

Consolidated Final Report

A Study on the
**Spatial Distribution
of Employment and
Income Categories
in the **Chennai
Metropolitan Area****

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1. INTRODUCTION

As an input into the preparation of the Third Master Plan, the Chennai Metropolitan Development Authority (CMDA) selected the Indian Institute for Human Settlements (IIHS) to undertake a study on the Spatial Distribution of Employment and Income Categories (SDEIC) in Chennai Metropolitan Area. The study is supported by the World Bank under the Tamil Nadu Housing and Habitat Development Project.

The Chennai metropolitan region plays a substantial role in the state's economy, and has a diversified economic base that spans manufacturing, services, and administration linked economies. In 2022, the CMDA expanded the boundaries of the Chennai Metropolitan Area (CMA) to a larger area spanning 5,904 square kilometres (sq. km), and the purpose of this study is to understand the economic geography, income distribution, labour market dynamics and commuting pattern across the CMA. This study aims to provide data and methods to enable CMDA to balance the objectives of economic growth, equity, and sustainability across the CMA as part of the Third Master Plan.

1.1. Scope of Work and Objectives

The objectives of the study are to understand the spatial patterns of economic activities, employment patterns and income distribution, analyse housing locations and commute patterns for work, frame interrelationships and simulate future scenarios. These are detailed in figure 1 below:



Figure 1: Study Objectives

In order to achieve the above objectives, the study undertook the following set of methods: policy review, secondary data analysis, geo-spatial analysis, a primary household survey, a primary workplace survey, in-depth interviews with key experts, stakeholders, and multiple government departments, interviews and observational studies of informal workers and workspaces, and site visits to key locations pertinent to the SDEIC study. The overall study approach and methodology is detailed in Figure 2 below.

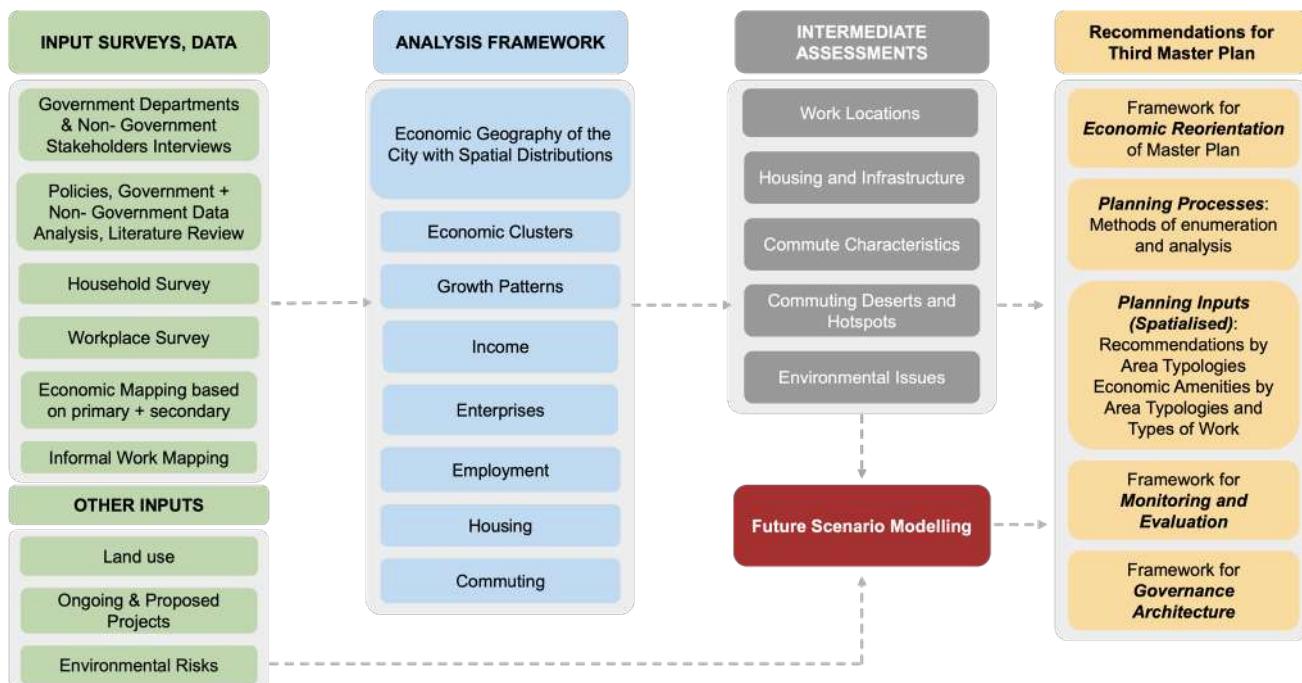


Figure 2: Study Approach and Methodology

As part of the SDEIC study, IIHS has submitted multiple reports and made several presentations—including the 1st and 2nd inception reports, two interim reports, a draft and a final recommendations report. This consolidated report synthesises findings of all these submissions, offering an integrated overview of the key findings and recommendations from the study.

2. METHODS

Figure 3 presents a diagrammatic summary of all the methods employed by IIHS for the study. These include primary methods (household and workplace surveys, stakeholder consultations, informal economy consultations) and secondary data analysis, policy analysis and projects mapping, as well as future scenario modelling. A brief summary of each method is provided below.

