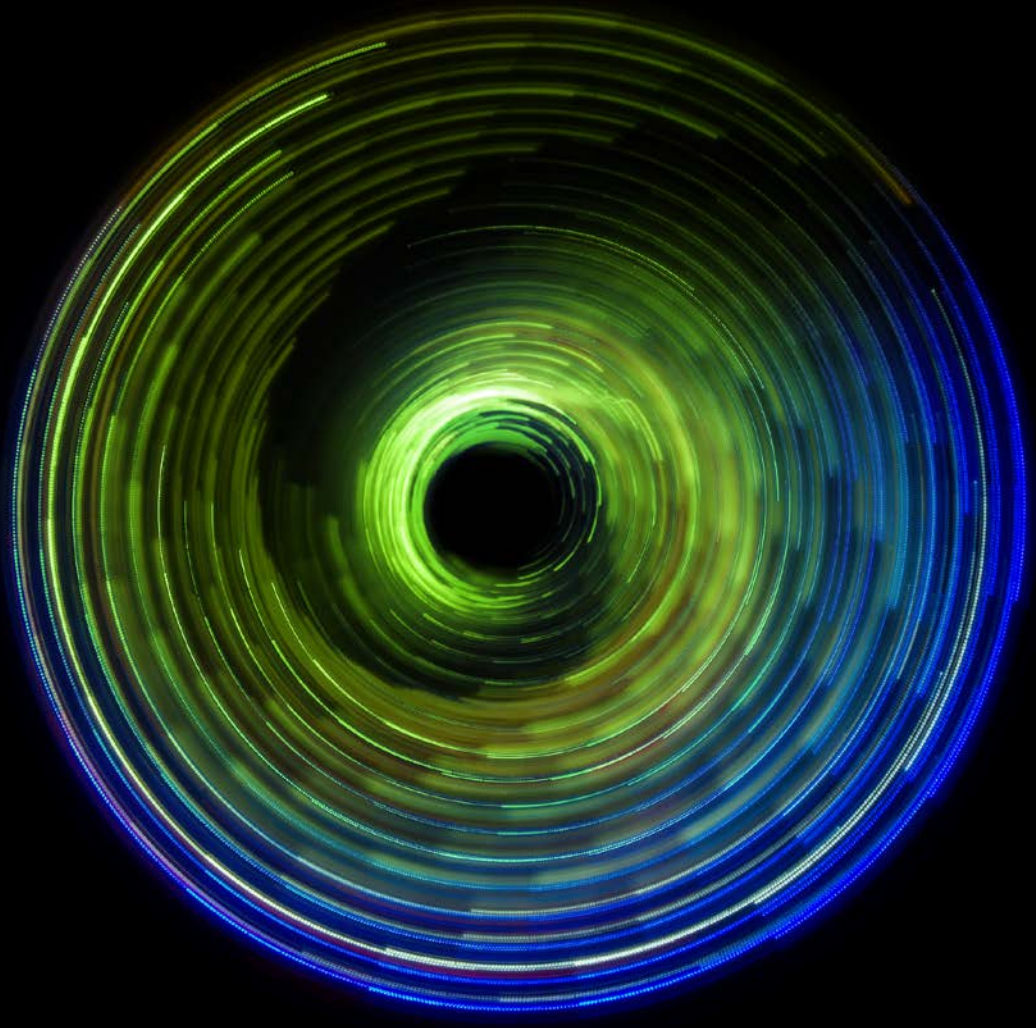
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Towards one trillion: Accelerating Tamil Nadu's progress to become a trillion-dollar economy

April 2023

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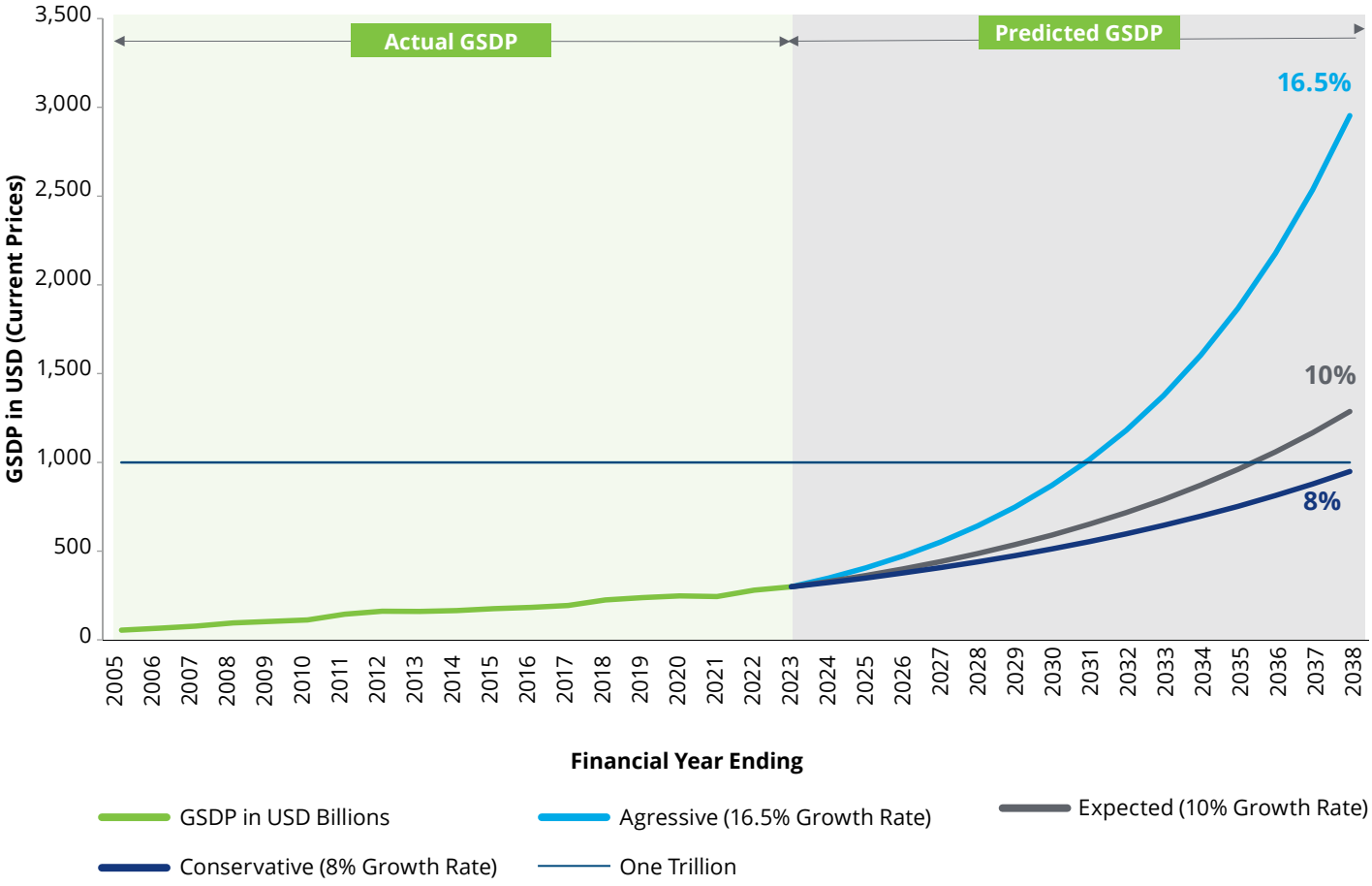
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Introduction

Tamil Nadu is the second-largest state economy (as of 2021-2022) and population wise, the seventh-largest state (7.5 crores).[1] The state's Gross State Domestic Product (GSDP) stood at INR 20.65 lakh crore in 2021-2022 (only after Maharashtra)[2] and is estimated to be around 23.5 lakh crore in 2022-2023.[3]

Tamil Nadu's economy has witnessed tremendous growth over the past two decades, with an average 10 percent YoY growth[4] between FY2005 and FY2023.[5] While the state's economic performance remains strong, its aspirations are set on achieving a trillion-dollar (US$)[6] economy status by FY2031.

