuating credit availability, and the management of operational costs through diversified supply networks.

Our latest Global Business Optimism Insights report reveals a further decline in business optimism, though at a more moderate pace than in the prior quarter, as businesses continued to grapple with trade-related policy uncertainty and its broader economic implications. Export-driven sectors such as automotives, electricals, and metals saw sharp declines in optimism, particularly in the U.S., Mexico, South Korea, and Japan, where rising tariffs and shifting trade policies have fueled cost pressures and demand volatility. Financial risk perceptions remain elevated.

Global Growth Projection

At broader level, the global economy is expected to experience a slowdown in 2025, with GDP growth projected to decline to 3.0%, down from 3.3% in 2024. This deceleration reflects persistent inflationary pressure, geopolitical uncertainties and tightened monetary policies. However, a sightly recovery is anticipated in 2026, with growth projected to improve to 3.1%. Global inflation is expected to decline steadily, to 4.2% in 2025 and to 3.6% in 2026. Inflation is projected to converge back to the target earlier in advanced economies, reaching 2.2% in 2026, whereas in emerging market and developing economies, it is anticipated to decrease to 4.6% during the same period. Trade tariffs function as a supply shock for the countries imposing them, leading to a decrease in productivity and an increase in unit costs. Countries subject to tariffs experience a negative demand shock as export demand declines, placing downward pressure on prices. In each scenario, trade uncertainty introduces an additional layer of demand shock since businesses and households react by delaying investment and spending, and this impact could be intensified by stricter financial conditions and heightened exchange rate volatility. Moreover, Global trade growth is expected to slow down in 2025 to 1.7%. This forecast reflects increased tariff restrictions affecting trade flows and, to a lesser extent, the waning effects of cyclical factors that have underpinned the recent rise in goods trade. Geopolitical tensions as seen in the past such as the wars in Ukraine and the Middle East could exacerbate inflation volatility, particularly in energy and agricultural commodities.

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Indian Macroeconomic Scenario

India emerged as one of the fastest growth economies amongst the leading advanced economies and emerging economies. In CY 2024, even amidst geopolitical uncertainties, particularly those affecting global energy and commodity markets, India continues to remain one of the fastest growing economies in the world and is expected to grow by 6.4% in CY 2025.

Country	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024	CY 2025 P	CY 2026 P
India	–5.8%	9.7%	7.6%	9.2%	6.5%	6.4%	6.4%
China	2.3%	8.6%	3.1%	5.4%	5.0%	4.8%	4.2%
United States	-2.2%	6.1%	2.5%	2.9%	2.8%	1.9%	2.0%
Japan	-4.2%	2.7%	0.9%	1.4%	0.2%	0.7%	0.5%
United Kingdom	-10.3%	8.6%	4.8%	0.4%	1.1%	1.2%	1.4%
Russia	-2.7%	5.9%	-1.4%	4.1%	4.3%	0.9%	1.0%

Source: World Economic Outlook, July 2025, P-Projected

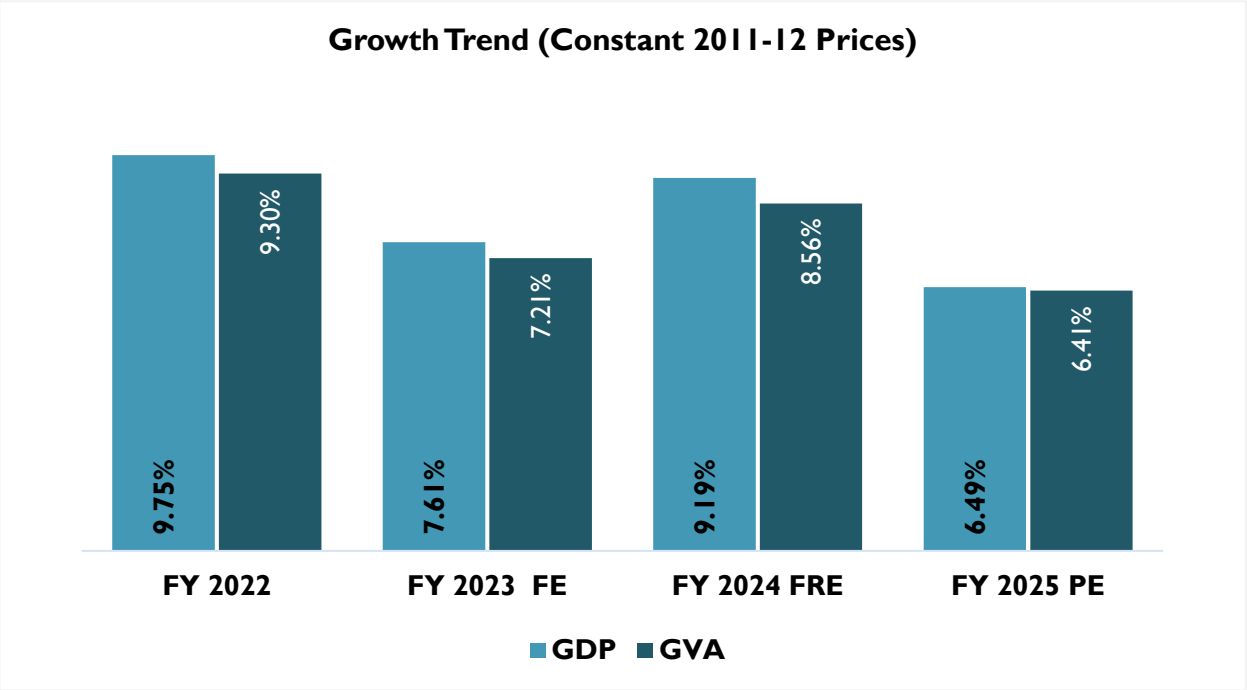
The Government stepped spending on infrastructure projects to boost the economic growth had a positive impact on economic growth. The annual growth in capital expenditure of the central government moderated to 7.27% in FY 2025 against the average of 26.52% in the previous two fiscal which translated in moderation GDP growth in 2024 to 6.5% against 9.2% in the previous calendar year.

In the Union Budget 2025-2026, the government announced INR 11.21 billion capex on infrastructure (10.12% higher than previous year revised estimates) coupled with INR 1.5 trillion in interest-free loans to states. This has provided much-needed confidence to the private sector and is expected to attract the private investment and support India's economic growth in the current year.

Historical Growth Trend

As per the latest estimates, India's GDP at constant prices is estimated to grow to INR 187.96 trillion in FY 2025 (Provisional Estimates) with the real GDP growth rates estimated to be 6.5% for FY 2025. Similarly, real Gross Value Added (GVA) growth stood is estimated to have moderated to 6.4% in FY 2025. Even amidst global economic uncertainties, India's economy exhibited resilience supported by robust consumption and government spending.

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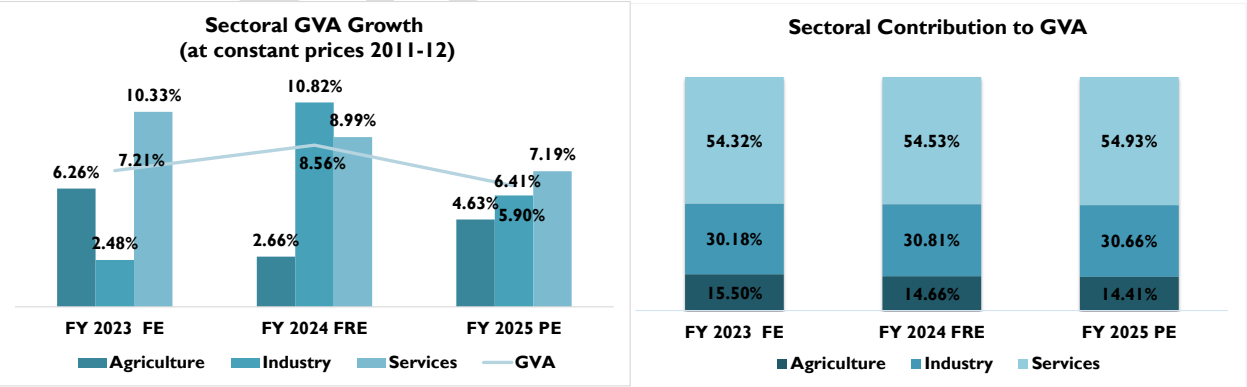


Source: Ministry of Statistics & Programme Implementation (MOSPI), National Account Statistics: FY2025.

FE is Final Estimates, FRE is First Revised Estimate and PE is Provisional Estimates

Sectoral Contribution to Economic Growth

Sectoral analysis of GVA reveals that the industrial sector experienced a moderation in FY 2025, recording a 5.90% y-o-y growth against 10.82% year-on-year growth in FY 2024. Within the industrial sector, growth moderated across sub sector with mining, manufacturing, and construction activities growing by 2.69%, 4.52%, and 9.35% respectively in FY 2025, compared to 3.21%, 12.30%, and 10.41% in FY 2024. Growth in the utilities sector too moderated to 6.03% in FY 2025 from 8.64% in the previous year. The industrial sector's contribution to GVA moderated marginally from 30.81% in FY 2024 to 30.66% in FY 2025.



Source: Ministry of Statistics & Programme Implementation (MOSPI)

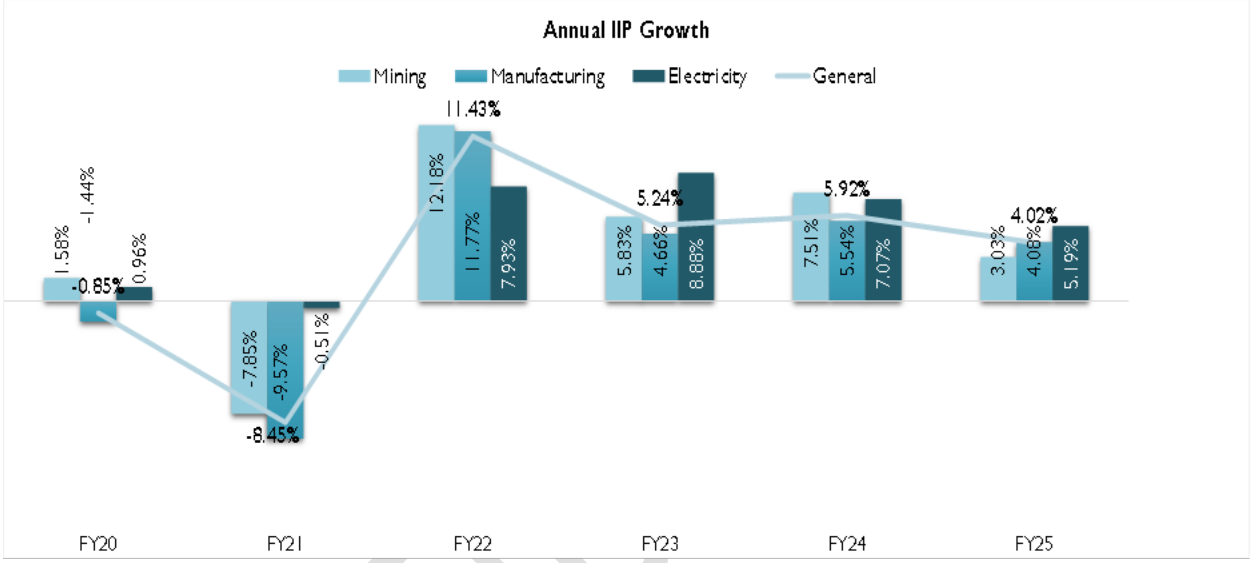
FE is Final Estimates, FRE is First Revised Estimate and PE is Provisional Estimates

The services sector continued to be the main driver of economic growth, although its pace moderated. It expanded by 7.19% in FY 2025 from 8.99% in FY 2024. The services sector retained its position as the largest contributor to GVA, rising from 54.32% in FY 2023 to 54.53% in FY 2024, with a further increase to 54.93% in FY 2025.

The agriculture sector saw an acceleration, with growth increasing from 2.66% in FY 2024 to 4.63% in FY 2025. However, its contribution to GVA declined marginally from 14.66% in FY 2024 to 14.41% in FY 2025. Overall, Gross Value Added (GVA) growth moderated to 6.41% in FY 2025 from 8.56% in FY 2024

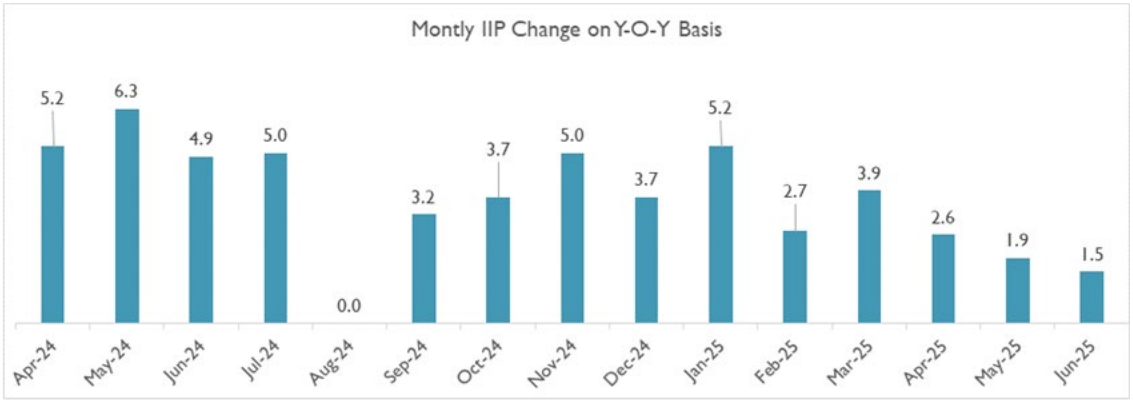
Industrial Activity in India

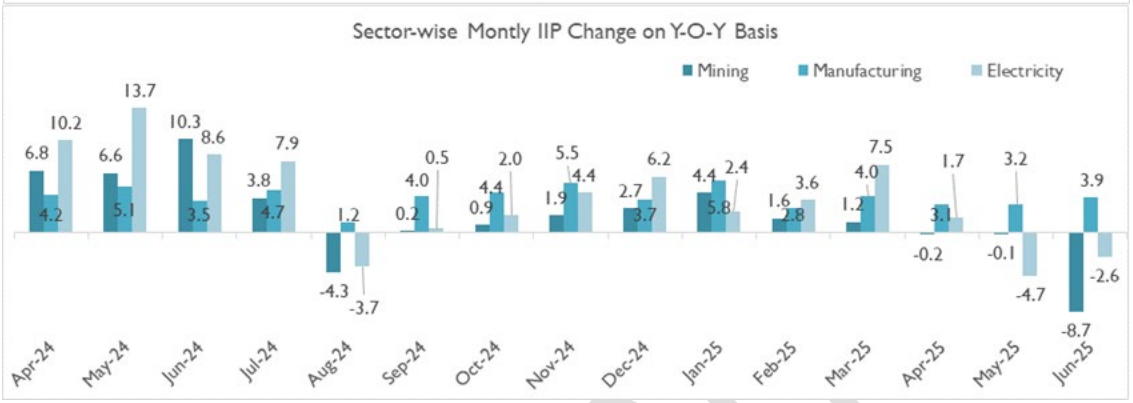
Industrial sector performance as measured by IIP index exhibited moderation in FY 2025, recording a 4.02% y-o-y growth against 5.92% increase in the previous year. The manufacturing index showed moderation and grew by 4.08% in FY 2025 against 5.54% in FY 2024. Mining sector index too moderated and exhibited a growth of 3.03% in FY 2025 against 7.51% in the previous years while the Electricity sector Index, also witnessed moderation of 5.19% in FY 2025 against 7.07% in the previous year.



Source: Ministry of Statistics & Programme Implementation (MOSPI)

The IIP growth rate for the month of June 2025 is 1.5% which was 1.9% in the month of May 2025. The growth rates of the three sectors, Mining, Manufacturing and Electricity for the month of May 2025 are (-)8.7%, 3.9% and (-)2.6% respectively.



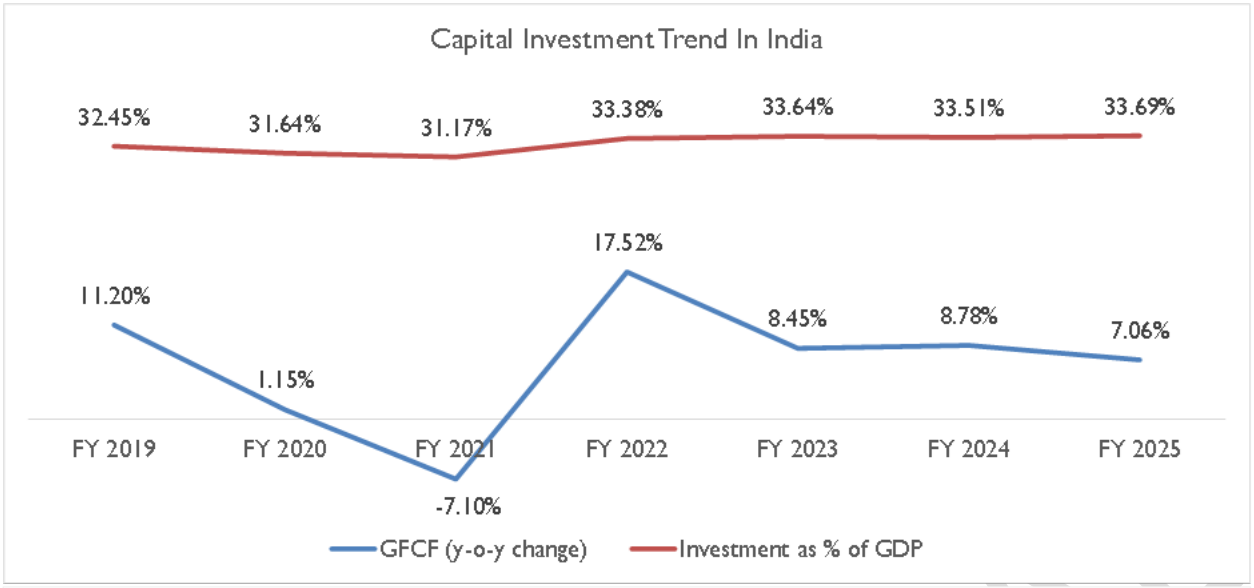


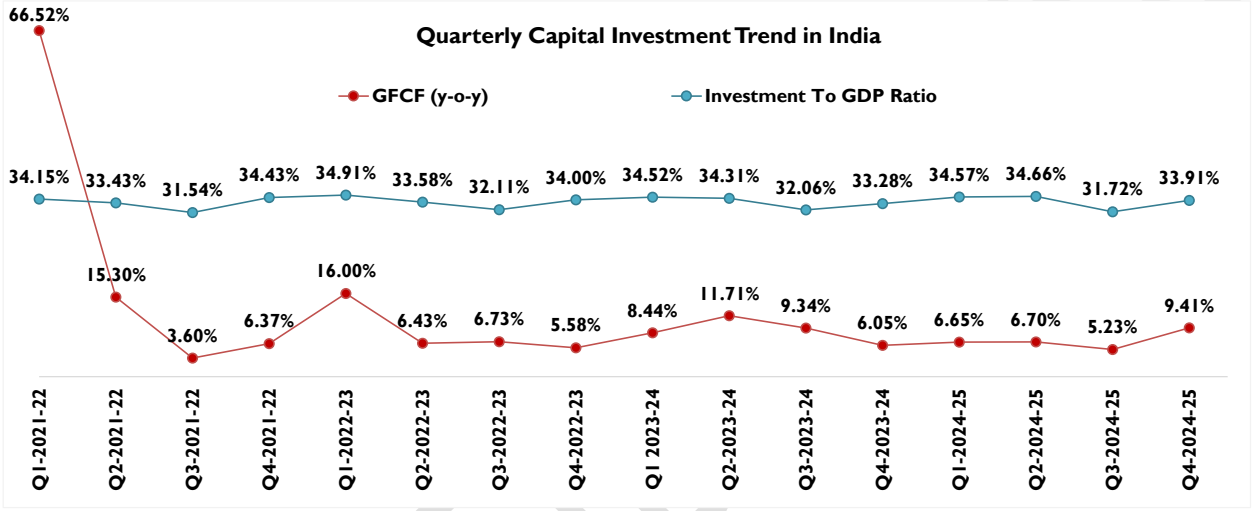
Source: Ministry of Statistics & Programme Implementation (MOSPI)

Investment & Consumption Scenario

Other major indicators such as Gross fixed capital formation (GFCF), a measure of investments, has shown fluctuation during FY 2025 as it registered 7.06% year-on-year growth against 8.78% yearly growth in FY 2024, taking the GFCF to GDP ratio measured to 33.69%.

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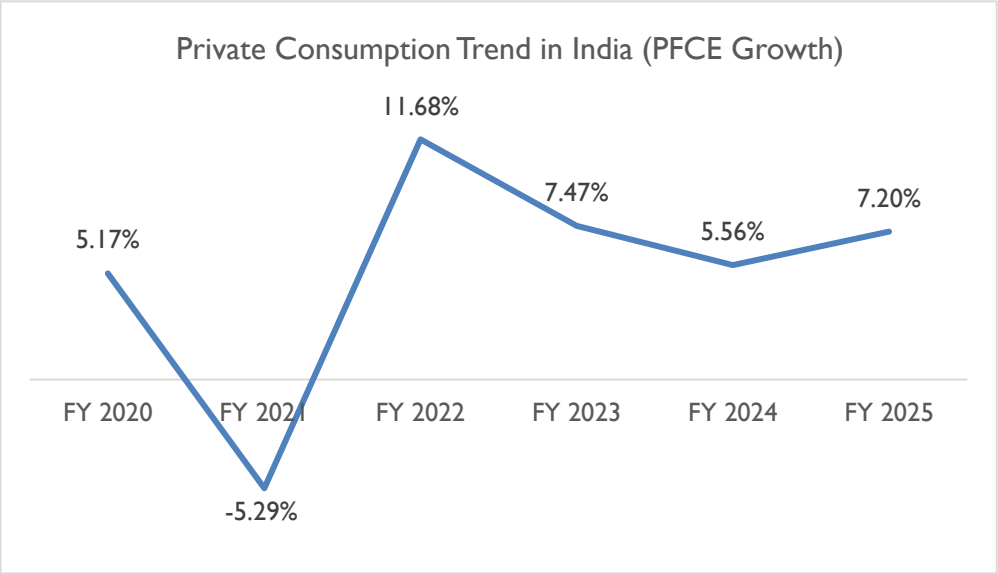


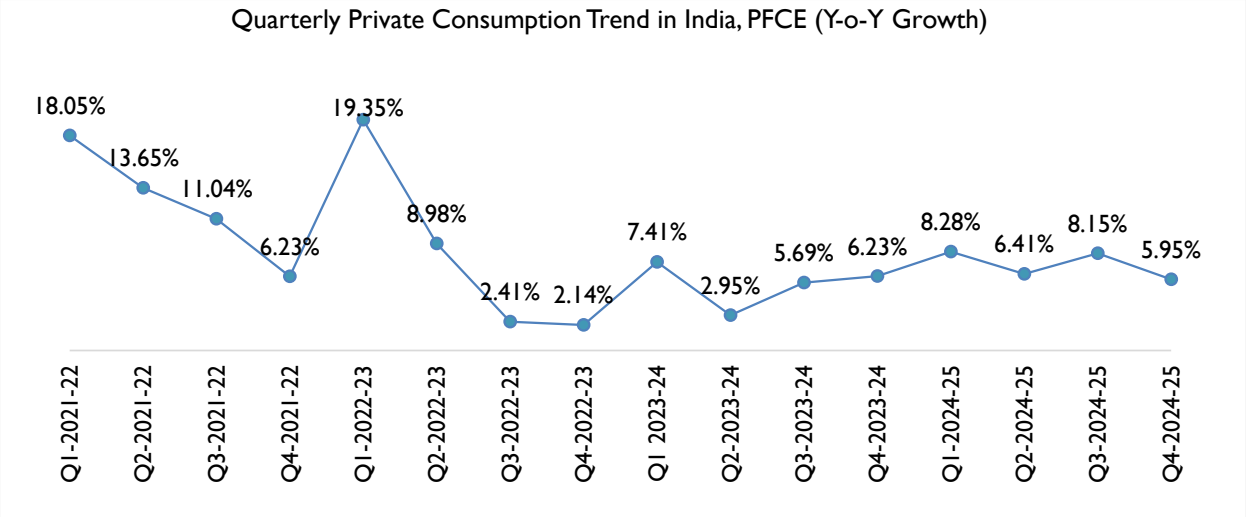
Source: Ministry of Statistics & Programme Implementation (MOSPI)

On quarterly basis, GFCF exhibited a fluctuating trend in quarterly growth over the previous year same quarter. In FY 2024, the growth rate moderated to 6.05% in March quarter against the previous two quarter as government went slow on capital spending amidst the 2024 general election while it observed an improvement in Q1 FY 2025 by growing at 6.65% against 6.05% in the previous quarter and moderated in the subsequent two quarter. On yearly basis, the growth rate remained lower compared to the same quarter in the previous year during FY 2025. The GFCF to GDP ratio measured 33.91% in Q4 FY 2025.

Private Consumption Scenario

Private Final Consumption Expenditure (PFCE) a realistic proxy to gauge household spending, observed growth in FY 2025 as compared to FY 2024. However, quarterly data indicated some improvement in the current fiscal as the growth rate improved over the corresponding period in the last fiscal.





Sources: MOSPI

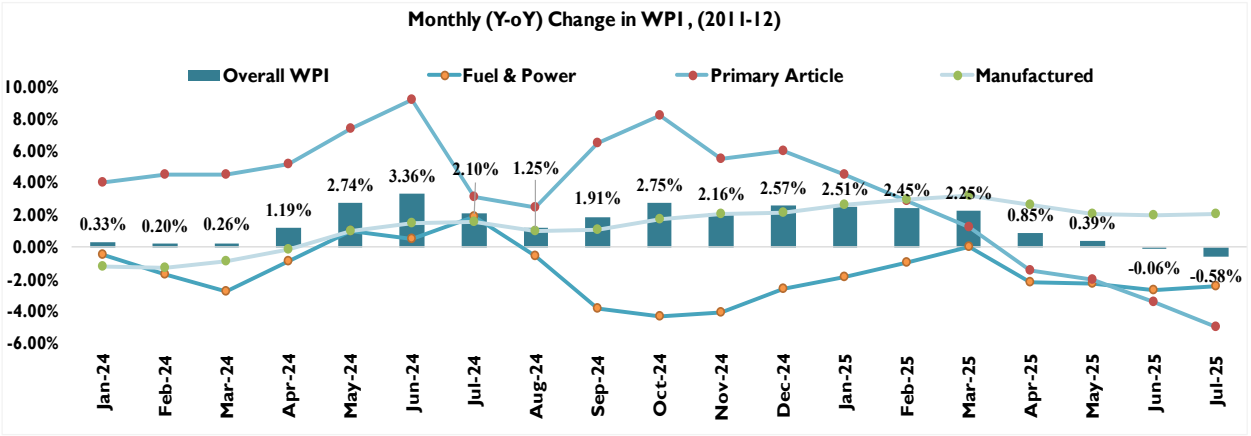
Inflation Scenario

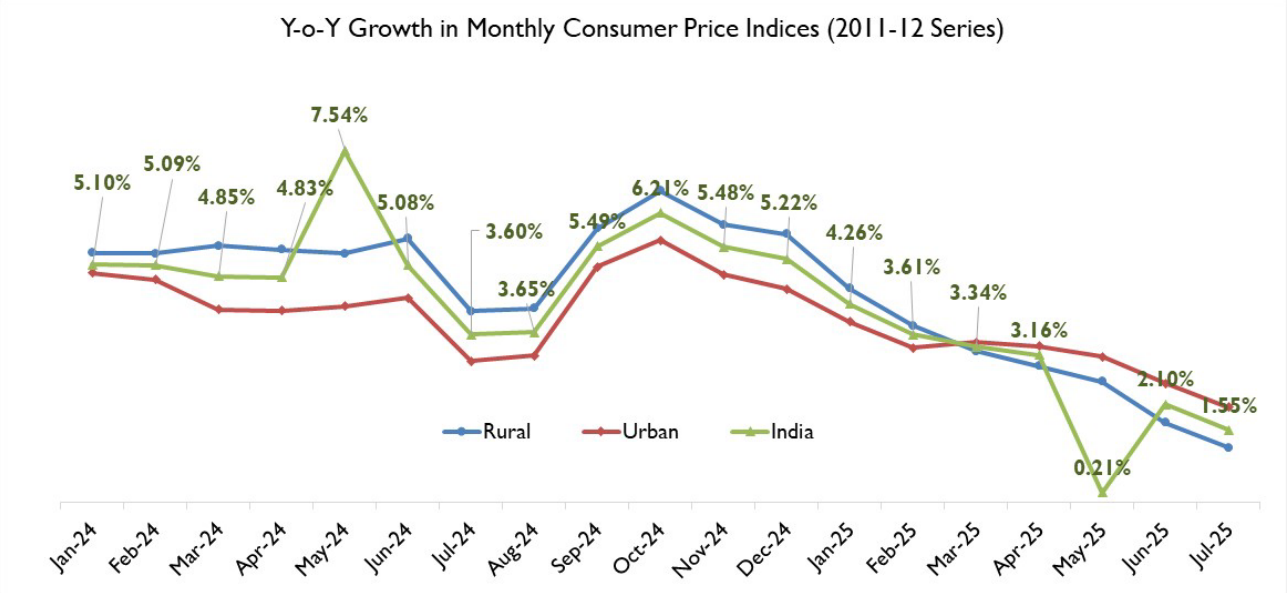
The inflation rate based on India's Wholesale Price Index (WPI) exhibited significant fluctuations across different sectors from January 2024 to July 2025. The annual rate of inflation based on All India Wholesale Price Index (WPI) number is (-) 0.58% (provisional) for the month of July, 2025 (over July, 2024). Negative rate of inflation in July 2025 is primarily due to increase in prices of manufacture of food products, electricity, other manufacturing, chemicals and chemical products, manufacture of other transport equipment and non-food articles etc.

By July 2025, Primary Articles (Weight 22.62%), - The index for this major group increased by 1.18 % from 185.8 (provisional) for the month of June 2025 to 188.0 (provisional) in July, 2025. Price of Crude Petroleum & Natural Gas (2.56%), non-food articles (2.11%) and food articles (0.96%) increased in July, 2025 as compared to June, 2025. The price of minerals (-1.08%) decreased in July, 2025 as compared to June, 2025.

Moreover, power & fuel, the index for this major group increased by 1.12% from 143.0 (provisional) for the month of June, 2025 to 144.6 (provisional) in July, 2025. The price of mineral oils (1.98%) increased in July, 2025 as compared to June, 2025. Price of coal (-0.44%) and electricity (-0.36%) decreased in July, 2025 as compared to June, 2025.

Furthermore, Manufactured Products (Weight 64.23%), The index for this major group declined by 0.14% from 144.8 (provisional) for the month of June, 2025to 144.6 (provisional) in July, 2025. Out of the 22 NIC two-digit groups for manufactured products, 9 groups witnessed an increase in prices, 9 groups witnessed a decrease in prices and 4 groups witnessed no change in prices. Some of the important groups that showed month-over-month increase in prices were other manufacturing; other transport equipment; motor vehicles, trailers and semi-trailers; other non-metallic mineral products and furniture etc. Some of the groups that witnessed a decrease in prices were manufacture of basic metals; fabricated metal products, except machinery and equipment; food products; chemicals and chemical products and paper and paper products etc in July, 2025 as compared to June, 2025.

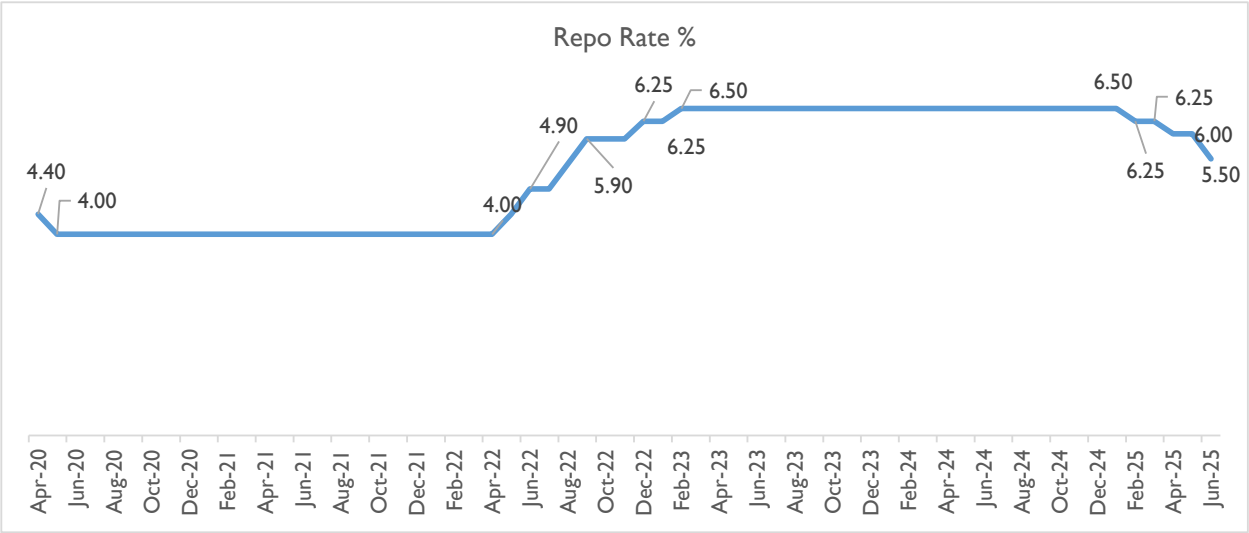




Source: MOSPI, Office of Economic Advisor

Retail inflation rate (as measured by the Consumer Price Index) in India showed notable fluctuations between January 2024 and July2025. Overall, the national CPI inflation rate moderated to 1.55% by July 2025, indicating a gradual easing of inflationary pressures across both rural and urban areas. Rural CPI inflation peaked at 6.68% in October 2024, declining to 1.18% in July 2025. Urban CPI inflation followed a similar trend, rising to 5.62% in October 2024 and then dropping to 2.05% in July 2025. CPI measured above 6.00% tolerance limit of the central bank since July 2023. As a part of an anti-inflationary measure, the RBI has hiked the repo rate by 250 bps since May 2022 and 8 Feb 2023 while it held the rate

steady at 6.50 % till January 2025. On 6th June 2025, RBI reduced the repo rate by 50 basis points which currently stands at 5.50%.