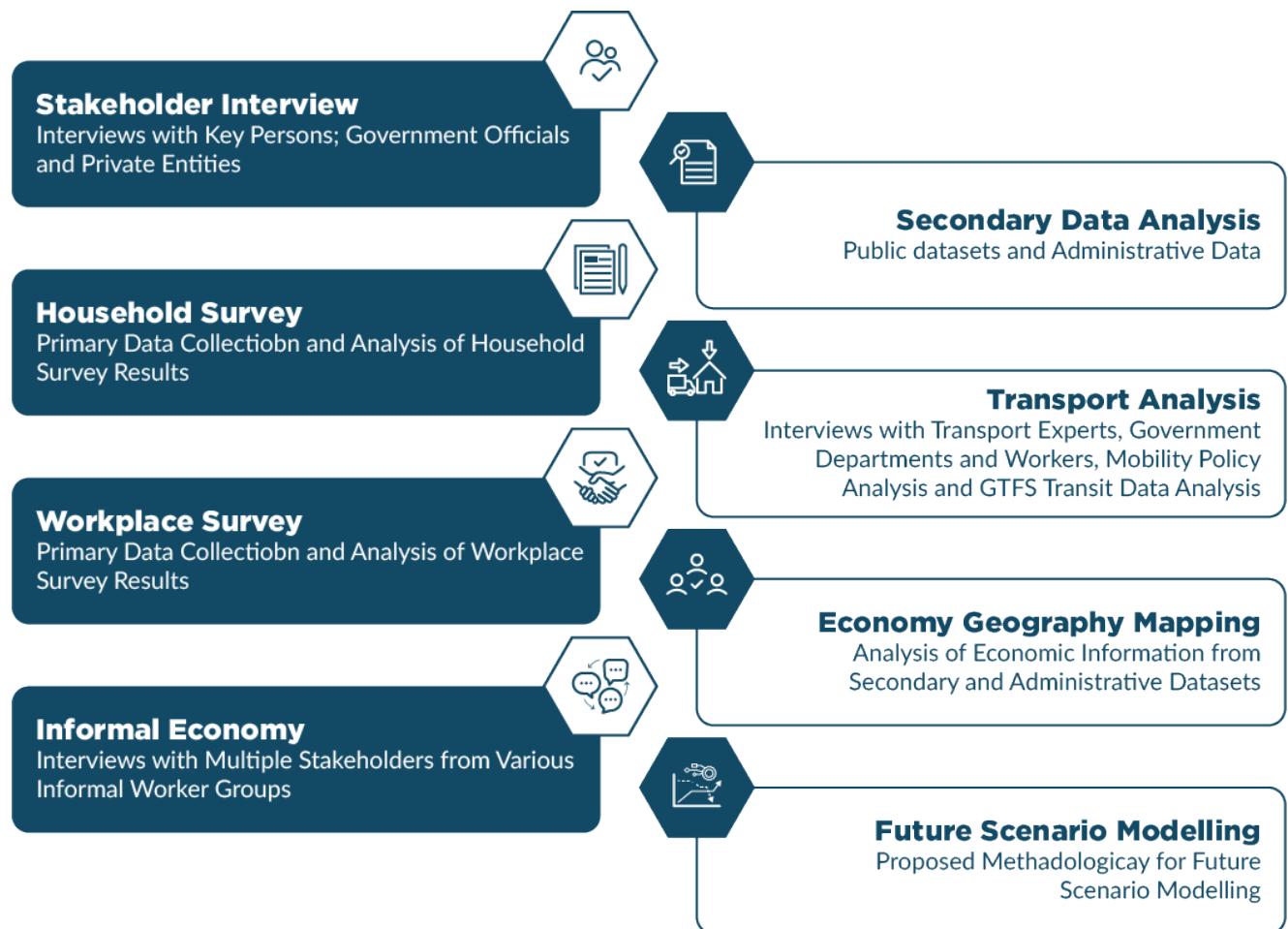


Figure 3: Summary of Methods Diagram

2.1. Stakeholder Interviews

As part of the study, IIHS conducted 109 long-form and in-depth interviews as well as consultations through FGDs and other group-based formats. Figure 4 represents the stakeholders that were consulted for this project. IIHS has met with over 72 organisations that include a wide range of actors and domain experts across government, private sector, academia and civil society. In addition, we have conducted extensive site visits to a range of different economic and housing locations across the metropolitan area.

With the government and public agencies, IIHS focused on core planning, housing, industries, transport and mobility, and finance, economics and statistics departments. These interviews also included an understanding of planned and ongoing projects and investments that will shape the future economic geography of the region during the Third Master Plan period.

In the private sector, IIHS interacted with industries associations as well as individual entrepreneurs and industries. In addition, we interviewed a set of real estate developers to understand the anticipated changes in land markets and forthcoming real estate trends and investments across the region.

IIHS also extensively consulted with academics and research organisations in Chennai on questions of economic development, housing, planning and transport. In order to understand the issues faced by the informal economy, the team interviewed labour unions, worker organisations, and interacted with workers through site visits.

**109
INTERVIEWS 72
ORGANISATIONS 5
STAKEHOLDER TYPES**

Government Entities | Private Entities | Research Organisations | Labour Groups and Workers

Government Entities

28 Institutions | 45 Interviews



Department of Economics and Statistics
Government of TamilNadu



Housing and urban development department
Industries, Investment Promotion & Commerce Department
Municipal Corporation
Department of Commercial Taxes



Private Entities

14 Institutions | 14 Interviews



Not-for-Profit Organizations

11 Institutions | 11 Interviews



Research Organizations

7 Institutions | 11 Interviews



Labour groups & workers

12 Institutions | 28 Interviews



Kottivakkam Meenavar Ani

Tamil Nadu Domestic workers Welfare Association

TN Domestic Workers Welfare Trust

South Indian Fishermen Welfare Association

Tamilnadu Aadi Andhra Arunthathai Mahasabha

Figure 4: Snapshot of stakeholders consulted, including government and private entities, as well as not-for-profits, research organisations, and labour groups

2.2. Household Survey

As part of the study, a household survey covering 10,000 households designed to measure the employment and income patterns of the residents of the expanded CMA region (5904 sq. km) was undertaken during July-September 2024. The survey followed a multi-stage stratified sampling design, covering four strata, two in the core CMA area and two in the expanded CMA area. The households were sampled from a total of 500 survey blocks distributed across the strata. The questionnaire was detailed enough to capture key household characteristics, assets, as well as employment, income and commute details of all working members. The survey was carried out in partnership with Lokniti-CSDS, after multiple pilot rounds and extensive enumerator training. Careful data quality monitoring and corrections were made during and after the survey. Phone checks for a random sample of respondents were also undertaken. The survey responses were then weighted according to the survey design to get accurate population-level estimates. The key analyses performed include:

- Weighted estimates of population quantities related to assets, income, employment and commute.
- Regression analyses to quantify important associations.
- Spatial interpolation of variables using geostatistical models integrating secondary information from remote sensing and other sources

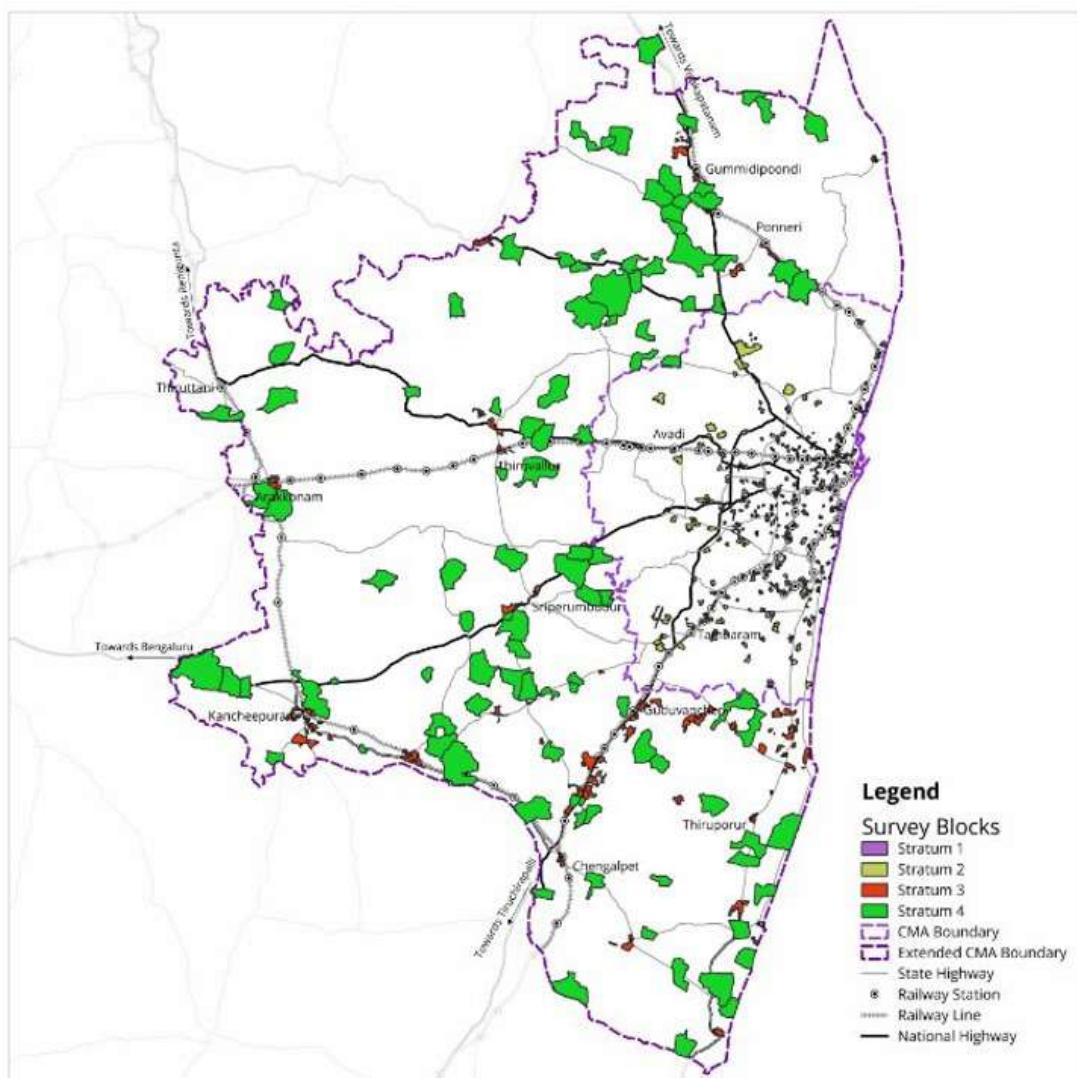


Figure 5: Household Survey blocks

2.3. Workplace Survey

While the household survey enables CMA region-level analyses of different segments of the workforce and identification of certain large-scale regional patterns, it is important for the Master Planning exercise to consider the important local patterns in employment and mobility of the workers at key employment clusters. The workplace survey done as part of our study involved enumerating workers at their workplaces, capturing the income, employment typology and commute patterns. 15,000 workers at 170 workplace clusters were included in the survey. The geographical distribution of these clusters is shown in Figure 6.