Figure 1: Tamil Nadu's Economic Trajectory - The Past and Future



Source: Data from FY2005 to FY2011 is from the RBI Handbook of Statistics on Indian States and that from FY2012 to FY2023 is from the Ministry of Statistics and Programme Implementation. The average exchange rate for the calendar year in which the financial year started has been used to convert GDP estimates from INR to US$. Projected conversion rates by the Economist Intelligence Unit (EIU) have been used for projections.

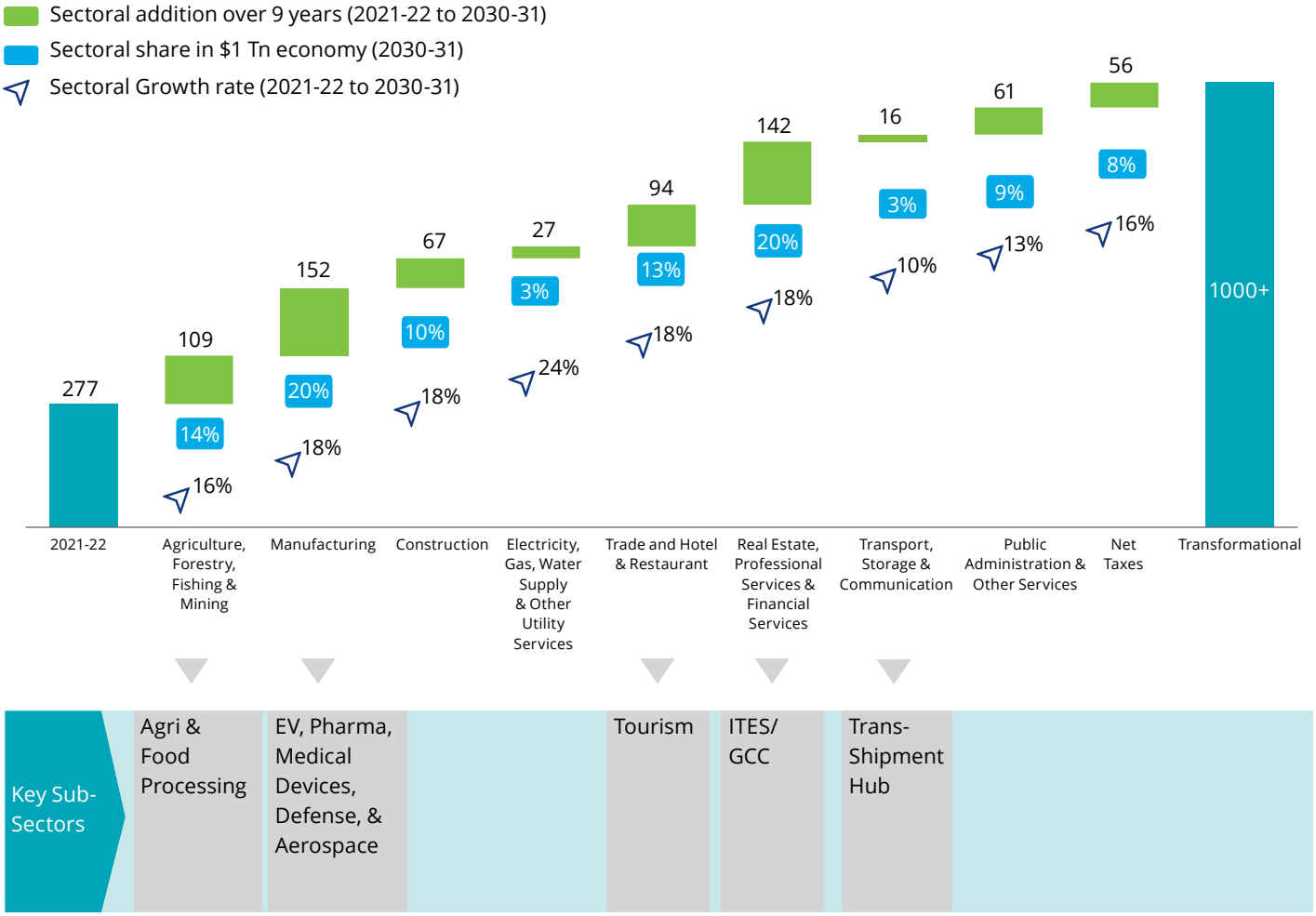
[1] Projected population for 2019 provided by National Commission on Population, Ministry of Health & Family Welfare.
[2] Maharashtra's GSDP in 2021-2022 stood at 31 lakh crores.
[3] Data from Ministry of Statistics and Programme Implementation – Last updated on 15 March 2023.
[4] The growth rates are for the GSDP of Tamil Nadu in USD.
[5] The compounded annual growth rate during this period was around 13.3%
[6] United states dollar

Assuming Tamil Nadu can sustain its current average of 10 percent growth, it is expected to reach the US$1 trillion benchmark by FY2034. To achieve this milestone by FY2031, Tamil Nadu will need to grow at an average of 16.5 percent.

Achieving this growth rate will require the introduction of path-breaking policies and economic planning to attract investments, enhance production, and expand exports. Tamil Nadu will need to climb up the value chain across all three sectors of the economy (primary, secondary, and tertiary) to increase value addition and propel its economy towards the set goal.

The estimated growth required for each major sector of the economy has been summarised in Figure 2. The primary sector is required to grow at 16 percent, while the manufacturing and professional services sectors are required to grow at 18 percent. To achieve the required sectoral growth rates, the state will need to bring in strategic investments over the next seven years. Aggregate sector-wise investments (in US$ billion) that will be needed have been illustrated in Figure 3.

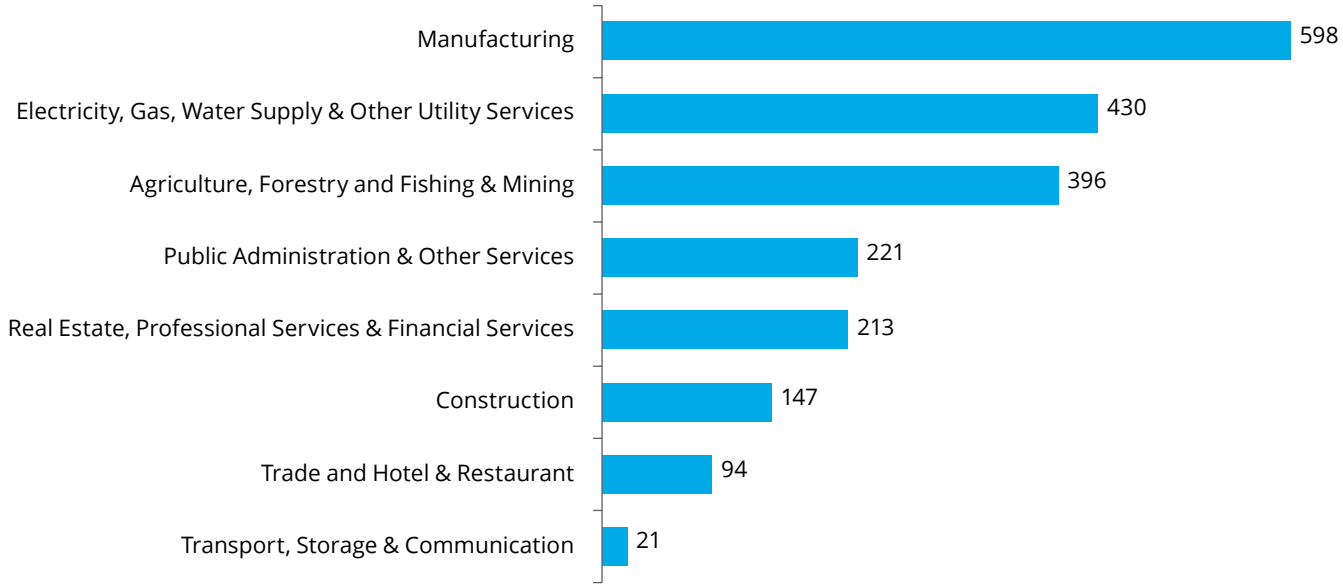
Figure 2: Projected Sectoral Growth Rates and Value-Addition Targets



All monetary figs. in USD Bn.