Sources: CMIE Economic Outlook

Rs vs USD Analysis

Rupee-USD Exchange Rate Trends

The value of Indian Rupee was Rs 58.78 /USD in May 2014 and it as on August 2025 was Rs 88.03/USD. Intensification of US Dollar against INR implies the economy is impacted positively owing to development of the export competitiveness of Indian exports. The strengthening of USD is also partly linked to the new tariffs imposed by the current U.S Administration imposed to relieve the trade deficit of U.S.

Devaluation of the rupee could rise due to the prices of imported goods. Though, the overall impact of exchange rate depreciation on domestic prices depends on the extent of the price-transmission of international commodity prices to the domestic market. Furthermore, the imports in the economy also depends on various factors including the demand and supply of commodities in the international market, kind of tradeable (i.e. essential or luxury items), freight costs, availability of substitutes goods etc. Thus, the impact of movement of the exchange rate on the import cost and hence on domestic

Growth Outlook

The Union Budget 2025-26 has laid the foundation for sustained growth by balancing demand stimulation, investment promotion and inclusive development. Inflation level is reaching within the central bank's target; the RBI may pursue further monetary easing that will support growth. The medium-term outlook is bright, fueled by the emphasis on physical and digital infrastructure spending.

With a focus on stimulating demand, driving investment and ensuring inclusive development, the budget introduces measures such as tax relief, increased infrastructure spending and incentives for manufacturing and clean energy. These initiatives aim to accelerate growth while maintaining fiscal discipline, reinforcing India’s long-term economic resilience.

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The expansion of tax relief i.e zero tax liability for individuals earning up to INR 12 lacs annually under the new tax regime is expected to strengthen household finances and, consequently, boost consumption.

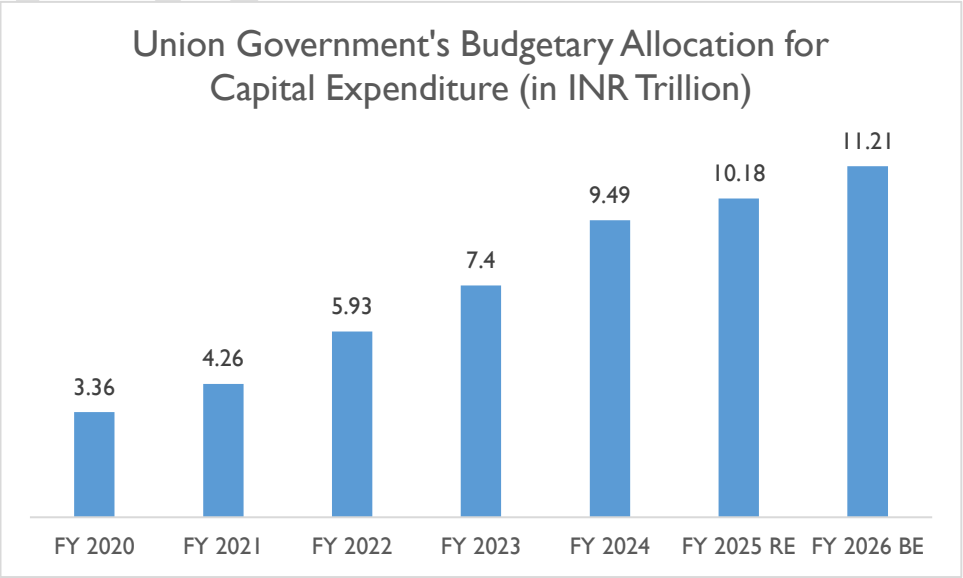
The external sector remains resilient, and key external vulnerability indicators continue to improve. However, tariff-related uncertainty is likely to weigh on exports and investment, prompting us to cut our CY26 GDP growth forecast to 6.4%.

Factors Supporting Growth

Government focus on infrastructure development

Infrastructure development has remained recurring theme in India's economic development. As India aims to grow to a USD 5 trillion economy by 2027, Construction sector that include Infrastructure construction will be critical for boosting economic growth as it is the key growth enabler for several other sector. Infrastructure development provides impetus to other sectors like cement, bitumen, iron and steel, chemicals, bricks, paints, tiles, financial services among others. A unit increase in expenditure in construction sector has a multiplier effect on other sectors with a capacity to generate income as high as five times in other sectors. The sector enjoys intense focus from the Government which is well reflection in higher budgetary allocations. To push the infrastructure development, government has also announced higher budgetary allocation, various arrangement for raising funds through road asset monetization plan and converting of NHAI's existing InvIT into a public one is also planned. With economic targeting to reach USD 5 trillion economy by 2027, demand for various infrastructure facilities such as power, cargo movement, passenger movement is likely to grow which necessitate steady capacity addition in infrastructure facilities.

The launch of flagship policies like National Infrastructure Pipeline (NIP), and PM Gati Shakti plan have provided the coordination & collaboration that was lacking earlier. Both NIP and PM Gati Shakti are ambitious billion-dollar plans that aim to transform India's infrastructure, elevating it to the next level. These projects are expected to improve freight movement, debottleneck the logistics sector, and improve the industrial production landscape, which would provide the incremental growth in GDP.



Union Budget, Government of India; RE – Revised Estimates ; BE – Budgeted Estimates

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Value in INR BN	FY'20	FY'21	FY'22	FY'23	FY'24	FY'25 RE	FY'26B.E	CAGR FY20-24	y-o-y Growth FY'26
Railway	678.42	299.26	1,172.71	1,592.56	2,426.48	2,523.77	2,520.00	37.52%	-0.10%
Road & Bridges	707.14	922.94	1,167.88	2,104.96	2,698.6 5	2,588.53	2,591.18	39.77%	0.10%
Energy & Power	13.74	30.19	35.2	20.83	69.99	59.77	106.46	50.23%	78.10%
Water Transport	0	0	4.68	5.44	10.11	7.08	12.55	NM	77.30%
Irrigation	2.59	1.33	1.59	1.38	1.8	2.41	4.86	-8.75%	101.50%
Urban Development	37.13	17.21	43.6	67.99	44.7	61.75	49.91	4.75%	-19.20%
Total of the above	1,439.02	1,270.92	2,425.65	3,793.17	5,251.74	5,243.31	5,284.96	38.22%	0.80%

y-o-y growth in FY 2026 is B.E. over RE, B.E is Budgeted Estimate and R.E. is revised estimates.

Witnessing the CAGR growth of the budgetary allocation historically, construction of the road & highway, railway, energy and power and Urban Infrastructure has remained a focused area over the period FY 2020-24. While in Union Budget 2025-26, spending towards energy and power, water transport and Irrigation increased substantially over the previous year revised estimated. Substantial budgetary allocation for the development of roads, railways, airports, and urban infrastructure, the government stimulates economic growth and improves public facilities.

Development of Domestic Manufacturing Capability

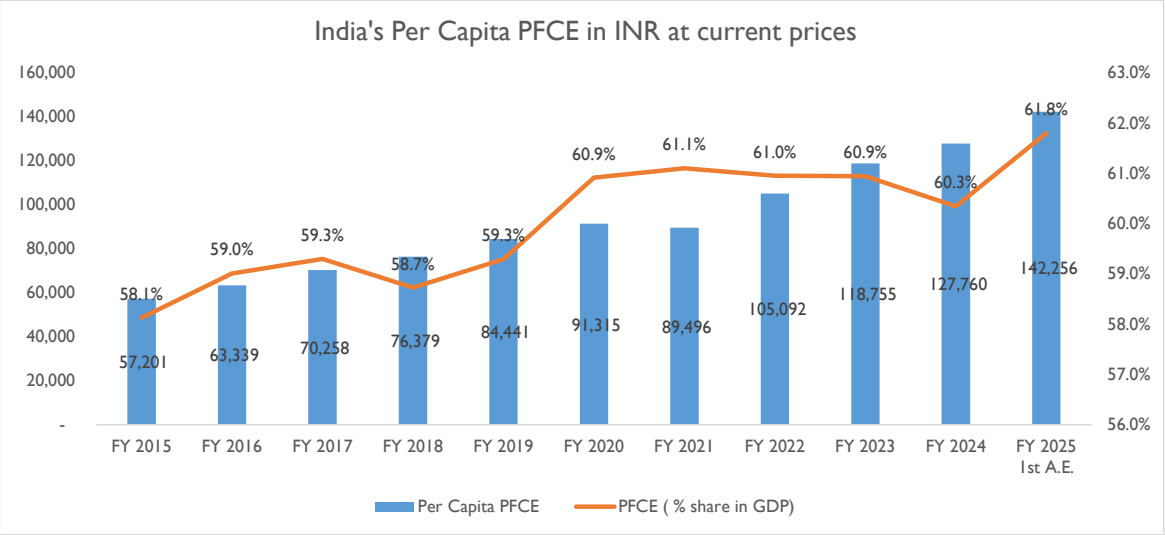
The Government launched Production Linked Incentive (PLI) scheme in early 2020, initially aimed at improving domestic manufacturing capability in large scale electronic manufacturing and gradually extended to other sectors. At present it covers 14 sectors, ranging from medical devices to solar PV modules. The PLI scheme provides incentives to companies on incremental sales of products manufactured in India. This incentive structure is aimed to attracting private investment into setting up manufacturing units and thereby beef up the domestic production capabilities. The overall incentives earmarked for PLI scheme is estimated to be INR 2 trillion. If fully realizing the PLI scheme would have the ability to add nearly 4% to annual GDP growth, by way of incremental revenue generated from the newly formed manufacturing units.

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Strong Domestic Demand

Domestic demand has traditionally been one of the strong drivers of Indian economy. After a brief lull caused by Covid-19 pandemic, the domestic demand is recovering. Consumer confidence surveys by Reserve Bank / other institutions are points to an improvement in consumer confidence index, which is a precursor of improving demand. India has a strong middle-class segment which has been the major driver of domestic demand. Factors like fast paced urbanization and improving income scenario in rural markets are expected to accelerate domestic demand further.

This revival is perfectly captured by the private final consumption expenditure (PFCE) metric. The PFCE at current prices is on steady rise from FY 2022 onwards. Between FY 2015-25, PFCE in India has improved by nearly 2.5 times its share in GDP has increased from 58.1% to about 61.8% in FY 2025 (as per the first advance estimates).

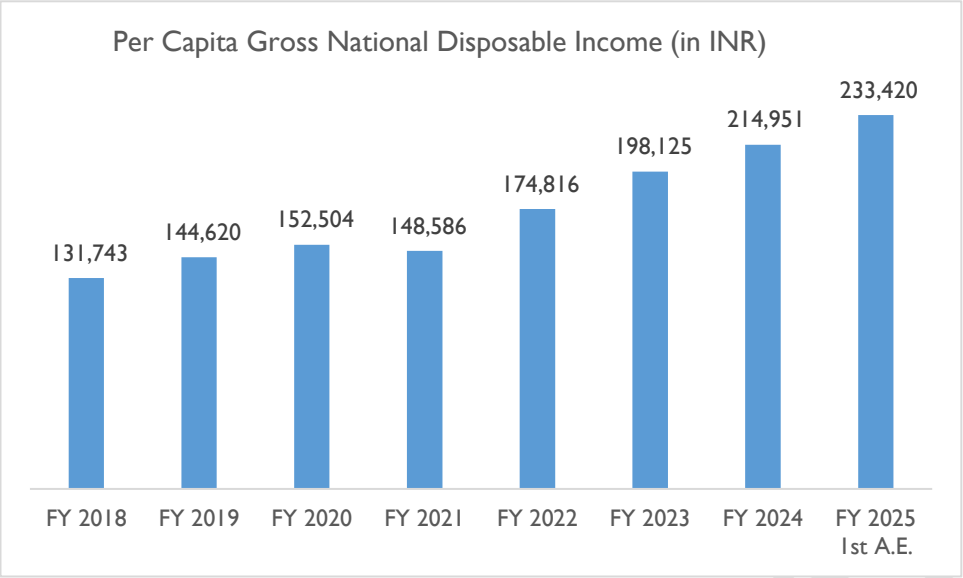


Source: Ministry of Statistics & Programme Implementation (MOSPI)

There are two factors that are driving this domestic demand: One the large pool of consumers and second the improvement in purchasing power.

- The share of middle class increased from nearly 14% in 2005 to nearly 30% in 2021 and is expected to cross 60% by 2047[1]. This expanding middle class household segment is fuelling India's growth story and would continue to play a key role in propelling India's economic growth.
- Consumer driven domestic demand is majorly fuelled by this growth in per capita income. As per National Statistics Office (NSO) As per National Statistics Office (NSO), India's per capita net national income (at constant prices) stood at INR 106,744 in FY 2024 against INR 99,404 in FY 2023 and INR 87,586 in FY 2018. This increase in per capita income has impacted the purchasing pattern as well as disposable income. The disposable income during the FY 2018-25 has increased from INR 131,753 to INR 233,420, increasing at CAGR 8.5% while in FY 2025 it is estimated to grow at 8.59% on year-on-year basis in FY 2025 against 8.49% in FY 2024.

[1] As per the survey conducted by People Research on India's Consumer Economy. Households with annual income in the range of INR 5 – 30 lakh is considered as middle-class households.



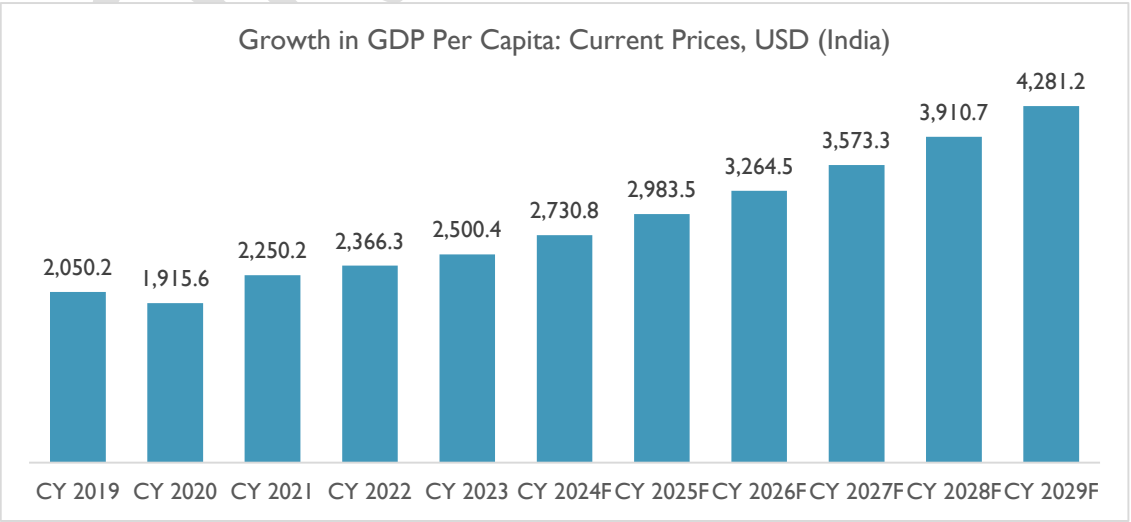
Source: Ministry of Statistics & Programme Implementation (MOSPI)

India's Per capita GDP trends

India is poised to become the world's third-largest economy with a projected GDP of USD 5 trillion within the next three years, driven by ongoing reforms. As one of the fastest-growing major economies, India currently holds the position of the fifth-largest economy globally, following the US, China, Japan, and Germany. By 2027-28, it is anticipated that India will surpass both Germany and Japan, reaching the third-largest spot.

This growth is bolstered by a surge in foreign investments and a wave of new trade agreements with India's burgeoning market of 1.4 billion people. The aviation industry is witnessing unprecedented orders, global electronics manufacturers are expanding their production capabilities, and suppliers traditionally concentrated in southern China's manufacturing hubs are now shifting towards India.

To achieve its vision of becoming the world's third-largest economy by 2027-28, India will need to implement transformative industrial and governmental policies. These policies will be crucial for sustaining the consistent growth of the nation's per capita GDP over the long term.



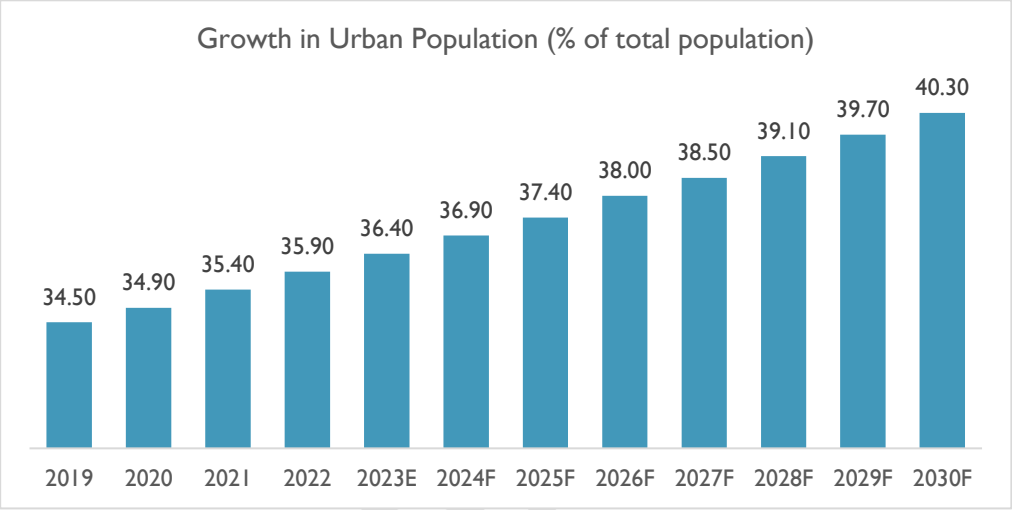
Source: IMF ; F- Forecasted

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From CY 2024-29, India's per capita GDP is projected to grow at a compound annual growth rate of 9.4%. This growth will be driven by the service sector, which now accounts for over 50% of India's GDP, marking a significant shift from agriculture to services.

Increasing Urbanization

As per the handbook of urban statistics 2022, India's urban population has been on a steady rise, with urban dwellers accounting for over 469 million in 2021, is projected to soar to over 558 million by 2031 and further exceed to 600 million by 2036.



Source: World Bank[2] D&B Research and Estimates, F – Forecasted

The share of urban population in total population has been quickly escalating. In 2019, 34.5% of the total population was urban. By 2023, this is estimated to have reached to 36.4%, showing an increment of 2.1% in a span of four years. The share of urban population is further forecasted to cross 40% by 2030. This increase in urban population is set to demand drastic changes in infrastructure development. Cities are a major driver for the construction industry. With cities expanding rapidly, there will be an increased need for improved housing, water supply, sewage systems, and electricity. Urban planning will need to account for higher population densities, necessitating the development of smart cities with integrated technology for efficient management of resources and services.

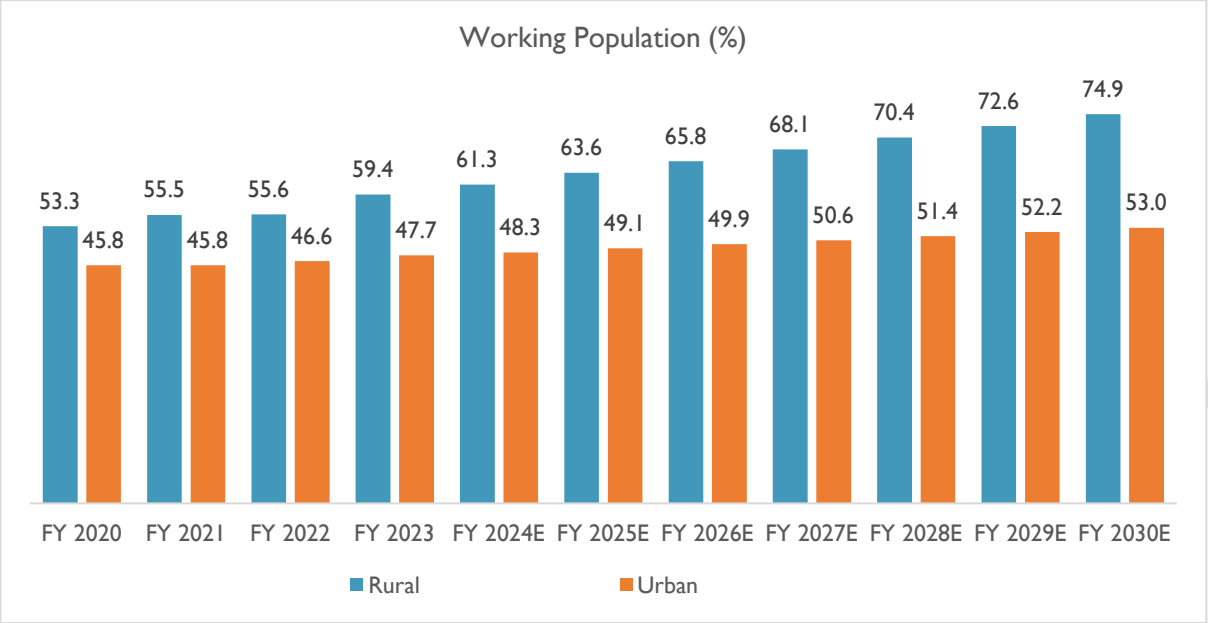
The Smart Cities Mission targeted at 100 cities is aimed at improving the quality of life through modernized/ technology driven urban planning. This transformation will also require significant investment in public health, education, and recreational facilities to enhance the quality of urban living. The surge in urban population will also propel demand for improvement in multimodal transport infrastructure for freight and passenger travel requirement.

Rural Vs Urban Working Population Age Group

As India continues to experience economic growth and development, the working population in both rural and urban areas is increasing. In case of urban population, this growth is marked from a share of 45.8% in FY20 to 47.7% in FY23, whereas in rural areas, it grew from 53.3% in FY20 to 59.4% in FY23.

[2] https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS?end=2022&locations=IN&skipRedirection=true&start=1960&view=chart

This growth is driven by a combination of factors, including demographic changes, economic policies, and the expansion of various industries. The rise in employment opportunities across sectors such as agriculture, manufacturing, services, and information technology has contributed to the overall increase in the working population, thereby fostering economic stability and enhancing the standard of living for many Indians.



Source: Periodic Labour Force Survey (PLFS) Annual Report 2022-2023, D&B Research and Estimates

In urban areas, the working population is growing rapidly due to the proliferation of jobs in sectors like IT, finance, retail, and healthcare. Additionally, the development of infrastructure, such as improved transportation networks and housing, has made urban centers more accessible and desirable for the working population. In rural areas, the working population remains substantial, primarily due to the dominance of the agricultural sector.

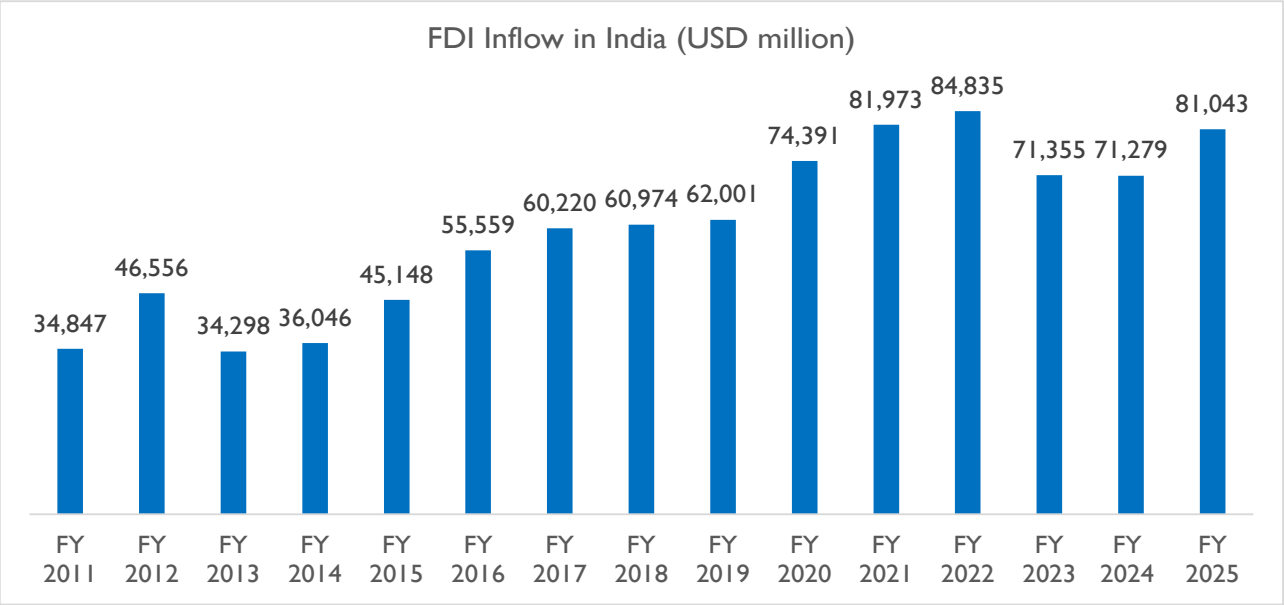
Government initiatives aimed at rural development, such as improved access to education and skill development programs, have also played a crucial role in enhancing employment prospects in these regions. The dominance of the rural working population over their urban counterparts can be attributed to the agricultural sector's labor-intensive nature ensures a consistent demand for human labor despite advancements in mechanization, sustaining employment rates in rural areas.

Foreign Direct Investment Trend in India

FDI inflow in India has observed a steady increase between FY 2013 till FY 2022 while it witnessed a decline of 15% in FY 2023 and of -0.1% in FY 2024 due to several factors, including the ongoing conflict between Russia and Ukraine, changes in US monetary policy, and other global uncertainties.

However, the country has received substantial FDI inflow between from April 2011-March 2025. This increasing FDI can be attributed to the new investment facilitation measures like the National Single-Window System (NSWS), which streamlines the approval and clearance process for investors, entrepreneurs, and businesses sectoral along with PLI schemes, emerging growth prospects in tier-2 and tier-3 cities.

Further, tax compliance for startups and foreign investors have been simplified where the Income Tax Act, 1961 has been amended in 2024 to abolish angel tax and to reduce income tax rate chargeable on income of a foreign company.



Sources: Department for Promotion of Industry and Internal Trade

- As per World Investment report 2025, India ranking improved by one position to rank 15th place for global FDI destinations, attracting USD 27.6 billion as an FDI destination in 2024, up from 16th in 2023.

  India ranked as the 4th largest recipient of greenfield projects with 1,080 greenfield projects in 2024 announcements, as per the World Investment Report 2025.

Digitization Initiatives

2006 – 2010	Early Initiatives & Foundation Building	Launch of National e-Governance Plan (NeGP) to improve Government services through integration of IT. Introduction of MeghRaj initiatives – National Cloud Computing Infrastructure
2011-2015	Transition to Digital Platform	Launch of Digital India campaign Introduction of Aadhaar program
2016 – 2020	Accelerated Modernization & Integration of Emerging Technologies	Implementation of GST, and subsequently the creation of GST Network (GSTN) Cloud adoption gains momentum National Artificial Intelligence Strategy to promote responsible & ethical use of AI
2021 – 2024	Focus on digital inclusion & citizen centric services	Expansion of broadband connectivity, promoting digital inclusion in rural areas.

Government Flagship Digital Policies

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While digitization of common citizen services has improved operational efficiencies as well as service delivery, it has generated massive data necessitating the requirement for a robust and flexible digital infrastructure. Subsequently the Government has scaled up its spending and budgetary allocation towards digital infrastructure updation, and adoption of cloud infrastructure.

Digital India Initiative

The Digital India program has spurred the development of citizen-centric applications like CoWIN and DigiLocker, emphasizing innovation, service quality, and operational efficiency. These apps have led to increased data generation and the need for flexible, scalable solutions. These solutions have significantly impacted vaccination distribution, worker registration, and document issuance, showcasing the tangible benefits of cloud technology adoption.

The scheme launched in 2015 is an umbrella program which covers programs including Aadhaar, country-wide rural broadband connectivity, common service centres, Bharat Interface for Money (BHIM), Aadhar enabled payment system, and MyGov program.

The Union Government in August 2023 approved the extension of Digital India programme for five years (period 2021-22 to 2025-26) with an outlay of INR 14,903 crore. The extension would focus on skill upgradation, IT infrastructure modernization, and improvement in cyber security, among others.

Adoption of Hybrid Cloud Model

Rapid digitization of citizen services has created massive volume of data, with varying sensitivity levels. This has created the need for a hybrid cloud strategy, which provides both flexibility as well as enhanced data security. The hybrid cloud model has facilitated initiatives such as the MyGov Saathi app, engaging over 2.5 crore users. Additionally, entities like the IT Regulators of India and the Development Authority of Maharashtra leverage hybrid cloud models for government-to-consumer operations.

The Government of India has embraced a cloud-first approach, aiming to make it the default option for ministries/departments to enhance citizen-centric services and internal efficiency. The introduction of MeghRaj in 2013 facilitated cloud technology benefits within the government sector, leading numerous ministries/departments to initiate their cloud journey. Despite progress, some entities hesitate due to concerns like data security, control after migration, data loss, and application compatibility. Central and state governments are actively promoting cloud awareness.

These investments and government policies are poised to position India to be a major contributor in the IT-BPM sector globally, as the country is witnessing consistent year-on-year growth every year.

As the IT-BPM sector is witnessing steady, consistent growth every year, the government has started focusing on investments promoting cloud services and hyper-scale data centers. This strategy is likely to attract investment of USD 5 billion annually by 2025, leading to an employment opportunity for 60-65 million with digital skills.

The industry added 60,000 net employees in FY 2024, with focus on digital skills including AI, cloud services, and cybersecurity. The advent of generative AI is garnering new companies and talent to expand its portfolio and redefining the service offerings to include AI-driven analytics, intelligent automation, and personalised customer interactions. These initiatives have led towards concentrated focus on Generative AI training across the country upskilling work force with Gen AI skills.

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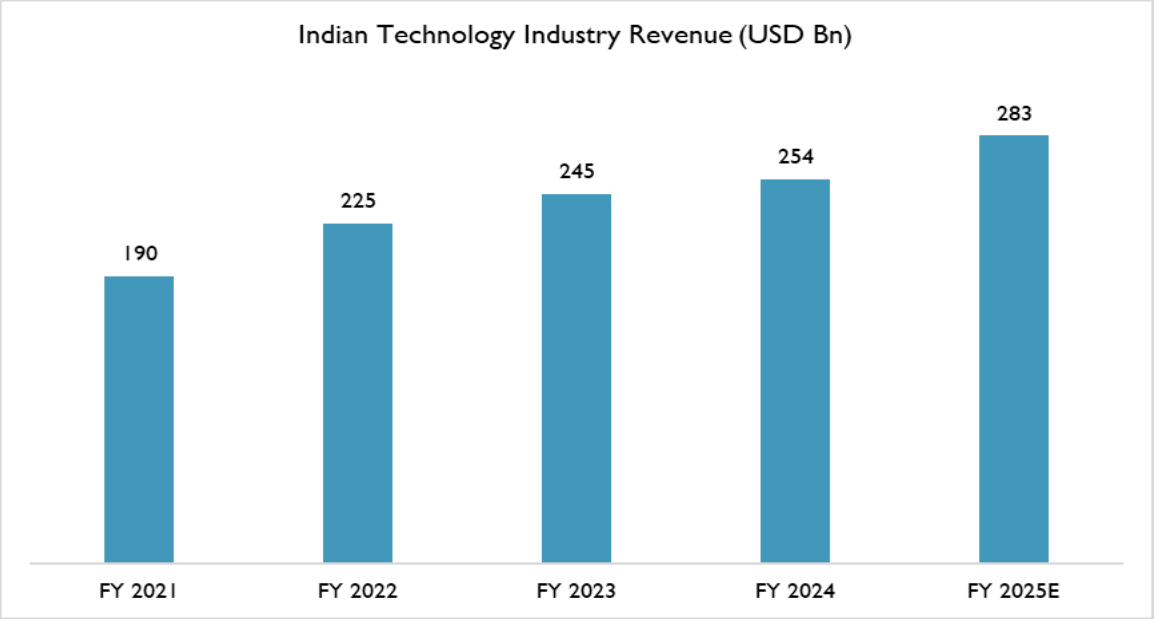
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Indian Information Technology Industry

Market Size & Historical Growth Trend

According to NASSCOM, the Indian Information Technology (IT) Industry is estimated to have clocked a revenue of USD 283 billion in FY 2025. Between FY 2021 – FY 2025, the revenue in the Indian Technology industry grew at a CAGR of 10%, recording a phenomenal growth.

Annual turnover in the industry grew by nearly 11.4% in FY 2025, up from approximately 3.8% that was recorded during the previous year. The moderation in growth during FY 2024 was primarily caused by unfavourable macroeconomic conditions, geopolitical uncertainties, and cautious spending by clients in the technology sector, resulting in delays in closing deals



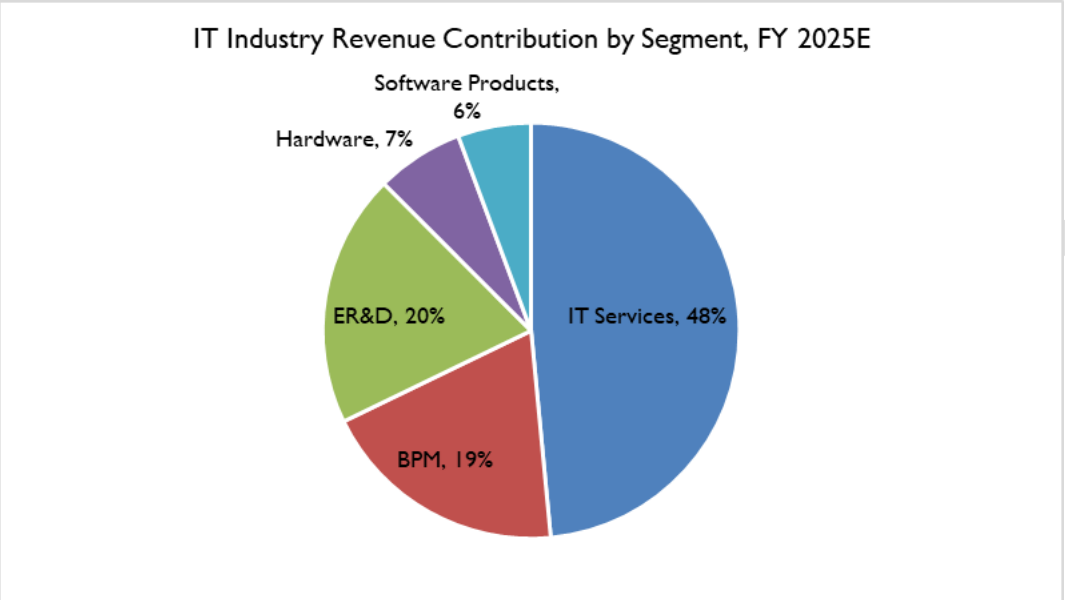
Source: NASSCOM

Over the past four quarters or so, technology firms, particularly those providing software services and generating a significant portion of their revenue from international markets like North America and Europe, have experienced subdued business activity due to the economic slowdown in these regions. However, there have been some positive factors, such as stronger performance in the engineering, research, and development (ER&D) sector, and the continued growth of global capability centers (GCCs), with India remaining a preferred location.