The sampling of workplace clusters was done in a careful and systematic manner to cover the full spectrum of economic activities in the Chennai Metropolitan Area. These clusters include large and medium industries (including ports, warehousing), medium and small industries, mixed local economies like Ambattur and Guindy, informal manufacturing, IT and commercial offices government worker clusters, medium to large retail trade, small retail trade, informal services and transport hubs. Preparing the universe of cluster locations for the workplace survey involved an extensive exercise of data gathering from multiple government departments, as well as from private sources. Each of these datasets contains different attributes and was in a different format. We then undertook digitisation, georeferencing, and data cleaning to arrive at a sampling frame for the workplace surveys.

Like the household survey, the workplace survey was operationalised in partnership with Lokniti-CSDS and was carried out during Oct-Nov 2024 after detailed enumerator training. Using the data collected from the workplace survey, extensive descriptive summaries of industry, occupation, income, mobility patterns for each cluster group were prepared. Detailed spatial analysis of selected important locations integrating survey findings with the following additional sources was conducted:

- Location of employment from IIHS' economic geography maps
- Residential population density
- Public transport accessibility of employment nodes using GTFS data for MTC, CMRL and suburban rail (source: CUMTA)

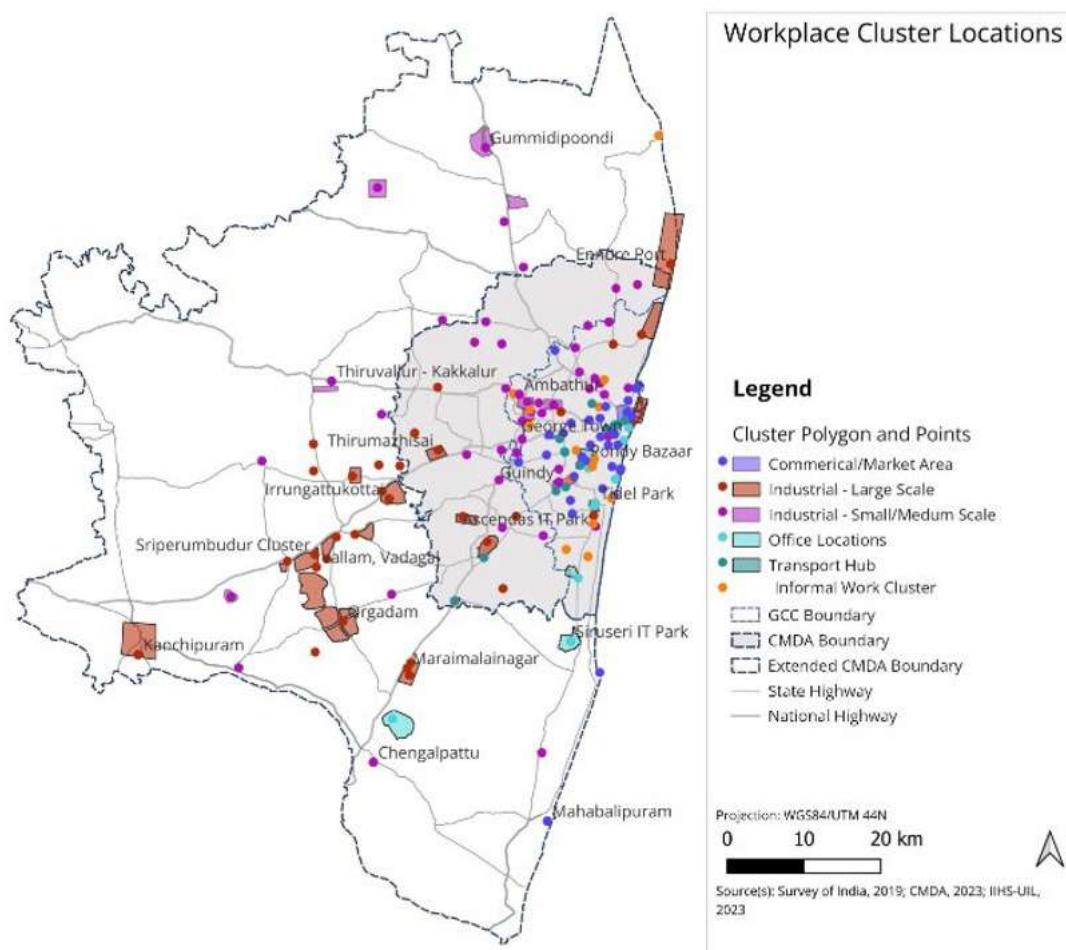


Figure 6: Workplace Survey Cluster Locations

2.4. Secondary Data Analysis

As part of the secondary data analysis, IIHS collected economic, survey, administrative and geo-spatial data from various sources including the Census and MoSPI, PLFS, Tamil Nadu Department of Economics and Statistics, and various state government bodies (such as SIPCOT, SIDCO, CUMTA, CMDA, TNPCB) and satellite-based sources (such as GHSL, MODIS, LANDSAT). These datasets covered aspects including the economy, labour, housing, transportation, development permits, environment, infrastructure, future projects and so on. Further, current and upcoming projects have been mapped using the CMIE Capex database, and our survey results have been benchmarked against the Tamil Nadu Household Panel Survey undertaken by DES.

Secondary data analysis has been a key method for the context setting of the economy and development in Chennai currently. It has also provided key inputs into the various methods of this project including economic geography (location of employment clusters, employment estimates, land use), transportation analysis (transport networks, routes analysis), future scenario modelling (location of past and upcoming projects, temporal trends) as well as to validate the results of the primary household and workplace surveys undertaken for the study.

2.5. Economic Geography Mapping

One of the key objectives of this study is to understand the spatial distribution of employment at a granular scale for the Master Plan. The overall methodology is detailed below and summarised in Figure 7.

An understanding of the ‘demand side’ of employment in the city is crucial in order to address infrastructure needs for workers in different economic clusters. Currently, employment estimates are only available at administrative unit levels (Ward / Village / Town) but are dated (Population census was in 2011, Economic Census in 2013) and have data quality issues (Economic Census is known to undercount employment). Administrative data is available from Shops & Establishment’s Act (for GCC) which locates service/trade related enterprises, and industrial park data from SIPCOT and SIDCO which provide estimates within industrial parks but only for certain sectors. TANGEDCO electricity meter connections serve as a good proxy for firm counts but do not provide information on the type of work. Since all the available datasets have partial information, the key challenge is data integration to estimate employment to arrive at a sectoral and spatial understanding of where employment is concentrated. In order to do this, we use a Bayesian Spatial Disaggregation Model that can disaggregate employment from a higher spatial unit (such as ward) to a finer 90m grid with these input datasets along with spatial covariates (land use, built volume, etc.)

Due to the limitation of our input datasets, with location playing a key role in allocating employment, we primarily focus on “place-based” employment (employment associated with firms) and ignore “dynamic” employment such as transport workers, gig workers, home-based work, informal work, etc. We primarily focus on three key economic sectors of Manufacturing, Commercial (Trade, Office-based jobs such as Professional services, Admin, etc.) and IT/ITES due to limited availability of administrative data for validation. It is important to note that our method estimates direct employment associated with the firms within these sectors, and there might be a larger indirect employment (such as outsourced workers, street vendors supporting local worker needs, etc.) which might increase the local estimated employment.