Source: Deloitte Analysis

Figure 3: Sectoral Investment Requirements (2023-31) in USD Billions



Source: Deloitte Analysis



Towards one trillion: Playing to Tamil Nadu's strengths

A good starting point for Tamil Nadu to plan its economic strategy would be to capitalise on its existing strengths and the key sectors that the state already specialises in. Some of Tamil Nadu's strengths have been detailed in this section.

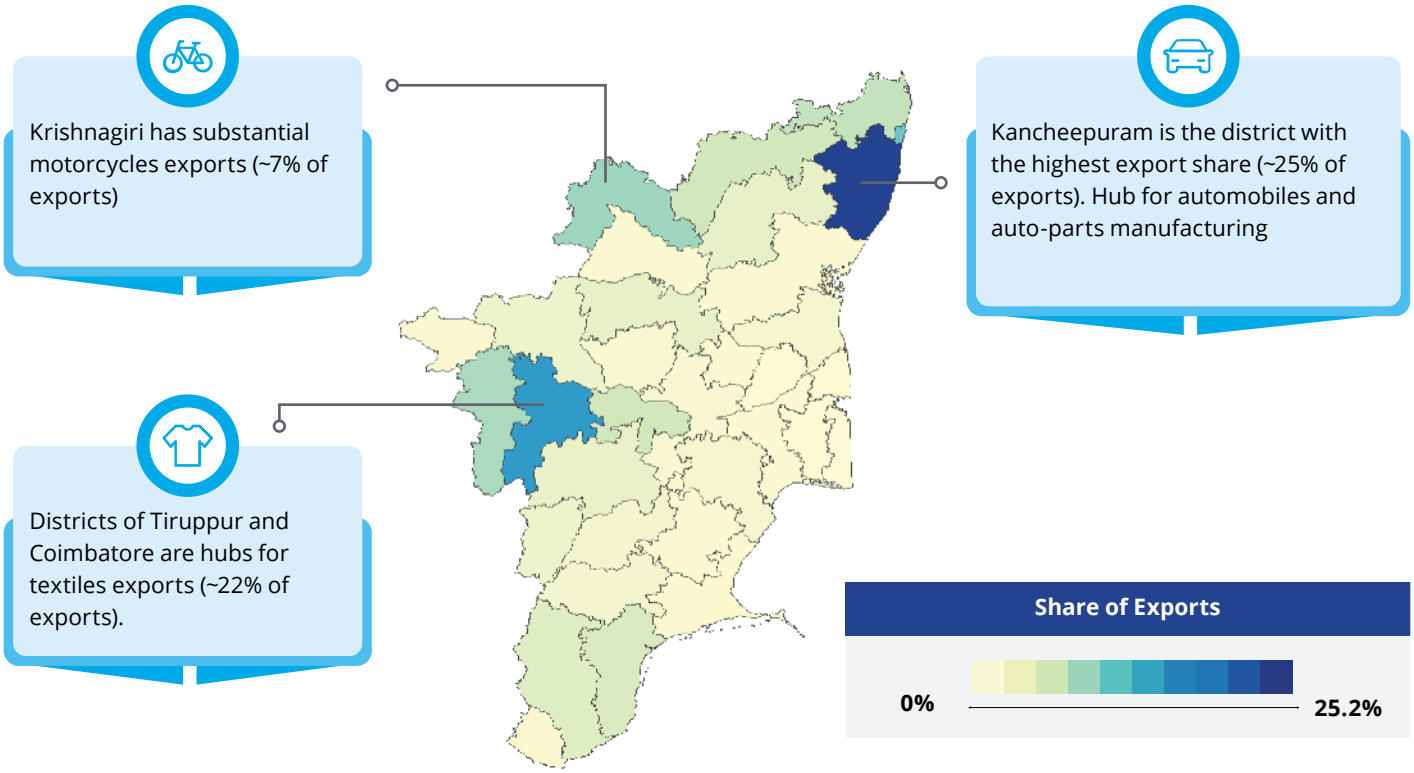
Prowess in manufacturing and exports

Tamil Nadu is a well-established industrial hub, with globally relevant manufacturing clusters, such as the automobile cluster in Chennai-Kancheepuram districts and the textile cluster in Coimbatore-Tirupur-Karur districts. The manufacturing sector accounted for around 20 percent (on an average) of the state's nominal value addition between FY2012 and FY2023, and its value addition stood at around 4.39 lakh crore during 2022-23.[7]

Tamil Nadu ranks first amongst Indian states in the production of motor vehicles, auto-components, fabric yarns, knitted and crocheted apparel, and rubber products.[8] It ranks second in the production of mechanical machinery.[9]

The manufacturing sector is also export oriented in Tamil Nadu. Tamil Nadu is the third-largest goods exporter in India (by value) after Gujarat and Maharashtra, with an aggregate export value of 1.23 lakh crores during 2021-22.[10] Primary goods exported by Tamil Nadu include automobiles and auto-components (totalling INR 25,195 crore in 2021-22) and textiles (totalling INR 12,425 crores).[11] The automobile cluster in Kancheepuram and the textile cluster in Tiruppur and Coimbatore are the major exporting districts.

Figure 4: Commodity export shares of districts in Tamil Nadu



Source: Ministry of Commerce Dashboard (https://dashboard.commerce.gov.in/commercedashboard.aspx). District borders are as of the 2011 census.

[7] Ministry of Statistics and Programme Implementation data, updated 15th March 2023
[8] Deloitte analysis on Annual Survey of Industries 2018-19
[9] Deloitte analysis on Annual Survey of Industries 2018-19
[10] Source: Ministry of Commerce Dashboard, https://dashboard.commerce.gov.in/commercedashboard.aspx
[11] Source: Ministry of Commerce Dashboard, https://dashboard.commerce.gov.in/commercedashboard.aspx

While Tamil Nadu is undoubtedly a dominant player in the Indian manufacturing sector, there is substantial scope to climb the value-addition chain in key sectors, such as **electric vehicles, electronics, semi-conductors, chemicals, defence and aerospace, textiles, and pharmaceutical/medical devices.** Tamil Nadu could hold a competitive edge over other Indian states in attracting global investors in these sectors, owing to its dominant industrial presence in the country.

Furthermore, the Chennai Container Terminal (CCT) is managed by a leading multi-national logistics company under a 30-year Build Operate Transfer (BOT)[12] contract with the Chennai Port Trust (Government of India). The terminal, which can now handle fifth-generation vessels up to 6,400 TEU, enables multi-modal connectivity and supports 60 percent of southern India's container market. It also anchors several key port-rotation routes, such as an India-Europe route, covering hubs including Rotterdam and London Gateway, and a China-India route covering hubs such as Busan, Shanghai, Malaysia (Port Klang), and Singapore. This allows Tamil Nadu to have direct routes to China, the Middle East, Europe, US, and enable quick transits to the far east.[13] Utilising this, the state can adopt an export-oriented strategy in the aforementioned target sectors and dominate intra-Asian trade and exports. This would also be key in achieving the US$100 billion goal in exports by 2030, set out in the Export Promotion Strategy of Tamil Nadu.

The forthcoming sections of this report will explore how Tamil Nadu can build its competencies in these industrial sectors.

Tamil Nadu's higher education ecosystem and talent pool

The need for a skilled and educated labour force in Tamil Nadu gains significant relevance as Tamil Nadu aspires to move up the value-addition curve. Higher education, specifically in science, medicine, technology, and engineering is key for the manufacturing and IT services sectors, while business and legal education is crucial for the professional services sector.

Tamil Nadu is home to ~2,610 college institutions (degree colleges affiliated with universities), 59 universities, and ~914 stand-alone diploma-awarding institutions (that are typically not affiliated with any university).[14] The state hosts 15 percent of all Ph.D. students in India, 11 percent of post-graduates, and 8 percent of undergraduate students in India. It is important to note that Tamil Nadu is home to only 5.7 percent of India's population; however, its share of enrolled students (specifically for higher education) is substantially higher than its population share.