The Indian IT industry is export-oriented, with exports contributing to nearly 79% of total industry revenue in FY 2025. India's IT export revenue is estimated to have grown to USD 224 billion in FY 2025 from USD 200 billion in FY 2024, registering 12% Y-o-Y growth, while domestic IT industry revenue is estimated to have grown by 8.9% on a Y-o-Y basis to reach USD 59 billion in FY 2025.

Market Segmentation

By segmentation, the overall IT industry is estimated to earn 48% of the revenue from IT services while 19% from BPM services, 20% from ER&D, 7% from the IT hardware sector, and 6% from software products in FY 2025. During the past two years, the COVID-19 pandemic accelerated the technology adoption across industries as businesses relied on digital tools for resilience and business continuity. The overall industry revenue has been driven by the fast-paced digitization and cloud adoption.



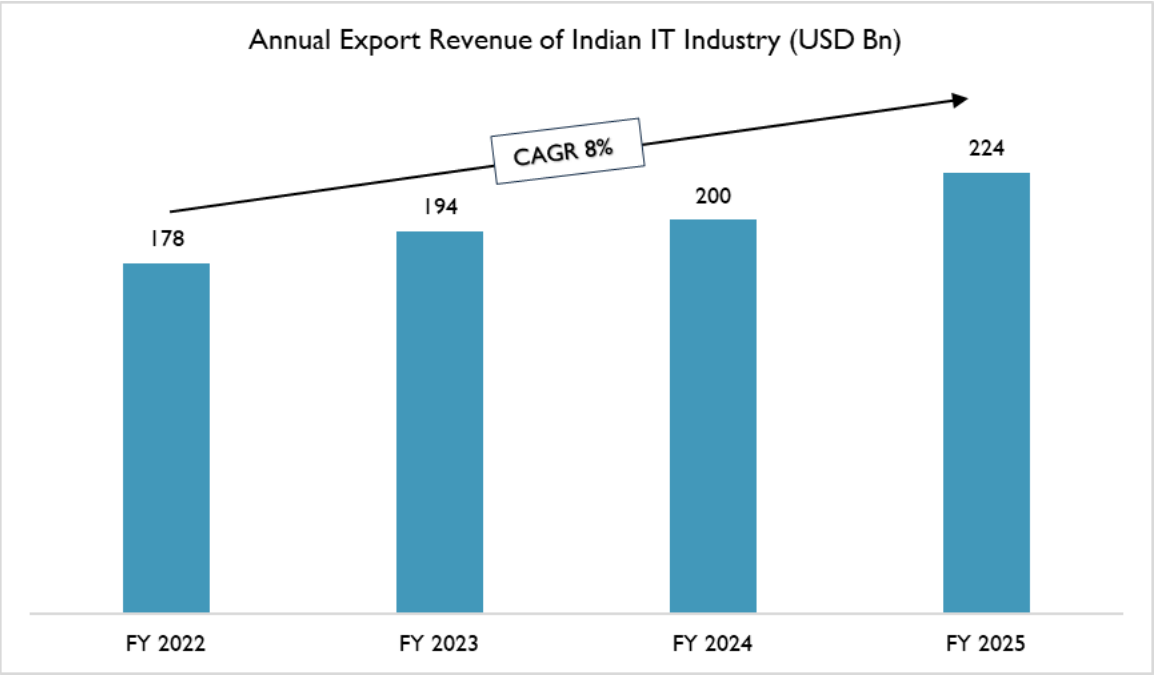
Source: NASSCOM

Export Revenue

The Indian IT industry is export-driven, with exports contributing ~79% of the industry revenue in FY 2025. Within exports, IT services export accounts for the largest share, while the share of hardware in exports is negligible, as IT hardware manufactured in India is primarily consumed to meet domestic demand. IT services export contributed the most to total industry revenue with nearly 51% share, followed by BPM and the ER&D.

In FY 2025, the value of export revenue generated by the IT industry is estimated to be USD 224 Bn, registering 12% y-o-y growth. Factors such as economies of scale, business risk mitigation, utilization improvement, and superior competency have all led to the growth of the Indian BPM industry.

The USA, UK, and EU remain the major markets for the IT software and services exports, accounting for ~90% of the total IT industry exports; however, there are new challenges surfacing in these traditional geographies. Consequently, India is exploring new opportunities in Asia Pacific (APAC), Latin America, the Middle East Asia, Europe, Japan, China, and Africa, along with catering to the demand in the traditional market.



Source: NASSCOM

Key Factors Driving Export Revenue

Large Talent Pool & Cost Competitiveness: Presence of a large employee base with high IT skills and a cost differential with their peers in the developed markets of the US and Europe has helped the country emerge as a sought-after IT outsourcing destination. As per industry estimates, labour cost efficiency is up to 30-40% more than source countries (primarily US) that gives a huge opportunity for the outsourcing business model to expand. The Indian IT industry is a global talent powerhouse and a representative of millennials, showcasing diversity and leadership in digital skills at competitive costs. With improving market conditions, the industry's net hiring increased by 126,000 employees in FY 2025, taking the total employee base to 5.80 million, a 2.2% y-o-y growth. India also boasts a digitally skilled talent pool of 1.6 million, supported by rising investments in learning and development budgets.

Global Technology Spending: Organizations worldwide have been preferring computerization as well as automation to streamline costs and increase operation efficiency, business. Moreover, amidst strict restriction during Covid, business looked technology as a solution to keep the business running and respond to consumers increasingly reliance to several online platform including gaming, digital content, social media, and E-commerce. Consequently, the global IT spending surged to USD 5.26 trillion in 2024 and is projected to grow by another ~9.3% in 2025 to about USD 5.74 trillion. This created great opportunities for the export-oriented Indian IT industry, which grew substantially.

Preferred Outsourcing Destination: Indian IT industry has earned more than 25 years of outsourcing experience and possesses a strong ecosystem. Indian companies are steadily upgrading their capabilities to rapidly adapt with emerging demand. With expanding GCC base and tech value proposition, India's continued to ranked 1st as sourcing destination with nearly 60% share in global outsourcing market which witnessed significantly higher growth reaching USD 224 billion in 2025.

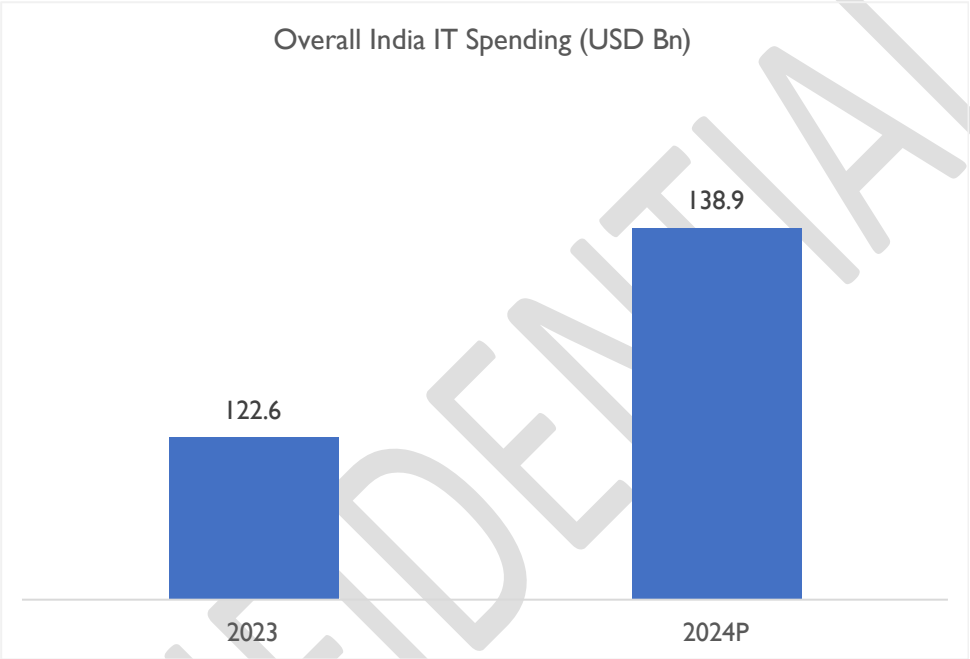
Growing Technology Absorption in Domestic Market: While the first phase of India's technology industry development was driven by export of software and services, the current boom is largely led by domestic demand. A major source of growth in domestic IT-BPM revenue has been Government initiatives and technology adoption

programmes by government for its citizen and inter- departmental services. Enterprise services comprising of M-wallets/m-banking for financial inclusion; digital marketing; online payments; analytics; automotive (EV/autonomous vehicles); etc. and smart projects comprising of smart city, transportation, utilities buildings, etc., E-commerce.

Domestic IT Spending in India

Market Scenario

The Indian IT sector is experiencing a boom, with overall spending projected to reach a staggering USD138.9 billion in 2024, reflecting a healthy 13.2% growth from 2023. This surge is fueled by a collective increase across all major segments: Data Center Systems, Devices, Software, IT Services, and Communication Services.

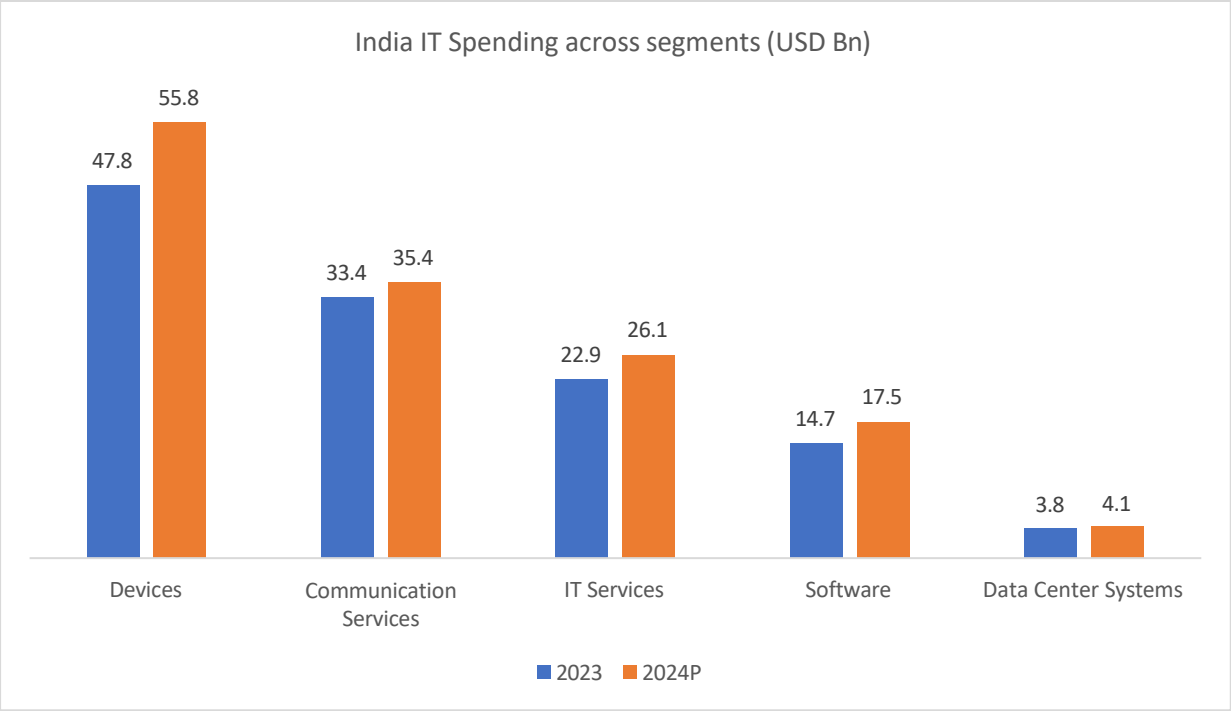


Source: As per Gartner, sourced from public domain

Leading the pack is the software segment, anticipated to witness the highest growth rate of 18.6% in 2024. This can be attributed to factors like rising adoption of cloud-based solutions, increased demand for security software, and the growing importance of enterprise resource planning (ERP) tools. Businesses are actively investing in software that streamlines operations, enhances data management, and fosters innovation.

The devices segment is also expected to experience significant growth of 16.9% in 2024. This could be due to a combination of factors such as the need for upgrading to newer devices with better functionalities, and the increasing penetration of smartphones and tablets across various demographics.

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Source: As per Gartner, sourced from public domain

IT services, a major strength of the Indian IT industry, is projected to reach USD 26.1 billion in 2024, reflecting a growth of 14%. This continued growth indicates a strong demand for services like application development, systems integration, and managed IT services. Companies are increasingly outsourcing these tasks to leverage India's skilled workforce and cost-effectiveness.

Data center spending is expected to reach USD 4.1 billion in 2024, showing a growth of 9.3%. This growth is likely driven by the expanding need for data storage and processing capabilities as businesses create and manage ever-growing volumes of data.

Communication services, though experiencing a slower growth rate of 5.8% compared to other segments, are still expected to reach USD 35.4 billion in 2024. This indicates a steady investment in communication infrastructure, including cloud-based solutions and enhanced bandwidth capabilities, to facilitate seamless information sharing and collaboration in a digital ecosystem.

Market Segmentation

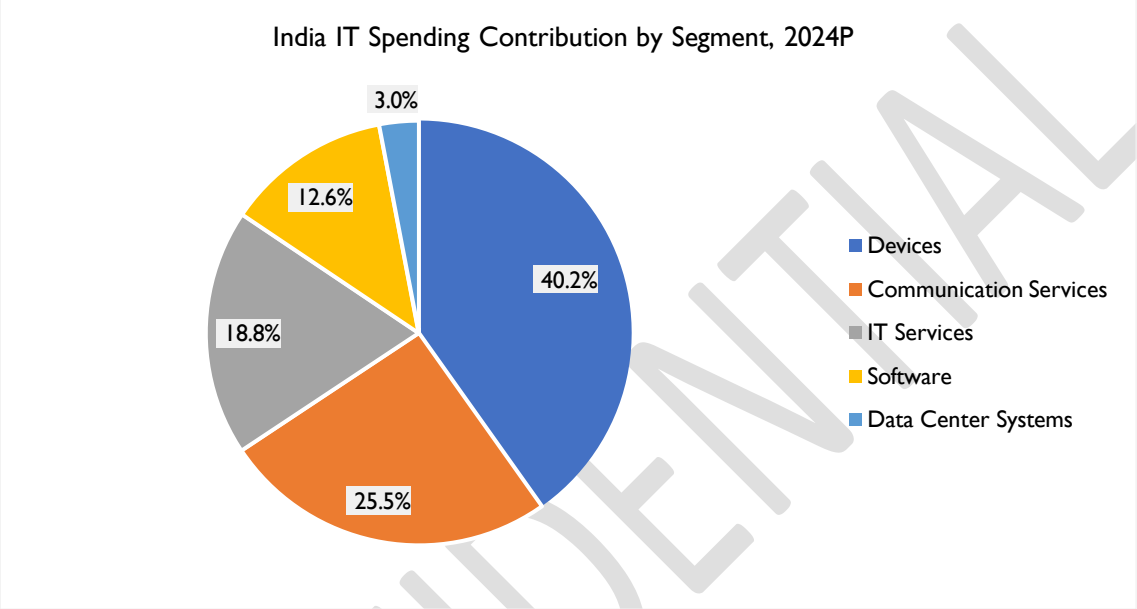
Devices (40.2%) takes the largest share, signifying a significant investment in hardware. This segment likely encompasses expenditures on computers (desktops, laptops), mobile devices (smartphones, tablets), peripherals (printers, scanners), and other endpoint equipment. The high percentage indicates a large and growing need for IT hardware to support digital transformation initiatives across businesses and individuals.

Communication Services (25.5%) comes in second, highlighting the importance of robust connectivity. This segment likely covers spending on internet access, data plans, network infrastructure, and potentially cloud communication services. The significant investment reflects the growing importance of reliable and high-speed connectivity for cloud adoption and real-time collaboration.

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IT Services (18.8%) reflects a strong focus on outsourcing IT operations, system management, and application development. This segment caters to businesses that leverage external expertise to manage their IT needs. Software (12.6%) represents spending on various software applications, including operating systems, enterprise resource planning (ERP) tools, customer relationship management (CRM) software, and industry-specific applications that drive business processes.

Data Center Systems (3.0%) constitutes a smaller portion but represents a growing area. As businesses migrate towards cloud computing and data analytics, investments in data center infrastructure and related technologies are expected to rise.



Source: As per Gartner, sourced from public domain

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Private Sector IT Spending Trends in India

In recent years, India's corporate sector has embarked on a transformative journey driven by IT modernization and digital transformation. This paradigm shift has been catalyzed by rapid technological advancements, changing consumer behaviors, and evolving market dynamics. As organizations across various industries strive to stay competitive and relevant in an increasingly digital world, the adoption of innovative technologies and digital strategies has become imperative.

The digital era has ushered in a new wave of transformation, reshaping traditional business models and revolutionizing industry landscapes. Digital transformation encompasses the integration of digital technologies across all aspects of business operations, including customer engagement, product development, supply chain management, and workforce collaboration. In India, digital transformation has emerged as a strategic imperative for organizations seeking to enhance agility, drive innovation, and deliver superior customer experiences in a rapidly evolving marketplace.

Several key factors are driving the push towards IT modernization in India's corporate sector:

- Technological Innovation: The relentless pace of technological innovation, fueled by advancements in cloud computing, artificial intelligence, machine learning, and data analytics, is empowering organizations to reimagine business processes and unlock new opportunities for growth and efficiency.
- Changing Consumer Expectations: Today's consumers demand seamless, personalized, and convenient experiences across digital channels. Organizations are under pressure to adapt to these changing expectations by leveraging digital technologies to deliver exceptional customer experiences.
- Competitive Pressures: Intense competition in domestic and global markets is compelling organizations to embrace digital transformation as a means of gaining a competitive edge. Businesses that fail to innovate and modernize risk being left behind in an increasingly digital marketplace.

Digital Transformation Initiatives

Digital transformation has become a cornerstone of growth and innovation for the corporate sector in India. Fueled by technological advancements and changing market dynamics, organizations across industries are embracing digital initiatives to enhance efficiency, agility, and customer-centricity. Given below are the key digital transformation initiatives driving progress in India's corporate sector:

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E-commerce and Omnichannel Strategies:

With the proliferation of smartphones and internet connectivity, e-commerce has emerged as a pivotal driver of digital transformation in the corporate sector of India. Organizations are investing in robust e-commerce platforms and omnichannel strategies to reach customers across multiple touchpoints seamlessly. From online marketplaces to mobile applications, companies are leveraging digital channels to enhance customer engagement, drive sales, and build brand loyalty.

Cloud Computing and Infrastructure Modernization:

Cloud computing has revolutionized the way businesses manage and deploy IT infrastructure, enabling scalability, flexibility, and cost efficiency. Organizations in India are migrating their workloads to cloud platforms such as Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform to streamline operations, accelerate innovation, and drive digital transformation. By leveraging cloud-native technologies, companies can modernize their IT infrastructure, improve agility, and unlock new capabilities for growth.

Data Analytics and Business Intelligence:

Data has emerged as a strategic asset for organizations seeking to gain actionable insights and make informed decisions. Digital transformation initiatives in India's corporate sector include investments in data analytics and business intelligence tools to harness the power of data. From predictive analytics to real-time dashboards, companies are leveraging advanced analytics techniques to uncover trends, identify opportunities, and drive operational efficiency. Data-driven decision-making is becoming increasingly central to business strategies, enabling organizations to stay competitive in a rapidly evolving marketplace.

Artificial Intelligence and Machine Learning:

Artificial intelligence (AI) and machine learning (ML) are transforming business processes and customer experiences across industries. In India, organizations are leveraging AI and ML technologies to automate repetitive tasks, personalize customer interactions, and optimize operations. From chatbots and virtual assistants to predictive maintenance and fraud detection, AI-powered solutions are driving efficiency, innovation, and value creation. By harnessing the power of AI and ML, companies can unlock new revenue streams, improve productivity, and deliver superior customer experiences.

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Cybersecurity and Risk Management:

As digitalization accelerates, cybersecurity has become a top priority for organizations looking to protect their assets, data, and reputation. Digital transformation initiatives in India's corporate sector include investments in cybersecurity solutions and risk management frameworks to mitigate threats and vulnerabilities. From network security and endpoint protection to threat intelligence and incident response, companies are adopting a proactive approach to cybersecurity to safeguard against cyber-attacks and data breaches. By implementing robust security measures and fostering a culture of cybersecurity awareness, organizations can build trust with customers, partners, and stakeholders.

IT Infrastructure Industry

The IT industry plays a pivotal role in driving India's overall economic growth. The industry contributed 7.3% to India's GDP in FY 2024, compared to 7.5% in FY 2023 and 7.4% in FY 2022. The IT industry added an impressive 1.26 lakh new jobs in FY 2025, taking the total workforce to 5.80 million people.

IT infrastructure services provide the foundation for India's digital transformation by building and managing data centers, networks, and cloud platforms. This ensures ubiquitous internet access, critical for connecting citizens, businesses, and government entities.

Reliable and secure IT infrastructure facilitates the adoption of digital technologies like cloud computing, AI, and IoT across sectors like healthcare, education, banking, and agriculture. This translates to improved efficiency, transparency, and innovation within these sectors. Government initiatives like Digital India rely heavily on robust IT infrastructure for delivering citizen-centric services like e-KYC, e-payments, and online education platforms.

Key Segments

Workplace Services:

The workplace services segment within the IT infrastructure sector goes beyond just maintaining and managing technology within an organization's physical space. It encompasses a comprehensive approach to supporting an increasingly complex and digital work environment. The workplace is evolving rapidly, with remote and hybrid work models becoming increasingly common. This demands flexible and scalable workplace services that cater to a distributed workforce. Cloud-based solutions are gaining traction in workplace services, providing cost-effectiveness, accessibility, and improved collaboration capabilities. Workplace services are no longer siloed but are increasingly integrated with broader business objectives, focusing on user experience, productivity, and overall employee engagement.

Key Services and Trends:

- End-user Support: Evolving from traditional helpdesks to self-service portals and AI-powered chatbots for faster and more personalized assistance.
- Network and Security Management: Emphasis on proactive monitoring, threat detection, and zero- trust security models to ensure data protection and compliance.
- Mobility Management: Managing diverse device types, securing access to corporate resources, and facilitating secure mobile productivity tools.
- Unified Communications and Collaboration: Integrating voice, video, and data tools for seamless communication and collaboration across locations and devices.

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- Workplace Automation: Automating routine tasks like device provisioning, password resets, and patching vulnerabilities for improved efficiency and reduced downtime.
- Digital Workspace Management: Providing a personalized and secure digital workspace with access to applications, data, and tools based on individual roles and needs.
- Workplace Analytics: Utilizing data insights to optimize IT services, improve user experience, and identify areas for cost reduction.

Data Security:

Data security plays a critical role in today's digital landscape, safeguarding sensitive information from ever- evolving threats. This segment within IT infrastructure focuses on protecting data from unauthorized access, use, disclosure, disruption, modification, or destruction. Cybercriminals are constantly evolving their tactics, making data security an ongoing challenge. This necessitates staying updated on the latest threats and adopting a layered security approach. Data privacy regulations like GDPR and CCPA are becoming increasingly stringent, demanding robust data protection measures. The growing adoption of cloud services introduces new security considerations, requiring securing data across on-premises and cloud environments.

Key Services and Trends:

- Network Security: Implementing firewalls, intrusion detection/prevention systems (IDS/IPS), and vulnerability management solutions to protect networks from unauthorized access and malicious activity.
- Endpoint Security: Deploying antivirus, anti-malware, and endpoint detection and response (EDR) solutions to secure individual devices from malware and intrusions.
- Identity and Access Management (IAM): Establishing robust IAM practices including multi-factor authentication and role-based access control to ensure only authorized users can access specific data and systems.
- Data Encryption: Encrypting data at rest and in transit using industry-standard algorithms to protect its confidentiality even if compromised.
- Data Backup and Recovery: Implementing comprehensive backup and recovery strategies to ensure data can be restored quickly and efficiently in case of disasters or cyberattacks.
- Cloud Security: Utilizing cloud-specific security solutions like cloud access security brokers (CASBs) and data loss prevention (DLP) to secure data in cloud environments.
- Security Information and Event Management (SIEM): Using SIEM tools to aggregate and analyze security data from various sources, identifying potential threats and providing insights for improved security posture.

Physical infrastructure/data Center services:

The physical infrastructure/data center services segment forms the backbone of the IT infrastructure sector. It focuses on providing the physical foundation and associated services to house and manage the critical IT equipment that powers our digital world

Services and Solutions:

- Colocation: Organizations rent space and power within a data center provider's facility to house their IT equipment. This offers cost-efficiency, scalability, and access to advanced infrastructure.

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- Managed Hosting: Service providers manage and maintain IT infrastructure on behalf of an organization, including servers, storage, network equipment, and operating systems. This frees up internal resources and expertise.
- Disaster Recovery: Providers offer backup data centers and infrastructure to ensure business continuity in case of outages or disruptions at the primary location.
- Cloud Data Center Services: This encompasses various cloud deployment models (public, private, and hybrid) where infrastructure elements like servers, storage, and networking are delivered as a service.
- Edge Computing Services: Infrastructure deployed closer to where data is generated (e.g., factory floor, retail store) to process and analyze data locally, minimizing latency and improving performance.

Trends Shaping the Segment:

- Hyperscale Data Centers: Growing demand for large, scalable data centers capable of supporting massive computing workloads, often driven by cloud providers and large enterprises.
- Edge Computing Adoption: The rise of IoT and real-time applications necessitates processing data closer to its source, leading to increased adoption of edge computing services.
- Green and Sustainable Data Centers: Growing focus on reducing the environmental impact of data centers through energy-efficient technologies, renewable energy sources, and innovative cooling solutions.

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IT Infrastructure Management Services

IT Infrastructure Management Services (IMS) encompass a range of services focused on the planning, design, implementation, operation, and ongoing management of an organization's IT infrastructure. This includes hardware, software, networks, data centers, and the associated processes necessary to deliver reliable and efficient IT services. IMS are critical for ensuring the smooth operation, security, and optimization of the technical backbone that supports businesses in India's rapidly expanding digital economy.

Key Offerings	
anaged Data Center Services	• Colocation: Renting space and power in a data center to house IT equipment. Provides robust physical infrastructure and security. • Managed Hosting: Outsourcing the entire management of servers, storage, and networking equipment to a service provider. • Disaster Recovery as a Service (DRaaS): Backup and recovery sites, often in the cloud, to facilitate business continuity during unexpected disruptions.
Network Management Services	• Network Operations Center (NOC): Real-time monitoring, troubleshooting, and optimization of network performance and availability. • SD-WAN Management: Software-defined wide area network solutions for improved network flexibility and cost optimization. • Managed Security: Firewall management, intrusion detection, and security information and event management (SIEM) to protect networks from threats.
Cloud Infrastructure Services	• Infrastructure as a Service (IaaS): Provisioning of virtualized compute, storage, and network resources on demand. • Platform as a Service (PaaS): Cloud-based platforms for software development and deployment. • Software as a Service (SaaS): Cloud-delivered applications accessible over the internet. • Cloud Migration and Management: Assisting businesses to move workloads and applications to the cloud, along with ongoing optimization.

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Transition in IT Infrastructure Industry

Cloud computing has revolutionized the way businesses manage their IT infrastructure. The shift from traditional on-premises setups to cloud-based models has fundamentally altered how IT resources are provisioned, managed, and consumed.

Traditional Hardware-Dominated Infrastructure

- Capital Expenditure (CapEx) model: Businesses had to invest heavily in procuring and maintaining physical IT infrastructure, including servers, storage, networking equipment, and data centers.
- Capacity Planning: Organizations needed to forecast their future needs, often overprovisioning resources to handle peak demand, leading to underutilized capacity.
- In-House Management: IT teams were responsible for the entire hardware and software lifecycle – procurement, deployment, maintenance, upgrades, and troubleshooting.
- Limited Scalability: Scaling IT resources up or down to match changing needs was often a time- consuming and expensive process.
- Security & Compliance Challenges: Ensuring robust security and meeting compliance standards in a traditional on-premises environment could be complex and demanding.

The Rise of Cloud Infrastructure

- Operational Expenditure (OpEx) model: The cloud introduced a pay-as-you-go approach where businesses pay for only the computing resources they use, converting IT costs into operational expenses.
- On-Demand Provisioning: Businesses can quickly provision resources as needed, without upfront investments or capacity planning concerns.
- Managed Services: Cloud providers handle much of the IT infrastructure management, including hardware maintenance, software updates, and security patching, freeing up internal IT resources.
- Rapid Scalability: Cloud infrastructure provides near-instant scalability to accommodate fluctuating workloads, eliminating the need for overprovisioning and supporting business agility.
- Enhanced Security & Compliance: Cloud providers invest heavily in advanced security measures and often offer compliance-ready solutions, easing the burden on organizations.

Driving Factors for Cloud Adoption

- Cost Savings: The pay-as-you-go model eliminates significant upfront capital expenditures and reduces ongoing IT management costs.
- Agility & Flexibility: Cloud allows businesses to experiment, innovate, and adapt quickly to market demands by readily scaling resources to support growth or new initiatives.
- Focus on Core Business: Reduced IT management burden allows organizations to focus on their core competencies and business goals.
- Accessibility: Cloud-based resources can be accessed from anywhere, enabling remote work and collaboration.

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- Technological Advancements: Continuous innovation and improvements in cloud technology, such as microservices and containerization, offer greater flexibility and better performance.

Challenges and Considerations

- Vendor Lock-in: Migrating to the cloud can sometimes create potential dependency on a specific cloud provider, making switching difficult.
- Security & Privacy Concerns: While cloud providers implement robust security measures, some organizations still have reservations about storing sensitive data in the cloud.
- Regulatory Compliance: Understanding and adhering to compliance requirements specific to the cloud and the industry is crucial.
- Hybrid Cloud Landscapes: Many organizations adopt a hybrid cloud approach, blending on- premise infrastructure with cloud services, leading to increased complexity.

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Start-Up Segment and its Impact in IT Infrastructure Industry

India has emerged as a hub for technology start-ups in recent years, with a growing ecosystem fostering innovation and entrepreneurship. This surge in start-up activity has not only transformed the business landscape but also significantly impacted the IT infrastructure industry.

India's technology start-up ecosystem has witnessed exponential growth fueled by factors such as increasing internet penetration, availability of skilled talent, supportive government policies, and access to venture capital funding. Start-ups across various sectors including e-commerce, fintech, health tech, edtech, and SaaS have proliferated, leveraging technology to address diverse market needs.

The exponential growth of India's technology start-up ecosystem can be attributed to several key factors:

- Increasing Internet Penetration: This rise in internet connectivity has facilitated greater access to digital services, driving demand for innovative tech solutions.
- Abundance of Skilled Talent: India's vast pool of skilled talent, particularly in the fields of technology, engineering, and business, has been instrumental in fueling the growth of technology start-ups. The availability of qualified professionals has enabled start-ups to build robust teams and drive innovation across various sectors.
- Supportive Government Policies: The Indian government has introduced several initiatives and policies to support the growth of the start-up ecosystem, including Startup India, Make in India, and Digital India. These initiatives provide incentives, funding support, and regulatory frameworks to nurture and promote entrepreneurial ventures.
- Access to Venture Capital Funding: India has emerged as a lucrative destination for venture capital investment, attracting significant funding from domestic and international investors. According to S&P Global Market Intelligence, India ranked fourth globally in terms of venture capital investment, with the financial technology sector leading the funding charts.

India's start-up landscape is home to more than 100,000 start-ups, with a capital infusion exceeding an impressive $146 billion during the last decade. This substantial investment signifies a strong financial bedrock for fostering innovation and expansion. Additionally, the presence of over 20,000 active start-up investors and 112 unicorns, collectively valued at over $500 billion, firmly establishes India as a leading global hub for entrepreneurial ventures. Factors that show the remarkable growth and potential of India's technology start-up ecosystem are:

Impact on the IT Infrastructure Industry:

The rapid proliferation of technology start-ups has led to a surge in demand for robust IT infrastructure solutions. This demand is driven by several factors:

- Cloud Adoption: Start-ups, particularly those operating in the software-as-a-service (SaaS) domain, rely heavily on cloud computing for scalability, flexibility, and cost-efficiency. This has led to a significant increase in demand for cloud infrastructure services, prompting cloud providers to expand their data center footprint in India.
- Edge Computing: With the proliferation of IoT devices and the need for real-time data processing,

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edge computing has gained prominence. Start-ups leveraging IoT, AI, and machine learning require edge infrastructure to process data closer to the source, leading to investments in edge computing solutions.