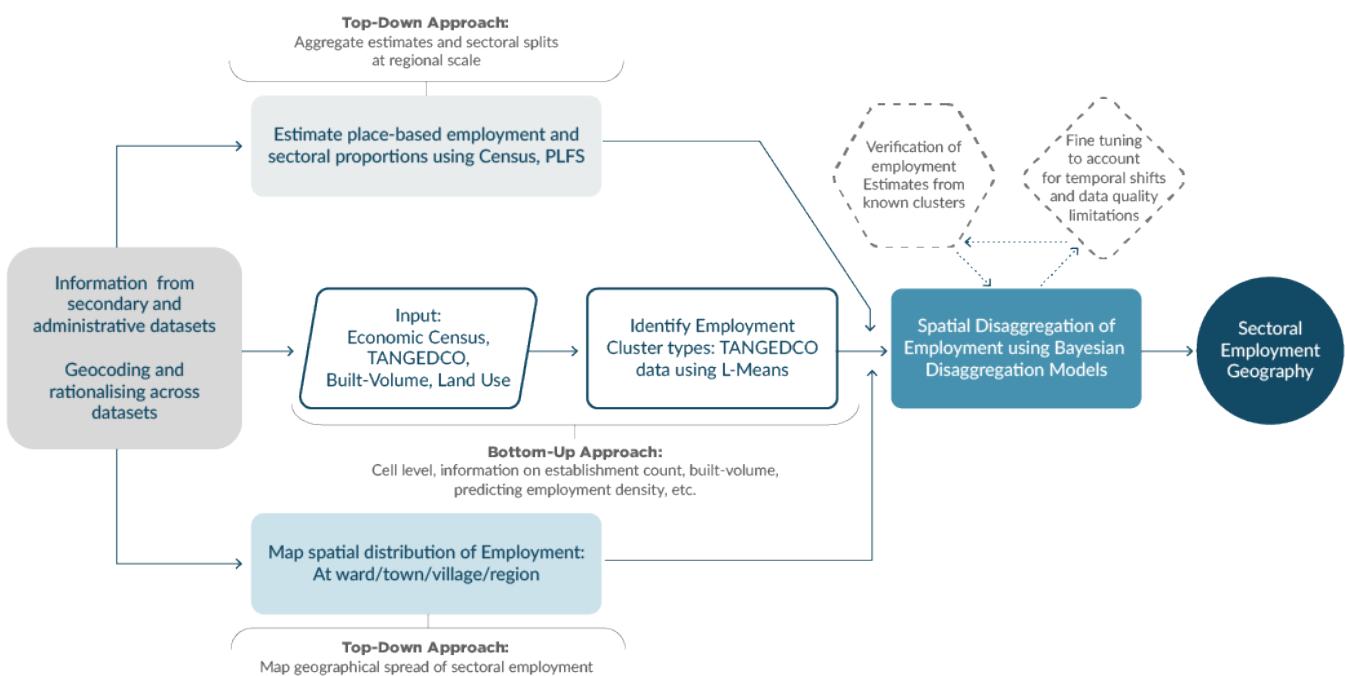


Figure 7: Depiction of Methodology for Economic Geography Mapping

2.6. Transportation Analysis

The master plan needs information on job locations, commuting patterns and public transport infrastructure to address issues related to congestion and improving accessibility to employment opportunities. The transport analysis undertaken for this study focuses on geographic demand and supply of transport infrastructure and services with a focus on accessibility to workplaces via public transport and understanding work commute patterns - including mode, distance travelled, cost and time taken, directional patterns, and distribution across the day.

To understand transportation infrastructure and service delivery, we use General Transit Feed Service (GTFS) data on MTC buses, Metro and Suburban Rail obtained from CUMTA to understand bus stop accessibility and route frequencies. Using GTFS data, we also map workplace and residential location accessibilities via public transport using R5: Rapid Realistic Routing on Real-world and Reimagined networks, an open-source transit feed analysis algorithm developed by Conveyal (Pereira et al., 2021). Our analysis covers accessibility based on real-time feed provided within GTFS data to understand how far people can get to from their residential locations using multimode transit options, and from where all can people get to various job clusters by using public transport within 30- and 60-minute travel times. Our analysis provides information on infrastructure and accessibility parameters but does not account for service delivery i.e. traffic congestion on roads and space availability on transport routes (on bus/metro/train) due to lack of data availability on the same.

For understanding commute patterns of workers, we use our Primary survey data collected as part of IIHS-SDEIC Household Survey and IIHS-SDEIC Workplace survey reporting information on commute characteristics and origin location of workers for different workplace clusters in the city by gender, mode of commute and employment category. Our analysis is complemented by policy analysis (Comprehensive Mobility Plan,2019; Chennai Comprehensive Transport Study, 2008) and qualitative inputs from stakeholder interviews with transport experts, agencies running transport services (MTC, CMRL) and CUMTA.

2.7. Informal Economy Consultations

For this component of the study, inputs were received from 150 experts and workers, across seven sectors. These include domestic work, construction work, waste and sanitation work, rickshaw pullers, gig workers, street vendors, home-based workers, and fisherfolk. The interviews included a diverse set of respondents such as academics, researchers, sector experts, journalists, representatives of labour unions, representatives of community-based organisations as well as, workers and residents. In addition, the team made 22 site visits to resettlement colonies, landfills, informal settlements, industrial areas, ecologically sensitive areas, beach fronts, etc



Figure 8: Teams interviewing fisherfolk in Kottivakam

2.8. Policy Analysis and Project Mapping

To understand the patterns of economic activity, employment, and income, IIHS undertook a review of key state policies and their instruments. The review covered over 20 state policies, acts, and rules, schemes and reports, and a wide range of statutory and regulatory instruments. IIHS also mapped ongoing and proposed Infrastructure Projects and Employment centers to understand the drivers of future growth and expansion. These are presented below.