Specifically, the undergraduate gross enrolment rate[15] of Tamil Nadu is the third-highest amongst states and union territories and nearly double the national average. This is a major asset to the economy, as the demand for a highly skilled workforce continues to increase.

Tamil Nadu can utilise the strong higher education ecosystem and availability of skilled talent to become a leading global Research and Development (R&D) hub. Key sectors of scope for the state include **R&D (including biotechnology), AI/ML, renewable energy, defence, agri-tech, and electronics.**

Table 1: Enrolment at various higher education levels

Level	Tamil Nadu	All India	Share
Ph.D.	30,660	2,02,550	15%
M.Phil.	9,779	23,934	41%
Postgraduate	4,79,938	43,12,245	11%
Undergraduate	25,91,010	3,06,47,287	8%
Post Graduate Diploma	15,912	217,249	7%
Diploma	3,47,917	26,72,562	13%
Certificate	23,111	1,59,869	14%
Others	21,984	3,00,373	7%
Total	**35,20,311**	**3,85,36,069**	**9%**

Source: All-India Survey of Higher Education (AISHE) – 2019-2020

[12] Build-Operate-Transfer
[13] Source: https://www.dpworld.com/india/ports-and-terminals/chennai-container-terminal, accessed April, 2023
[14] All India Survey on Higher Education – 2019-2020
[15] Number of students enrolled as a share of the total population in the age of 18-23



Tamil Nadu's coastline and rich heritage

Tamil Nadu is endowed with over a 1,000-kilometre-long coastline, enabling great potential for (i) marine product processing, utilising its vibrant fishing industry (ii) trans-shipment hubs, utilising its ports, and (iii) coastal tourism, owing to its rich culture and heritage.

Fishing and marine product processing

Tamil Nadu's fisheries sector makes up 1 percent of its economy (as of 2022-2023)[16] and has over 10.48 lakh marine fishers, who employ over 5,000 mechanised and 41,000 traditional crafts for fishing. The state exported over 1.28 lakh metric tonnes of marine products, resulting in foreign exchange earnings of over INR 5,591 crore during 2018-2019.[17]

The natural next step post fishing is to ascend the value chain by commencing marine product processing and exports. Recognising the immense potential in this sector, the Tamil Nadu government has invested in an Integrated Sea Food Park in Ramanathapuram district, for the processing of fish, shrimp, prawns, and crabs. It would also cater to branded food products that produce "ready-to-eat/ready-to-fry" sea food.

Further, a leading logistics and ports company has planned to invest over INR 2,000 crore[18] in setting up cold-storage warehouses and seafood-processing zones. The development of the necessary common infrastructure for seafood processing would invariably attract more MSME players to enter the market. The global seafood exports market totalled a staggering US$6.6 billion and demonstrated a strong growth trend over the past decade.[19] Global prospects for the market seem to be positive and long-lived.

Ports and trans-shipment hubs

Apart from marine exports, TN also has tremendous scope to be a transhipment hub, utilising its existing port infrastructure. Tamil Nadu houses four ports—namely Chennai Port, Kamarajar Port (Ennore, near Chennai), V.O. Chidambaranar Port (Thoothukudi), and Kattupalli Port (north of Chennai). Together, the ports handled 125.4 million[20] metric tonnes of freight and over 4,000 vessels in FY2020.[21]

In terms of container traffic, the Chennai Port, Kamarajar Port (Ennore, near Chennai), and V.O. Chidambaranar Port (Thoothukudi) handled 2.32 Twenty-feet Equivalent Unit (TEU) in 2019-2020, around 23.2 percent of the total cargo handled

[16] Ministry of Statistics and Programme Implementation - https://www.mospi.gov.in/data
[17] Tamil Nadu Fisheries Department - https://www.fisheries.tn.gov.in/
[18] Business Standard Article dated September 12 2021 - https://www.business-standard.com/article/companies/dp-world-to-invest-rs-2-000-crore-in-various-tamil-nadu-projects-121091200570_1.html
[19] United Nations COMTRADE, accessed September 2022
[20] 2019-2020 Annual Report of Adani Ports and Indian Ports Association.
[21] FY2020 Annual Reports of Chennai Port Trust and VOC Port Trust, and website of Kamarajar Port Limited (https://ennoreport.gov.in/content/innerpage/vessels-handled.php)

by major ports in India.[22] The existing seaport and airport infrastructure enables Tamil Nadu to currently contribute to nearly 9.8 percent of India's outbound shipments.[23]

While Tamil Nadu has a strong port infrastructure, the ports are not amongst the largest in the country. For example, the largest port in Tamil Nadu, the Chennai Port, handled only 38 percent (in metric tonnes) of the cargo that Deendayal port (Gujarat) handled during 2019-2020 (the highest cargo traffic in India). There is considerable scope for growth in this context. More so, considering growing trade volumes in the Asia Pacific region. Container traffic in the Asia-Pacific region is expected to grow to 531 million TEUs in 2030.[24] Tamil Nadu could position itself as a key transhipment hub for traffic towards Southeast Asia, expanding its position as a key shipping hub in India.

Heritage and coastal tourism

In addition to marine products and shipping, the coastline also provides an opportunity for Tamil Nadu to attract tourists. Key tourist hubs along the coast, such as Mahabalipuram, Ramanathapuram, and Kanniyakumari, could be prime international destinations for tourists. Though Tamil Nadu registered over 6.8 million incoming foreign tourists and 494.8 million domestic tourists in 2019 (pre-COVID-19),[25] there is scope to become the choice coastal destination for large events (such as the International Chess Olympiad) and resorts.

To reach the one trillion benchmark by FY2031, Tamil Nadu will need to bring about transformational change. The next section provides three key focus areas where transformational change could have substantial impact.



[22] Indian Ports Association

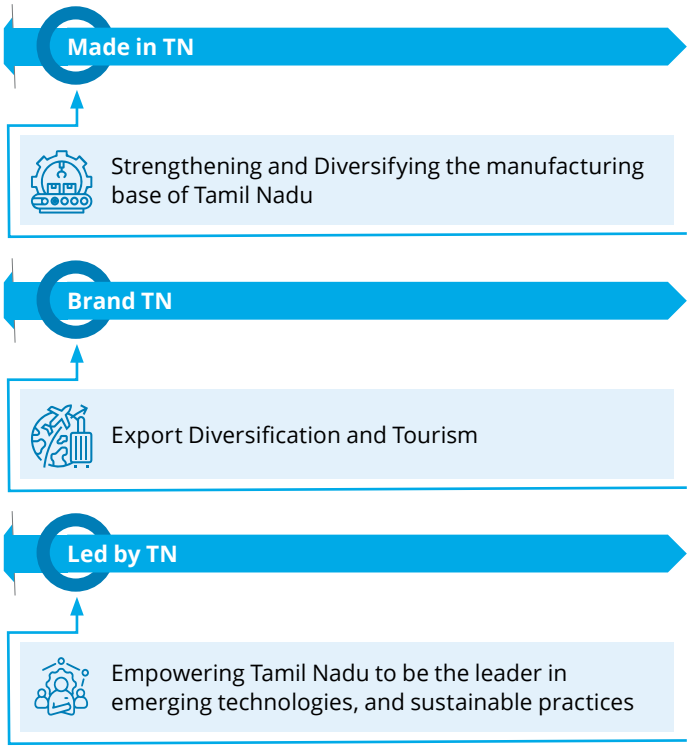
[23] Tamil Nadu Industrial Policy, 2021 - https://investingintamilnadu.com/DIGIGOV/TN-pages/industrial-policy.jsp?pagedisp=static

[24] United Nations Economic and Social Commission for Asia and the Pacific, Facilitating Sustainable and Resilient Port Development to Support Sustainable Maritime Connectivity in Asia and The Pacific, April 2021. Accessible at: https://www.unescap.org/sites/default/d8files/event-documents/Report_on_Sustainable_and_Resilient_Port_Development-Final.pdf

[25] India Tourism Statistics 2021 - https://tourism.gov.in/sites/default/files/2022-09/India%20Tourism%20Statistics%202021%20%281%29.pdf

Key areas of transformational change

We identify three strategic focus areas where Tamil Nadu can leverage its current strengths and competitive advantages to effectively grow its economy. While this is not exhaustive, these key areas are likely to have the greatest impact in boosting the economy towards the one trillion mark.