- Cybersecurity: As start-ups handle sensitive customer data and intellectual property, cybersecurity has become a top priority. This has resulted in increased investments in cybersecurity infrastructure, including firewalls, threat detection systems, and encryption technologies.
- Data Analytics: Start-ups are increasingly relying on data analytics to gain actionable insights and drive decision-making. This has spurred demand for infrastructure capable of handling large volumes of data and performing complex analytics tasks, leading to investments in big data platforms and analytics tools.
- DevOps and Automation: Start-ups prioritize agility and rapid product development, driving the adoption of DevOps practices and automation tools. This has led to investments in infrastructure automation, continuous integration/continuous deployment (CI/CD) pipelines, and containerization technologies.
- Remote Work Infrastructure: The COVID-19 pandemic accelerated the adoption of remote work practices, prompting start-ups to prioritize remote-friendly infrastructure solutions. This includes robust networking infrastructure to support remote collaboration tools, virtual private networks (VPNs) for secure access to company resources, and cloud-based communication platforms. As start-ups continue to embrace remote work as a permanent or hybrid model, there is a growing demand for infrastructure solutions that enable seamless remote operations while ensuring data security and employee productivity. This shift towards remote work infrastructure presents both opportunities and challenges for the IT infrastructure industry, driving innovation in areas such as remote access technologies, virtualization, and endpoint security solutions

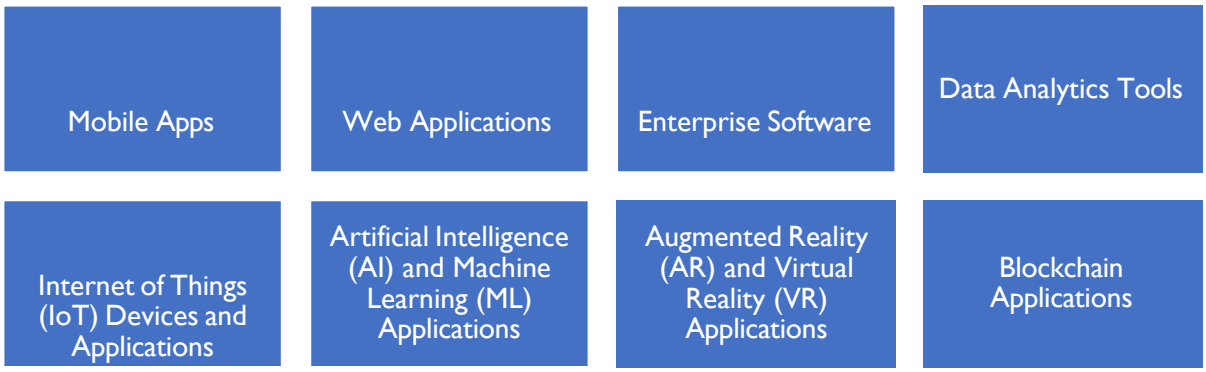
The rise of technology start-ups in India has reshaped the IT infrastructure landscape, driving demand for innovative solutions that can support the dynamic needs of these companies. To capitalize on this trend, IT infrastructure providers must adapt their offerings to cater to the unique requirements of start-ups while addressing challenges such as scalability, cost, talent shortage, and cybersecurity. By embracing innovation and agility, the IT infrastructure industry can effectively support India's thriving start-up ecosystem and contribute to its continued growth and success

New technology applications and its impact

Technology applications refer to software, tools, platforms, and systems developed to perform specific tasks, solve problems, or meet user needs using technological solutions. These applications leverage various technologies such as software development, hardware integration, data analysis, artificial intelligence, and internet connectivity to deliver value to users and organizations across different domains.

Examples of technology applications include:

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Technology applications are utilized in both consumer and enterprise segments to meet various needs and objectives

Consumer Segment

- Communication: Consumers use technology applications such as messaging apps, social media platforms, and video conferencing tools for seamless communication and connectivity with friends, family, and peers.
- Entertainment: Streaming services, gaming apps, and virtual reality experiences provide consumers with entertainment and leisure options, enhancing their digital lifestyles.
- E-commerce: Online shopping platforms and mobile payment apps enable consumers to browse, purchase, and pay for products and services conveniently from the comfort of their homes.
- Health and Wellness: Health tracking apps, wearable devices, and telemedicine platforms empower consumers to monitor their health, access medical advice, and engage in fitness activities remotely.
- Personal Finance: Banking apps, budgeting tools, and investment platforms assist consumers in managing their finances, making transactions, and planning for the future.

Enterprise Segment

- Operations Management: Enterprises leverage technology applications such as enterprise resource planning (ERP) systems, inventory management software, and project management tools to streamline operations, optimize workflows, and enhance efficiency.
- Customer Relationship Management (CRM): CRM software enables businesses to manage interactions with customers, track sales leads, and analyze customer data to improve engagement and drive revenue growth.
- Data Analytics: Business intelligence (BI) tools, data visualization platforms, and predictive analytics software help enterprises analyze large volumes of data, gain insights, and make informed decisions to drive business outcomes.
- Collaboration and Communication: Enterprises utilize collaboration tools, video conferencing platforms, and project management software to facilitate teamwork, communication, and collaboration among employees, regardless of location or time zone.
- Marketing and Sales: Marketing automation software, customer relationship management (CRM) platforms, and digital marketing tools assist enterprises in reaching target audiences, generating leads, and driving sales through targeted campaigns and personalized messaging.

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In India, there has been a notable surge in the adoption and proliferation of new technology applications across both consumer and enterprise segments. This growth is driven by several factors, including increasing internet penetration, rapid digitalization, and a burgeoning start-up ecosystem.

The surge in new technology applications, both in consumer and enterprise segments, has significant implications across various aspects of society and the economy. This growth signifies a transformative shift in how individuals and businesses interact, operate, and innovate. Following are the key implications of this phenomenon:

- Enhanced Consumer Experiences: New technology applications are revolutionizing consumer experiences across industries such as retail, entertainment, healthcare, and transportation. From personalized recommendations and immersive content to convenient digital services and seamless transactions, consumers are benefiting from greater convenience, efficiency, and customization.
- Empowerment of Businesses: For enterprises, the proliferation of new technology applications presents opportunities to streamline operations, optimize processes, and unlock new revenue streams. From advanced analytics and automation to cloud computing and IoT integration, businesses can leverage technology to enhance productivity, agility, and competitiveness in an increasingly digital marketplace.
- Disruption and Innovation: The rapid adoption of new technology applications is driving disruption and innovation across traditional industries, challenging existing business models and paving the way for novel approaches to value creation. Start-ups and established companies alike are harnessing emerging technologies such as artificial intelligence, blockchain, and augmented reality to create innovative solutions that address evolving market demands and customer preferences.
- Economic Growth and Job Creation: The growth of new technology applications fuels economic growth by stimulating investment, driving productivity gains, and fostering entrepreneurship. As new markets emerge and existing industries evolve, there is a corresponding increase in job opportunities across various skill levels, from software development and data analysis to digital marketing and customer experience management.
- Societal Impacts: Beyond the economic realm, the proliferation of new technology applications has profound societal implications, influencing how people communicate, collaborate, and interact with the world around them. From the democratization of information and digital inclusion to concerns about privacy, cybersecurity, and ethical use of technology, these developments shape the fabric of society and raise important ethical, legal, and social questions.

The growth of new technology applications represents a paradigm shift in how individuals, businesses, and society as a whole engage with technology and navigate the digital landscape. By understanding and harnessing the potential of these technologies, stakeholders can unlock opportunities for innovation, growth, and positive societal impact in the digital age

India's Emergence as a Global Capability Center (GCC) Hub

In recent years, India has emerged as a key hub for multinational companies establishing their Global Capability Centres (GCCs). With over 1,600 GCCs operating in the country and employing more than 1.6 million people, India's prominence in the global business landscape has significantly grown. This write-up delves into the factors driving this emergence, the evolution of GCCs in India, key industry verticals, growth projections, and the transformative impact on the economy.

Evolution of GCCs in India

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The journey of GCCs in India dates to the 1980s when pioneering companies like Texas Instruments set up their offices in Bengaluru. Originally known as captives or GICs (global in-house centres), these entities have evolved significantly over the years, transitioning into sophisticated GCCs. By 2012, the number of GICs had surpassed 760, and today, India hosts over 1,600 GCCs, a testament to its attractiveness as a strategic destination for global operations.

Several factors contribute to India's appeal as a preferred destination for establishing GCCs:

- Abundance of Skilled Talent: India boasts a vast talent pool of 2.5 million people with diverse skill sets, particularly in software product engineering. This futuristic talent pool is not only technically proficient but also possesses a strong work ethic and innovative mindset, essential for driving business growth and competitiveness.
- Cost-Competitive Operations: India offers competitive operational costs without compromising on quality standards. This cost advantage, coupled with high-quality services, makes it an attractive proposition for multinational companies seeking to optimize their operational expenses.
- Strategic Geographic Location: India's strategic geographic location allows for easy management of satellite operations for neighbouring countries and beyond. This facilitates seamless coordination and enhances operational efficiency for multinational corporations.
- Culture of Innovation: The Indian tech ecosystem is characterized by a culture of innovation, fostering creative problem-solving and adaptability. This culture enables GCCs to drive cutting-edge innovations and stay ahead in today's dynamic business environment.
- Market Access and Growth Opportunities: With a large domestic market and significant opportunities for further growth and market penetration, India provides GCCs with a platform for expanding their business footprint and tapping into diverse market segments.

Key Industry Verticals in GCC and Growth Trajectory

GCCs in India operate across various service lines, including IT services, BPO, engineering services, and software product development. Over the years, they have ascended the value chain, delivering complex work that requires a deep understanding of business context and imperatives. Key industry verticals such as banking and financial services, software, telecom, semiconductor, aerospace, automotive, healthcare, and pharma have witnessed substantial growth driven by GCCs' contributions.

In India, several multinational companies have established Global Capability Centres (GCCs) to drive innovation and operational efficiency. Below are examples of three such companies:

AstraZeneca's Virtual Reality Solution:

AstraZeneca's Global Innovation and Technology Centre in Chennai showcases the innovative potential of GCCs in India. By leveraging virtual reality (VR) technology, AstraZeneca has developed an immersive digital replica of its drug production facility in Sweden. This virtual environment allows employees to undergo training and familiarize themselves with the production processes without physically being present on the assembly line.

Developed entirely by AstraZeneca's captive unit in India, this VR solution not only enhances training effectiveness but also saves the pharmaceutical giant significant costs associated with traditional training methods. By harnessing the technical expertise and innovation capabilities of its GCC in India, AstraZeneca demonstrates how GCCs contribute to driving efficiency, innovation, and cost savings for multinational corporations.

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Rakuten Group's Bengaluru GCC:

Rakuten Group, a Japanese conglomerate, has established its Global Capability Centre in Bengaluru. This GCC plays a crucial role in developing and managing digital payment platforms, including Rakuten Pay, which is Japan's equivalent of GooglePay. The Bengaluru GCC oversees the entire product lifecycle, from user experience (UX) design to backend development and strategic planning. By leveraging India's vast talent pool and tech expertise, Rakuten Group's GCC has not only created innovative digital payment solutions but also contributed to the company's strategic goals. The success of Rakuten Pay underscores the pivotal role played by GCCs in driving digital transformation and enhancing customer experiences for multinational corporations.

Lowe's Self-Checkout System:

Lowe's, a US-based home improvement retailer, has leveraged its GCC in Bengaluru to develop a robust self-checkout system for its stores. This system, developed in-house at a fraction of the cost of vendor products, has significantly increased the efficiency of transactions at Lowe's stores. With the GCC's expertise in software development and engineering services, Lowe's has successfully implemented innovative solutions to streamline operations and enhance customer satisfaction. The success of the self-checkout system highlights how GCCs in India contribute to driving operational excellence and cost optimization for multinational corporations across diverse industry verticals.

According to projections by NASSCOM, the GCC landscape in India is set to expand further in the coming years. By 2028, the total number of GCCs is expected to surpass 2,100, with revenue exceeding USD 90 billion. Cost savings are no longer the main driving force behind companies' decisions to operate in India. Instead, a combination of skilled talent, a vibrant startup environment, and a digitally savvy industry and customer base is drawing companies to the country.

Impact on IT Infrastructure spending

The emergence of India as a Global Capability Centre (GCC) hub has had a profound impact on IT infrastructure spending, both within the country and globally. This impact can be observed across various dimensions:

- **Increased Investment in IT Infrastructure in India:** As multinational companies establish their GCCs in India, there is a growing need for robust IT infrastructure to support their operations. This includes investments in data centers, networking equipment, cloud computing services, cybersecurity measures, and software development tools. The influx of GCCs has led to a surge in demand for advanced IT infrastructure solutions and services, prompting organizations to allocate significant budgets for infrastructure development and upgrades. According to a collaborative survey conducted by Deloitte and industry association NASSCOM, more than 70 percent of companies with GGCs and engineering service arms in India intend to boost their budgets by 10-25 percent during 2022- 23. The survey also highlights that Engineering Research and Development (ER&D) expenditures within the automotive, transportation, and industrial sectors housed in India's GCCs are anticipated to experience the most significant growth, projected to fall within the range of 10-25 percent.
- **Adoption of Emerging Technologies:** GCCs in India often focus on driving innovation and digital transformation within their parent organizations. This entails the adoption and implementation of emerging technologies such as artificial intelligence (AI), machine learning (ML), Internet of Things (IoT), blockchain, and advanced analytics. Consequently, there is a heightened emphasis on investing in IT infrastructure that can support these technologies, including high-performance computing systems,

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storage solutions, and specialized hardware accelerators.

- E**xpansion of Data Center Footprint:** The growing presence of GCCs in India has led to an expansion of data center infrastructure to accommodate the increasing volume of data generated and processed by these centers. Organizations are investing in building new data centers or expanding existing ones to ensure scalability, reliability, and compliance with regulatory requirements. Additionally, there is a trend towards adopting hybrid and multi-cloud strategies, necessitating investments in cloud infrastructure and management platforms.
- **Focus on Security and Compliance:** With the rising cyber threats and stringent regulatory requirements, there is a heightened focus on enhancing cybersecurity measures and ensuring compliance with data protection regulations. Organizations operating GCCs in India are investing in advanced security solutions such as intrusion detection systems, threat intelligence platforms, encryption technologies, and identity and access management solutions. Moreover, there is an increased emphasis on implementing robust data privacy and compliance frameworks to safeguard sensitive information and mitigate risks.
- **Collaboration and Connectivity Requirements:** The seamless collaboration between GCCs in India and their parent organizations worldwide necessitates investments in robust connectivity infrastructure. This includes high-speed internet connectivity, virtual private networks (VPNs), unified communications platforms, and collaboration tools. Organizations are leveraging technologies such as software-defined networking (SDN) and edge computing to optimize network performance, ensure low-latency communications, and support real-time collaboration across geographically distributed teams.
- **Economic Impact on IT Infrastructure Providers:** The growing demand for IT infrastructure solutions and services driven by the proliferation of GCCs in India presents significant opportunities for IT infrastructure providers, including hardware vendors, cloud service providers, network equipment manufacturers, and cybersecurity firms. These providers stand to benefit from increased demand for their products and services, leading to revenue growth and market expansion.

In conclusion, India's emergence as a GCC hub highlights its growing significance in the global business ecosystem. With a conducive business environment, abundant talent pool, cost-competitive operations, and culture of innovation, India offers a compelling value proposition for multinational companies seeking to establish GCCs. As the GCC landscape continues to evolve and expand, India is poised to remain at the forefront of this transformation, driving economic growth, innovation in Information technology, and market leadership in the years to come.

Evolving Data security / Cybersecurity Landscape in India

In recent years, India has witnessed significant changes in its data security and cybersecurity landscape driven by technological advancements, regulatory reforms, and evolving cyber threats. India's digital transformation journey has accelerated, leading to a massive proliferation of data across various sectors such as finance, healthcare, e-commerce, and government services. The widespread adoption of digital technologies, including cloud computing, IoT, and mobile devices, has exponentially increased the volume, velocity, and variety of data being generated, posing new challenges for data security and cybersecurity.

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Current Challenges for Organizations in India

- **Rise in Cyberthreats:** The proliferation of cyber threats has surged in the digital era, underscoring the critical importance of cybersecurity. India is confronted with a broad spectrum of cyber threats, ranging from financial fraud and data breaches to sophisticated cyber-espionage campaigns.
- **Diverse Attack Techniques**: Given its expansive population, India has become a focal point for cybercriminals who employ various attack techniques such as phishing, ransomware, and social engineering tactics to exploit vulnerabilities.
- **Targeted Sectors:** Key sectors including financial institutions, e-commerce platforms, and government entities are particularly targeted due to the sensitive nature of their data, amplifying the need for robust cybersecurity measures.
- **Ransomware Surge:** A notable surge in ransomware incidents has resulted in significant disruptions to businesses, lasting from a few days to several weeks, further emphasizing the evolving and pervasive nature of cyber threats.

Response to Cyberattacks

- Amidst the rising tide of cyber threats, India's cybersecurity landscape is witnessing a robust response, with various stakeholders including businesses, individuals, and governmental bodies collaborating to fortify their digital defenses.
- A notable initiative involves the collaboration between national security agencies and the Defence Cyber Agency, engaging in rigorous cyber defense exercises to enhance preparedness and resilience. Additionally, the Union Home Ministry has established a dedicated helpline to assist individuals affected by cyber scams, aiming to swiftly block stolen funds, refund victims within 24 hours, and raise awareness about the importance of safeguarding sensitive information online.
- In August 2023, the government enacted the Digital Personal Data Protection (DPDP) Act, 2023, a landmark cross-sectoral legislation aimed at safeguarding personal data amidst concerns of heightened surveillance. This legislative milestone has bolstered confidence among multinational corporations operating in India.
- Further demonstrating proactive measures, initiatives like the National Counter Ransomware Task Force underscore India's commitment to countering specific threats like ransomware. Collaborative efforts, such as the formation of the International Counter Ransomware Task Force, exemplify India's willingness to collaborate globally for enhanced cybersecurity.
- Concurrently, Indian businesses and individuals are taking proactive steps against cyber threats by enrolling in online courses offered by institutions like the Defence Research and Development Organisation, focusing on cybersecurity and AI education to bolster their expertise.
- The deployment of innovative tools such as USB Pratirodh and AppSamvid, aimed at providing enhanced control and protection against malware, reflects India's tech-driven approach to cybersecurity. Additionally, breakthrough solutions like the Artificial Intelligence and Facial Recognition-powered Solution for Telecom SIM Subscriber Verification (ASTR) showcase India's technological advancements in combatting fraudulent activities in the cybersecurity domain.

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Impact on IT Sector

Increased Spending on IT Infrastructure: With the escalating cyber threats, organizations are compelled to invest more in strengthening their IT infrastructure to safeguard against potential breaches and cyber-attacks. This surge in spending on IT infrastructure encompasses the implementation of robust cybersecurity measures, including advanced threat detection systems, encryption technologies, and secure network architecture.

Growing Demand for Cybersecurity Solutions and Services: The heightened awareness of cybersecurity risks has fuelled a surge in demand for cybersecurity solutions and services across various industries. This increased demand encompasses a wide range of cybersecurity offerings, including threat intelligence platforms, endpoint security solutions, penetration testing services, and security consulting services. As a result, cybersecurity providers are witnessing a significant uptick in business opportunities and revenue growth.

Rise in Cybersecurity Jobs and Skill Development: The evolving cybersecurity landscape has created a growing demand for skilled professionals capable of combating sophisticated cyber threats. Consequently, there is a surge in cybersecurity job opportunities across the country, ranging from cybersecurity analysts and engineers to ethical hackers and incident responders. This increased demand for cybersecurity talent has prompted organizations and educational institutions to invest in cybersecurity training and skill development programs to bridge the skills gap and groom the next generation of cybersecurity professionals.

Emphasis on Regulatory Compliance and Data Protection: The enactment of regulatory reforms such as the Digital Personal Data Protection (DPDP) Act, 2023, has heightened the focus on regulatory compliance and data protection among organizations operating in India. Companies are now mandated to adhere to stringent data protection requirements and implement comprehensive data security measures to ensure compliance with regulatory standards. This emphasis on regulatory compliance has spurred investments in data protection technologies and compliance frameworks to mitigate regulatory risks and safeguard sensitive customer information.

Rise in Cyber Insurance Adoption: As organizations recognize the financial implications of cyber incidents, there is a growing trend towards the adoption of cyber insurance policies to mitigate the financial impact of cyber attacks and data breaches. Cyber insurance policies provide organizations with financial protection against the costs associated with data breaches, including legal expenses, regulatory fines, and incident response costs. This rise in cyber insurance adoption reflects a proactive approach towards managing cyber risks and enhancing financial resilience in the face of cyber threats.

Government Spending on Information Technology

Despite the signs of contraction in technology spending in private sector, spending trend in public domain is showing signs of resilience. The positive trend in IT spending in public space is driven by two key factors – IT modernization initiatives and digitization measures to improve productivity. This is in line with the trend seen in Government spending across the world, with investments in application modernization driving the spending.

Specific to Indian Government, the focus is on providing a unified digital experience and a mobile first experience. Schemes like Unified Mobile Application for New-Age Governance (UMANG), Open Government Data Platform (OGDP) and IndiaStack are designed to achieve this objective. Among these, the IndiaStack program is focused on creating a unified software platform to fast track the digital journey of Indian population. IndiaStack has five programs:

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Aadhar, e-KYC, e-Signature, Digital Locker, and Unified Payment Interface (UPI). These five programs together are transforming the digital landscape in India.

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IT Modernization Journey in Indian Public Domain

2006 – 2010	Early Initiatives & Foundation Building	Launch of National e-Governance Plan (NeGP) to improve Government services through integration of IT. Introduction of MeghRaj initiatives – National Cloud Computing Infrastructure
2011-2015	Transition to Digital Platform	Launch of Digital India campaign Introduction of Aadhaar program
2016 – 2020	Accelerated Modernization & Integration of Emerging Technologies	Implementation of GST, and subsequently the creation of GST Network (GSTN) Cloud adoption gains momentum National Artificial Intelligence Strategy to promote responsible & ethical use of AI
2021 – 2024	Focus on digital inclusion & citizen centric services	Expansion of broadband connectivity, promoting digital inclusion in rural areas.

Government Flagship Digital Policies

While digitization of common citizen services has improved operational efficiencies as well as service delivery, it has generated massive data necessitating the requirement for a robust and flexible digital infrastructure. Subsequently the Government has scaled up its spending and budgetary allocation towards digital infrastructure updation, and adoption of cloud infrastructure.

Digital India Initiative

The Digital India program has spurred the development of citizen-centric applications like CoWIN and DigiLocker, emphasizing innovation, service quality, and operational efficiency. These apps have led to increased data generation and the need for flexible, scalable solutions. These solutions have significantly impacted vaccination distribution, worker registration, and document issuance, showcasing the tangible benefits of cloud technology adoption.

The scheme launched in 2015 is an umbrella program which covers programs including Aadhaar, country- wide rural broadband connectivity, common service centers, Bharat Interface for Money (BHIM), Aadhar enabled payment system, and MyGov program.

The Union Government in August 2023 approved the extension of Digital India programme for five years (period 2021-22 to 2025-26) with an outlay of INR 14,903 crore. The extension would focus on skill upgradation, IT infrastructure modernization, and improvement in cyber security, among others.

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Adoption of Hybrid Cloud Model

Rapid digitization of citizen services has created massive volume of data, with varying sensitivity levels. This has created the need for a hybrid cloud strategy, which provides both flexibility as well as enhanced data security. The hybrid cloud model has facilitated initiatives such as the MyGov Saathi app, engaging over 2.5 crore users. Additionally, entities like the IT Regulators of India and the Development Authority of Maharashtra leverage hybrid cloud models for government-to-consumer operations.

The Government of India has embraced a cloud-first approach, aiming to make it the default option for ministries/departments to enhance citizen-centric services and internal efficiency. The introduction of MeghRaj in 2013 facilitated cloud technology benefits within the government sector, leading numerous ministries/departments to initiate their cloud journey. Despite progress, some entities hesitate due to concerns like data security, control after migration, data loss, and application compatibility. Central and state governments are actively promoting cloud awareness.

Impact on IT infrastructure

The most direct benefit is a surge in demand for IT infrastructure solutions. Government projects often involve large-scale data center upgrades, network expansion, and cloud adoption, all of which require robust hardware, software, and implementation services. This translates to increased revenue and project opportunities for IT infrastructure providers.

The government's initiatives often involve implementing advanced technologies like cloud computing, Big Data analytics, and cybersecurity solutions. This pushes IT infrastructure providers to innovate and offer new solutions, keeping them at the forefront of technological advancements. Government IT projects tend to be large-scale and often involve multi-year contracts. This provides stability and recurring revenue for infrastructure providers, allowing them to invest in research and development and expand their capabilities.

Increased Demand for Products and Services:

- Hardware: Increased spending translates to a greater demand for hardware components like servers, storage solutions, networking equipment, and security solutions. This creates a larger market for companies that manufacture, sell, and maintain these products.
- Software: Government projects often require specialized software solutions for data management, analytics, communication, and cybersecurity. This opens doors for software providers who can cater to these specific needs.
- Services: Implementation, integration, and management of these complex IT systems require expertise. IT infrastructure providers benefit by offering services like system design, deployment, data center management, and ongoing maintenance.

Focus on Emerging Technologies:

- Cloud Adoption: The government's push for cloud migration creates a demand for cloud service providers (CSPs) who offer public, private, or hybrid cloud solutions. This benefits companies like Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform (GCP) along with domestic players.

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- Cybersecurity Solutions: As the government stores and manages more data, robust cybersecurity measures become crucial. This creates opportunities for companies specializing in network security, data encryption, and intrusion detection systems.

Project Opportunities:

- Large-Scale Infrastructure Projects: Government initiatives like "Digital India" and "Smart Cities Mission" involve building large-scale IT infrastructure like data centers, fiber optic networks, and citizen service platforms. These projects provide lucrative contracts for IT infrastructure providers who can design and build these networks.
- Specialization and Innovation: Government projects often have unique requirements, prompting infrastructure providers to develop specialized solutions and niche expertise. This fosters innovation within the sector and allows companies to differentiate themselves.

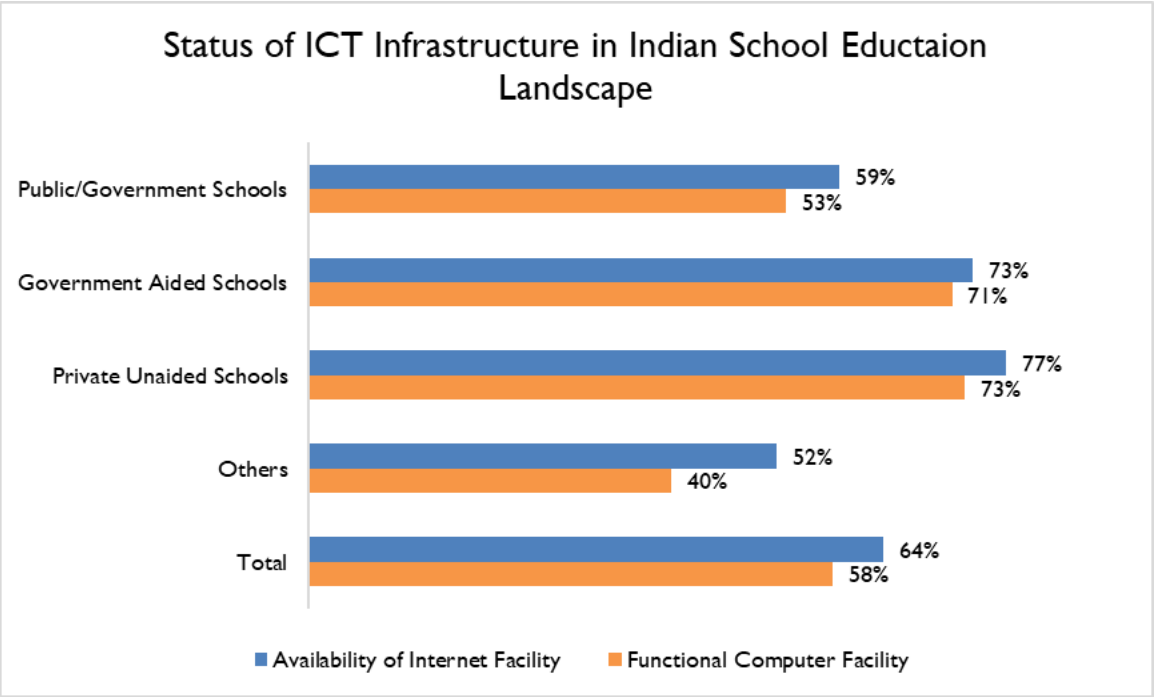
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IT Infrastructure Modernization in Public Education Sector

The rapid growth in internet penetration in the country have facilitated the integration of ICT into public education domain. The development of digital infrastructure has helped in improving the access to education specifically among rural population. The Union Government have implemented a range of policy initiatives to leverage the ICT infrastructure. These include Digital Infrastructure for Knowledge Sharing (DIKSHA) platform, and initiatives by various state Governments to popularity virtual classroom & digital learning.

Current Scenario

According to the Ministry of Education, 58% of schools in the country now have a functional computer facility, while 64% have internet availability in FY 2025. These figures reflect a significant improvement in ICT infrastructure across Indian schools, although challenges remain in ensuring equitable access across different categories of institutions, particularly in government schools.



Source: Unified District Information System for Education Plus, Data for FY 2025

Government Schemes Promoting ICT Infrastructure in Education Sector

Samagra Shiksha Scheme:

The ICT and Digital Initiatives component of Samagra Shiksha targets Government and Aided Schools offering classes VI to XII. This facet entails providing financial support for the establishment of ICT Labs and Smart Classrooms within schools. States and Union Territories (UTs) have access to non-recurring and recurring grants under the 'ICT and Digital Initiatives' component, with two available options:

- Option I: Schools lacking previous ICT facilities can choose between establishing an ICT Lab or Smart Classrooms, depending on their specific needs. Additionally, if a school enrols over 700 students, it may be eligible for an additional ICT lab.
- Option II: Schools already equipped with ICT facilities can opt for Smart Classrooms according to the scheme's guidelines.

Achievements During 2018-19 to 2023-24

- In 2022-23, Samagra Shiksha achieved significant milestones in enhancing digital infrastructure and education facilities nationwide. These include sanctioning 8,989 ICT Labs, 30,792 Smart Classrooms, 1,482,565 tablets (TABS), and 6,525 ICT Labs in Block Resource Centers (BRCs).
- Over the given period, a total of 3,062 schools spanning across Elementary, Secondary, and Higher Secondary levels have undergone upgrades, thereby improving the infrastructure and quality of education.
- Coverage under ICT & Digital Initiatives: A significant achievement lies in the coverage of 122,757 schools under ICT & Digital initiatives, which includes the implementation of Smart Schools, thus ensuring access to modern technological resources for educational enhancement.
- Approval for ICT & Smart Classrooms: Since its inception until November 2023, remarkable progress has been made in the approval and implementation of ICT Labs and Smart Classrooms nationwide. Specifically, ICT Labs

have been approved in 135,740 schools, while Smart Classrooms have been established in 103,662 schools, facilitating a conducive learning environment equipped with digital tools and resources.

PM e-VIDYA

The National Mission on Education through Information and Communication Technology (NMEICT) has been conceptualized as a Centrally Sponsored Scheme aimed at harnessing the potential of ICT to enhance the teaching and learning process for learners in Higher Education Institutions, accessible anytime and anywhere. Its primary objective is to narrow the digital gap, which refers to the disparity in the ability to utilize computing devices for educational purposes among urban and rural teachers/learners in higher education.

In response to the directives outlined in the National Education Policy 2020, which emphasize investment in digital infrastructure and innovative teaching methodologies, the government launched a comprehensive initiative known as PM e-VIDYA on May 17, 2020, as part of the Atma Nirbhar Bharat Abhiyaan. This initiative aims to consolidate all endeavors related to digital, online, and on-air education, facilitating multi-mode access to educational resources.

PM e-VIDYA offers a diverse range of educational resources and platforms to students across all states, free of cost. These resources include digital infrastructure, online teaching platforms and tools, virtual laboratories, digital repositories, online assessments, and technology and pedagogy for online teaching- learning. Additionally, PM e-VIDYA promotes multilingualism and recognizes the importance of language in teaching and learning by employing innovative and experiential teaching methods.

Through the PM e-VIDYA initiative, the government seeks to democratize access to education, ensuring that all students have equitable opportunities to engage with high-quality educational content regardless of their geographical location or socio-economic background.

Digital University

Government of India in its Budget 2022-2023 has announced establishment of Digital University. The University will provide access to students across the country for world-class quality universal education with personalized learning experience at their doorsteps. This will be made available in different Indian languages and Information & Communication Technology (ICT) formats.

The University will be built on a networked hub-spoke model, with the hub building cutting edge ICT expertise. The best public universities and institutions in the country will collaborate as a network of hub-spokes. The Department of Higher Education, in consultation with University Grants Commission (UGC), All India Council for Technical Education (AICTE) and other stakeholders has initiated the process to ensure the early start of this digital university

One Nation One Subscription

The One Nation One Subscription (ONOS) scheme, approved by the Union Cabinet as a Central Sector Scheme on 25th November 2024, seeks to provide universal access to international research publications and journals across India. Nearly 6,400 institutions, including central and state universities, colleges (with all medical colleges), and central government R&D institutions, are set to benefit from this initiative.

This will enable around 1.8 crore students, faculty, and researchers to access over 13,000 journals from 30 publishers, including top global names such as Elsevier, Springer-Nature, Taylor & Francis, and Wiley. Implemented by the INFLIBNET

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Centre under UGC, Ministry of Education, the scheme consolidates multiple institutional and consortia-based subscriptions into a single national license, covering disciplines spanning STEM, medicine, management, social sciences, and humanities.

Aligned with the vision of *Atmanirbhar Bharat* and *Viksit Bharat @ 2047*, ONOS is also designed to strengthen research culture in tier-2 and tier-3 higher educational institutions under the Anusandhan National Research Foundation (ANRF) Act.

Ensuring equitable access to high-quality journals, it addresses a critical gap for institutions that previously lacked resources for advanced research. Additionally, the scheme envisions central funding support for Indian researchers to meet article processing charges (APCs) for publishing in reputed open access journals, thereby enhancing both the quality and global visibility of India's research output.

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STEM Lab Infrastructure in Indian Education Sector

The integration of STEM (Science, Technology, Engineering, and Mathematics) labs in the Indian education system represents a transformative shift towards experiential and skill-based learning. STEM labs empower students to engage with real-world problems, explore solutions, and acquire critical thinking skills through hands-on activities. Here's an in-depth analysis of STEM lab infrastructure in India, highlighting the current scenario, components, key drivers, challenges, and outlook.

Current Scenario

K-12 Education

In the K-12 segment, schools across India are gradually embedding STEM labs into their curriculum to provide students with practical exposure to scientific concepts. Private schools lead the adoption curve, incorporating advanced equipment such as robotics kits, coding tools, and 3D printers to make science and technology engaging. These facilities encourage students to explore and innovate beyond textbooks.

Government schools, although relatively slower in implementation, have benefited significantly from initiatives like the Atal Tinkering Labs (ATLs) under the Atal Innovation Mission. With over 10,000 ATLs established across India, these labs serve as a bridge to STEM education for underserved regions. By enabling students to work on projects related to AI, IoT, and other futuristic technologies, these labs are transforming how rural and underprivileged students perceive and engage with STEM subjects.

Higher Education

STEM labs in higher education institutions cater to advanced research and industry needs. Universities and colleges are setting up specialized facilities focusing on areas such as artificial intelligence, biotechnology, and robotics. These labs provide students with the tools and platforms to work on real-world problems and prepare them for industry roles.

Collaborations between academia and industry are another hallmark of STEM education in higher education. Through partnerships, institutions are establishing Centers of Excellence, which provide students with access to cutting-edge technologies and methodologies used in industry. For instance, tech companies like Intel and Microsoft have collaborated with educational institutions to provide hands-on training and exposure to practical challenges.