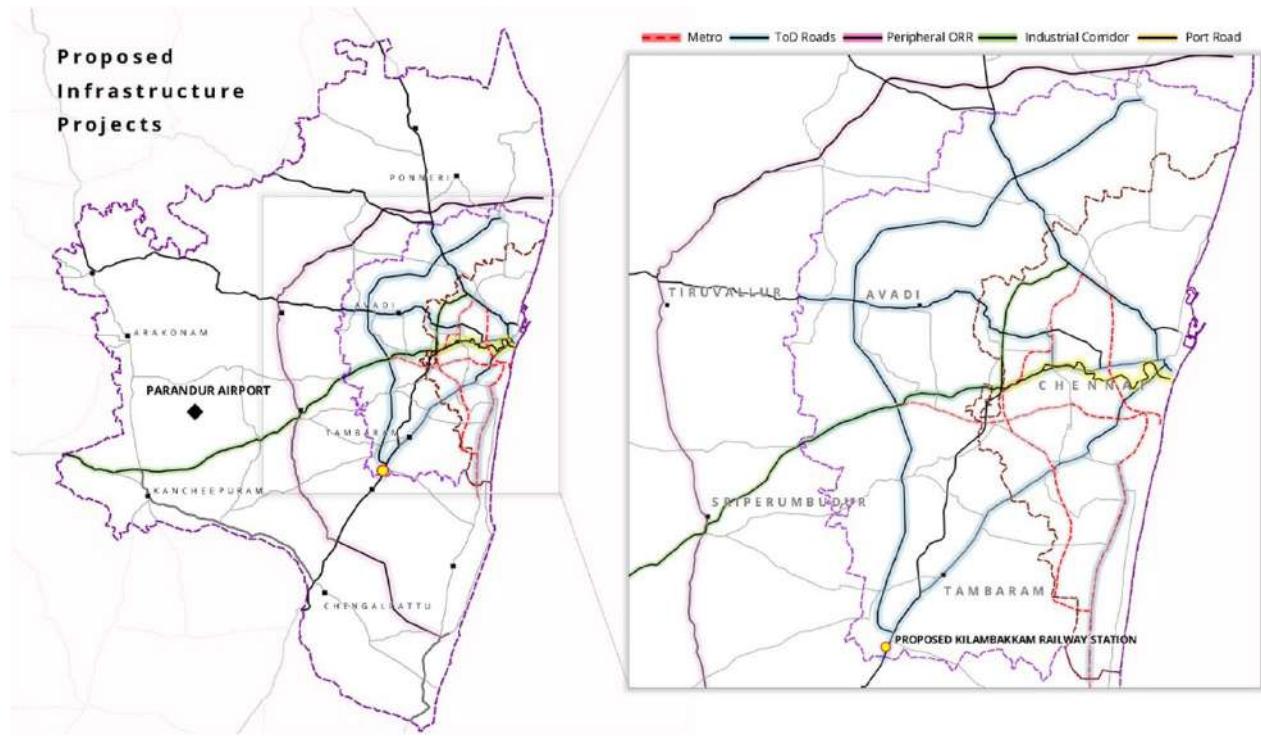


Figure 9: Proposed Infrastructure Projects

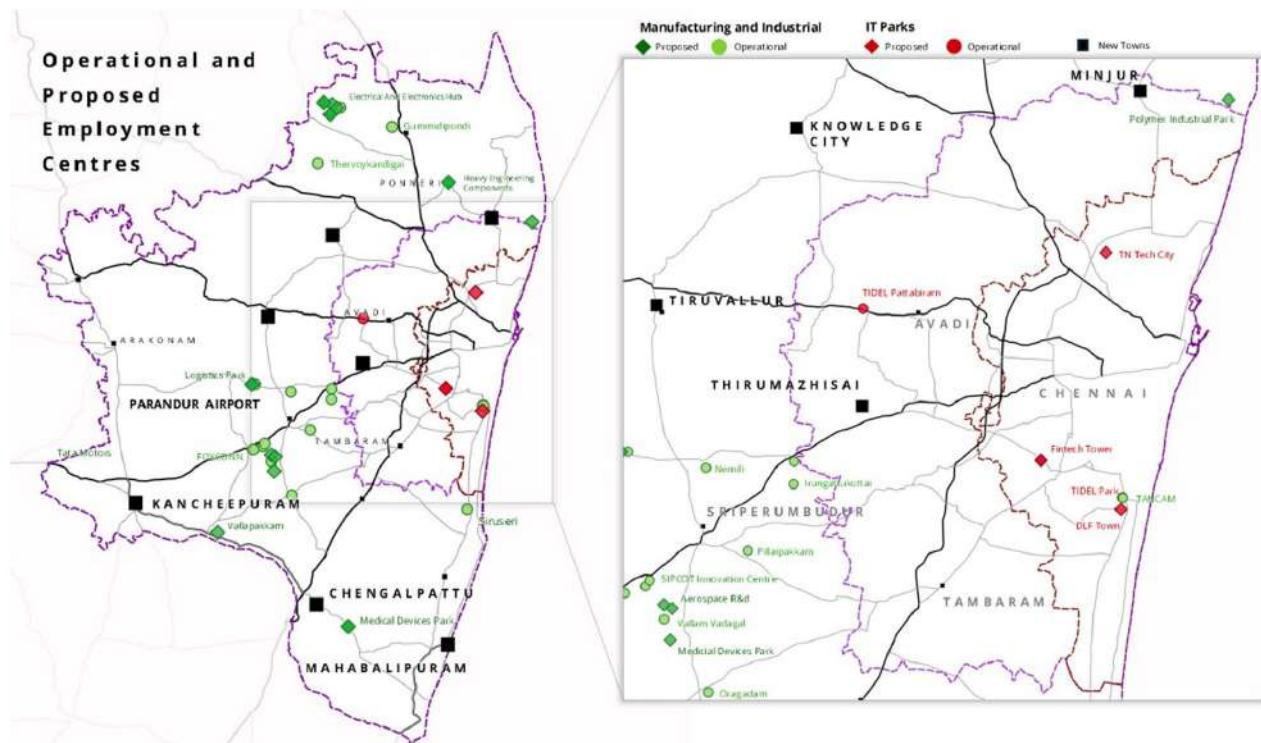


Figure 10: Operational and Proposed Employment Centers

2.9 Future Scenario Modelling

As part of the study, we have developed a first of its kind machine learning growth model that can predict volumetric or 3D urban growth for Chennai, based on a set of input data from the past few decades as well as growth scenarios for the future. The model conceptualises the city as a network consisting of nodes and connectors. Nodes include economic clusters, mobility hubs or housing clusters. For instance, hubs of economic activities act as agglomerations of current jobs and future economic investments and growth and act as one of the key drivers of urban expansion. Connectors include major roads, highways, metro lines, rail and such other mobility conduits. They connect places of work, residence, leisure and infrastructure and facilitate the urban eco-system to function through flows of humans, goods, and resources. The absence of connectors create opportunity 'deserts' spatially.

Another important concept in this modelling framework is 'key growth drivers'. These are transformational inputs into the urban system that change growth patterns. They are inherently unpredictable in themselves, as they are the result of public and private strategic decisions. In the model these are the independent variables and include large investments which substantially change the nodes or the connectors. A large new industrial cluster, metro line extension, new arterial roads, a new airport etc. are examples of key growth drivers.

Our model takes the following key spatial datasets as inputs:

Growth Estimates

- a. Built-up growth estimates from 1990 to 2025, along with the distance to various urban boundaries. Urban boundaries refer to boundaries of contiguous built-up patches which are more than 4 sq. Km in area.
- b. Volumetric growth estimates from 1990 to 2025, which help assess densification within urban areas. Our first of its kind models estimate both expansion and densification for the expanded CMDA region (see Figure 11).

Connectivity and Proximity

- a. Connectivity: Distance to national and state highways, arterial roads, railway and metro networks, airports and distance to the coast.
- b. Proximity indices are computed based on distance to employment centers.

Key Growth Drivers

- a. Employment Growth Drivers: Past, current, and future investment projects, along with their employment estimates, are used as inputs to model key employment growth drivers
- b. Infrastructure Growth Drivers: Past, current and future infrastructure investments, including metro networks, peripheral roads, and other infrastructure projects, are considered to update the connectivity index and the network distances to key employment growth drivers.

Other layers such as elevation, forest and water mask.

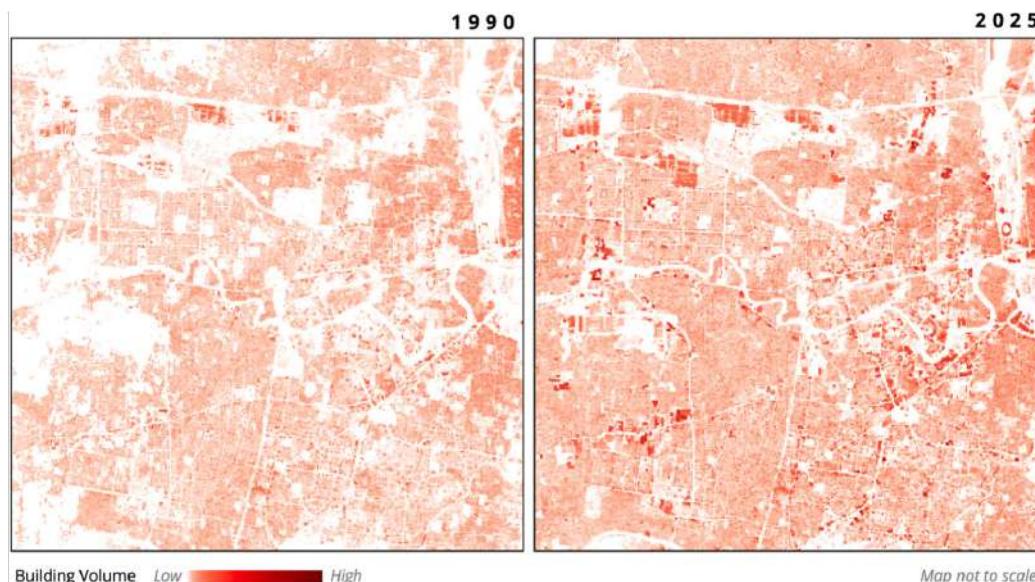


Figure 11:
Volumetric Growth:
1990 - 2025;
Image showing
volumetric
expansion and
densification for
central part of
Chennai.