Strategic focus area I: Made in TN

Tamil Nadu's manufacturing strength is well established. However, there remains considerable scope for the state to move up the value chain in manufacturing. This is specifically true for sectors such as EV, agri-allied food processing, technical textiles, chemicals, non-metallic minerals, and electronic and semi-conductor industries, where it can considerably enhance its value addition.

Auto value chains: EV

Tamil Nadu has immense untapped potential in the automobile sector. The state can aim to be the Stuttgart of Asia utilising its already-established industrial ecosystem.

Given the need to become a global leader in EV automobiles, the focus today needs to be on the well-established automotive cluster in the Chennai-Kancheepuram-Chengalpattu-Tiruvallur corridor, utilising the existing auto-manufacturing infrastructure and industry presence.

The state has already put its best foot forward with the advent of the Tamil Nadu EV policy 2023, identifying key EV cities in the state—Chennai, Coimbatore, Trichy, Madurai, Salem, and Tirunelveli, with the goal of making TN the preferred destination for EV manufacturing in Southeast Asia.

Given the infancy of this sector in the state, the state will need to intervene in infrastructure creation, start-up support, and social development. In addition to the already proposed EV park in Hosur and Manalur,[26] TN could also enable the setting up of key technology nerve centres along the corridor, linking the identified cities in the policy. The R&D nerve centre ecosystem could enable start-ups to have co-working spaces located alongside OEM/Tier-1 R&D centres. Further, OEMs can offload new research activities to interested start-ups and acquire technologies from them. OEMs and start-ups could also work together on adapting EV production technologies for Indian MSMEs, to push localisation.

Apart from supply-side interventions, citizen-centric policy changes may be adopted to enable the increase in demand of the electric automotive sector within the state. The current EV policy aims to convert 30 percent of bus fleets (60,000 busses)[27] in public transport and educational institutions to EV by 2030.[28] Apart from public transportation, the state can also consider providing government-backed finance assistance for auto drivers to acquire and operate electric vehicles via usage-based payment plans, incentivising private owners by offering public charging infrastructures and battery swap stations, and subsidising the cost of electric vehicles via rebates on the state goods and services tax.

EV conversion can also be achieved via EV Retrofitting. Retrofit kits for existing autos can help with electrification goals, and battery standardisation with retro fit kits can help push battery swap infrastructure as well. These changes will increase demand and make the public more open to adopting EV.

[26] To be established by State Industrial Promotion Corporation (SIPCOT)
[27] FICCI Analysis
[28] Tamil Nadu Electric Vehicles Policy 2023, https:/investingintamilnadu.com/DIGIGOV/StaticAttachment?AttachmentFileName=/pdf/poli_noti/TN_Electric_Vehicles_Policy_2023.pdf" https://investingintamilnadu.com/DIGIGOV/StaticAttachment?AttachmentFileName=/pdf/poli_noti/TN_Electric_Vehicles_Policy_2023.pdf

Apart from manufacturing, EVs and autonomous driving has generated a plethora of R&D opportunities across the world. There is potential to employ over 5,000 professionals in the R&D space alone over the next 7-10 years, which would contribute ~1,000-1,500 crore rupees in GDP.[29] Several diversified job roles involved with EV manufacturing, charging infrastructure, supply chain and logistics, and sustainability will lead to an estimated 20,000-25,000 new jobs created by the EV sector over the next 7-10 years.[30]

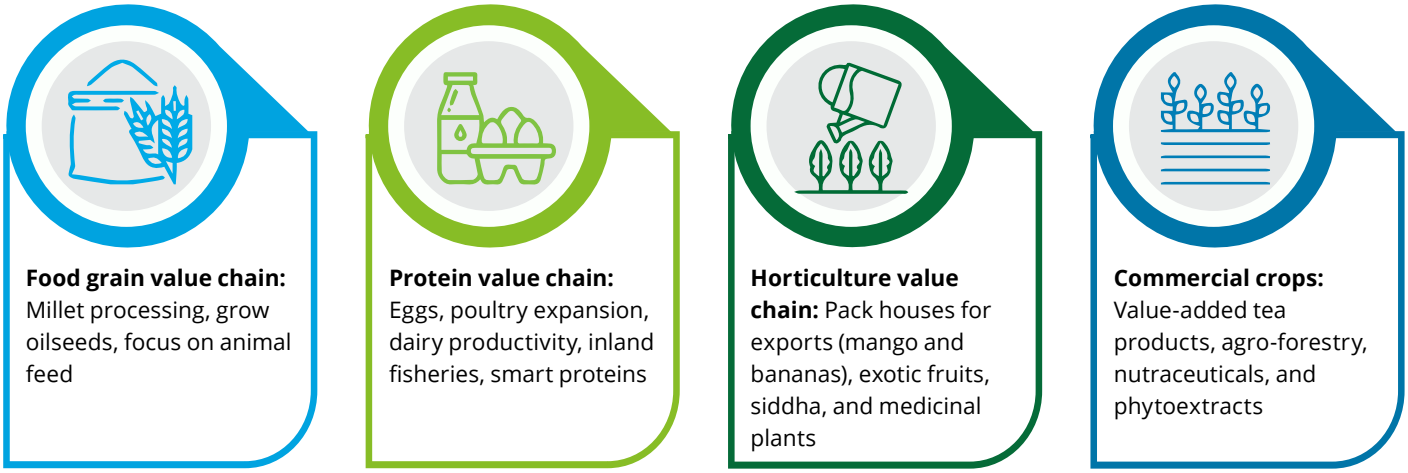
Overall, increasing focus on the EV sector will help the state achieve its sectoral targets to achieve the one-trillion-dollar-economy goal.

Food processing hub

Tamil Nadu's primary sector has the smallest share of the state's economy. However, there are a few key agrarian districts, specifically, the Kaveri delta region (districts of Nagapattinam, Thanjavur, and Thiruvarur), which are primarily agrarian with over 60 percent of the land sown.[31]

As illustrated in Figure 2, agri-allied sectors need to increase their output by 16 percent to aid the state in its one-trillion-dollar journey. To enable this, Tamil Nadu can look at becoming a food processing hub utilising the agrarian prowess of the Kaveri delta region and setting up a marine food processing hub in the Thoothukudi-Tirunelveli area.

Key value chains through which the state can achieve this growth are as follows:



Each district must be mapped to one of the four chains, based on its competitive advantage. Further, to increase yield, value addition and improve soil fertility, the state may opt to change irrigation techniques, such as drip irrigation, invest in the infrastructure necessary for lift irrigation, and promote natural fertilisers.

The food processing sector would also benefit from cluster development. This can be enabled via a one-district-one-food design. Each district can be mapped to a key food item that it would process. Agri-MSMEs could play a key role in providing district-specific agricultural inputs, micro-cold storages, pack houses, and greenhouses. This will then be supported via Ag-tech and R&D enabling ecosystems for MSMEs within the agri-value chains to grow and thrive. Additional support can come from the implementation of management systems such as Ag-tech to conduct production surveys and forecast volumes. This would help farmers prepare for all circumstances. Further, the government could explore providing mentorship and training support to equip the next generation with the skills and resources needed to drive growth and transformation in the agricultural sector.

These interventions will enable a robust and resilient primary sector for Tamil Nadu.

[29] FICCI Analysis
[30] FICCI Analysis
[31] Net Sown Area data is from Area and Production Statistics, Ministry of Agriculture and Farmers Welfare (https://aps.dac.gov.in/). Total Area of districts is from Tamil Nadu Government's official website (https://www.tn.gov.in/district_view).