Infrastructure Components

Physical Space

A well-designed STEM lab begins with a dedicated physical space that prioritizes safety, functionality, and creativity. These labs typically include well-ventilated rooms with modular furniture, allowing students to reconfigure the workspace for group activities or individual projects. Safety measures such as fire extinguishers, first aid kits, and proper electrical setups are essential to ensure a secure environment for experimentation.

Equipment and Tools

STEM labs are equipped with a wide range of tools to cater to varying levels of complexity. For younger students, basic kits for electronics, mechanics, and coding are common, introducing foundational concepts in a hands-on manner. Advanced setups for older students or higher education may include 3D printers, AI development tools, IoT devices, and

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simulation software for engineering or design projects. These tools enable students to prototype and test their ideas effectively, bridging theoretical learning and practical application.

Digital Integration

The integration of digital tools is redefining STEM labs, making them more interactive and accessible. Cloud- based platforms allow students to store and access their projects remotely, while AI-driven tools provide personalized learning experiences. Technologies like Virtual Reality (VR) and Augmented Reality (AR) are being introduced to create immersive learning environments. For example, VR can simulate engineering tasks, and AR can help visualize molecular interactions in chemistry, enhancing understanding and engagement.

Key Drivers

Government Initiatives

The Indian government has been a driving force behind the growth of STEM lab infrastructure. Programs such as the **Atal Innovation Mission** focus on nurturing innovation and creativity among students by setting up ATLs in schools. Similarly, the **Rashtriya Avishkar Abhiyan** integrates STEM subjects into school curriculums, promoting inquiry-based learning. The **National Education Policy (NEP) 2020** emphasizes hands-on and experiential learning, advocating for the introduction of coding, robotics, and computational thinking from early grades. These initiatives collectively aim to make STEM education a cornerstone of the Indian education system.

Corporate Social Responsibility (CSR)

Corporations have been instrumental in supporting STEM labs through their CSR initiatives. Companies like TCS, Infosys, and Intel have contributed funding, resources, and training for setting up labs, especially in underserved areas. For example, TCS has funded STEM labs in rural schools, while Intel provides advanced training and equipment to schools and colleges. These efforts not only bridge resource gaps but also foster industry-academic collaboration, enhancing the quality of STEM education.

Technological Advancements

The declining costs of tools like Arduino kits, Raspberry Pi boards, and 3D printers have made it easier for schools and colleges to adopt STEM labs. Affordable, user-friendly technology has democratized access to innovation, enabling even small schools to provide hands-on experiences in areas like coding, robotics, and design. This trend has been a significant enabler of STEM lab expansion across different tiers of institutions.

Rising Demand for STEM Skills

With industries increasingly relying on technology, there is a growing demand for STEM-skilled professionals. STEM labs help bridge the gap between academic learning and industry expectations, ensuring students are well-prepared for future roles. Employers across sectors value hands-on experience and problem-solving skills, which STEM labs effectively nurture.

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Key Challenges

Funding Issues: Many government schools, particularly in rural areas, lack the financial resources required to establish and sustain STEM labs. While government schemes and CSR initiatives help mitigate this, the scale of funding needed to ensure widespread access remains a significant hurdle.

Shortage of Skilled Educators: STEM labs require educators who are not only subject matter experts but also adept at using advanced tools and fostering innovation. However, there is a considerable shortage of such trained professionals. Frequent teacher turnover and limited professional development programs exacerbate the issue, leaving many STEM labs underutilized.

Maintenance and Upkeep: Advanced equipment in STEM labs requires regular maintenance and technical expertise, which many schools lack. Without proper upkeep, the functionality of the labs diminishes over time, impacting their effectiveness.

Accessibility Disparities: There is a stark divide in the accessibility of STEM labs between urban and rural areas. While urban schools enjoy better resources and support, rural schools often struggle with basic infrastructure, making it challenging to establish and sustain STEM labs.

Prospects / Outlook

Increased Adoption: Driven by government mandates and the rising importance of technology in education, more schools and colleges are expected to adopt STEM labs. This trend is likely to accelerate as stakeholders recognize the value of hands-on learning in fostering innovation and critical thinking.

EdTech Collaborations: EdTech startups like BYJU'S and STEMpedia are playing a pivotal role in enhancing STEM education. These collaborations bring innovative tools, digital resources, and training programs to schools, enriching the STEM learning experience.

Inclusive Growth: Focused efforts by NGOs, government subsidies, and CSR initiatives are working towards bridging the rural- urban divide in STEM lab access. Ensuring that marginalized communities benefit from STEM education is a priority for stakeholders.

AI and AR/VR Integration: Emerging technologies like AI, AR, and VR are set to revolutionize STEM labs by providing immersive, real- time simulations. These technologies make abstract concepts tangible, allowing students to experiment and learn in an engaging environment.

Upskilling Educators: Comprehensive training programs for teachers will ensure that educators can effectively utilize STEM labs. Certification programs and workshops focused on using advanced tools and fostering innovation will play a key role in addressing the shortage of skilled teachers.

STEM lab infrastructure in India is at the cusp of a major transformation. With collaborative efforts from the government, private sector, and educational institutions, these labs are paving the way for a technology- driven, innovation-led education system. Addressing challenges such as funding, accessibility, and skilled educators will be crucial for ensuring widespread adoption and sustainability. As these labs evolve with advanced technologies and inclusive policies, they hold the potential to redefine India’s education landscape, preparing students to excel in a rapidly changing global environment.

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Atal Tinkering Labs (ATL)

The Atal Innovation Mission, with its vision to nurture one million young innovators across India, is establishing Atal Tinkering Laboratories (ATLs) in schools. This initiative aims to promote curiosity, creativity, and imagination while equipping students with essential skills such as computational thinking, design mindset, and physical computing.

ATLs serve as dedicated workspaces where students can explore STEM (Science, Technology, Engineering, and Mathematics) concepts through hands-on, do-it-yourself activities. Equipped with educational kits, tools for robotics, electronics, open-source microcontroller boards, sensors, 3D printers, and computers, ATLs provide a platform for experiential learning. Additional facilities like meeting rooms and video conferencing enhance collaboration and communication.

The program also encourages innovation through activities such as competitions, exhibitions, workshops, and lecture series. These engagements aim to foster critical thinking, problem-solving, and ethical leadership among students, aligning with the 21st-century skill requirements.

The objectives of ATL include:

- Creating flexible workspaces for hands-on learning and idea development.
- Equipping youth with modern skills, including creativity, innovation, and cross-cultural collaboration.
- Encouraging the development of solutions for India's unique challenges to support its growth as a knowledge-driven economy.

This initiative underlines the commitment to preparing the next generation to thrive in a technology-driven world.

Impact of Atal Tinkering Labs (ATL) in India

The Atal Tinkering Labs (ATLs) initiative under the Atal Innovation Mission has achieved significant milestones in fostering a culture of innovation and creativity among students across India. With over 10,000 ATLs established, the program has made its presence felt in 722 districts across 35 states and union territories, ensuring wide geographical outreach and inclusivity.

Atal Tinkering Labs (ATLs), an initiative by NITI Aayog under the Atal Innovation Mission, serve as innovation workspaces designed to foster creativity, technological skills, and adaptive learning among students in grades 6 to 12. With the objective of equipping young minds for the AI-driven era, ATLs provide infrastructure and tools such as 3D printers, robotics kits, IoT tools, and advanced computing systems.

Funded through an initial grant of ₹12,00,000 and annual recurring support of ₹2,00,000 for operational expenses over four years, the labs focus on skill development in areas like artificial intelligence, design thinking, and problem-solving. In collaboration with NASSCOM and industry leaders like Microsoft, Adobe, SAP Labs, and Wipro, ATLs have introduced AI modules featuring videos, experiments, and interactive activities.

These labs play a pivotal role in bridging the gap between traditional education and technological advancements, offering students exposure to STEM and real-world applications. Through partnerships for hackathons, mentoring, and innovation challenges, ATLs are democratizing access to technological education and fostering grassroots innovation across India.

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A robust mentorship network supports the program, with more than 6,200 *Mentors of Change* actively guiding students in their journey of innovation. These mentors play a pivotal role in enabling young minds to explore concepts in Science, Technology, Engineering, and Mathematics (STEM), inspiring them to develop solutions for real-world challenges.

The initiative has engaged over 1.1 crore students in hands-on activities and projects, empowering them with practical skills and innovative thinking. Notably, more than 60% of the ATLs are housed in government or government-aided schools, with 96% of these labs situated in girls' or co-educational institutions, reflecting the program's commitment to inclusivity and gender equality.

The impact is further evidenced by the creation of over 16 lakh innovation projects by students, showcasing their ability to think critically and develop solutions. These projects underline the success of ATLs in nurturing future innovators and leaders capable of addressing India's unique challenges.

The ATL initiative continues to play a transformative role in shaping India's education landscape, equipping the youth with 21st-century skills and fostering a culture of innovation essential for a knowledge-driven economy.

Challenges Faced by ATLs

- **Sustainability and Maintenance**: Regular maintenance of high-tech equipment and ensuring a consistent supply of tools and materials are ongoing challenges for some ATLs, especially in government schools with limited resources.
- **Teacher Training**: To maximize the potential of ATLs, teachers need continuous training in new technologies and educational methodologies. The lack of trained teachers in some regions hinders the effective utilization of these labs.
- **Accessibility in Rural Areas**: Although the aim is to democratize innovation across the country, ATLs are still concentrated in urban and semi-urban areas, with fewer resources allocated to rural schools.

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Prospects / Outlook

- **Expansion and Outreach**: The government plans to increase the number of ATLs, particularly in rural and underprivileged areas, ensuring that every student across India has access to cutting-edge educational resources.
- **Integration with Global Networks**: Collaborations with international innovation networks and universities are expected to further enhance the learning experience in ATLs, providing students with exposure to global technologies and trends.
- **Sustainability Initiatives**: Focus on ensuring long-term sustainability of the ATLs through continuous funding, collaboration with industry stakeholders, and community involvement.

Atal Tinkering Labs have played a transformative role in the Indian education system by fostering an environment of creativity, innovation, and practical learning. With a focus on empowering students with the skills needed for the future, ATLs are shaping India's future innovators and entrepreneurs. However, to fully realize the potential of this initiative, addressing challenges related to teacher training, resource sustainability, and rural accessibility will be crucial.

IT Infrastructure Modernization Initiatives

India's Ministry of Education has embarked on a groundbreaking modernization journey by selecting Oracle Cloud Infrastructure (OCI) to transform the national education technology platform, 'Digital Infrastructure for Knowledge Sharing' (DIKSHA). This strategic migration not only enhances the accessibility of DIKSHA but also significantly reduces its IT costs, marking a pivotal advancement in India's educational landscape.

DIKSHA, a cornerstone of India's Digital Public Infrastructure (DPI) initiatives, was meticulously crafted to cater to school education and foundational learning programs. Leveraging the open-source platform Sunbird, DIKSHA empowers teachers to foster inclusive learning environments for underserved and disabled learners nationwide. With over 200 million students and 7 million teachers from government and private schools accessing content contributed by more than 11,000 collaborators, DIKSHA serves as a beacon of educational empowerment.

Since transitioning to OCI, DIKSHA has experienced a paradigm shift, reaping the benefits of enhanced scalability, security, cost-effectiveness, and dynamic capacity adjustment based on demand. This transformation has bolstered DIKSHA's ability to deliver vast amounts of content, accommodating the burgeoning needs of students and educators as the platform expands.

The monumental scale of the DIKSHA platform necessitated a cloud service provider capable of efficiently handling extensive data processing, storage, and distribution. OCI emerged as the ideal solution, equipped with robust capabilities to manage DIKSHA's diverse data formats and intricate workflows. Employing OCI Compute VMs, OCI Storage, and OCI Container Engine for Kubernetes (OKE), DIKSHA seamlessly manages its workload, stores application content, and orchestrates microservices to ensure uninterrupted service delivery.

Furthermore, OCI Media Flow and OCI Media Streams play a pivotal role in optimizing user access to DIKSHA's extensive library of nearly 1.5 million videos. By processing and storing video content in the appropriate formats and resolutions, OCI facilitates seamless content delivery tailored to users' preferences.

The adoption of OCI by India's Ministry of Education underscores a transformative shift towards leveraging cutting-edge technology to revolutionize education delivery and accessibility. As DIKSHA continues to evolve and expand its reach,

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Oracle Cloud Infrastructure remains a steadfast partner, driving innovation and empowerment within India's educational ecosystem.

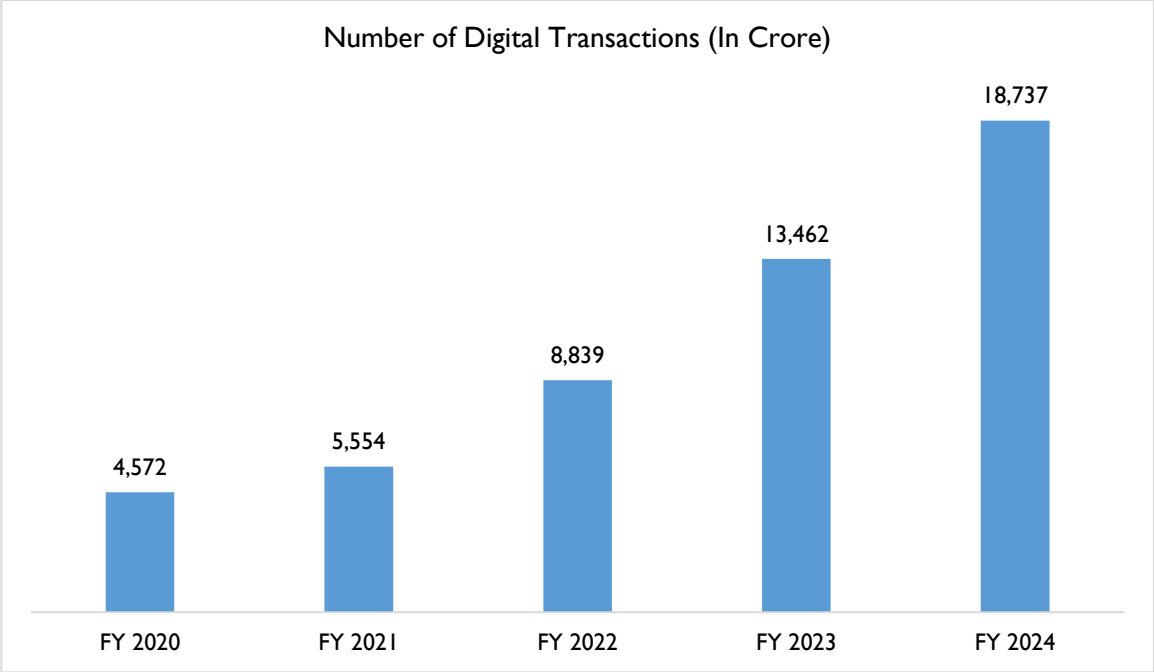
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IT Infrastructure Modernization in BFSI Domain

In recent years, the BFSI sector has witnessed a rapid shift towards digitalization, driven by changing consumer preferences, technological advancements, and regulatory mandates. The adoption of digital technologies has revolutionized banking, financial services, and insurance operations, enabling organizations to streamline processes, expand market reach, and deliver personalized services to customers. Moreover, IT infrastructure modernization has become imperative to support the growing demands of digital banking, data analytics, and cybersecurity in an increasingly interconnected world.

The Government of India's commitment to fostering a cashless economy, notably following the 2016 demonetization drive, has accelerated the country's transition to digital financial services. The Digital India initiative has also played a significant role in promoting awareness and adoption of digital payments. Over the past decade, India has witnessed a surge in digital transactions, facilitated by widespread smartphone penetration and the availability of affordable data plans.

As a result of these technological advancements, digital financial transactions in India have increased exponentially, particularly in the wake of the COVID-19 pandemic. Between FY 2020 and FY 2024, the number of digital transactions in the banking space increased by a CAGR of nearly 42% to reach approximately 18,737 crore transactions per annum.



Source: Department of Economic Affairs

Among the various digital payment platforms, the Unified Payments Interface (UPI) has truly transformed the landscape of financial transactions in India since its introduction in 2016. UPI transactions have expanded from just 1,252 crores in FY 2020 to an impressive 13,116 crores in FY 2024, underscoring its rapid adoption.

During the current financial year up to 31st December 2024, UPI has already recorded 13,446 crore transactions and is projected to cross 20,000 crores by the end of FY 2025. In fact, within the same period, total digital payment transactions across platforms reached 16,544 crores in volume, with a transaction value of INR 2,727 lakh crore. This exponential growth highlights UPI's role as the backbone of India's digital payments ecosystem, making it the dominant choice for everyday transactions across the country.

IT Infrastructure Modernization Initiatives

In the dynamic landscape of the BFSI sector, IT infrastructure modernization plays a critical role in enabling organizations to adapt to evolving technological trends, enhance operational efficiency, and deliver seamless customer experiences. This section delves into the importance of IT infrastructure modernization in the BFSI domain, highlighting key initiatives and technologies driving transformation in this sector.

With the exponential growth of data and increasing customer expectations for real-time services, BFSI organizations are under pressure to modernize their IT infrastructure to meet the demands of the digital age. This modernization effort encompasses various components, including hardware, software, networking, and cybersecurity systems. Upgrading legacy systems to more agile and scalable architectures is essential for supporting the rapid pace of innovation and ensuring seamless integration with emerging technologies.

One of the primary drivers of IT infrastructure modernization in the BFSI sector is the adoption of cloud computing technology. Cloud solutions offer scalability, flexibility, and cost-effectiveness, allowing organizations to optimize resource utilization, improve data management, and enhance operational agility. By migrating data and applications to cloud platforms, BFSI organizations can streamline operations, reduce infrastructure costs, and accelerate time-to-market for new products and services.

Furthermore, the proliferation of digital channels and the increasing volume of online transactions have heightened the importance of cybersecurity in the BFSI sector. IT infrastructure modernization efforts include the implementation of advanced cybersecurity measures, such as multi-factor authentication, encryption, and threat detection systems, to safeguard sensitive data and mitigate cyber risks. Building a resilient cybersecurity framework is crucial for maintaining customer trust and complying with regulatory requirements in an increasingly interconnected and data-driven environment.

Additionally, BFSI organizations are leveraging emerging technologies such as artificial intelligence (AI), machine learning (ML), and robotic process automation (RPA) to enhance operational efficiency and customer engagement. AI and ML algorithms are being deployed for predictive analytics, fraud detection, and personalized customer services, enabling organizations to gain valuable insights from data and deliver tailored solutions to individual customers. RPA solutions are automating repetitive tasks, reducing manual errors, and improving process efficiency across various business functions.

Digital Transformation Initiatives

The BFSI sector is witnessing a profound digital transformation driven by changing consumer behaviours, technological advancements, and evolving regulatory landscapes. This section explores the key digital transformation initiatives undertaken by BFSI organizations to stay ahead in a competitive market and meet the evolving needs of customers.

One of the primary digital transformation initiatives in the BFSI sector is the development and deployment of mobile banking applications. Recognizing the increasing reliance on smartphones and mobile devices, banks and financial institutions have invested heavily in creating user-friendly and feature-rich mobile apps.

These apps enable customers to perform a wide range of banking transactions, such as account inquiries, fund transfers, bill payments, and mobile deposits, conveniently from their mobile devices. Mobile banking apps not only enhance customer experience but also drive customer engagement and loyalty.

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Furthermore, BFSI organizations are leveraging advanced analytics and artificial intelligence (AI) technologies to gain actionable insights from vast amounts of data. By harnessing the power of data analytics, banks and financial institutions can better understand customer behavior, preferences, and needs. AI-powered chatbots and virtual assistants are being deployed to provide personalized recommendations, address customer queries, and facilitate self-service transactions, thereby improving customer satisfaction and reducing operational costs.

Another critical digital transformation initiative in the BFSI sector is the adoption of blockchain technology. Blockchain offers immutable and transparent transaction records, enhancing security, trust, and efficiency in financial transactions. BFSI organizations are exploring various use cases for blockchain, including cross- border payments, trade finance, identity verification, and smart contracts. By leveraging blockchain technology, banks and financial institutions can streamline processes, reduce fraud, and lower transaction costs, ultimately enhancing operational efficiency and fostering innovation.

Moreover, BFSI organizations are embracing open banking and API (Application Programming Interface) ecosystems to facilitate collaboration and innovation in the industry. Open banking initiatives enable banks to securely share customer data and services with third-party developers and fintech startups through APIs. This collaboration fosters the development of innovative financial products and services, such as personal finance management apps, peer-to-peer lending platforms, and robo-advisors, enriching the overall customer experience and expanding market opportunities.

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IT Infrastructure Modernization in Government Service Delivery

UIADI Biometric Upgrade

The Unique Identification Authority of India (UIDAI) is mandating an upgrade from L0 to L1 biometric devices for Aadhaar authentication. This upgrade signifies a significant step towards enhancing security and accuracy in Aadhaar-based fingerprint and iris recognition systems.

The older L0 devices rely on basic sensors to capture fingerprints and iris scans. They offer a lower level of security and may be prone to errors due to limitations in sensor technology. This risk has prompted an upgrade to L1 devices which are equipped with advanced capacitive fingerprint sensors and high-resolution iris scanners. L1 devices offer improved image quality, leading to higher accuracy and better resistance to spoofing attempts.

Impact of Upgrade: Opportunities for IT Infrastructure Service Providers

The L1 biometric upgrade presents a lucrative opportunity for IT infrastructure companies in several ways:

Device Deployment and Maintenance: The rollout of millions of L1 devices across India necessitates efficient deployment and maintenance services. IT infrastructure companies can offer logistics and on-site support for device installation, configuration, and troubleshooting.

System Integration: Integrating L1 devices with existing Aadhaar infrastructure requires expertise in system integration. IT infrastructure companies can provide services for seamless integration and data transfer between devices and central systems.

Cybersecurity Solutions: The increased focus on security necessitates robust cybersecurity solutions for L1 devices and the overall Aadhaar infrastructure. IT infrastructure companies can offer security assessments, penetration testing, and vulnerability management services.

Training and Awareness: The transition to L1 devices requires training for users and administrators. IT infrastructure companies can develop training programs to educate users on the proper use of L1 devices and create awareness about Aadhaar security best practices.

Point of Sale (PoS) Mandate for Direct Benefit Schemes

The Indian government's initiative to mandate Point-of-Sale (PoS) machines for Direct Benefit Transfer (DBT) schemes signifies a significant shift towards financial inclusion and transparency. DBT involve electronically transferring government subsidies and benefits directly to beneficiaries' bank accounts. The PoS mandate requires using PoS machines for authenticating beneficiaries and recording transactions when they utilize these benefits at designated points.

Opportunities for IT Infrastructure Service Providers

The PoS mandate creates exciting opportunities for IT infrastructure companies in several areas:

- PoS Hardware and Software Providers: There will be a surge in demand for PoS machines, catering to various functionalities and price points. IT infrastructure companies can supply, and install these devices. Additionally, there's a need for developing and integrating secure PoS software solutions.

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- Connectivity Solutions: Reliable internet connectivity is crucial for PoS transactions, especially in rural areas. IT infrastructure companies can provide solutions like satellite internet, VSAT, or robust broadband services to ensure seamless connectivity for PoS devices.
- Payment Network Services: The increased volume of PoS transactions necessitates efficient payment network processing. IT infrastructure companies can offer payment gateway solutions and network management services to ensure smooth transaction processing.
- Data Security and Management: Securing sensitive financial data from PoS transactions is paramount. IT infrastructure companies can provide data encryption solutions, security audits, and robust data management solutions to safeguard sensitive information.
- Training and Support: Rolling out PoS systems across a vast nation requires training for retailers, beneficiaries, and government officials. IT infrastructure companies can develop training programs and provide ongoing technical support for all stakeholders involved.

Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDSA)

The Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDSA), launched in 2017, is a flagship initiative of the Government of India aimed at empowering rural India with digital literacy skills.

Opportunities for IT Infrastructure Service Providers

The PMGDSA has opened doors for IT infrastructure companies to play a vital role in India's digital transformation journey:

- Training and Development: There's a demand for companies that can develop and deliver effective digital literacy training programs tailored to the needs of rural populations. This includes creating content in local languages and utilizing user-friendly training modules.
- Technology Infrastructure: Providing access to computers, tablets, or smartphones for training purposes is crucial. IT infrastructure companies can collaborate with the government to set up training centers or provide low-cost devices for rural communities.
- Connectivity Solutions: Bridging the digital divide in rural areas requires innovative solutions for internet connectivity. IT infrastructure companies can explore options like satellite internet, VSAT, as well as establishing robust broadband networks in rural areas.

Data Centre Policy 2020

The Data Centre Policy 2020, launched by the Ministry of Electronics and Information Technology (MeitY), aims to accelerate the growth of data center infrastructure in India. This policy introduces a series of reforms to streamline the setup process, incentivize investments, and position India as a global data center hub.

Opportunities for IT Infrastructure Service Providers

The Data Centre Policy 2020 presents a golden opportunity for IT infrastructure companies offering a range of services:

- System Integration: Designing and integrating complex data center infrastructure, including hardware, software, and network components, will be in high demand. Companies with expertise in system integration can play a crucial role.

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- Hardware Services: Supplying, installing, and maintaining data center hardware like servers, storage solutions, cooling systems, and security equipment will see a surge in demand. IT infrastructure companies with robust hardware service portfolios are well-positioned.
- Project Management Services: Managing large-scale data center projects from planning and construction to deployment and ongoing maintenance requires skilled project managers. Companies with experience in managing complex IT infrastructure projects will be in high demand.
- IT Facility Management Services: Providing comprehensive data center facility management services, encompassing power management, environmental controls, physical security, and disaster recovery solutions, will be crucial. Companies with expertise in this area can capitalize on this opportunity.
- IT Consulting Services: Offering strategic IT consulting services to businesses planning to set up or migrate to data centers will be in high demand. This includes advising on data center design, technology selection, and implementation strategies.
- IT Infrastructure Solutions: Delivering complete IT infrastructure solutions encompassing hardware, software, managed services, and expertise in data center design and deployment will be attractive to businesses. Companies offering bundled solutions can gain a competitive edge.

Digital Personal Data Protection (DPDP) Act

The Digital Personal Data Protection Act (DPDP) Act, 2023, is a landmark legislation in India that governs the processing of digital personal data. It aims to strike a balance between protecting individual privacy and enabling businesses to leverage data for legitimate purposes.

Impact on Businesses Handling Data:

The DPDP Act will significantly impact businesses that handle personal data of Indian citizens.

- Compliance Costs: Businesses will need to invest in building processes and systems to comply with the Act's requirements. This includes obtaining consent management platforms, data security solutions, and potentially hiring data protection officers.
- Shift in Data Governance: Businesses will need to adopt a more transparent and accountable approach to data governance. This involves documenting data collection practices, purposes, and retention periods.
- Potential for Disruption: Non-compliance with the Act can lead to penalties and reputational damage. Businesses may need to review their data collection practices and marketing strategies to ensure compliance.

Opportunities for IT Infrastructure Service Providers

The DPDP Act presents significant opportunities for IT infrastructure companies that can help businesses achieve compliance:

- Data Security Solutions: The increased focus on data security creates a demand for solutions like data encryption, access controls, and intrusion detection systems. IT infrastructure providers can offer these solutions and consulting services to help businesses secure their data.

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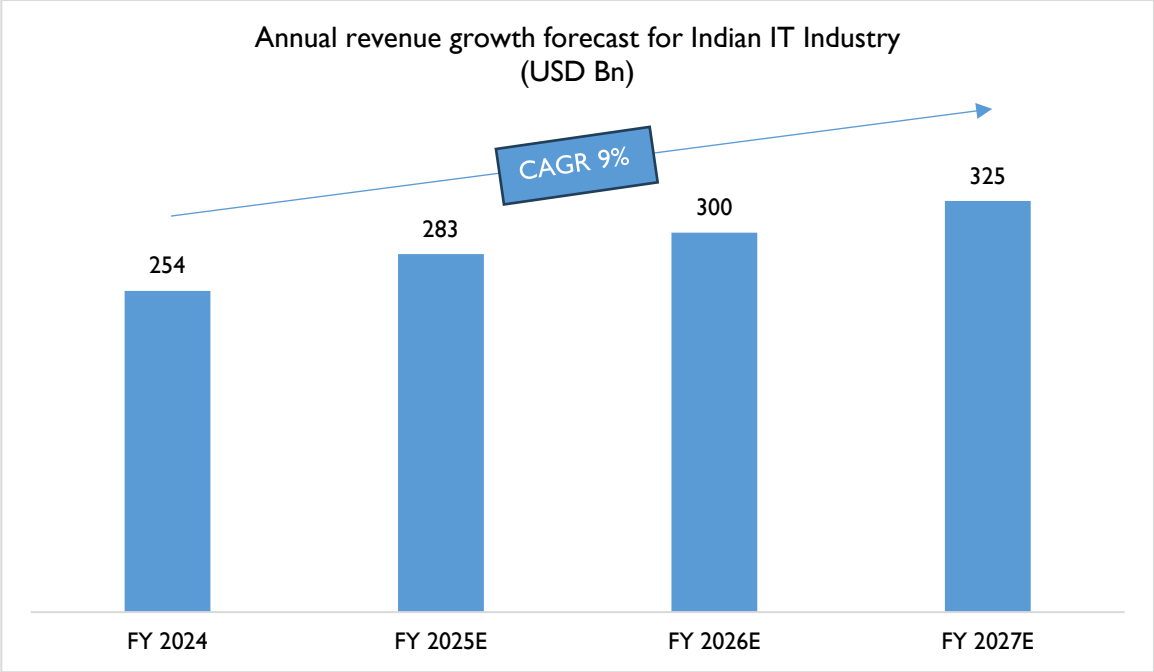
- Consent Management Platforms: Businesses will need tools to manage consent from individuals for data collection. IT infrastructure providers can develop or integrate consent management platforms that streamline this process.
- Data Governance Solutions: Software solutions for data lineage tracking, data discovery, and data anonymization can help businesses manage and govern their data effectively. IT infrastructure providers can offer these solutions or partner with existing providers.
- Cloud-based Compliance Solutions: Cloud service providers can offer solutions specifically designed to help businesses comply with the DPDP Act's data storage and residency requirements.

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Growth Forecast

The Indian IT industry is experiencing a period of significant growth, driven by a confluence of factors. According to estimates, the industry is expected to grow at CAGR of 9% to reach USD 325 billion by 2027. The global shift towards digitalization has increased the demand for IT services across industries. Indian IT firms, with their expertise in software development, cloud solutions, and system integration, are well- positioned to capitalize on this trend.

Compared to developed economies, India offers competitive rates for IT services, making it an attractive option for businesses worldwide. This advantage, coupled with a large pool of skilled professionals, continues to attract global clients. The rise of technologies like artificial intelligence, blockchain, and the Internet of Things (IoT) is creating new opportunities for the Indian IT industry. Companies are investing in developing expertise in these areas to meet evolving client needs.



Source: NASSCOM, Industry Articles, D&B Research and Estimates

Notably, the domestic IT market is expected to grow even faster. This rapid expansion presents exciting opportunities for both Indian businesses and the global IT landscape. The Indian government is actively promoting digital adoption through initiatives like "Digital India," which aims to make government services more accessible online and bridge the digital divide.

This creates significant demand for IT infrastructure and services within the country. The rising middle class in India is driving demand for consumer-focused IT products and services, such as e-commerce platforms, digital payment solutions, and online entertainment options. India's thriving start-up ecosystem is fueling demand for IT services as these new businesses require solutions for website development, app development, cloud infrastructure, and cybersecurity.

Competitive Landscape

The Indian IT infrastructure industry is flourishing, driven by a growing demand for digital solutions. The competitive landscape is dynamic, with established players facing competition from innovative mid-tier players and niche specialists. The

market is teeming with both established players and emerging ones, creating a dynamic competitive environment. Major players like TCS, Wipro, Infosys, and HCL Technologies offer comprehensive IT infrastructure solutions, including data center services, network management, and cloud solutions. These companies leverage their vast experience, global reach, and diverse service portfolios to gain a competitive edge.

Mid-sized players like L&T Infotech, Tech Mahindra, and Mphasis are also making their mark, offering cost- effective solutions and catering to specific market segments. Additionally, niche players with specialized expertise in areas like cloud migration, network security, and disaster recovery are carving out their space, further intensifying the competitive landscape.

Competition is evolving beyond just cost and service offerings. Factors like innovation, agility, and specialization are becoming increasingly important. Companies are differentiating themselves by investing in cutting-edge technologies like artificial intelligence and automation, adopting agile methodologies, and developing domain-specific expertise. Additionally, the rise of cloud-based solutions is disrupting traditional business models, forcing players to adapt and develop new competitive strategies.

The Government of India's Digital India initiative fuels the demand for IT infrastructure solutions as businesses and government entities across the country rapidly digitize their operations to facilitate e-governance, citizen services, and business enablement. The rapid adoption of cloud-based solutions drives the need for IT infrastructure services focusing on cloud migration, management, and optimization. Companies look for providers to help them move workloads to the cloud and manage hybrid cloud environments. Rising cybersecurity threats increase the demand for robust network, data, and infrastructure security solutions. Companies require assistance in vulnerability assessments, threat detection, and incident response. The need for data centers to store and process increasing volumes of data is pushing the requirement for IT infrastructure players with specialized expertise in data center design, build-out, and management.

The domestic IT infrastructure industry in India is highly competitive, featuring a mix of established global players, large Indian conglomerates, and specialized mid-sized firms. Companies like TCS, Wipro, Infosys, and HCL Technologies dominate the market, leveraging their global reach, extensive resources, and diversified portfolios. These players offer a full range of IT infrastructure services, from cloud solutions and data center management to network security and managed services. Mid-sized players like L&T Infotech, Tech Mahindra, Mphasis, and others compete by providing a mix of cost-effectiveness, niche specialization, and focus on specific industry verticals. They often have strong regional presence and established relationships with specific clientele. Smaller, niche players compete by focusing on specialized areas like cloud migration, network security, cybersecurity, or infrastructure solutions for specific sectors like healthcare or education.

Entering the domestic IT infrastructure industry requires significant technical expertise and investment in skilled resources. Setting up modern data centers, establishing cloud solutions, and building robust networking infrastructure can be capital intensive. Especially to cater to the government sector, where pre-qualifications are mandatory, which often involve a minimum number of years of experience, proven track record of successfully executing similar projects, and financial stability. Additionally, obtaining security clearances and adhering to stringent compliance regulations can be challenging for new entrants. Government contracts often require domain-specific expertise and experience in handling large-scale projects. Additionally, specific security certifications and adherence to data privacy regulations are mandatory.

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TCS provides a comprehensive portfolio of IT infrastructure services, including data center operations, managed services, and cloud solutions. For example, TCS established and currently maintains the infrastructure for the Passport Seva, a government initiative facilitating passport issuance.