Source: Mapsolve
AI Private Limited,
2025

Based on these input layers, the model predicts volumetric growth for the periods 2025 to 2035, and 2035 to 2045, for the following distinct scenarios that were arrived at in consultation with CMDA, the World Bank and the Review Committee (see Table 1 for the description of each scenario).

Growth Drivers	Unit	Inputs into 2025-35 and 2035-45 periods			
		Scenario 1: Base Case	Scenario 2A: High Growth	Scenario 2B: High Growth + ToD Projects	Scenario 3: Restricted
Employment Growth Drivers	Total jobs created	Base estimates of jobs created	High estimates of jobs created	Scenario 2A + jobs created along the ToD corridor	High growth, but the projects in the environmentally sensitive north Chennai region such as TN Polymer Industries Park are not considered as a growth drivers
Growth of New Towns	Total jobs created				
Transportation Hubs	Number of passengers	Base estimates of passengers	High estimates of passengers		High estimates of passengers
Transport Networks	Completed and Operational	Metro expansion not considered for 2025-35 period. Rest of the projects are operational.		All projects are operational	All projects are operational

Table 1: Inputs and Assumptions for each Scenario

3. SUMMARY OF ANALYSIS

The full analysis of the SDEIC study is presented across the following reports: Interim Reports I and II, and Inception Report II. This section presents the highlights of the analysis from across multiple methods described in the previous section.

3.1. Economy | Growth, Employment and Income

This section provides the economic context for the CMA region (both the planning boundary of 1189 sq km, as well as the expanded boundary of 5904 sq km, in order to provide the regional economic context). The output (or Gross District Domestic Product) in the expanded CMA region has been growing at 10.5% annually for the period between 2011-12 and 2022-23. The region's economy is growing faster than the state of Tamil Nadu, which has been growing at 8.5% annually. During the same period, per capita income for the expanded region has grown at 8.3% annually.

However, employment has been growing on an average only at 2.3% per year over this period. Unemployment rate in 2011 was 2.83% which increased to 5.33% in 2022, and the overall labour force participation rate increased from 53% in 2011 to 54% in 2022. The overall workforce in the expanded CMA region is estimated to be 54 lakhs in 2022-23. Further, work related incomes have been increasing at an average rate of 7.5% over this period, which is comparable with the rate of growth of incomes in urban India as a whole. The average income in the expanded CMA region is Rs. 19,804, which is higher than the average all India urban income, which is Rs. 18,049.

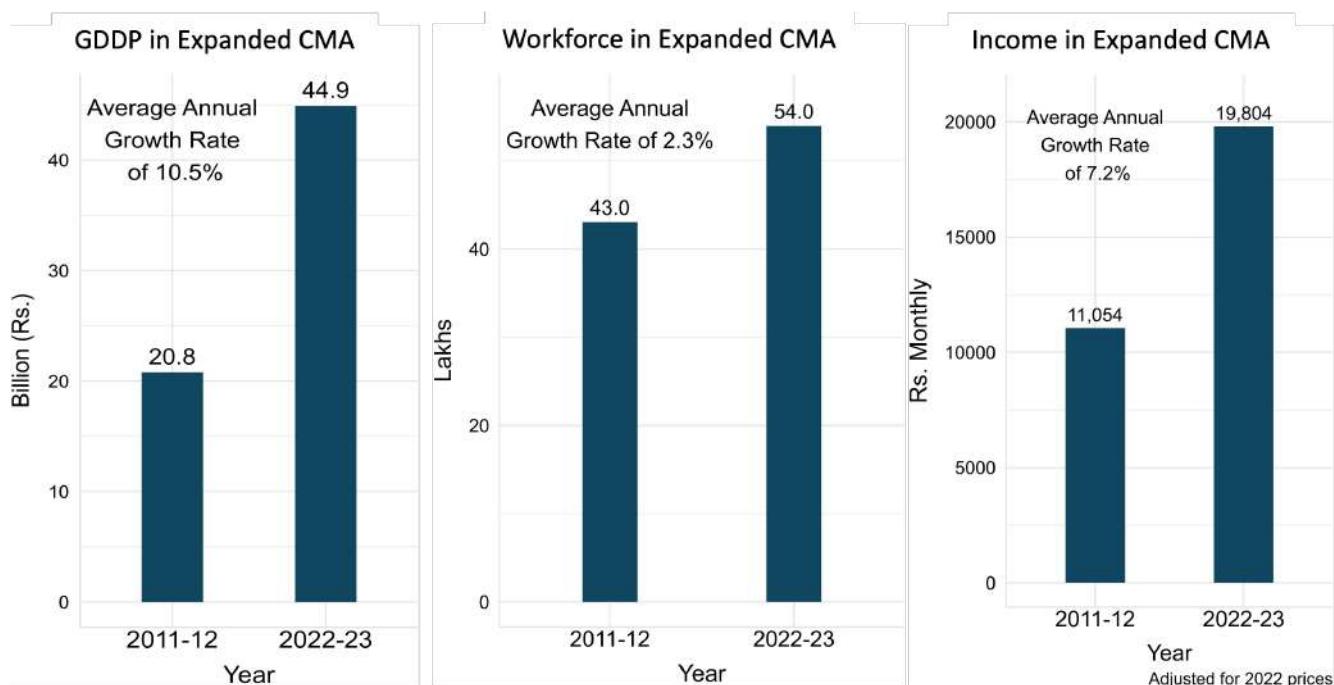


Figure 12: Output, Employment, and Income in Expanded CMA

Source: Dept. of Economics and Statistics TN, PLFS 2022, NSS 68th Round, Census 2011; Estimates - Author's

Year	Per Capita Income	CMA Average Annual Per Capita Income Growth Rate : 8.27%	CMA Average Annual Population Growth : 1.2%	Average Annual Income Growth in Urban India: 7.5%
2011-12	178,627.6			
2022-23	341,134.5			Monthly Average Wage Urban India: Rs. 18,049

Table 2: Income Estimates | Expanded CMA

Source: Dept. Of Economics and Statistics TN, PLFS 2022, NSS 68th Round, Census 2011; Estimates - Author's calculations

When we compare this with the picture for the CMA planning boundary of 1189 sq km, we see that output growth in the old CMA area has been slightly slower (8.7% when compared with 10.5% for the expanded CMA). Employment growth in old CMA has also been slower (1.3% when compared with 2.3% for expanded CMA). Average incomes in the old CMA are higher than for the expanded region (Rs. 20,562 when compared with Rs. 19,804) but are growing more slowly than incomes in the expanded region (5.8% when compared with 7.5%).