Technical textiles

Tamil Nadu is a titan in the textiles industry. With expertise in spinning, handloom weaving, power-loom weaving, processing, knitwear, apparel, and garmenting, it is the largest contributor to the Indian textile industry, accounting for a ~19 percent share in India's textiles output.[32] The textile sector in Tamil Nadu is the third-largest recipient of FDI in India, and accounts for 4 percent of the national GDP.[33] While its national presence is felt heavily, recent international events have threatened the growth of this sector in the state.

Exports of textiles have dwindled drastically post the Russia-Ukraine war. Orders from Europe have dwindled, bringing down the total textile export by over 45 percent.[34] This has led to a large loss of employment and closures of spinning, weaving, and knitting units. Further, China, which has been the largest buyer of yarn from India, has ceased to come to India for their requirements due to policy changes over the past 4-5 years.[35]

To address these, the state should aim to help textile industries diversify their export destinations by providing market intelligence and support. Textile industries could look to expand to the emerging economies in Southeast Asia.

Apart from diversifying export destinations, the government could also help the industry diversify its product offerings to include technical textiles. Technical textiles have been on the rise due to the growth of end-user sectors, such as health care, oil and gas, and automotive. However, the need for advanced technical knowledge of the production and certification process is a major obstacle to textile manufacturers in the state. The government could run knowledge sessions and provide subsidies for certification costs to help textile manufacturers diversify to technical textiles.

Chemicals and non-metallic minerals

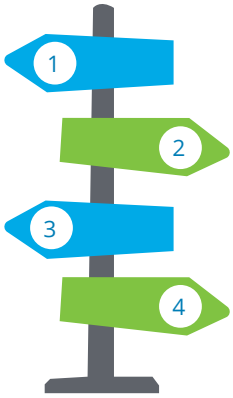
The chemical sector, whose value chain spans all major industries, is currently around 2 percent of Tamil Nadu's GSDP.[36] The share of the chemicals to the national GDP stands at 7 percent, while that for global giants such as the US and UK stands at over 20 percent.[37] Based on its current size, the chemical sector (around US$6 billion) will have to grow more than 10 times in a span of just eight years.[38]

The Tamil Nadu government has been pro-active in enabling this sector's growth via standardised approval procedures (single-window systems), updated clearance requirements, financial incentives, and land information portal support. The state has also identified petrochemicals, specialty chemicals, pharmaceuticals, and bulk drugs as sunrise sectors and laid out key developmental goals for them in state policy. While the required growth rate is substantial, it is still comfortably achievable. The chemical industry's international wide-spread value chain allows it to have a maximum multiplier effect of four[39] and has massive export potential.

[32] Source: Tamil Nadu State Investment Promotion Agency – Guidance Bureau
[33] Source: Tamil Nadu State Investment Promotion Agency – Guidance Bureau
[34] FICCI Analysis
[35] FICCI Analysis
[36] FICCI Analysis
[37] FICCI Analysis
[38] FICCI Analysis
[39] Every dollar generated by chemical companies, further $4 generated elsewhere in the economy due to its downstream – FICCI Analysis

The Tamil Nadu government may take up the following interventions to boost its chemical sector's growth:

1. Offer implementation support for policies set up by the Tamil Nadu Investment Promotion agency
2. Focus on mega projects such as naphtha cracker
3. Develop ports and infrastructure to facilitate chemical-based industrial belts
4. Enable manpower quality improvement (through skill development centres wherein industrial experts guide educational institutions and enable knowledge transfers)



Chemical industries in Tamil Nadu spend around INR 2,500 crore in their operations.[40] The burden of environmental regulations could be reduced to enable the industry to better contribute to the states' economic output goals.

A supporting and interconnected industry of this secondary sector is non-metallic minerals. Tamil Nadu may explore mineral avenues by identifying new areas for exploration of lignite (Neyveli), beach sand minerals, molybdenum (Madurai), feldspar (Salem), quartz, and other silica-based minerals, encouraging potential private players to explore and survey. To facilitate identification and allocation of mining leases after exploration, the state may develop a portal with updated land parcels and an online bidding system.

Additionally, the state could aid seamless integration into the operational aspects of the mine by enabling faster NoC processing via a single-window clearance system with a pre-defined timeline, identification of non-working leases, and targeting of high potential lease for commencement.

Finally, the state could utilise its coastline to identify clusters for beach sands, such as monazite, garnet, ilmenite, rutile, sillimanite, zircon, and leucoxene, and accordingly update the policies and incentives to vitalise this sector.

Electronics and semi-conductors

Tamil Nadu has identified electronics design and manufacturing as a sunrise sector within the state. Currently, this sector is largely import dependant. To achieve the required growth rate in the manufacturing sector, the state can concentrate on bringing the production home and aim to be a hub in trending fields, such as Internet of Things (IoT) devices and Electronic Systems Design and Manufacturing (ESDM).

IoT devices are undergoing a major boom in the global market. It is expected that there would be 30 billion devices in 2030 from the current eight billion, a growth of almost 3.5 times, with China expected to be the leader with a total output of five billion devices annually.[41]

Tamil Nadu can aim to be the IoT device manufacturing hub of India by setting up centres of excellence of IoT device technology along key industrial corridors and providing infrastructure, land, and technical expertise to entrepreneurs on manufacturing devices. With low investment and energy needs, device manufacturing can be promoted in rural centres with local factories employing local unskilled labour. This will not only engage graduating engineers in manufacturing, but also usher in a digital technology culture at the grassroot levels of the state. This will enable Tamil Nadu to possess the capability of manufacturing one billion devices a year by 2030.[42]

Tamil Nadu may also encourage the development of private ESDM parks with common infrastructure, amenities, and waste-handling facilities, along with policy-enabled initiatives to entice developers.

The TN government, armed with the new electronics and hardware manufacturing policy, may set a target to increase the state's electronics industry output to US$100 billion by 2028, roughly contributing to 25 percent to India's electronic

[40] FICCI Analysis
[41] FICCI Analysis
[42] FICCI Analysis

exports over five years.[43] The policy proposes skill training for more than one lakh people by 2025 to meet the incremental human resource requirement, projected by National Skill Development Corporation (NSDC) for Tamil Nadu, in the electronics and hardware manufacturing sector.

Aiming to provide adequate infrastructure and supporting ecosystem to ESDM companies and attract major global ESDM players to invest in Tamil Nadu, policies can be aimed at incentivising home-grown start-ups in the sector, both in the component and OEM sub-segments. Policy implementation can be used to target the increase in the level of value addition done in Tamil Nadu as part of the ESDM global value chains, especially across focus sectors such as mobile handsets, LED products, chip designs, PCBs, solar photovoltaic cells, medical electronics, and automotive electronics.

The above focus sectors will have to be supported by a strong semi-conductor manufacturing ecosystem as well, which can be enabled by setting up ESDM clusters around the Nagapattinam district, known for its presence of silica-sand, a key ingredient in semi-conductor manufacturing. A similar approach of policy implementation and enabling can be undertaken to boost this sector, in tandem with electronics, to propel Tamil Nadu towards its one-trillion-dollar target.

MSME revitalisation

The interventions above will vitalise the manufacturing sector and attract large industries to invest in Tamil Nadu, leading to an increase in demand for domestic ancillary component manufacturing and services within the ecosystem. This demand can be fulfilled by revitalising Tamil Nadu's well-established Micro, Small, and Medium Enterprises (MSME) base.

MSMEs have remained a cornerstone of Tamil Nadu's economy. The state has the third-largest number of MSMEs in India and is an active hub for enterprise and entrepreneurship.[44] Tamil Nadu is home to 50.29 lakh MSMEs, accounting for 8.6 percent of the total number of MSMEs in India. Tamil Nadu ranks fourth in the number of MSMEs after Uttar Pradesh (which accounts for 11.43 percent of India's MSMEs), Maharashtra (10.49 percent), and West Bengal (10.10 percent). MSMEs in Tamil Nadu offer ~11.7 million jobs.[45] It is important to note that 95 percent of MSMEs employ five workers or less in Tamil Nadu (this is similar to the all-India average of 95.5 percent).[46] Given the substantial economic footprint of MSMEs in TN, it is essential to ensure that MSMEs play an active role in contributing towards the one-trillion-dollar economy.