Wipro offers a comprehensive portfolio of IT infrastructure services for government agencies, including cloud solutions, data center management, and network security. They have been involved in projects like the implementation of the Integrated Traffic Management System (ITMS) for Delhi and the National Knowledge Network (NKN) project.

HCL Technologies offers a diverse IT infrastructure service portfolio for the government sector, encompassing data center operations, network management, and cloud solutions. They have implemented projects like the National e-Governance Plan (NeGP) and the digitization of land records for various state governments.

L&T Infotech specializes in offering IT infrastructure solutions catering to specific needs of government agencies. They have been involved in projects like the implementation of the Goods and Services Tax Network (GSTN) and the automation of various processes for the Ministry of Defence.

While the government sector presents unique challenges with its stringent entry barriers and specific requirements, it also offers significant opportunities for players with the right expertise and experience.

Key Factors Shaping Competition

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Cost-effective Solutions	Indian IT service providers are known for their ability to offer cost-efficient solutions compared to many developed nations. This cost advantage remains a primary factor attracting domestic businesses seeking to maximize the value of their IT investments
Competitive Bidding	The Indian IT market has many established players and emerging firms, leading to a highly competitive bidding environment for projects. This can drive price pressure, particularly for commoditized services
Flexible Pricing Models	IT providers in India often offer flexible pricing models to cater to diverse client needs. These could include fixed-price contracts, pay-as-you-go models, or outcome-based pricing, allowing clients to tailor their IT spend

Service Offerings

Broad Range of Services	Indian IT firms offer a comprehensive spectrum of services, including software development, IT infrastructure management, cloud services, cybersecurity, business process outsourcing, and analytics. This allows businesses to find a single vendor for multiple needs.
Specialization in Emerging Technologies	Many Indian IT companies are differentiating themselves by specializing in areas like artificial intelligence, machine learning, blockchain, IoT, and advanced analytics. This specialization in niche areas helps them stand out in a crowded market.
Emphasis on Innovation	Top Indian IT companies invest significantly in research and development to stay ahead of the technology curve. They prioritize innovation, offering cutting-edge solutions for a rapidly evolving digital landscape

Other Factors	
Talent Pool	India's large and skilled IT workforce is a significant driver of the industry's growth and competitiveness. The continuous supply of engineers and IT professionals provides an advantage in terms of resource availability and cost optimization.
Domestic Market Understanding	Indian IT service providers have a deep understanding of the local business dynamics, regulatory requirements, and cultural nuances. This understanding can be a key differentiator when working with Indian businesses..
Government Support	Government initiatives like "Digital India" and "Make in India" have fostered a conducive environment for the domestic IT industry. Programs promoting technology adoption and innovation contribute to the industry's growth.

Key Player Profiles

Company Name	Brief Profile	Services Offered
Telecommunications Consultants India Limited (TCIL)	It is a wholly-owned Government of India Public Sector Undertaking under the administrative control of the Department of Telecommunications (DoT), Ministry of Communications. Established in 1978, it is a leading engineering and consultancy company offering services in the fields of telecommunications, information technology, and civil construction.	TCIL offers various IT services, such as: • IT infrastructure planning, design, and implementation • Software development and maintenance • Cybersecurity solutions • Data center services

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Company Name	Brief Profile	Services Offered
Larsen & Toubro (L&T)	It is a multinational conglomerate headquartered in Mumbai, India. Established in 1938, it has a long history and strong presence in several key sectors such as Engineering & Construction (E&C) , Information Technology & Services (IT&S), Financial Services, making it a leading player in the Indian economy.	Information Technology & Services segment is represented by L&T Technology Services (LTTS), a listed subsidiary focusing on: Engineering design and development: LTTS offers services like product development, embedded systems, and engineering process management for various sectors. Digital transformation: The company assists clients in implementing digital solutions like automation, data analytics, and cloud adoption.

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Company Name	Brief Profile	Services Offered
Extramarks Education	It is an Indian education technology (EdTech) company established in 2007. It offers a comprehensive suite of online and offline learning solutions for students across various age groups and educational needs.	Pre-school and K-12: Extramarks provides curriculum-based resources and interactive learning modules for students ranging from pre-school to class 12. Higher Education and Test Prep: The company offers dedicated online courses and preparation materials for various competitive exams like JEE (engineering entrance), NEET (medical entrance), and other university entrance exams.

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Company Name	Brief Profile	Services Offered
Team Computers	It is a leading IT infrastructure and information solutions provider established in India in 1987. With a presence across over 25 cities in the country, it serves over 2500 clients and boasts a workforce exceeding 4,000 individuals.	Core Services:Team Computers offers a comprehensive range of hardware & software solutions Team Computers offers a wide range of IT services, including: • System management • Application management • Network management • Security • management • Cloud services • Managed print services • IT consulting

Company Name	Brief Profile	Services Offered
Hitachi Systems Micro Clinic (HISYS-MC)	It is a system integration (SI) company operating under the umbrella of Hitachi Systems India Pvt. Ltd. Established in 1991, HISYS-MC has carved a niche for itself in the Indian IT landscape, empowering businesses with advanced IT solutions.	• Infrastructure Solutions • Cloud Solutions • Networking Solutions • Security Solutions • Digital Workplace Solutions • Managed Services

Dynacons Systems & Solutions Ltd.	Established in 1995 and headquartered in Mumbai, India, has carved a niche for itself in the IT service industry. They offer a comprehensive suite of IT solutions catering to diverse needs of corporations across various industry verticals.	• Infrastructure Managed Services (IMS) • Break-Fix Services • Managed Print Services (MPS) • Cloud Computing • Systems Integration Services • Applications Development and Maintenance

Company Name	**Brief Profile**	**Services Offered**
Value Point Systems Private Limited	It is a leading IT infrastructure solutions and services provider headquartered in Bengaluru, India. Established in 1991 as a partnership firm and reconstituted as a private limited company in 1995, VPSPL has established itself as a trusted partner for businesses seeking reliable and comprehensive IT solutions.	End-to-End Infrastructure Solutions: VPSPL provides a full spectrum of services to design, build, manage, and optimize IT infrastructure, including: • Network infrastructure solutions (LAN, WAN, wireless) • Data center solutions (design, construction, management)

		• Cloud computing solutions (migration, management, optimization) • Cyber security solutions (threat detection, vulnerability management) • IT infrastructure management (monitoring, maintenance, optimization) Life Cycle Services: VPSPL offers a comprehensive

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Company Name	Brief Profile	Services Offered
Aabasoft Technologies India Private Limited	It is a global Information Technology (IT) and Information Technology Enabled Services (ITeS) solutions provider headquartered in Kochi, Kerala, India. Established in 2002, the company has grown to serve clients across various industries.	• IT Infrastructure • Cloud Services • Web Technology • Mobile Applications • Enterprise Applications • Business Services • Internet Marketing

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Solar EPC Industry

Renewable Energy Landscape in India[3]

India has emerged as a global leader in renewable energy, ranking 4th globally for total renewable power capacity additions, 4th in wind power capacity, and 5th in solar power capacity, as per the REN21 Renewables 2024 Global Status Report. At COP26, India pledged to achieve 500 GW of non-fossil fuel-based energy by 2030, marking the world's largest renewable energy expansion plan. As of August 2024, India's installed non- fossil fuel capacity stands at over 207.76 GW, which is about 46% of the country's total power capacity. The solar energy capacity alone has surged by 30 times over the past nine years, reaching 89.43 GW. India's estimated solar energy potential is 748 GWp, positioning the country as a key player in the global renewable energy market.

The renewable energy sector in India benefits from favourable government policies, including 100% Foreign Direct Investment (FDI) under the automatic route. The government has also allocated INR 10,000 crore in the Union Budget 2024-25 for solar power development, a 110% increase from the previous year, along with other incentives such as the PM-Surya Ghar Muft Bijli Yojana and Basic Customs Duty exemptions on critical minerals for the renewable sector.

India's renewable energy capacity, which includes wind, solar, biomass, hydro, and waste-to-energy, totals approximately 199.52 GW. With solar power accounting for 89.43 GW and wind power contributing 47.19 GW, India is well-positioned to meet its ambitious goals of reducing carbon emissions, with a commitment to achieve net-zero by 2070. Additionally, 50 solar parks with a combined capacity of 37.49 GW have been approved, while offshore wind energy and the National Green Hydrogen Mission are key growth areas, targeting 30 GW of wind capacity and 5 MMT of green hydrogen production by 2030.

The Production Linked Incentive (PLI) Scheme is a crucial initiative supporting India's renewable energy sector, specifically targeting solar PV manufacturing. Launched under the Aatmanirbhar Bharat initiative, the scheme aims to build 65 GW of annual manufacturing capacity, providing direct and indirect employment opportunities while promoting import substitution. The renewable energy landscape in India continues to attract significant investment, with numerous projects and opportunities, reflecting the country's strong commitment to sustainable growth and energy security.

Solar Power Generation Scenario in India

India has rapidly ascended as a global leader in solar power generation, ranking 5th globally in solar power capacity and 4th in renewable energy installations, including large hydro. As of July 2025, India has achieved a cumulative installed solar power capacity of 119.02 GW. This includes 90.99 GW from ground-mounted solar plants, 19.88 GW from grid-connected solar rooftop systems, 3.06 GW from the solar component of hybrid projects, and 5.09 GW from off-grid solar installations.[3] These figures highlight the diverse contributions of various solar technologies toward the country's renewable energy goals, showcasing steady progress in expanding solar capacity across different segments.

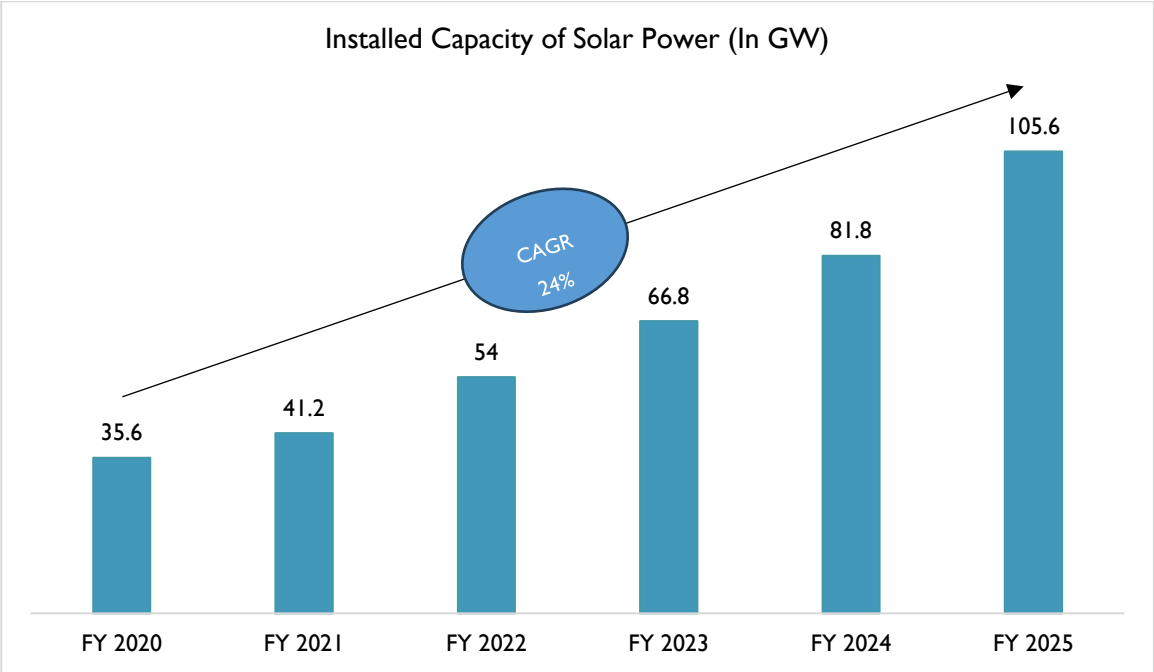
India has witnessed remarkable technological advancements in solar power, with the installed solar capacity growing 30 times over the past nine years. A new study by The Energy and Resources Institute (TERI) has estimated India's total solar potential at 10,830 GW, a sharp increase from the 748 GW assessed in 2014 by the Ministry of New and Renewable

[3] Ministry of New and Renewable Energy

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Energy (MNRE), highlighting not only the vast scope across the country's 300 sunny days annually but also additional opportunities beyond conventional deployment on barren and unculturable lands.

The TERI report, "*Reassessment of Solar Potential in India: A Macro-level Study*," projects 4,909 GW from ground-mounted PV, 100 GW from floating solar, 960 GW from rooftops, 4,177 GW from agrivoltaics, and 684 GW from urban and infrastructure-integrated systems, presenting a comprehensive and scalable roadmap for India's renewable energy ambitions.



Source: Ministry of New and Renewable Energy

India's solar power sector has demonstrated robust growth, marked by a significant increase in installed capacity over the past five fiscal years. Beginning at 35.6 GW in FY 2020, the country's solar power capacity surged to 105.6 GW by FY 2025, reflecting a notable compound annual growth rate (CAGR) of 24%. This rapid expansion underscores India's strategic push towards renewable energy, with substantial investments and policy initiatives driving the adoption of solar technologies across the nation. The upward trajectory in solar installations highlights India's commitment to achieving energy security, reducing carbon emissions, and leveraging its abundant solar resources for sustainable development.

India's solar power sector has seen significant growth and development, reflecting the country's commitment to renewable energy. As of 2025, India aims to achieve a solar power capacity of 280 GW by 2030, with current installations reaching 105.6 GW. Rajasthan leads with 28 GW, driven by projects like the Bhadla Solar

Park, the world's largest fully operational solar park. Gujarat follows with 18.5 GW, emphasizing projects like the Charanka Solar Park and plans for a massive renewable energy park in Kutch. Maharashtra ranks third with 10.7 GW, anchored by the Maha Solar Park. Tamil Nadu and Karnataka round out the top five states with 10.2 GW and 9.7 GW, respectively. Each state showcases ambitious targets and substantial investments in solar energy infrastructure, underscoring India's rapid advancement in green power generation.

In the realm of solar power plants, India stands out prominently with significant achievements. Bhadla Solar Park in Rajasthan exemplifies this distinction, boasting a colossal capacity of 6263.71 MW spread across

126.74 km2, making it the world's largest solar park as of 2020. Securing a long-term power purchase agreement ensures the sale of generated electricity, underscoring India's commitment to renewable energy transition. Moreover, India's initiatives extend to innovative projects like the Kutch Solar Project, aimed at providing electricity to remote regions through advanced technologies such as solar ponds and integrated solar stills with greenhouses. These efforts highlight India's strategic focus on sustainable development and reducing reliance on fossil fuels, positioning it as a global leader in the solar energy sector.

Solar Power: Technologies Deployed

Solar power harnesses energy from the sun using various technologies, each suited for different applications and environments. The primary technologies deployed in solar power generation in India include:

Solar Photovoltaic (PV) Technology

Solar Photovoltaic (PV) technology converts sunlight directly into electricity using semiconductor materials, primarily silicon, and is the most widely deployed technology in India, significantly contributing to the country's installed capacity.

PV systems include monocrystalline solar panels, known for high efficiency and space optimization but typically more expensive; polycrystalline solar panels, which are more affordable but less efficient; and thin-film solar panels, which are lightweight and flexible but generally have lower efficiency.

Tata Power Solar produces both monocrystalline and polycrystalline panels and is involved in large-scale solar PV projects across India, while Adani Solar, a subsidiary of Adani Group, manufactures both types of panels and operates a significant 2,000 MW solar farm in Khavda, Gujarat, part of the world's largest solar park.

Rooftop solar systems have gained popularity for residential and commercial buildings due to government incentives and net metering policies that allow self-generated electricity, while large-scale ground- mounted solar farms, known as solar parks, include notable examples like Bhadla Solar Park (2,245 MW) in Rajasthan and Pavagada Solar Park (2,050 MW) in Karnataka.

The combination of these technologies and manufacturers demonstrates India's commitment to expanding its solar energy capacity and transitioning to renewable energy sources.

Concentrated Solar Power (CSP)

CSP technology utilizes mirrors or lenses to concentrate sunlight onto a small area, generating heat that is then used to produce electricity through steam turbines. This process enables efficient conversion of solar energy into electricity, making CSP a viable option for large-scale energy production.

CSP systems are most effective in large-scale utility projects, where they can harness significant amounts of solar energy. One of the key advantages of CSP is its ability to incorporate thermal energy storage systems. This capability allows CSP plants to store heat generated during sunny periods and use it to produce electricity even when sunlight is not available, providing a more stable and reliable energy supply.

The 100 MW solar thermal power plant located in Dhursar village, Rajasthan, exemplifies CSP technology in India. This plant utilizes parabolic trough technology, which consists of curved mirrors that focus sunlight onto a receiver tube filled

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with heat transfer fluid. The heated fluid then produces steam that drives a turbine to generate electricity, showcasing the practical application of CSP in the country.

While Bhadla Solar Park is primarily known for its photovoltaic (PV) installations, it has also begun experimenting with hybrid systems that integrate CSP technologies. This innovative approach aims to enhance energy output by combining the strengths of both PV and CSP, potentially improving efficiency and reliability in solar energy generation.

Although CSP technology is less common than photovoltaic (PV) technology in India, it is increasingly being explored for its potential to provide effective energy storage solutions. As India seeks to diversify its renewable energy portfolio and enhance energy security, CSP's ability to store thermal energy could play a significant role in the future of the country's solar energy landscape.

Solar Thermal Systems

Solar thermal systems collect sunlight to produce heat, which can be utilized for various applications, including residential water heating and space heating. These systems play a vital role in promoting the use of renewable energy for domestic and industrial purposes.

Solar Water Heaters: These systems utilize solar collectors to heat water for domestic use, offering an efficient and sustainable alternative to traditional water heating methods, thereby reducing energy costs and reliance on fossil fuels.

Solar Air Heaters: Designed to heat air for space heating, solar air heaters are commonly employed in buildings and industrial processes. They contribute to reducing energy consumption and enhance overall energy efficiency in various applications.

Solar Thermal Projects:

Rajasthan Solar Water Heating Project: This comprehensive initiative has been implemented across residential, commercial, and industrial sectors in Rajasthan. The project promotes the adoption of solar water heating systems, significantly reducing reliance on fossil fuels and lowering energy costs for users.

Sundarbans Solar Thermal Project: This initiative focuses on providing solar thermal systems for cooking and water heating in rural areas of the Sundarbans. By enhancing energy access and promoting sustainability, the project aims to improve the quality of life for residents in these regions through the utilization of renewable energy resources.

Building-Integrated Photovoltaics (BIPV)

Building-Integrated Photovoltaics (BIPV) systems incorporate solar cells into building materials, such as windows, roofs, and facades, enabling buildings to generate energy while maintaining aesthetic appeal. This innovative technology serves the dual purpose of energy generation and structural support.

The Indian Institute of Technology (IIT) Madras has successfully integrated solar panels into its building structures. This initiative demonstrates the feasibility of BIPV in urban environments and promotes energy efficiency on campus, showcasing a commitment to sustainable building practices.

The Solar House Project, located in Delhi, the Solar House project exemplifies BIPV technology, where solar panels are seamlessly integrated into the building's facades and roofs. This project highlights the potential for energy generation while preserving the aesthetic integrity of architectural designs.

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By integrating solar technology into building materials, BIPV systems can reduce reliance on traditional energy sources, lower energy costs, and contribute to the overall sustainability of urban infrastructure. As cities continue to grow, BIPV offers a promising solution for incorporating renewable energy into the built environment, potentially transforming urban landscapes into energy-producing structures while enhancing their visual appeal.

Floating Solar Farms

- Floating solar farms consist of solar panels mounted on floating structures on bodies of water. This innovative approach helps reduce land use, minimizes evaporation, and can enhance the efficiency of solar panels due to the cooling effects provided by the water.
- Kolar Floating Solar Project: Located in Karnataka, the Kolar Floating Solar Project has a capacity of 54 MW. This project effectively utilizes water surfaces for deploying solar panels, thereby minimizing land use and enhancing overall efficiency.
- NTPC Floating Solar Project: The National Thermal Power Corporation (NTPC) has commissioned a floating solar project in Andhra Pradesh with a capacity of 100 MW. This initiative showcases the potential of floating solar technology in utilizing water bodies for renewable energy generation.
- Mudasarlova Reservoir Floating Solar Project: Another significant project is the Mudasarlova Reservoir Floating Solar Project in Andhra Pradesh, which has a capacity of 2 MW. This installation exemplifies the application of floating solar technology in enhancing energy production while conserving land resources.
- Expansion of Floating Solar Technology: NTPC has also developed floating solar plants in Telangana and other states, indicating a growing interest and investment in floating solar technology across India, aimed at maximizing renewable energy output while minimizing ecological impact.

Hybrid Solar Systems

- Hybrid solar systems combine different solar technologies or integrate solar power with other renewable energy sources to optimize energy generation and enhance reliability. This approach allows for a consistent power supply by addressing fluctuations in solar energy availability.
- Integration with Other Sources: For instance, solar photovoltaic (PV) systems can be paired with wind energy or energy storage systems, creating a more stable and reliable energy solution for various applications.
- Tata Power Hybrid Solar Projects: Tata Power has successfully developed hybrid solar projects that integrate solar PV with wind energy. These projects are strategically implemented in various locations, significantly enhancing energy reliability and consistency in power supply.
- Renew Power Initiatives: Renew Power has made substantial investments in hybrid projects that combine solar PV with energy storage systems. This innovative approach not only improves grid stability but also helps meet peak demand, making renewable energy more accessible and dependable.
- By leveraging multiple energy sources, hybrid solar systems enhance overall energy security, reduce dependency on a single source, and contribute to a more resilient and efficient power grid.

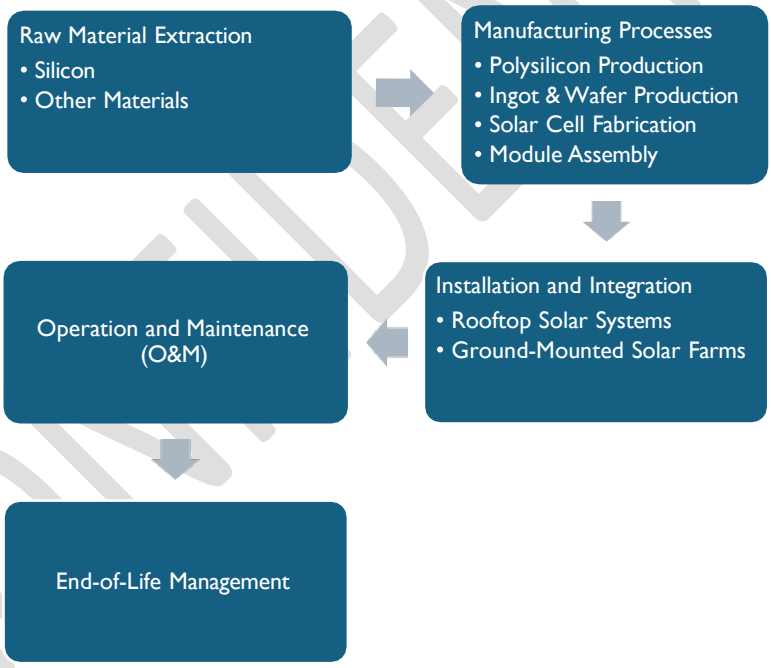
Agrivoltaics

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- Agrivoltaics is an emerging technology that involves co-locating solar panels with agricultural activities. This innovative approach allows for simultaneous solar energy generation and crop production, maximizing land use and providing dual benefits for energy and food production.
- An agrivoltaics pilot project in Gujarat exemplifies this technology by installing solar panels on agricultural land. This setup enables farmers to cultivate crops beneath the solar panels while generating renewable energy.
- The agrivoltaics approach optimizes land use, allowing farmers to increase their income by leveraging both crop production and renewable energy generation.
- By integrating solar energy with agriculture, agrivoltaics contributes to sustainable land management practices and supports the transition to cleaner energy sources.
- This technology holds significant potential for expansion across various regions in India, promoting food security while contributing to the country's renewable energy goals.

Value Chain of Solar Parts

The solar power value chain encompasses various stages, from raw material extraction to the final installation of solar systems. Understanding this value chain is crucial for analyzing the solar industry's dynamics and identifying opportunities for efficiency and innovation.



- Raw Material Extraction: The primary material used in solar panel production is silicon, extracted and purified to create polysilicon. Other essential materials include silver, used for conductive layers, glass for panel coverings, and aluminium for framing.
- Manufacturing Processes: Polysilicon undergoes purification to produce chunks, which serve as the feedstock for solar cells. In the subsequent stages, polysilicon is melted and formed into cylindrical ingots. These ingots are sliced into thin wafers, the foundation for solar cell fabrication. The wafers are then processed to create solar cells, which convert sunlight into electricity. Finally, these cells are assembled into solar modules or panels and encapsulated for environmental protection.

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- Installation and Integration: Solar installations are implemented either as rooftop systems, typically deployed on residential and commercial buildings, or as ground-mounted solar farms, large-scale installations connected to the electrical grid or operating off-grid.
- Operation and Maintenance (O&M): Post-installation, solar systems require regular maintenance to ensure efficient performance. This includes cleaning solar panels, inspecting electrical connections, and monitoring overall system functionality.
- End-of-Life Management: As the solar industry evolves, recycling processes for decommissioned solar panels are gaining importance, with efforts focused on recovering valuable materials for reuse.

Solar Cell & Module Scenario

India is making significant strides in solar module manufacturing, driven by various government initiatives, including the Production-Linked Incentive (PLI) scheme and the Approved List of Models and Manufacturers (ALMM). These measures aim to boost domestic production and enhance the country's competitiveness in the global solar market. While India still trails behind leaders such as China and Vietnam, recent advancements and export strategies are positioning it to become the second-largest solar module manufacturing region by 2025, with a current capacity of 64.5 GW and a growing global market share.

[4]India's solar industry saw significant growth in 2023, with the installation of 20.8 GW of solar modules and

3.2 GW of solar cell manufacturing capacity. By the end of the year, the country's cumulative solar module manufacturing capacity reached 64.5 GW, while solar cell manufacturing capacity stood at 5.8 GW. Around 60% of the module manufacturing capacity is now equipped to produce solar modules in the M10 and G12 wafer sizes, reflecting advancements in technology. Monocrystalline modules dominated production, followed by polycrystalline, TOPCon, and thin film modules.

Gujarat led the way in photovoltaic manufacturing, contributing 46.1% of the country's total solar module production in 2023. Telangana emerged as the top producer for solar cells, accounting for 39% of the annual capacity. Imports and exports of solar components also saw a rise, with India importing 16.2 GW of solar modules and 15.6 GW of solar cells, while exports of modules and cells increased significantly compared to the previous year.

Looking ahead, solar module manufacturing capacity is projected to surpass 150 GW by 2026, with cell manufacturing expected to reach over 75 GW. While the expansion of domestic production is promising, Indian manufacturers face challenges in maintaining competitiveness due to cheaper imports from countries like China. The need to address geopolitical and trade complexities remains a critical factor for the continued growth of the solar manufacturing sector.

Foreign Trade: Export & Import Scenario

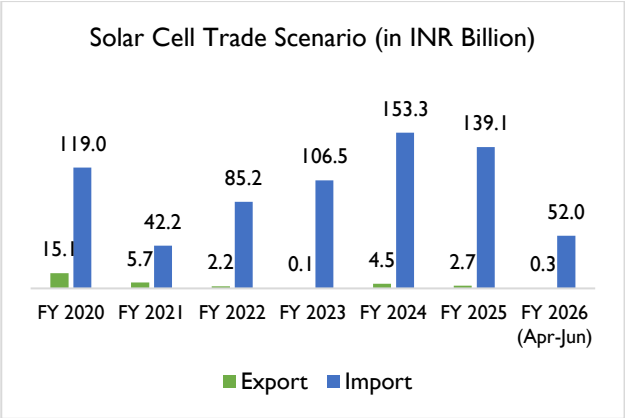
Solar Cell

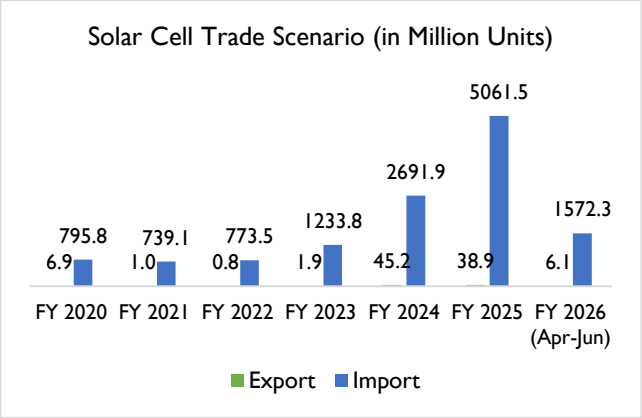
India's solar cell trade has witnessed fluctuating patterns over the past few years, with notable changes in both exports and imports. In FY 2020, India exported solar cells worth INR 15.1 billion, while imports stood significantly higher at INR 119.0 billion.

Over the years, imports have consistently outweighed exports, with the disparity peaking in FY 2024, when imports surged to INR 153.3 billion, while exports were recorded at just INR 4.5 billion. In FY 2025, imports remained elevated

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at INR 139.1 billion, while exports fell to INR 2.7 billion, reaffirming India's continued reliance on imported solar cells despite expanding domestic production capacity.





Source: Ministry of Trade and Commerce

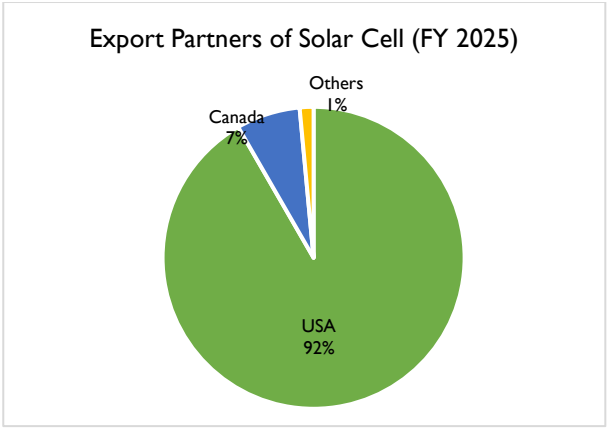
In terms of volume, the import of solar cells has sharply increased from 795.8 million units in FY 2020 to a record 5,061.5 million units in FY 2025. On the export front, volumes have shown significant variability, peaking at 45.2 million units in FY 2024 before declining to 38.9 million units in FY 2025. While this rise in exports reflects some efforts to tap into the global solar market, India continues to remain a net importer by a wide margin.

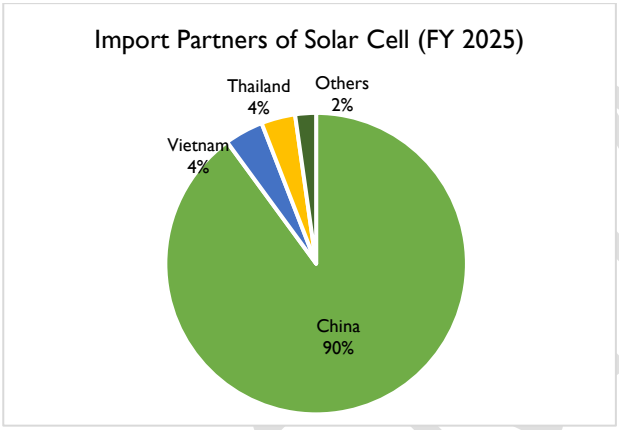
The period of Apr- Jun FY 2026 continues to reflect this imbalance, with imports reaching INR 52.0 billion compared to exports of just INR 0.3 billion. In terms of units, imports stood at 1,572.3 million, while exports were limited to 6.1 million units. The decline in exports during this period can be linked to lower overseas demand and price competition from other Asian suppliers, while imports remained strong due to rising domestic solar installations and limited local cell manufacturing. These factors highlight the urgent need for scaling up domestic capacity and enhancing cost competitiveness to reduce dependency on imports.

Trading Partner

India's export of Solar cells in FY 2025 was largely concentrated in a few key markets, with the United States accounting for 92% of total exports, followed by Canada at 7%. The significant share of exports to the U.S. reflects the strong demand for solar energy components in the country and India's growing reputation as a competitive supplier. The export market diversification, with a focus on Southeast Asian countries like Thailand and Hong Kong, signals India's strategic expansion into regions with increasing solar energy adoption.

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Source: Ministry of Trade and Commerce

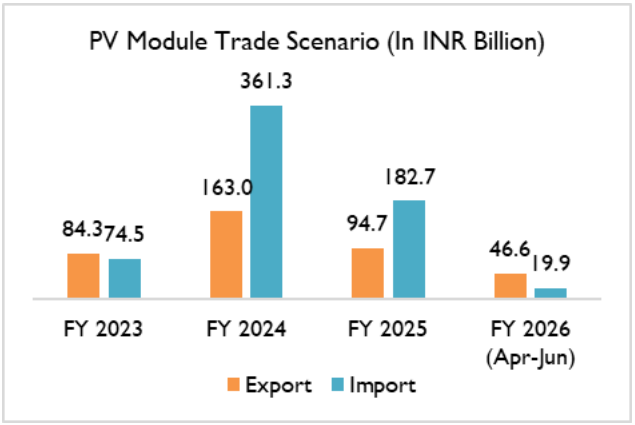
On the import front, China remained India's primary source for solar cells, contributing 90% of total imports in FY 2025. This heavy reliance on Chinese imports underlines the ongoing dependence on low-cost manufacturing hubs despite India's efforts to boost domestic production. Vietnam and Thailand also supplied 4% of imports, each, indicating India's preference for sourcing from established Asian manufacturers. The reliance on imports from multiple countries highlights the gap between domestic demand and local production, suggesting a continued need for technological upgrades and capacity expansion within India to reduce import dependency.

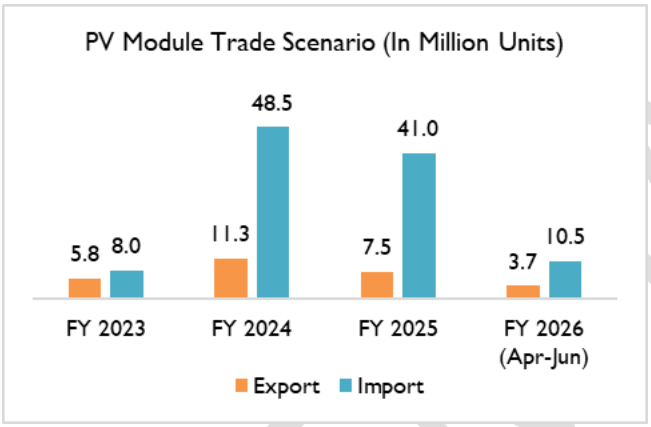
Solar PV module

India's photovoltaic (PV) module trade scenario has experienced notable shifts over the past few years, reflecting the country's evolving position in the global solar market. In FY 2023, exports of PV modules were valued at INR 84.3 billion, surpassing imports of INR 74.5 billion. This marked a turning point, suggesting that India's push to strengthen domestic PV module manufacturing had begun to deliver results, enabling greater exports while lowering import dependency.