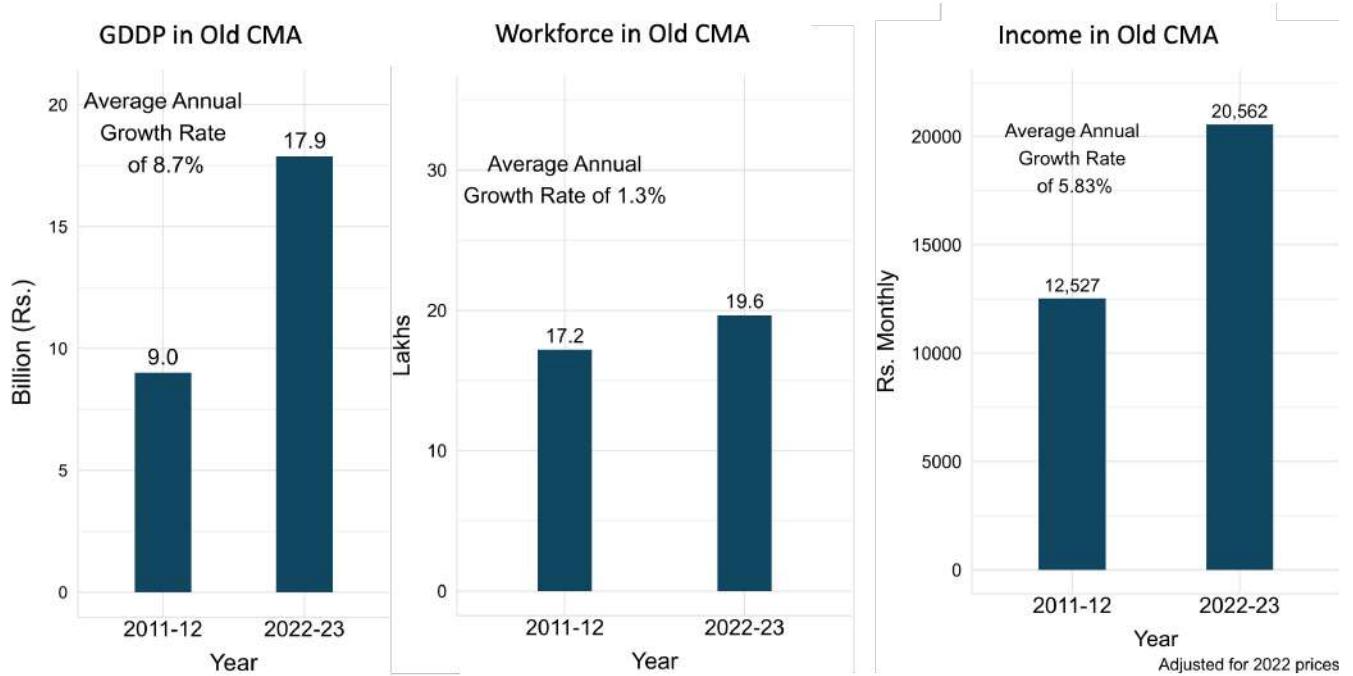


Figure 13: Output, Employment, and Income in Old CMA

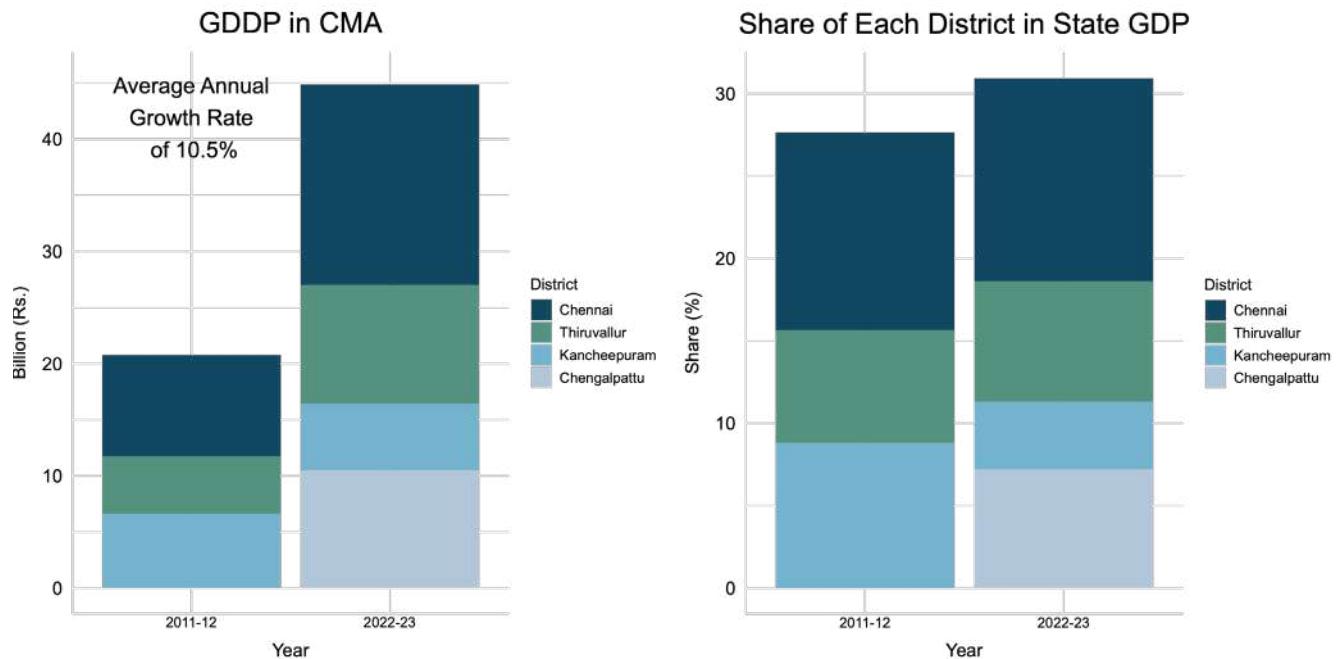
Source: Dept. of Economics and Statistics TN, PLFS 2022, NSS 68th Round, Census 2011; Estimates - Author's

Year	Per Capita Income	
2011-12	193,941.8	Average Annual Per Capita Income Growth Rate : 8.4%
2022-23	373,321.5	

Table 3: Income Estimates | Old CMA

Source: Dept. of Economics and Statistics TN, PLFS 2022, NSS 68th Round, Census 2011; Estimates - Author's Calculations

The output for the expanded CMA region is approximately Rs. 45 billion in 2022-23, of which Chennai district contributes roughly 50%. The share of the other districts, Thiruvallur, Kancheepuram, and Chengalpattu, has been growing, which is a good indicator of regionally balanced investment patterns.



Annual Average Growth Rate Tamil Nadu GDP : 8.47%

Figure 14: Output by District Composition in CMA
Source: Dept. of Economics and Statistics TN

Note: Chengalpattu was a separate district carved out of Kancheepuram district in 2019

The growth of output has largely been driven by rapid growth of the Manufacturing and Real Estate sectors. Manufacturing and Real Estate, along with Financial Services and Other Services are the key contributors to the CMA output.

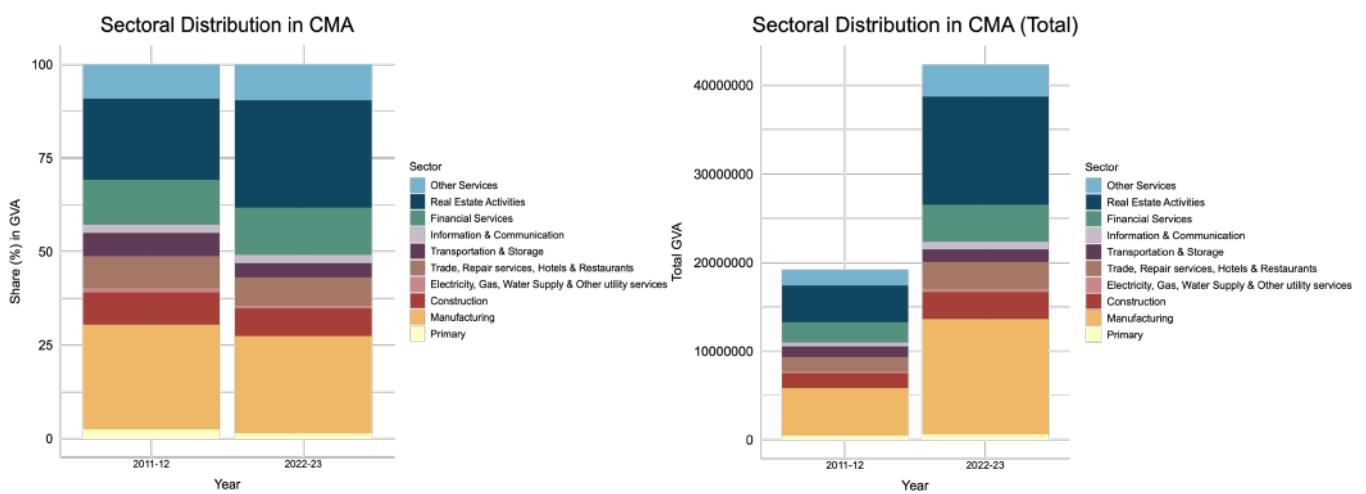


Figure 15: Output based on percentage share and total Gross Value added by Sectors
Source: Department of Economics and Statistics TN