Credit and seed funding

The gross fixed capital formation per MSME in the organised industrial sector of Tamil Nadu is 71 percent lower than that of Maharashtra (an average between financial year ending 2011 and 2019) and 27 percent lower than that of Gujarat.[47]

There is a need to improve access to credit and funding sources to ensure increased investment in fixed capital for MSMEs to move up the value chain. These could include capital subsidies, soft loans, and seed funding. The government could consider establishing a dedicated subsidy and seed fund to help MSMEs increase their fixed capital investments. The fund could prioritise MSMEs that are ancillary suppliers to key sectors, such as automotive, defence and aerospace, electronics, textiles, pharma, footwear, agro-processing, and medical devices.

Skilling and knowledge support

Apart from improving investments in fixed capital, human capital is also key in ensuring the success of MSMEs. The government could consider providing upskilling courses via Tamil Nadu Skill Development Corporation and Work Labs (TN Guidance Bureau) in agro-processing, electronics, pharma, footwear, technical textiles, hospitality, and IT sectors.

Furthermore, FaMeTN could provide targeted technical and business support for export-oriented MSMEs with the requisite certification and quality requirements to enter global markets.

Shared infrastructures

The "cluster development initiative" specified in the Government of Tamil Nadu's MSME Policy of 2021 would be vital to ensure the development of MSMEs across the state. In specific, the provision of shared infrastructure, such as common facility centres, tool rooms, quality testing and certification labs, and environment management infrastructure in Tamil Nadu Small Industries Development Corporation (TANSIDCO's) industrial estates[48] would be key in helping the proliferation of MSMEs.

Revitalising MSMEs and enabling their participation in Tamil Nadu's economic growth would help consolidate the grassroots of the state's economy and enable equitable growth across all income and social strata.

[43] FICCI Analysis
[44] Sixth Economic Census Report
[45] Sixth Economic Census Report
[46] Sixth Economic Census Report
[47] Deloitte Analysis of Annual Survey of Industries. Exports were also included in the turnover computations to determine MSMEs.
[48] TANSIDCO is expected to develop about 5,000 acres of land as MSME industrial estates to promote industrial development.



Strategic focus area II: Brand TN

Brand Tamil Nadu, as a focus area, primarily focusses on firmly integrating Tamil Nadu as an integral part of the global economy, trade, and culture. This includes aspects from exports to tourism.

The strategic location of Tamil Nadu along the eastern coast of India, which is in close proximity to global trading hubs, such as Singapore, and the availability of world-class technical talent puts Tamil Nadu in a fair position to be India's export and global trade hub. In specific, Tamil Nadu could be a key tans-shipment hub, and a capital for IT-enabled services exports.

Apart from being a leader in exports, the state's rich cultural heritage, and astounding natural beauty (coastline and the eastern ghats) could be utilised to attract global tourists, making it a major global tourist location.

Trans-shipment hubs

The strategic location of Tamil Nadu enables the state to be positioned as both, a domestic and international trans-shipment hub. With container traffic in the Asia and Pacific region set to grow to 531 million TEUs in 2030,[49] Tamil Nadu could be a key hub connecting the east and Southeast Asia (Singapore, Japan, China) with South and West Asia.

Tamil Nadu is well connected to industrial clusters in Karnataka and Kerala via the Chennai- Bangalore Industrial Corridor, Chennai-Kanyakumari Industrial Corridor, and the Kochi-Coimbatore-Bangalore Industrial Corridor. Further, the ports in Chennai are close to key industrial hubs in southern Andhra Pradesh (such as Sri City). This connectivity makes Tamil Nadu a preferred destination to move goods through from Andhra Pradesh, Karnataka, and Kerala to their export destinations globally.

To unlock this potential, TN could consider the expansion of existing facilities, or, by development of existing minor ports into major ports, or, by developing greenfield ports in the state.[50]

IT-enabled Services (ITeS) exports and Global Capability Centres (GCCs)

Tamil Nadu has the potential to build an ITeS exports and GCC hub, contributing up to 10 percent of the one-trillion target.

Tamil Nadu is already a well-established GCC base; the state currently hosts ~150-170 such centres.[51] GCCs, previously called captive centres, are the technology centres of multinational companies in India. The decision to offshore these centres is

[49] United Nations Economic and Social Commission for Asia and the Pacific, Facilitating Sustainable and Resilient Port Development to Support Sustainable Maritime Connectivity in Asia and The Pacific, April 2021. Accessible at: https://www.unescap.org/sites/default/d8files/event-documents/Report_on_Sustainable_and_Resilient_Port_Development-Final.pdf

[50] Key minor ports in Tamil Nadu include Cuddalore Port, Nagapattinam Port, and Kanyakumari Port. - Source: Tamil Nadu Maritime Board (https://www.tnmaritime.com/goverment_ports.php)

[51] FICCI Analysis

primarily driven by low-cost but skilled manpower, scalability, language proficiency, availability of seamless connectivity, and infrastructure. GCCs today comprise over 25 percent of the IT or Business Process (BP) management industry, growing faster than third-party providers.[52] TN is an attractive location for enterprise GCCs, given the talent availability at the intersection of industry domains and technology. GCCs could be set up across Tier-2 cities, such Hosur, Salem, Tiruppur, Coimbatore, Tirunelveli, Madurai, and Trichy.

To truly transform these cities into a hub for advanced technology services and R&D, the government could consider the following key suggestions:

- **ITeS/GCC office space augmentation:** The government can collaborate with renowned builders to set up world-class IT parks. Large investors in the ITeS and GCC space could be provided with readily available office spaces.
- **Digital infrastructure:** The current Tamil Nadu Statewide Area Network (TNSWAN) and Tamil Nadu FibreNet (TANFINET) networks need to be strengthened and extended beyond government institutions to include all private and public stakeholders, such as hospitals, educational institutions, and local bodies. This will enhance internet penetration and its use for productive purposes amongst citizens at large. The exposure to high-speed internet would generate a sustainable domestic market for IT enabled solutions and also support citizens upskill remotely via e-learning platforms. This thereby enhances the supply and demand for IT enabled solutions at the grassroot level.
- **Investor-friendly GCC/IT/ITeS policy:** A dedicated policy for GCC and ITeS investors can be introduced that provides key provisions, such as simplification of investment grounding processes, providing targeted incentives for hiring high-skilled talent (such as payroll subsidies), and providing investment indexed subsidies for office space leases.
- **Upskilling support for TN-based professionals:** This can be done via course fee reimbursements and setting up dedicated skilling centres.
- **Branding and communication:** Policy incentives and available talent ecosystems can be branded via partnerships and alliances with industry bodies, such as NASSCOM and DFI to attract more players.
- **Establishing world-class dedicated residential townships** for incoming high-skilled talent and improving **social infrastructure and connectivity in Tier-2 cities.**

Tourism

Tamil Nadu's coastline, cultural heritage, and natural beauty are major assets to the state. Mahabalipuram, Thanjavur, Rameswaram, Kanniyakumari, Kodaikanal, Ooty, Dharmapuri Falls, Pollachi/Valparai, and Anaimalai Hills are prime locations to promote internationally. Furthermore, Tamil Nadu has proven its capacity to be a global Meetings, Incentives, Conferences and Exhibitions (MICE) tourism destination by successfully hosting the International Chess Olympiad.

To consolidate Tamil Nadu's position as a global tourism hub, the state can consider taking the following key steps:

- Entering Public-Private Partnerships (PPP) with leading hospitality property developers to establish convention centres and resorts for hosting large events.
- Constituting dedicated site management teams for each major tourist location to guide tourists and maintain the quality of facilities.
- Conducing large-scale outreach programmes across India and internationally to promote Tamil Nadu's tourist destinations.
- Setting up an integrated online portal where tourists can find registered resorts, wellness spas, cab operators, adventure sports operators, and other key players in the hospitality industry. This will simplify the planning experience for tourists and improve the quality of their stay.
- Providing tax benefits to tourist operators, restaurants, hotels, and resorts to ensure cost competitiveness with other competing tourist destinations.
- Allowing electric vehicles to be used for commercial purposes. This will help reduce the costs for tourist operators and also help control the pollution level in eco-sensitive regions.