The momentum continued into FY 2024, with exports rising further to INR 163.0 billion, though imports also spiked to INR 361.3 billion, driven by strong domestic demand for solar installations. In FY 2025, both exports and imports moderated, standing at INR 94.7 billion and INR 182.7 billion respectively, highlighting a stabilization phase in the trade dynamics while keeping India a net importer.

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Source: Ministry of Trade and Commerce

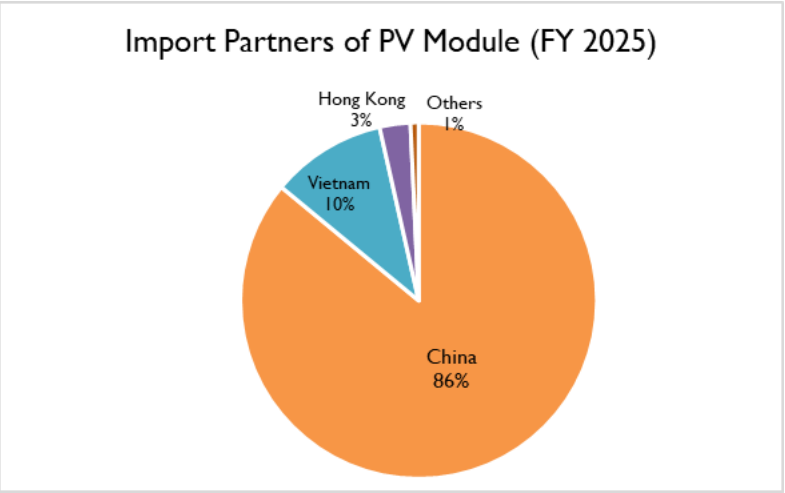
In terms of volumes, India exported 5.8 million units in FY 2023 compared to imports of 8.0 million units, reflecting a relatively balanced position. Exports then increased to 11.3 million units in FY 2024, while imports surged sharply to 48.5 million units, underscoring the high pace of domestic solar deployment. In FY 2025, volumes eased slightly with exports at 7.5 million units and imports at 41.0 million units, indicating continued reliance on overseas supplies despite a healthy export base.

The period of Apr- Jun FY 2026 further highlights this mixed trend, with exports reaching INR 46.6 billion compared to imports of INR 19.9 billion. In volume terms, India exported 3.7 million units while importing 10.5 million units. The higher export value during this quarter indicates growing global demand for Indian modules, while import volumes reflect the need to fill supply gaps in meeting domestic project timelines. This suggests that while India is strengthening its role in global exports, domestic demand pressures continue to drive imports, making capacity expansion and technology upgrades critical to achieving greater self-sufficiency.

Trading Partner

In FY 2025, China dominated India's imports of photovoltaic (PV) modules, accounting for 86% of total imports. This heavy reliance on Chinese modules underscores China's significant cost advantage and well-established manufacturing infrastructure, which continues to cater to India's growing solar energy needs. Vietnam, contributing 10%, emerged as another key supplier, benefiting from competitive pricing and favourable trade conditions. Hong Kong and other countries accounted for smaller shares, with 3% and 1%, respectively, indicating a concentration of imports from major Asian manufacturing hubs.

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Source: Ministry of Trade and Commerce

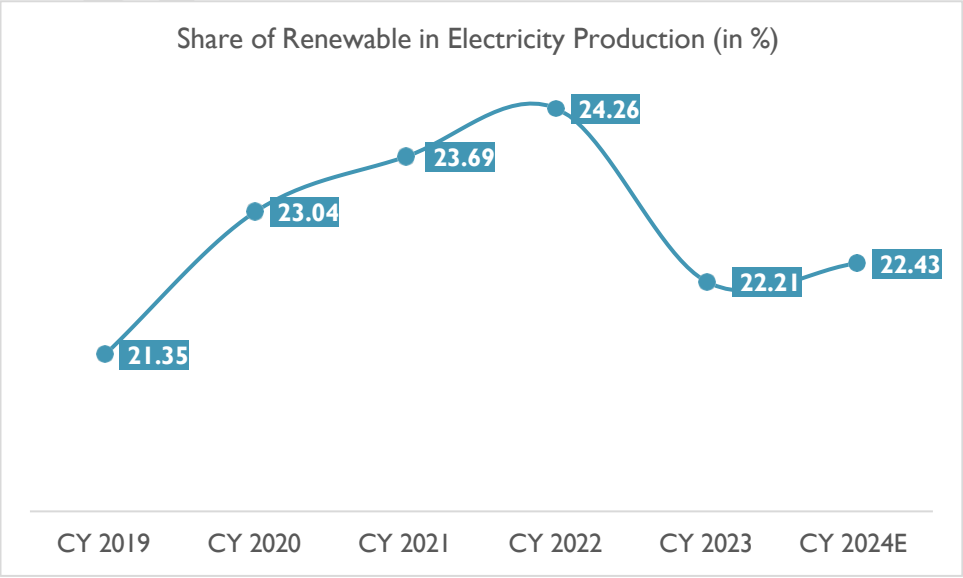
On the export side, India's PV module exports were almost exclusively directed to the United States, with a staggering 96% share in FY 2025. This reflects strong demand from the U.S., likely driven by policies promoting renewable energy adoption and efforts to diversify its supply chain away from China. The minimal export to other markets, comprising only 4%, suggests that while India is making strides in PV module manufacturing, its focus on the U.S. market could present risks if it does not broaden its export base. Diversification into additional markets may be necessary to sustain long-term growth and reduce dependency on a single trade partner.

Key Demand Drivers: Analysis of factors driving the growth in India.

India's solar energy sector is rapidly expanding, driven by several key factors that are shaping the future of this industry. As the country strives to meet its energy needs sustainably and reduce its carbon footprint, solar energy has emerged as a vital solution. Here are ten key factors that are propelling the future of solar energy in India

Rising Energy Demand

The rapid population growth and industrialization in India have driven a significant surge in electricity demand. As urbanization accelerates and the middle class expands, the prevalence of energy-intensive devices has risen, underscoring the urgent need to transition to sustainable energy sources such as solar power to ensure reliable and affordable electricity for all.



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Source: MNRE, D&B Estimates

The Indian government has launched the Solar Mission with an ambitious goal of deploying 100 gigawatts (GW) of solar power by 2022, with a current capacity of 73 GW as of 2023. Additionally, a target of 40 GW of rooftop solar capacity was set for mid-2022; however, only 10 GW had been installed by the end of 2023.

In response to this shortfall, a new subsidy scheme for rooftop solar was introduced in April 2024, aiming to achieve the target by 2026. As energy demand continues to surge, particularly in rural areas with limited access to conventional electricity, solar energy emerges as a viable solution to bridge the energy access gap and ensure reliable, affordable electricity for both urban and rural populations.

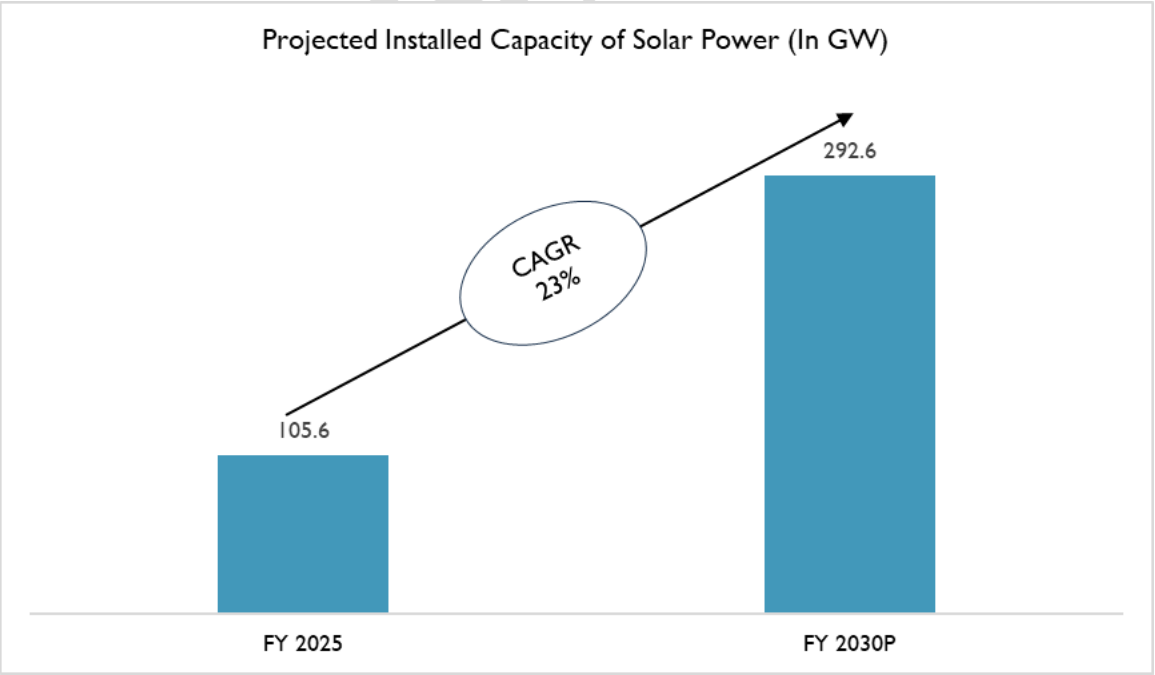
Utilization of Wasteland for Solar PV Installation

India is confronted with substantial waste generation due to its vast population. However, the National Institute of Solar Energy (NISE) highlights the potential of this wasteland for solar power generation. NISE estimates that if merely 3% of India's wasteland were outfitted with solar photovoltaic (PV) modules, the country could harness approximately 748 gigawatts (GW) of solar energy. This is further supported by India's abundant sunlight, receiving an estimated 5,000 trillion kilowatt-hours (kWh) of energy annually, with most regions enjoying between 4 and 7 kWh per square meter each day.

Growth Forecast: Installed Capacity in Solar Power Generation Segment

India's solar power generation segment is on a remarkable growth trajectory, driven by ambitious government initiatives and substantial investments in renewable energy. By the end of 2029-30, the total installed capacity in the country is projected to reach 777,144 MW, with a diverse breakdown that includes 292,566 MW from solar power.

This projection positions India to meet its Nationally Determined Contribution (NDC) commitment, which mandates that 50% of the total installed capacity be derived from non-fossil fuel sources by 2030. As of July 2025, India's installed solar capacity has reached 119.02 GW, a remarkable rise from just 4.0 GW in FY 2015, underscoring a more than 30-fold expansion in the past decade



Source: CEA, Report on Optimal Generation Capacity Mix For 2029-30 Version 2.0

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India's solar power generation capacity has experienced remarkable growth, reflecting the country's commitment to renewable energy. By fiscal year 2019, the installed solar capacity reached 29.1 GW, showcasing a solid foundation for future expansions. The growth trajectory continued, with capacity increasing to 35.6 GW in FY 2020 and 41.2 GW in FY 2021.

This upward trend culminated in significant milestones, as the installed capacity surged to 54.0 GW by FY 2022, 66.8 GW in FY 2023, and further accelerated to 81.8 GW in FY 2024. As of FY 2025, India has achieved an installed solar capacity of 105.6 GW, indicating a robust pace of development in the solar sector. Looking ahead, projections suggest that the country is on track to reach 292.6 GW of solar power capacity by FY 2030.

This ambitious goal aligns with India's broader renewable energy targets and underscores the importance of solar power in the nation’s energy landscape. The substantial increases in capacity over the past years not only highlight the effectiveness of government policies and initiatives but also reflect growing investments and advancements in technology, positioning India as a key player in the global renewable energy.

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The growth of India's solar sector is bolstered by proactive policies such as the Production-Linked Incentive (PLI) scheme, which has an allocation of INR 24,000 Cr ($2.9 Bn) aimed at enhancing domestic manufacturing of solar PV modules and decreasing reliance on imports. Additionally, the government has approved the establishment of 50 solar parks, cumulatively contributing 37.49 GW to large-scale solar installations. The overall renewable energy capacity, including large hydro, has increased from 40.0 GW in FY 2015 to 220.1 GW in FY 2025, marking a growth of around 450%, with solar power emerging as the primary driver of this expansion.

Looking forward, the Indian solar sector is anticipated to continue its rapid ascent, with forecasts suggesting it could surpass 300 GW of installed capacity by 2026. This growth will be fuelled by advancements in innovative technologies, an increasing focus on decentralized energy solutions, and heightened energy security concerns.

The Energy and Resources Institute (TERI) has estimated India's total solar potential at 10,830 GW, a sharp increase from the 748 GW assessed in 2014 by the Ministry of New and Renewable Energy (MNRE). signifying considerable opportunities for further capacity additions. As India strives to achieve net-zero carbons emissions by 2070, the solar power sector is set to play a pivotal role in shaping the nation's sustainable energy landscape, aligning with global climate objectives while positioning India as a leader in renewable energy.

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Solar EPC Business Model

Solar EPC Business Model

The Engineering, Procurement, and Construction (EPC) business model is widely adopted in the solar industry due to its comprehensive, turnkey nature. In this model, a solar EPC company takes full responsibility for designing, procuring materials, and constructing a solar power project. The process starts with the engineering phase, where technical teams develop detailed project designs, including electrical schematics, structural layouts, and energy output forecasts. These designs are aligned with both the client's specifications and regulatory requirements. The goal is to create an efficient, high-performing solar system tailored to the project's site and conditions.

Next is the procurement phase, where the EPC company sources all, the essential components needed for the solar installation. This includes solar panels, inverters, wiring, mounting structures, and other equipment. Leveraging strong supplier relationships, the company can secure high-quality materials at competitive prices, which is critical for ensuring both cost efficiency and system longevity. The final stage of the EPC model is construction, where the project is physically built, installed, and connected to the grid. During this phase, the company oversees the on-site installation, project management, and commissioning of the solar system to ensure it meets performance guarantees and is completed on time and within budget. This end-to-end service model makes EPC highly appealing to developers and investors seeking turnkey solutions for solar power projects.

Utility-Scale Solar Technology

Utility-scale solar refers to large solar power plants, typically ranging from several megawatts (MW) to gigawatts (GW) in capacity, designed to supply electricity to the grid. These projects occupy vast land areas and contribute significantly to national renewable energy targets. India has emerged as a leader in the global utility-scale solar market, driven by government initiatives such as the National Solar Mission and favourable policies like competitive bidding for solar projects.

Utility-scale solar systems primarily consist of ground-mounted solar arrays that supply electricity directly to the grid. The energy generated is then distributed through the national grid to meet the demand of residential, commercial, and industrial consumers. As of 2023, India's utility-scale solar capacity crossed 50 GW, with ongoing large-scale projects in states like Rajasthan, Gujarat, and Karnataka. These projects are central to achieving India's target of 280 GW of installed solar capacity by 2030.

One of the key advantages of utility-scale solar is its ability to generate power at a lower cost per kilowatt-hour (kWh) due to economies of scale. However, these projects face challenges such as land acquisition, grid integration, and intermittency issues. Investments in transmission infrastructure and technological advancements in energy storage are critical to overcoming these barriers and ensuring the stable growth of utility-scale solar.

Hybrid Solar Technology

Hybrid solar systems combine solar PV with other energy sources, such as wind, battery storage, or diesel generators, to create a more reliable and efficient energy solution. Hybrid systems are particularly useful in areas with unreliable grid access or frequent power outages, as they offer flexibility in power generation and consumption.

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Hybrid systems are gaining traction in India, especially in rural or remote locations where grid connectivity is limited. For example, solar-wind hybrid projects are being developed in states like Tamil Nadu and Gujarat, where the complementary nature of solar and wind resources ensures more consistent power generation throughout the day. The government has introduced specific policies to promote hybrid projects, including favourable tariffs and land-use incentives.

The integration of **battery storage** in hybrid systems further enhances their reliability by storing excess solar power generated during the day for use during night or cloudy periods. This feature addresses one of the major challenges of solar power – its intermittent nature – and ensures a continuous power supply, which is critical for commercial and industrial applications.

Application Basis

Solar technology can be broadly categorized based on its application into **residential**, **commercial**, and **industrial** sectors. Each application has different energy needs, installation scales, and financial incentives.

- **Residential:** Solar energy systems for residential applications typically involve small-scale rooftop installations. These systems are designed to meet the electricity needs of individual households, reducing their dependency on the grid and lowering electricity bills. In India, residential rooftop solar has been growing, supported by government subsidies and falling solar PV prices.
- **Commercial:** Commercial applications of solar energy often involve medium to large-scale rooftop installations for businesses, shopping malls, hotels, and office buildings. These systems provide significant cost savings on electricity bills, especially for businesses operating in high electricity tariff zones. Additionally, companies can benefit from tax incentives, making solar a lucrative option.
- **Industrial:** Industrial solar installations are typically larger in scale and may involve both rooftop and ground-mounted systems. The industrial sector consumes a large amount of energy, and solar power provides a cost-effective solution to reduce operational costs. Many large factories and manufacturing units in India are investing in solar to reduce their carbon footprint and improve energy efficiency.

Basis of Project Size

Solar projects can also be classified based on their size – **small, medium,** and **large** – depending on the capacity and energy output.

- **Small Projects:** These are typically residential solar systems with a capacity ranging from a few kilowatts (kW) to 100 kW. Small solar projects are easy to install and maintain, and they offer significant savings on electricity bills for individual households or small businesses.
- **Medium Projects:** Medium-sized solar projects often fall between 100 kW to 1 MW. These are commonly found in commercial applications or large residential complexes. Medium-sized installations offer higher energy savings and are typically more financially attractive, especially with favorable net metering policies and government incentives.
- **Large Projects:** Large-scale solar projects, which can range from 1 MW to several hundred megawatts, are usually utility-scale or industrial projects. These projects are often developed by solar companies or energy providers and feed electricity into the grid. Large projects require significant land and capital investment but offer economies of scale, making solar energy generation more cost-efficient per unit of energy.

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India's solar energy industry, driven by the rapid adoption of these technologies across different sectors, plays a key role in meeting the country's renewable energy goals. Expanding the use of rooftop solar, utility-scale plants, and hybrid systems will be essential in ensuring India's energy security and sustainability in the coming decades.

EPC Services in the Solar Power Generation Segment

The Engineering, Procurement, and Construction (EPC) model is vital for the effective execution of solar power projects, offering a comprehensive approach that covers the entire lifecycle of solar installations. This model addresses the inherent complexities of the solar industry, providing tailored engineering designs based on feasibility studies, site surveys, and environmental assessments. EPC companies are responsible for procuring high-quality components such as solar panels and inverters while ensuring compliance with industry standards. During construction, these firms manage all aspects of the project, from site preparation to installation and integration, while adhering to safety regulations to mitigate risks.

EPC services extend beyond construction to include rigorous commissioning and ongoing operation and maintenance (O&M) support. Once a solar installation is complete, systems undergo thorough testing to ensure optimal performance before handing over the project to the client, complete with operational guidelines. This model offers significant advantages, including a single point of responsibility that simplifies communication and project management. By streamlining processes and enhancing resource allocation, EPC providers play a crucial role in advancing India's solar market, ultimately facilitating the nation's transition toward renewable energy and sustainable development.

EPC Business Model and Revenue Streams

EPC Business Models

Integrated Project Management: The EPC model emphasizes a holistic approach to managing solar power projects, encompassing all phases from initial design to final commissioning. This integration ensures seamless coordination among various project components, reducing delays and inefficiencies. EPC companies often employ project managers who oversee timelines, budgets, and quality control throughout the project lifecycle.

Single Point of Responsibility: By functioning as a single contractor responsible for all aspects of the project, EPC firms simplify communication between stakeholders. This streamlined approach minimizes potential conflicts and miscommunication, as clients have one primary contact for updates, changes, and issues. It also fosters accountability, as the EPC provider is fully invested in the project's success.

Contractual Framework: The EPC business model operates within clearly defined contractual agreements that specify the roles, responsibilities, and deliverables for all parties involved. These contracts outline the scope of work, timelines, payment schedules, and performance expectations, providing a structured foundation for project execution. Such transparency helps in managing client expectations and mitigating risks.

Revenue Streams

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Engineering Services Fees

Revenue from engineering services includes fees charged for design, technical planning, and feasibility studies. EPC companies leverage their expertise to create customized solar solutions tailored to specific site conditions and client needs. This phase may also involve conducting site surveys and environmental assessments to ensure regulatory compliance and optimal energy production.

Procurement Margins

EPC firms generate profits through strategic sourcing of materials, including solar panels, inverters, and mounting structures. By establishing strong relationships with manufacturers, they can negotiate competitive pricing and favourable warranty terms. The procurement process not only contributes to project cost efficiency but also ensures the quality of components, which is crucial for the longevity of solar installations.

Construction Contracts

Revenue from construction contracts comes from the actual installation of solar systems. This includes site preparation, installation of solar panels, electrical wiring, and system integration. The construction phase is critical as it directly impacts the project timeline and budget. EPC providers oversee all construction activities, ensuring adherence to safety regulations and industry standards.

Operation and Maintenance (O&M) Contracts

Many EPC companies offer long-term O&M contracts to monitor and maintain system performance post-installation. These services include regular inspections, repairs, and performance optimization to ensure that solar installations generate energy efficiently throughout their lifespan. O&M contracts provide a stable revenue stream for EPC firms and foster long-term client relationships.

Performance Guarantees

Some EPC providers offer performance guarantees, which are additional fees tied to achieving specific energy output or efficiency metrics. By ensuring that the solar power systems meet predetermined performance standards, EPC companies not only enhance their service offerings but also build trust with clients. This model incentivizes the EPC firm to prioritize quality and efficiency throughout the project lifecycle.

Consulting Services

Revenue from consulting services encompasses fees for providing expert guidance on project development, financing, and regulatory compliance. EPC companies often possess in-depth knowledge of the solar industry, enabling them to offer valuable insights to clients seeking to navigate complex regulatory environments or optimize their energy strategies. This consulting revenue stream diversifies the EPC firm's offerings and enhances its market position.

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Key Growth Drivers: Analysis of factors driving the growth in India

The Engineering, Procurement, and Construction (EPC) sector in India is witnessing robust growth, driven by several key factors that enhance its overall landscape. These drivers are not limited to any specific industry but encompass the broader EPC framework, leading to increased investments and project execution capabilities across various sectors.

Infrastructure Development

India's ongoing infrastructure development initiatives are a significant catalyst for the EPC business. Government investments in transportation, highways, railways, airports, and urban infrastructure projects create substantial demand for EPC services. The National Infrastructure Pipeline (NIP) aims to invest around USD 1.5 trillion in infrastructure projects over the year 2020-2025, paving the way for extensive EPC opportunities across the country.

As India aims to become a USD 5 trillion economy, the anticipated initiatives in the Union Budget 2024 focused on infrastructure development are set to significantly benefit the Engineering, Procurement, and Construction (EPC) business. The increased funding for affordable housing will create ample opportunities for EPC companies to leverage their expertise in construction techniques and project management.

Additionally, enhancements to rural infrastructure through the Pradhan Mantri Gram Sadak Yojana (PMGSY) and investments in irrigation and water supply schemes will drive demand for EPC services, opening up new markets and contributing to rural economic upliftment.

The emphasis on renewable energy projects, transportation networks, and digital infrastructure will further accelerate the need for specialized EPC solutions. Strengthening public-private partnerships and introducing new financing mechanisms will likely attract private investments, positioning the EPC sector as a pivotal player in India's infrastructure landscape and driving economic growth while enhancing the quality of life for citizens.

Government Policies and Initiatives

Proactive government policies, such as the Make in India initiative and the National Policy on Electronics, encourage domestic manufacturing and infrastructure development. These initiatives aim to reduce import dependence and promote self-sufficiency, thereby increasing the demand for EPC services in various sectors, including energy, manufacturing, and construction.

Public-Private Partnerships (PPP)

The growing trend of public-private partnerships in infrastructure projects has opened new avenues for EPC firms. Collaborations between the government and private players enhance project financing and execution capabilities, fostering an environment conducive to large-scale infrastructure development. The PPP model allows for shared risks and resources, making it attractive for EPC companies to participate in high-value projects.

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The Government of India's Ministry of Finance is actively promoting public-private partnerships (PPPs) as a key strategy for infrastructure development. The Infrastructure Finance Secretariat (IFS) has been established to harmonize policies and initiatives, aiming to boost private investment in critical sectors such as railways, roads, urban infrastructure, and power. The Private Investment Unit, which operates under the IFS, is responsible for formulating policies, managing financial support schemes like the Viability Gap Funding (VGF) and India Infrastructure Project Development Funding (IIPDF), and providing guidance for PPP projects.

Recent initiatives include the appraisal of 358 projects with a total estimated cost of ₹676,636.57 crore and the allocation of funds for leasing 25 airports managed by the Airports Authority of India. The government emphasizes the importance of private sector involvement as a "partner in progress" to enhance infrastructure, stimulate job creation, and ensure sustainable economic growth. The website serves as a repository for PPP policies, guidelines, and best practices, providing essential information for stakeholders in both government and the private sector.

Urbanization and Smart Cities

Rapid urbanization in India is driving the demand for modern infrastructure and smart city initiatives. The Smart Cities Mission aims to develop 100 cities with advanced infrastructure, technology, and sustainable practices. EPC firms play a crucial role in executing these projects, leading to increased investments in urban development and related services.

India is set to enhance its manufacturing ecosystem and infrastructure with the approval of 12 new smart industrial cities and several railway projects, as announced by the Cabinet Committee on Economic Affairs (CCEA) led by Prime Minister Narendra Modi. The smart city projects, part of the National Industrial Corridor Development Programme (NICDP), will involve an investment of INR 286.02 billion (USD 3.41 billion) and aim to attract INR 1.52 trillion (USD 18.12 billion) in investments, generating approximately 1 million direct and 3 million indirect jobs.

Key locations for these industrial hubs include Khurpia (Uttarakhand), Rajpura-Patiala (Punjab), and Zaheerabad (Telangana), among others. The initiative is designed to strengthen India's manufacturing base while targeting industries such as technical textiles, electric vehicles, and tourism.

Additionally, the CCEA has sanctioned INR 64.56 billion (USD 769.9 million) for three railway projects that will enhance logistics across Odisha, Jharkhand, West Bengal, and Chhattisgarh, adding around 300 km to the railway network. Key projects include the Jamshedpur-Purulia-Asansol line and new lines in Odisha and Chhattisgarh, aimed at facilitating the transportation of critical commodities.

Furthermore, an equity support of INR 41.36 billion (USD 493.2 million) has been allocated for hydro-power projects in Northeast India, targeting a total capacity of 15,000 MW over the next eight years. These developments align with the PM Gati Shakti National Master Plan, promoting seamless connectivity and driving economic growth.

Technological Advancements

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Innovations in construction techniques, project management software, and automation are transforming the EPC sector. The adoption of Building Information Modeling (BIM), modular construction, and digital project management tools enhances efficiency, reduces project timelines, and lowers costs. These technological advancements enable EPC firms to deliver projects more effectively and respond to market demands swiftly.

Sector Diversification

EPC companies are increasingly diversifying their service offerings beyond traditional sectors such as infrastructure and construction. The entry into emerging sectors like renewable energy, healthcare, and environmental management is opening up new growth avenues. This diversification helps EPC firms mitigate risks associated with economic fluctuations in specific industries.

EPC contractors are diversifying into sectors such as railways, solar energy, and water management, which present substantial annual opportunities estimated at approximately INR 1 lakh crore for railways, INR 15,000 crore for solar initiatives, and INR 70,000 crore for water-related projects. This evolving scenario highlights a crucial transition in India's infrastructure development, moving from a predominantly government- led approach to increased private sector participation.

Increased Private Investments

The influx of private equity and venture capital into the EPC space is driving growth. Investors are recognizing the potential of the EPC sector, particularly in infrastructure and energy projects. This increased funding supports expansion, innovation, and the ability to take on larger projects, enhancing the competitive landscape for EPC firms.

The projected growth of Build-Operate-Transfer (BOT) projects in India, especially within the road sector, indicates a significant shift in the dynamics of infrastructure funding. Starting from FY25, the private sector's share in capital expenditure (capex) is anticipated to rise as government-led investments begin to moderate. In the road sector, the government's capital expenditure—primarily supporting projects under the Hybrid Annuity Model (HAM) and Engineering, Procurement, and Construction (EPC)—is expected to slow down.

Road construction awards are projected to increase from 8,581 km in FY24 to 10,000 km in FY25 and further to 12,000 km in FY26. This upward trajectory in project awards, previously stalled due to the election code of conduct, is likely to gain momentum following the formation of a new government. The rise in private sector investment, particularly in BOT projects, signals a potential transformation in the funding landscape for infrastructure development. The Bharat Mala scheme, a flagship government initiative, includes a significant portfolio of projects worth INR 2.4 lakh crore yet to be awarded.

Rising Energy Demand

The continuous increase in energy demand in India necessitates the expansion of energy infrastructure, including power plants, transmission lines, and renewable energy projects. EPC firms are integral to the development and implementation of these energy projects, driving growth in the sector. The push for renewable energy sources offers substantial opportunities for EPC businesses.

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The Indian government has initiated the Solar Mission with the ambitious objective of deploying 100 gigawatts (GW) of solar power by 2022. As of 2023, the country has achieved a solar capacity of 73 GW. Additionally, a target of 40 GW for rooftop solar capacity was established for mid-2022; however, only 10 GW had been installed by the end of 2023. To address this shortfall, a new subsidy scheme for rooftop solar was launched in April 2024, aiming to meet the target by 2026.

Focus on Sustainability

The global shift towards sustainability and environmental responsibility is influencing EPC practices in India. The demand for eco-friendly construction methods and sustainable project execution is on the rise. EPC companies that prioritize sustainable practices and comply with environmental regulations are likely to gain a competitive edge in the market.

EPC business in India is poised for significant growth due to a combination of factors, including government support, technological advancements, and increasing private investments. The emphasis on infrastructure development, urbanization, and sustainability further enhances the prospects for EPC firms, positioning them as key players in India's economic development trajectory.

Key Success Factors for EPC Companies in India

The success of Engineering, Procurement, and Construction (EPC) companies in India, particularly in the solar power sector, is contingent upon several critical factors that enable these firms to navigate industry complexities and seize growth opportunities.

Technical Expertise and Innovation

A highly skilled workforce proficient in engineering, project management, and construction is imperative for EPC companies. Continuous training and development programs are essential to ensure that employees remain informed about the latest technologies and best practices. Moreover, the integration of cutting-edge technologies, such as Building Information Modeling (BIM), Internet of Things (IoT) for smart projects, and automation, significantly enhances project efficiency and quality, allowing companies to deliver superior results in a competitive market.

Strong Project Management Capabilities

Effective project management is vital for ensuring that projects are completed on time and within budget. This involves meticulous planning, efficient resource allocation, and proactive risk management to anticipate and mitigate potential issues. Additionally, robust supply chain management is crucial for procuring high-quality materials at competitive prices, which supports project timelines and budgetary constraints. Together, these capabilities contribute to the overall success of EPC projects.

Diversification of Services

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Providing a broad spectrum of services—from design and engineering to procurement and maintenance—enables EPC companies to cater to diverse client needs and market segments. This comprehensive offering allows firms to build stronger client relationships and adapt to varying market demands. Furthermore, geographical diversification into international markets helps mitigate risks associated with domestic economic fluctuations and creates additional revenue streams, enhancing the firm's stability and growth potential.

Strong Relationships with Stakeholders

Establishing long-term relationships with clients fosters trust and encourages repeat business, which is vital for sustained growth. Understanding client requirements and delivering customized solutions enhances client satisfaction and loyalty. In addition, collaboration with government agencies facilitates smoother project approvals and access to incentives or subsidies, thereby streamlining operations and providing firms with a competitive edge in the market.

Financial Stability

Maintaining a robust financial position is essential for EPC companies to invest in new technologies, expand operations, and withstand economic downturns. Access to capital enables firms to pursue innovative projects and enhance their service offerings. Effective risk management strategies are also critical, as they help address potential challenges such as cost overruns, regulatory changes, and project delays, ensuring sustained profitability in a volatile market environment.

Commitment to Sustainability

Adopting sustainable practices not only aligns with global trends but also enhances the company's reputation in an increasingly environmentally conscious market. This includes using eco-friendly materials and ensuring minimal environmental impact during construction processes. Furthermore, with India's commitment to increasing its renewable energy capacity, EPC companies that specialize in solar and other green technologies are well-positioned for substantial growth, capitalizing on the demand for sustainable energy solutions.

Government Support and Policy Alignment

Aligning business strategies with national policies, such as the National Solar Mission, provides EPC firms with a competitive advantage through access to funding and incentives. Understanding and effectively navigating the regulatory landscape is also essential, as it ensures compliance and helps avoid potential legal challenges that could delay projects. By leveraging government initiatives, EPC companies can enhance their operational efficiency and contribute to the broader goals of India's renewable energy sector.

The success of EPC companies in India is rooted in a blend of technical expertise, strong project management capabilities, service diversification, stakeholder relationships, financial stability, sustainability commitments, and alignment with government policies. By focusing on these key success factors, EPC firms can bolster their competitiveness in the rapidly evolving solar power sector and make significant contributions to India's renewable energy objectives.

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Challenges Faced by EPC Players in India

EPC (Engineering, Procurement, and Construction) companies in India encounter a range of challenges that can hinder their operations and impact their overall effectiveness in delivering projects, particularly in the renewable energy sector. Below are some of the primary challenges faced by EPC players in India:

Regulatory Hurdles

The complex regulatory landscape in India presents significant challenges for EPC companies. Obtaining necessary approvals and clearances can be time-consuming and often involves navigating bureaucratic red tape. Frequent changes in regulations and policies can further complicate compliance, leading to project delays and increased costs.

Funding and Financial Constraints

Access to adequate financing is a persistent challenge for EPC firms, particularly for large-scale projects. Limited availability of funds, high-interest rates, and stringent lending criteria can restrict the ability of companies to secure the necessary capital for project execution. This financial pressure can affect the planning and delivery of projects, ultimately impacting profitability.

Skilled Labor Shortage

The EPC industry in India faces a shortage of skilled labor, which is critical for the successful execution of projects. Despite a growing number of engineering graduates, there is often a gap between academic training and practical skills required in the field. This shortage can lead to project delays, quality issues, and increased labor costs as companies compete for a limited talent pool.