Using Tamil Nadu's strategic location and skilled talent pool, the state can establish a brand for itself in the global economy, both as a preferred tourist destination and a centre for global trade.

Strategic focus area III: Led by TN

Tamil Nadu should aspire to lead India in emerging technologies and innovation. This would enable the state to attract investments from growing sectors and provide the state with a head-start over other economies.

R&D refocussing

R&D is key to help Tamil Nadu climb up the value chain. TN has a strong base of high-skilled talent from top institutions,

[52] FICCI Analysis

such as Indian Institute of Technology Madras, Anna University (College of Engineering Guindy), and Madras University. With around 15 percent of all the PhDs in India, Tamil Nadu is amongst the top destinations for R&D efforts. The government could build on its existing efforts to consolidate TN's position as a global leader in R&D.

Sriperumbudur could be an engineering R&D hub, owing to its proximity to the automotive cluster and the upcoming aerospace park established by the Tamil Nadu Industrial Development Corporation (TIDCO). The park will house an Advanced Computing and Design Engineering Centre (ACDEC) for manufacturing/design industries in the aerospace and defence fields.[53] Chennai could be a Biotechnology research hub owing to the presence of TICEL Bio Park (a dedicated facility constructed by TIDCO for Biotechnology/ Pharmaceutical R&D) in Taramani,[54] and its proximity to the medical devices park to be set up in Oragadam.[55] Coimbatore could be an "AI City", and the foremost destination for talent looking to build careers in IT/ITeS, AI/ML, and FinTech.

Leading research institutions and organisations could be interested in these establishments with incentives linked to the number of patents filed and the high-skilled talent employed.

Further, the government could facilitate academic research collaboration with institutions in countries such as the US, Singapore, Israel, and Germany.

Defence and aerospace manufacturing

Tamil Nadu can utilise its upcoming Defence Industrial Corridor to attract leading manufacturers in defence and aerospace. Special focus could be given to emerging sub-sectors, such as unmanned aerial vehicles, defence electronics and communication devices, advanced weapons and ammunitions, guided missiles, and air defence systems. The state can incentivise defence sector companies that set up Centers of Excellence (CoE) for defence technology in leading universities such as Anna University and Indian Institute of Technology, Madras.

Start-up support

As of March 2021, Chennai has the fifth-highest share of start-ups in India (7 percent) after Delhi NCR (30 percent), Bengaluru (21 percent), Mumbai (16 percent), and Hyderabad (8 Percent).[56] TN must aim to make Chennai the leading start-up hub along with other TN cities such as Coimbatore, Madurai, and Trichy.

The government will have to expand efforts under the Tamil Nadu Startup and Innovation Mission (StartupTN), in terms of seed funding, investor-founders network, provision of dedicated office spaces, outreach support, and collaborations with the academia to expedite the growth of start-ups.

Specifically, TN could tie up with large angel-investor networks and venture capital funds to host competitions to identify and fund start-ups. Mentoring sessions could also be conducted in high schools, colleges, and universities to acquaint students with the start-up ecosystem.

Focussing on R&D will position Tamil Nadu as a pioneering state in India, enabling the state to attract lucrative economic opportunities in emerging sectors prior to other states. This would ensure the sustenance of economic growth with time.

A key enabler of Tamil Nadu's economic success is the provision of sustainable and cost-effective energy for all. This ensures that the state's primary, manufacturing, and services industries will have access to clean and economical energy that reduces their cost, improves profitability, and would prove to be a major competitive advantage for the state over other competing economies. It is important to note that sustainable energy is a nascent field, primarily led by innovations from the developed world. Tamil Nadu could aspire to be the leader in sustainable energy innovation, as the state is already amongst the largest renewable energy producers in India, contributing 11.6 percent of the total renewable energy in the country as of March 2023.[57]

Sustainable practices: Energy

Tamil Nadu has shown tremendous growth in non-conventional energy sources for over 15 years.[58] This growth has had a direct impact on the state's GSDP. As Tamil Nadu aims for the trillion-dollar mark, the state should also increase its installed capacity from the current 31,000 megawatts to around 44,000 megawatts by 2030.[59] To achieve this sustainably, Tamil Nadu can utilise its strengths in this area to become a global leader in renewable energy, particularly in the wind and solar energy subsectors. This will also reduce the cost of electricity for the consumers, making the state more cost competitive.

[53] Source: http://tidco.com/aerospacepark.php
[54] Source: https://ticelbiopark.com/ticel-new/
[55] Source: https://cms.tn.gov.in/sites/default/files/press_release/pn280921_e_67.pdf
[56] Source: Mangadu, AN, Singh, N and Thillai Rajan, A. 2021. "Venture Financing in India: The Seven Trends that Defined the Decadal Trajectory". In Shifting Orbits: Decoding the Trajectory of the Indian Start-up Ecosystem, edited by Thillai Rajan A, Srivardhini K Jha, Joffi Thomas and Rohan Chinchwadkar, 118-132. Hyderabad: Universities Press (India) Private Limited.
[57] FICCI Analysis
[58] FICCI Analysis
[59] Deloitte Analysis of Tamil Nadu State Energy Calculator, 2050 – We use the highest growth rate and highest consumption scenario and adjust for the difference between predicted consumption in 2020 with the actual consumption. Accessible at https://tnsec2050.tangedco.org/

Currently TN has a potential of 30-35 GW of offshore wind potential with the coastline considered to be generating high yield.[60] Setting up of manufacturing/fabrication facilities for various subsea foundation and steel structures would call for massive investments of about 0.5-0.75 billion US$ per GW.[61] This will, in turn, generate direct employment in TN.

For the seamless development of such energy projects, infrastructure developments either by TANTRANSCO/PGCIL or tenders for private substations and transmission systems may be explored. This will help create the much-required evacuation facilities to immediately grant load-flow clearances for planned projects.[62]

To enable renewable grids for generated energy, formulation of policies for green storage systems will be necessary. Initial trial storage units can be established under Public-Private Partnership (PPP) models by tendering for privately owned storage units. This will help in grid management, uniform usage of infirm power for 24 hours, and in laying down the operating methodologies for such projects in the future. Such projects can also be additionally supported via quick time-bound, single-window clearances. These can be extended to both solar and wind in load availability and viability.

Another avenue for Tamil Nadu to explore would be transmission losses. The current transmission loss in Tamil Nadu is around 20 percent and is charged at 7.8 percent to consumers.[63] However, the global best-in-class sustains a loss of around 3 percent in the system. China suffers a loss of 5 percent, South Korea 3 percent, and the US 6 percent.[64] One can look at AI/ML-enabled maximum power point tracking in solar energy generating systems, setting up solar farms in high insolation areas, and smart grids to reduce losses.

Overall, the implementation of these interventions will enable Tamil Nadu to meet its growing energy demands, while keeping its carbon-footprint in check.



[60] FICCI Analysis
[61] FICCI Analysis
[62] This can be at 110 / 33 kV systems in addition to 230 / 400 kV EHT systems.
[63] FICCI Analysis
[64] FICCI Analysis

Conclusion

Tamil Nadu is undoubtedly a state with significant potential. Structured strategic interventions in the aforementioned focus areas will enable the state to progress towards the one trillion mark. It is important to note that these interventions will require constant monitoring, evaluation, and fine tuning. Each intervention should therefore be linked with Key Performance Indicators (KPIs) that reflect the impact of the intervention on economic growth. The KPIs must be closely monitored at the chief minister's level, and immediate course correction should be taken by concerned government departments when the KPIs fail to meet benchmarks. With timely implementation and monitoring of the interventions, there is no doubt that Tamil Nadu will comfortably achieve its ambitions of becoming a one-trillion-dollar economy by 2030.



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Acknowledgements

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