Supply Chain Disruptions

EPC companies rely heavily on a robust supply chain for timely procurement of materials and equipment. Disruptions caused by global supply chain issues, transportation delays, or fluctuating material prices can significantly impact project timelines and budgets. Companies must develop effective supply chain management strategies to mitigate these risks and ensure consistent material availability.

Technological Adaptation

While adopting advanced technologies can enhance project efficiency, the initial investment and learning curve associated with new technologies can pose challenges for EPC players. Many firms may struggle with integrating digital tools, such as Building Information Modeling (BIM) and IoT, into their existing processes. This can hinder their ability to leverage technology for improved project outcomes.

Environmental Concerns and Compliance

Increasing environmental awareness and stricter sustainability regulations necessitate that EPC companies adopt environmentally friendly practices in their operations. Compliance with environmental regulations can add complexity to project planning and execution, requiring companies to invest in sustainable technologies and practices, which can increase project costs.

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Competition and Price Sensitivity

The EPC sector in India is highly competitive, with numerous players vying for projects. This intense competition often leads to price undercutting, resulting in reduced profit margins. Companies must balance the need to remain competitive with the necessity of delivering quality services while managing costs effectively.

Project Management Challenges

The execution of large-scale projects involves managing multiple stakeholders, tight timelines, and varying client expectations. Ineffective project management can lead to delays, cost overruns, and quality issues. EPC firms need to implement robust project management frameworks to ensure effective coordination and execution of projects.

Ineffective Communication

EPC projects involve multiple stakeholders, including contractors and subcontractors, often spread across different locations. This complexity can lead to communication breakdowns, resulting in costly rework and delays. To mitigate this risk, it is vital to establish clear communication channels. Owners should seek contractors with integrated teams to minimize reliance on subcontractors and simplify stakeholder management, ensuring everyone is informed of progress and any changes.

Budget Overruns

Unexpected increases in material costs, changes in project scope, and inaccurate estimations can lead to budget overruns, sometimes resulting in project failure. To manage this risk, creating detailed budgets and monitoring them throughout the project lifecycle is essential. Contractors should involve experienced estimators and comprehensive staff in budget preparation to enhance accuracy, ensuring all potential variables are accounted for to avoid financial pitfalls.

Project Timeline Delays

Project timelines can be disrupted by various factors, including scope changes, shipping delays, and labor shortages. Such schedule delays jeopardize customer satisfaction and can trigger cost overruns. To mitigate this risk, owners should carefully vet contractors for proven project management methodologies. Techniques like the Critical Path Method (CPM) help in establishing realistic timelines, while cross-functional teams can streamline execution to maintain project momentum.

Accountability Deficiencies

When problems arise, stakeholders who avoid responsibility can slow down resolution, increasing project costs and timelines. Establishing quality control measures at the project's outset is essential for ensuring performance standards are met. Using contractors that minimize reliance on subcontractors can reduce accountability issues, fostering a collaborative environment where responsibilities are clearly defined and addressed.

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Design and Quality Assurance Issues

Poor initial design can lead to performance issues later in the project. To prevent this risk, adopting a project-centred delivery approach that uses proven technologies allows for better customization. This ensures that designs meet the unique specifications of the end-user, leading to enhanced performance and satisfaction.

Outlook for the EPC Market

The Engineering, Procurement, and Construction (EPC) sector in India is set for significant growth in 2024-2025, with revenues projected to increase by 12-14% in the upcoming fiscal year. This optimistic outlook stems from robust order books supported by healthy domestic and international demand, alongside a consistent pace of execution in the infrastructure sector. EPC companies are expected to collectively generate revenues of approximately INR 3.5 lakh crore in FY 2023, accounting for a substantial share of India's overall construction investment.

The Engineering, Procurement, and Construction (EPC) market in India is poised for significant growth, driven by government initiatives and a strong focus on infrastructure development. The Indian government's National Infrastructure Pipeline (NIP) and Atmanirbhar Bharat campaign aim to enhance investments in transportation, energy, and urban development, creating robust demand for EPC services. Additionally, India's commitment to achieving net-zero emissions by 2070 and targeting 500 GW of renewable energy capacity by 2030 will lead to a surge in projects in solar, wind, and hydroelectric power. Rapid urbanization, supported by the Smart Cities Mission, further boosts demand for EPC services in sustainable urban infrastructure. Furthermore, public-private partnerships (PPP) are gaining momentum, facilitating investment and offering new project opportunities for EPC firms.

The positive trajectory of the EPC market is underpinned by a strong government push for infrastructure development, which is enhanced by rising public-private partnerships. The capital outlay for infrastructure projects has remained resilient, demonstrating the government's commitment to upgrading the country's infrastructure capabilities. Additionally, private sector investment is projected to increase to around 12% in 2024-2025 from 9% the previous year, driven by a revival in the build-operate-transfer model in the roads sector and greater private involvement in power capacity expansions.

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Battery Energy Storage Systems (BESS)

India's Battery Energy Storage System (BESS) sector has emerged as a critical enabler of the country's clean energy transition. As of March 2025, India's installed renewable energy capacity stood at 220.1 GW, with BESS increasingly supporting grid stability and renewable integration. India's first standalone utility-scale BESS project—a 20 MW/40 MWh system in New Delhi—has received regulatory approval, backed by the Global Energy Alliance for People and Planet (GEAPP), which aims to secure 1 GW of BESS commitments by 2026. Looking ahead, the sector is poised for rapid expansion: around 3,300 MW of BESS capacity (8,500 MWh) is currently in the pipeline, while an additional 12,500 MW (~42,000 MWh) is under tender.

These capacities are expected to scale steadily, ultimately reaching 74 GW (nearly 296,000 MWh) by FY 2031-32. This growth will be vital for managing renewable intermittency, enabling flexible power dispatch, and strengthening grid resilience, highlighting India's strategic commitment to energy storage.

Overview of BESS: key applications

Battery Energy Storage Systems (BESS) are advanced technologies that store electrical energy in rechargeable batteries for use at a later time. In simple terms, BESS allows electricity to be saved when generation is higher than demand and released back into the grid or consumed when demand is higher than supply. This capability makes BESS a vital component of modern power systems, especially as renewable energy sources like solar and wind become more widespread.

Unlike traditional energy storage methods such as pumped hydro, which are location-specific and capital intensive, BESS offers modularity, flexibility, and rapid response. They can be installed at various scales, from large grid-connected systems that stabilize power supply, to commercial facilities that reduce peak demand charges, to residential homes supporting rooftop solar.

A typical BESS consists of four main components:

- **Battery cells and packs** – where the energy is stored (commonly using lithium-ion, lead-acid, or emerging chemistries like sodium-ion and flow batteries).
- **Battery Management System (BMS)** – which ensures safe operation, monitors performance, and protects against overcharging or overheating.

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- **Power Conversion System (PCS)** – converts stored DC electricity into AC for grid or household use and vice versa.
- **Control and Monitoring System** – integrates the BESS into the grid, enabling automated energy dispatch, demand response, and optimization.

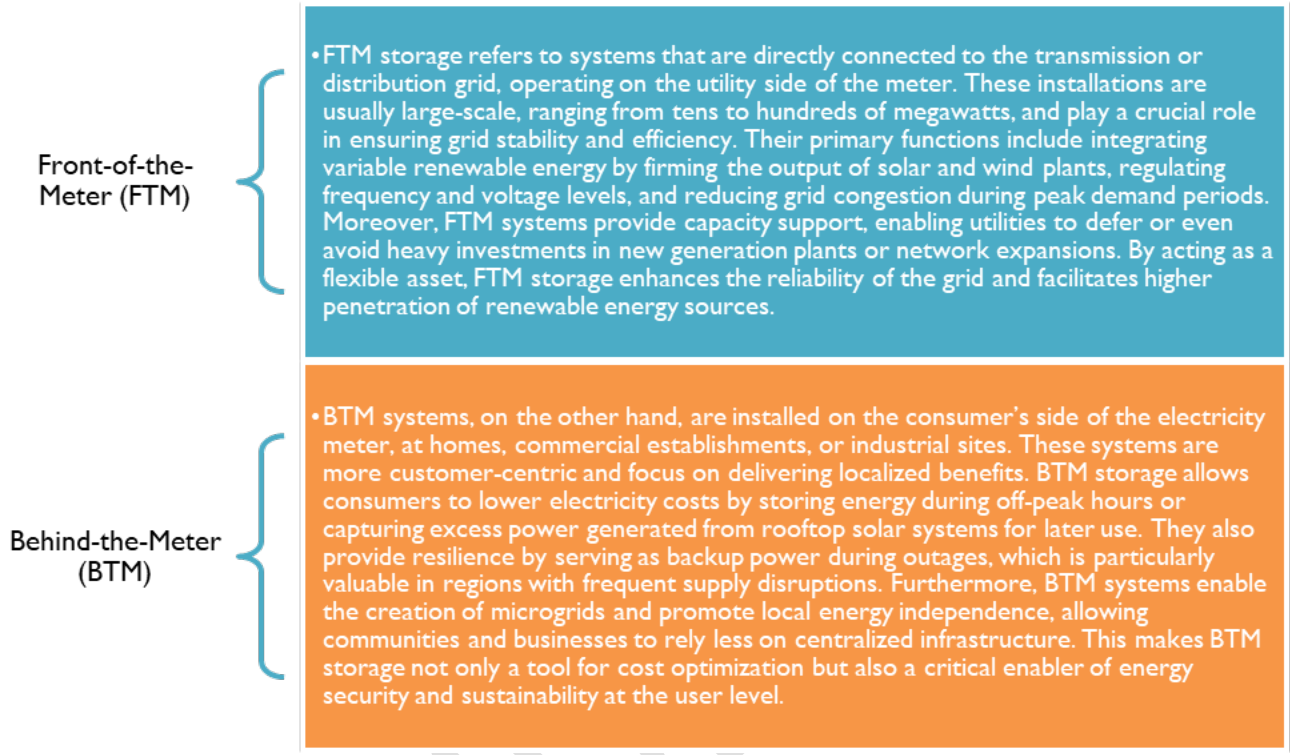
BESS is used for multiple applications, including renewable energy integration, peak load shaving, frequency regulation, backup power, and supporting electric vehicle charging infrastructure. With declining battery costs, technological innovation, and strong policy support, BESS is rapidly becoming a cornerstone of the global clean energy transition.

Type of battery chemistry

Battery Type	Key Advantages	Limitations	Cycle Life	Efficiency	Applications
Lithium-ion (LFP, NMC)	High energy density, long life, fast response, scalable	Costly, safety risks if poorly managed	5,000-10,000	90-95%	Utility-scale, frequency regulation, EVs, homes
Lead-Acid	Low cost, mature, recyclable	Short life, bulky, low efficiency	500-1,500	70-80%	Backup power, telecom, small off-grid
Flow Batteries	Long-duration, safe, scalable (tank size)	Expensive, bulky, lower density	10,000+	70-85%	Grid-scale, long-duration renewable storage
Sodium-Sulphur (NaS)	High energy density, proven for grid	Needs high temp, safety concerns	4,500-7,000	75-90%	Large grid storage, peak shaving
Emerging (Metal-air, Solid-state)	Very high potential density, safer (solid-state)	Still R&D, limited use	-	~95% (expected)	Future EVs, advanced grid storage

Type of BESS

Battery Energy Storage Systems (BESS) are typically classified into two categories depending on where they are installed in relation to the power grid: **Front-of-the-Meter (FTM)** and **Behind-the-Meter (BTM)**. Both serve distinct purposes and together form the backbone of a modern, flexible energy ecosystem.



Together, FTM and BTM deployments represent complementary layers of the energy storage ecosystem, FTM serving the broader grid-level needs and BTM empowering end-users, both essential for a cleaner, more reliable, and future-ready power system.

Key Applications: Battery Energy Storage Systems (BESS) have emerged as a versatile solution serving multiple stakeholders, including utilities, grid operators, industries, and end-consumers. Their applications span across enhancing renewable integration, strengthening grid reliability, improving cost efficiency, and enabling new energy services.

Renewable Energy Integration: One of the most prominent applications of BESS is enabling higher adoption of renewable energy sources like solar and wind. Since these sources are variable and weather-dependent, BESS helps by storing excess electricity during peak generation (e.g., midday solar output) and discharging it when renewable output drops (e.g., evening hours). This not only balances intermittency but also allows for delivering round-the-clock (RTC) renewable power. By bridging the mismatch between renewable generation and demand patterns, BESS supports cleaner, more reliable electricity supply.

Grid Reliability and Ancillary Services: Modern grids demand flexibility, and BESS excels in providing real-time support services. With fast response times, BESS can regulate frequency, stabilize voltage fluctuations, provide spinning reserves, and even supply black-start capability (restarting a grid after a

blackout). By acting as a flexible balancing tool, storage improves grid resilience and ensures smooth operation even under high renewable penetration or sudden demand spikes.

Peak Load Management & Energy Arbitrage: Electricity demand often peaks in the evening or during seasonal extremes, creating stress on grids and requiring expensive peaker plants. BESS helps shave these peaks by discharging during high-demand periods, reducing reliance on costly and polluting backup generation. Additionally, storage enables energy arbitrage, where electricity is bought or stored during off-peak hours (low tariff) and discharged during peak demand (high tariff), optimizing costs for both utilities and consumers.

Backup Power & Resilience: For critical infrastructure such as hospitals, data centers, telecom networks, airports, and defense establishments, uninterrupted power supply is non-negotiable. BESS provides reliable backup power, ensuring continuity during outages or grid disruptions. Its ability to deliver instant response makes it a safer and cleaner alternative to traditional diesel generators, while also reducing dependency on fossil fuels.

Electrification of Transport: With the rapid growth of electric vehicles (EVs), BESS plays a crucial role in supporting charging infrastructure. By stabilizing demand surges at EV fast-charging stations, storage reduces stress on the local grid. Looking ahead, integration with Vehicle-to-Grid (V2G) systems could allow EVs themselves to act as distributed storage assets, further expanding grid flexibility and enhancing energy efficiency.

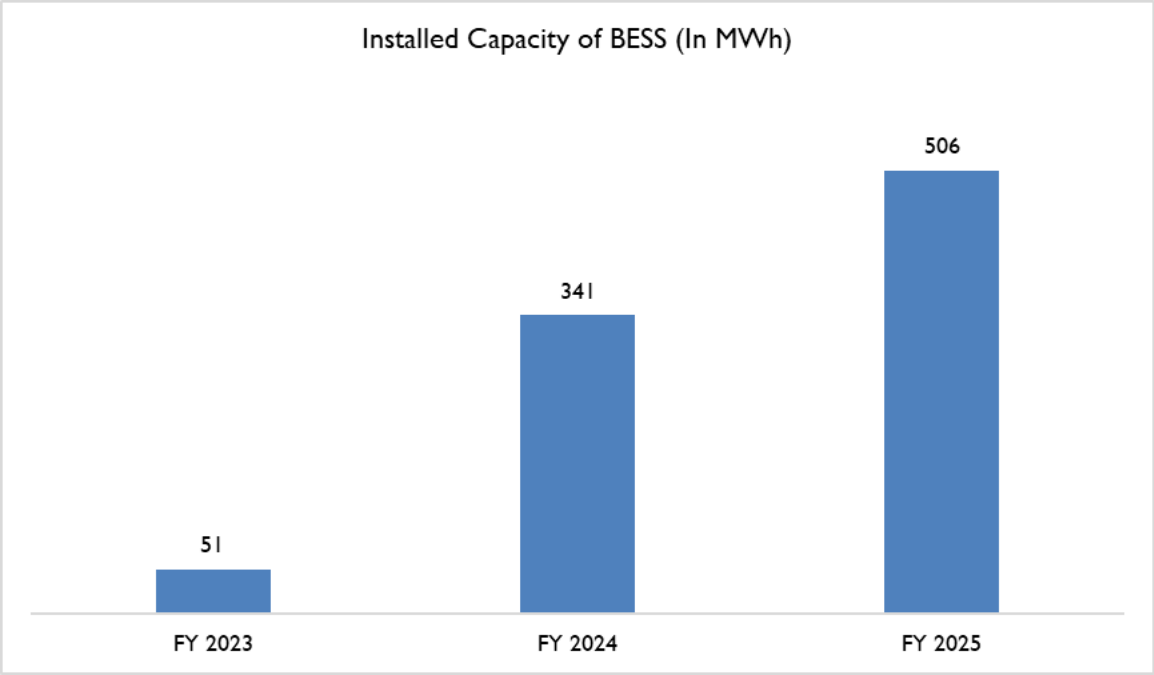
Decentralized Energy Systems and Microgrids: In remote areas, rural communities, and islanded grids, BESS is central to building decentralized power systems. When combined with renewable sources, storage allows the creation of self-sufficient microgrids that provide stable, clean, and continuous electricity without relying on fossil fuel-based generation. This is especially transformative for rural electrification in developing countries, where access to grid infrastructure is limited.

Current scenario of BESS

India's Battery Energy Storage System (BESS) sector is experiencing a marked expansion, driven primarily by the growing integration of renewable energy sources and the need for grid stability. As of FY 2025, the total installed capacity of large-scale BESS projects (greater than 1 MWh) has reached **505.6 MWh**, up significantly from **341 MWh in FY 2024** and just **51 MWh in FY 2023**, reflecting a **tenfold increase over two years**.

This substantial rise demonstrates a strong compound annual growth trend in installations, highlighting the country's accelerating adoption of energy storage solutions to address renewable intermittency and optimize power dispatch. The current landscape includes a mix of urban, rural, and remote installations, ranging from utility-scale storage paired with solar PV projects to standalone BESS deployments.

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Source: Government of India, Ministry of Power, Industry Sources

Growth Scenario of BESS

India's Battery Energy Storage System (BESS) sector has experienced a rapid transformation over the past few years. From a modest installed capacity of 51 MWh in FY 2023, the country's BESS capacity rose to 341 MWh in FY 2024 and further increased to approximately 506 MWh (205 MW) by FY 2025. While these figures may seem small in comparison to the country's renewable energy ambitions, they mark the beginning of a significant upscaling in storage deployments.

The current landscape includes a mix of urban, rural, and remote installations, ranging from standalone BESS projects to utility-scale storage integrated with solar PV plants. Notable projects such as Delhi's 10 MW/10 MWh BESS, Karnataka's 75 MW/150 MWh BESS under SECI's renewable project, and Chhattisgarh's 40 MW/120 MWh BESS exemplify large-scale deployment, while smaller systems in islands and union territories, like the 1.4 MWh BESS at Kavaratti, highlight the broad geographic adoption of energy storage.

Looking ahead, the BESS sector is poised for exponential growth. According to the Central Electricity Authority (CEA), India currently has around 3,300 MW of BESS capacity in the pipeline, expected to yield 8,500 MWh over the next two years, while an additional 12,500 MW (~42,000 MWh) is under tender. Starting from FY 2026-27, these capacities will need to scale up steadily to meet long-term targets, ultimately reaching around 74 GW of BESS by FY 2031-32, which translates to nearly 296,000 MWh. This projected trajectory underscores the country's strategic commitment to energy storage, which will play a crucial role in managing renewable intermittency, enabling flexible power dispatch, strengthening grid resilience, and supporting India's broader clean energy transition goals.

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Analysis of key factors driving BESS demand in India

The demand for Battery Energy Storage Systems (BESS) in India is being shaped by a convergence of policy ambitions, market economics, and energy system requirements. Several structural drivers are accelerating adoption, making storage central to India's clean energy transition.

Renewable Energy Expansion and Integration Needs

India's renewable energy targets form the foundation for BESS growth. The government has committed to installing **500 GW of non-fossil fuel capacity by 2030**, out of which over 300 GW is expected to come from solar and wind. These sources are inherently variable, generating power only when sunlight or wind is available. To ensure round-the-clock (RTC) renewable supply, storage becomes indispensable. The Central Electricity Authority (CEA) estimates that the grid will require **32 GW/160 GWh of battery storage capacity by 2030** for balancing, peak shifting, and frequency control. Without storage, renewable curtailment would rise, undermining India's climate and energy security goals.

Government Incentives and Viability Gap Funding (VGF)

To overcome the high upfront costs of BESS, the government has introduced direct financial support. The Union Cabinet recently approved a plan to develop **13.2 GWh of BESS projects by June 2027** under a Viability Gap Funding (VGF) mechanism, covering up to 40% of the project cost. This move is critical to make storage commercially attractive for utilities, developers, and distribution companies. As storage costs fall, such support will taper off, but in the near term, VGF is expected to catalyse rapid adoption and create economies of scale.

Declining Battery Costs and Expanding Auctions

The falling cost trajectory of lithium-ion batteries is another important driver. Global prices for Li-ion packs have dropped by more than **85% since 2010**, and India is leveraging this trend through large-scale renewable plus storage auctions. Between 2022 and May 2025, India auctioned nearly **12.8 GWh of BESS capacity**, demonstrating strong investor interest. With hybrid projects (solar/wind plus storage) increasingly replacing conventional peaker plants, BESS is becoming economically viable not just for grid balancing but also for energy arbitrage and firm capacity provisioning.

Supportive Policy and Regulatory Environment

India's policy landscape is becoming increasingly favourable for storage deployment. The Ministry of Power has extended a **waiver of inter-state transmission system (ISTS) charges** for renewable energy projects with storage until **June 2028**, which significantly improves project economics. Additionally, renewable energy tenders now often mandate the inclusion of storage components, leading to a sharp increase in hybrid projects — from just **12% of RE tenders in 2021** to nearly **49% in 2024**. Regulatory clarity on ancillary services markets is also enabling BESS to participate in frequency regulation and voltage support, creating new revenue streams.

Grid Stability, Peak Load Management, and Resilience

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Finally, the rising electricity demand and evolving grid dynamics make storage essential for stability. CEA's National Electricity Plan projects that by **2031-32, India will need 236.2 GWh of BESS** and **175.2 GWh of pumped hydro storage** to manage peak loads and frequency fluctuations. BESS also plays a crucial role in enhancing resilience, by providing backup power to critical facilities such as hospitals, defence installations, and data centers, and by supporting localized microgrids in rural and remote areas. As India electrifies its economy, including transport and industry, the demand for flexible and resilient storage solutions will only intensify.

Growth of energy storage system (installed capacity) in India

India's push toward clean energy has placed Energy Storage Systems (ESS) at the core of its power sector transformation. With the target of achieving **50% cumulative installed capacity from non-fossil fuels by 2030** and reducing emission intensity of GDP by **45% (from 2005 levels)**, storage will play a pivotal role in managing the variability of solar and wind energy. ESS ensures grid stability, enables peak shifting, provides ancillary services, and facilitates larger renewable integration, all of which are critical for India's energy transition.

The installed capacity requirement for ESS is projected to grow **exponentially** in the coming decades, driven by rising renewable penetration. According to the **National Electricity Plan (NEP) 2023 of the Central Electricity Authority (CEA)**:

- **By** 2026-27**, India will need** 82.37 GWh of energy storage capacity**, comprising** 47.65 GWh from Pumped Storage Projects (PSP) **and** 34.72 GWh from Battery Energy Storage Systems (BESS)**.**
- **By** 2031-32**, the requirement is expected to surge nearly** fivefold to 411.4 GWh**, with** 175.18 GWh from PSP **and** 236.22 GWh from BESS**.**
- **By** 2047**, aligned with India's** net zero target for 2070**, the projected storage requirement reaches a massive** 2,380 GWh**, including** 540 GWh from PSP **and** 1,840 GWh from BESS**.**

To ensure this growth, the government has also introduced a **long-term Energy Storage Obligation (ESO) trajectory**, mandating distribution companies and other obligated entities to procure increasing levels of stored renewable energy. The ESO begins at **1% of total consumption in FY 2023-24** and will rise gradually to **4% by FY 2029-30**, with an annual increase of 0.5%. Importantly, at least **85% of stored energy must come from renewable sources** to qualify, ensuring ESS deployment is aligned with India's decarbonization goals.

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Armee Infotech[4]

Profile

Founded in 2003, Armee Infotech is an IT infrastructure and IT managed services company headquartered in Ahmedabad. The Company has ventured into the retail sales space through Experience Zones engaged in the sale of IT, consumer electronics, and gaming and merchandise products, and have recently commenced operations in the renewable energy sector, including engineering, procurement and construction ("EPC") of solar power projects and development of solar power projects under power purchase agreements ("PPAs").

Armee provides their services to both Government/public sector undertakings (PSUs) and private sector clients which operate across a wide variety of industries. Bulk of the company's revenue is currently derived from services provided to Government/ PSU projects.

Armee Infotech: Snapshot
Establishment Year: 2003
20+ years of operational experiences
Headquartered in Ahmedabad
USP: End-to-End Project Management and Implementation
Key Industries Served
Government / PSU
Education
Corporate
BFSI
Renewable Energy - Solar

The Company offer a comprehensive suite of services categorized into two main areas: IT Infrastructure Solutions and IT Managed Services.

IT Infrastructure Solutions

[4] As per the information provided and stated by Armee Infotech.

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- Procurement and Implementation: They supply IT hardware and software, including computers, servers, interactive panels, and their peripherals. Their team expertly installs and integrates these solutions to meet specific requirements of the clients.
- Maintenance: They also provide ongoing maintenance for the IT infrastructure they install, ensuring its optimal performance throughout the contractually specified period.
- Seamless User Experience: To ensure seamless transition for their clients, they offer functional training on the newly implemented IT infrastructure.
- Project Experience: They have a proven track record of success in diverse projects. This includes setting up ICT labs, smart classrooms, digital infrastructure for gram panchayats, mobile workforce management solutions, and digitalization of primary agriculture credit societies.

Their commitment to IT Infrastructure Solutions has fueled significant growth. Revenue from IT Infrastructure Solutions stood at INR 93,500.81 lakhs in FY 2024, accounting for 91.64% of total revenue from operations of INR 1,02,057.47 lakhs. This further increased to INR 1,22,431.53 lakhs in FY 2025, contributing 93.23% of the total revenue from operations of INR 1,31,331.37 lakhs. This consistent rise reflects the Company's strong positioning in the IT infrastructure domain, building upon the substantial growth achieved in earlier years.

IT Managed Services

Building upon the foundation laid by their IT Infrastructure Solutions, their IT Managed Services encompass:

- Technical Staffing: They provide skilled IT personnel to support clients ongoing needs.
- Skill Development: They also provide training to ensure that clients team possesses the latest expertise.
- Annual Maintenance Services: They offer comprehensive annual maintenance plans to keep the clients IT infrastructure running smoothly.
- Operational Support: Their team delivers exceptional on-site and off-site operational support and maintenance, as outlined in each service level agreement. Payments are structured for convenience, with pre-defined billing intervals or according to contractual terms.

The IT Managed Services segment has also witnessed steady expansion. In FY 2024, revenue from these services was INR 8,556.66 lakhs, contributing 8.38% to the total revenue, which further grew to INR 8,899.84 lakhs in FY 2025, accounting for 6.78%. This reflects a CAGR of ~2% between FY 2024 and FY 2025.

Commitment to Quality and Expertise

They are dedicated to maintaining the highest quality standards in everything they do. This commitment is reflected in their achievement of several prestigious certifications, including ISO/IEC 20000-1:2018 (Information Technology Services Management), ISO 14001:2015 (Environmental Management System), ISO/IEC 27001:2022 (Information Security Management System), and CMMI- DEV V.2.0, Maturity Level 3.

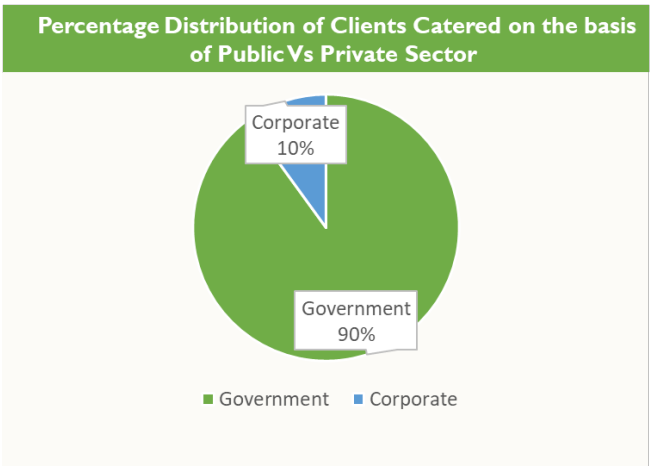
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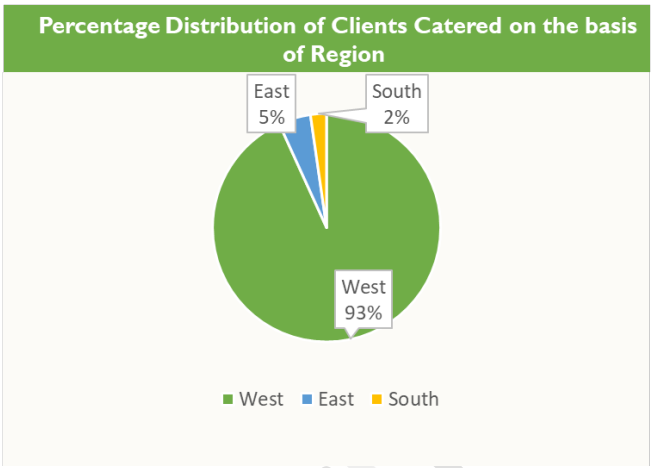
For certain activities, such as site preparation, electrification, and IT infrastructure commissioning, they leverage the expertise of their trusted third-party vendors, including their wholly-owned subsidiary company, Armee Technology Services Private Limited.

Strong Government Focus: Armee infotech boasts a remarkable 90% of its clientele within the government sector, showcasing its established position and expertise in catering to public sector IT infrastructure needs. This deep understanding and successful track record make them a trusted partner for government agencies.

Regional Reach: While their expertise extends nationwide, the Company currently focuses its operations primarily on the western region, followed by the eastern region. The southern region currently sees limited activity, but this could potentially present an opportunity for future expansion and diversification.

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In Renewable energy space, the Company has won projects in solar EPC domain as well as for developing solar parks via PPA mode.

- Notable clients in Solar EPC Project space: NACOF OORJA Private Limited, Apollo Green Energy Limited
- Notable projects in solar PPA domain: PPA from Maharashtra State Electricity Distribution Company Limited (MSEDCL) and Uttar Pradesh Power Corporation Limited (UPPCLP)



List of Completed Projects / Projects in Hand[6].

- Bihar Education Project Council- for Setting up "ICT Labs" [includes Supply, Installation, Commissioning and maintenance of Hardware, Software & Peripherals and Computer Education Services (including manpower etc.)] under ICT & Digital Initiatives intervention in 679 Govt. Elementary & Secondary Schools across Bihar on Build Own Operate and Transfer (BOOT) Model for five years.). **Project Value : Rs. 122 Crore.**
- Gujarat Council of School Education (ICT LEARNING LABS)- For implementing 4162 nos. ICT Learning Lab in total 4004 Schools across Gujarat including Supply of Hardware, Software, including Functional Training and Maintenance of the Systems for 5 years on behalf of Samagra Shiksha, Gujarat Council of School Education (GCSE), Education Department, Government of Gujarat. **Project Value : Rs. 252Crore**.
- Gujarat Council of School Education (GYANKUNJ)- For implementing Gyankunj in 30000 classrooms of Government Elementary & Secondary Schools within the State of Gujarat including Supply of Hardware, Operating Software and Maintenance of the Systems on behalf of Gujarat Council of School Education (GCSE), Education Department, Government of Gujarat. **Project Value : Rs. 290 Crore.**

[6] As per the information on the Company profile on the website.

E-Gram Vishwa Gram Society (OFFICE OF DEVELOPMENT COMMISSIONER)- For onboarding ePanchayat eGovernance Team (EET) in all the 33 District Panchayats and 248 Taluka Panchayats. They will be supporting e-Goveranace of 14179 Villages Panchayats in the state of Gujart for a period of 5 Years. This Project is part of an ambitious project of introducing eGovernance at grassroots through the panchayati Raj Institution (PRIs). The project is known as the eGram Vishwagram Project. Under the project. **Project Value : Rs. 205 Crore.**

Panchayat & Rural Development- Video Conferencing Solution. Aadhar Enrolment Kits. Biometric devices. Other IT Infrastructure (Desktops/ Printers etc.) For supply and commissioning of Includes warranty support for 5 years and comprehensive maintenance there after. **Project Value : Rs. 102 Crore.**

POS Devices for PDS Automation (UPDESCO)- System Integrator for Supply, Installation with Application and Maintenance of PoS Devices for Automation of Fair Price Shops in Rural Areas of Uttar Pradesh. End-to-end computerization of Public Distribution System (PDS) and as part of the implementation of National Food Security Act 2013 (NFSA) across the state of Uttar Pradesh by the Food & Civil Supplies Department, Government of Uttar Pradesh. **Project Value : Rs. 120 Crore**

Skill Development & Livelihood Project (Ministry of Rural Development)- The project (under the scheme Deen Dayal Upadhyaya Gramin Kaushal Yojana) has been implemented in Assam, West Bengal & Uttar Pradesh . In Assam 800 candidates,700 candidates in West Bengal and 800 candidates in Uttar Pradesh has been trained and placed accordingly. Project was focussed on capacity building through domain based skill development training and provide sustainable livelihood to rural un employed youth. **Project Value : Rs. 19 Crore**

Skill Development & Livelihood Project (Skill development Mission)- Skill development & livelihood project under Uttar Pradesh Skill Development Mission focussed on domain-based training & employment in various sector. Through this project the unemployed youths of Uttar Pradesh are getting trained & employed in various sector. **Project Value : Rs. 1.3 Crore**

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Some of the Awards and Recognition received by Armee Infotech

- In the Blindwink India Business Award 2025, the Company was awarded as in the category "Most Innovative & Successful IT Infrastructure Company in Gujarat"















Financial Performance

In FY 2025, the Company reported a total income of INR 1,315.78 Cr with a Profit After Tax (PAT) of INR 41.67 Cr. Over the period FY 2022 to FY 2025, the Company's revenue demonstrated a remarkable expansion, registering a strong CAGR of around 115%, reflecting consistent business scale-up despite margin pressures. Profitability also showed a significant uptrend during this period, with PAT growing more than tenfold, highlighting improved operational efficiency and stronger earnings capacity.

Financial Summary (All figures in INR Lakhs)			
	FY 2023	FY 2024	FY 2025
Revenue	51,960.00	1,02,399.34	1,31,578.49
EBDITA	3,398.38	7,499.45	6,111.38
PAT	1,957.60	5,013.04	4,166.64

Source: Armee Infotech Financial Reports