However, the growth sector of Real Estate does not generate much employment, as is evident from the Figure 16 below. The largest employers remain Trade, Repair Services, Hotels and Restaurants, and Other Services, along with Manufacturing. Construction and Information and Communication are also large employers. Therefore, the employment picture provides a different lens to understanding the economy. Increasing both the quantity as well as quality of jobs needs to be prioritised during the Master Plan period. The Master Plan will also need to provide for the housing and commuting needs of workers in these large employment sectors.

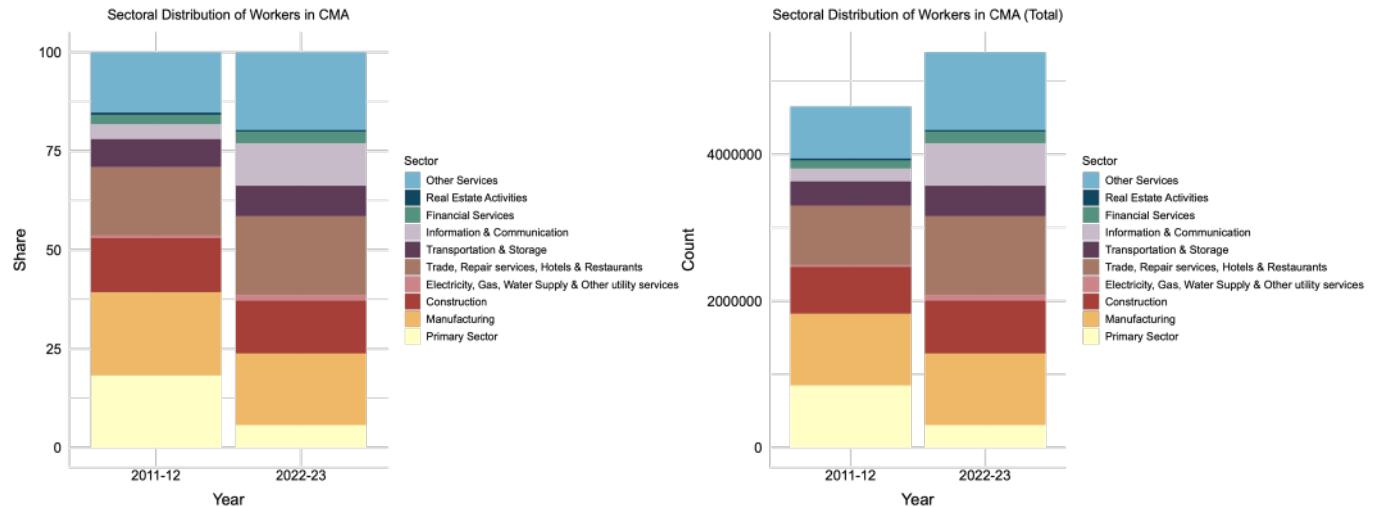


Figure 16: Employment Share and Total Employment Count by Sectors
Source: PLFS 2022 - 2, NSS 68th round, population census estimates

3.2. Household and Workplace Surveys

The household and workplace surveys provided the study with a detailed empirical picture of employment, income, housing and commuting in the CMA region. The full details of this analysis are presented in Interim Reports I and II. A selection of the key highlights is presented here:

- **Workforce Participation Rate:** The survey allowed us to estimate the workforce participation rate, analyse education levels within the workforce, and understand the demographic and social composition of the workforce. We find that the overall workforce participation rate for the region is 43%, with female workforce participation rate being much lower at 18%.
- **Vulnerable and Informal Work:** We used the survey to arrive at estimates of vulnerable and informal work. Based on an NCEUS definition of informality (working without employment security or social security), we estimate 67% of the workforce is engaged in informal work. 35-40% of the workforce is in vulnerable employment (defined to include all forms of daily, casual, informal, gig and unskilled work), and an additional 20% are in semi-vulnerable employment (working in jobs without contracts or benefits).
- **Fixed versus Dynamic Work Location:** Our survey highlighted that only 37% of male workers have a single fixed location of work. An additional 27% have multiple fixed locations, and 26% have no fixed location for their work. This implies that we need a more dynamic understanding of the relationship between residence and work, and the resulting commuting and infrastructure requirements. For the entire workforce, 57% of the workers have either a single fixed, or multiple fixed workplaces. An additional 23% of workers have non-fixed and dynamic workplaces (such as transport workers, gig workers), work in residential areas (domestic workers, home-based workers), or in marginal city spaces (such as landfills, construction sites). This group will require special attention for their infrastructure needs.
- **Spatial Inequality:** We find substantial intra-regional inequality between spatial zones of the city (GCC North, GCC Central, GCC South, CMA North, CMA South, Periphery North and Periphery South). Our survey indicates that housing quality, income, asset ownership and quality of employment all vary by spatial zones within the city. To illustrate, GCC North has highest proportion of workers earning less than Rs. 15,000 a month, the lowest proportion of professional and skilled workers, the lowest level of asset ownership and the highest proportion of workers working within 5km of their home, when compared to all other spatial zones.
- **Inter-relationships between employment, income, housing and commute:** The survey has also allowed us to analyse the relationships between employment type and household income, asset ownership, and housing quality. Further, we have also analysed the relationships between these variables and commute time, mode and cost. These analyses have been presented through a series of charts as well as more detailed regression analysis, presented in Interim Reports I and II.
- **Commute Patterns at Workplace Clusters:** The workplace survey has allowed us to analyse commuting patterns for different workplace clusters, such as large and small industry, IT offices, trade, government offices, and informal work locations. Interim Report II presents a mapping of locations from where workers are commuting along with mode and cost of commute, income, gender of worker, and type of work, for different types of workplace clusters.

3.3. Spatial Distribution of Employment

A key component of the SDEIC study was preparing a fine-grained map of employment by economic sector. Our methodology to arrive at this mapping is described in the Methods section of this report. Figures 17-21 present the outputs of IIHS' economic geography mapping, identifying locations of employment clusters and scale of employment by sectors. Figure 18 and Figure 21 represent overall employment clusters (areas with >100 workers per 270m), while Figures 18-20 represent the overall concentration of workers in each sector.

As seen in Figure 17, the core accounts for a substantive proportion of the employment. Estimated employment in CMA is approximately 54 Lakh workers of which 25.08 Lakhs is located in the following 3 sectors: Manufacturing, IT/ITeS and Commercial (Trade + Office spaces) that are mapped below (Figures 18-20). The IIHS economic geography mapping excludes workers working in dynamic locations (such as gig workers, transport workers, construction workers), in residential areas (such as domestic workers, home-based workers), as well as those working in the sectors of health, education and public administration. These categories together comprise the remaining employment in the CMA region. It is important to note that the distribution here represents direct employment in these sectors and does not account for indirect employment.

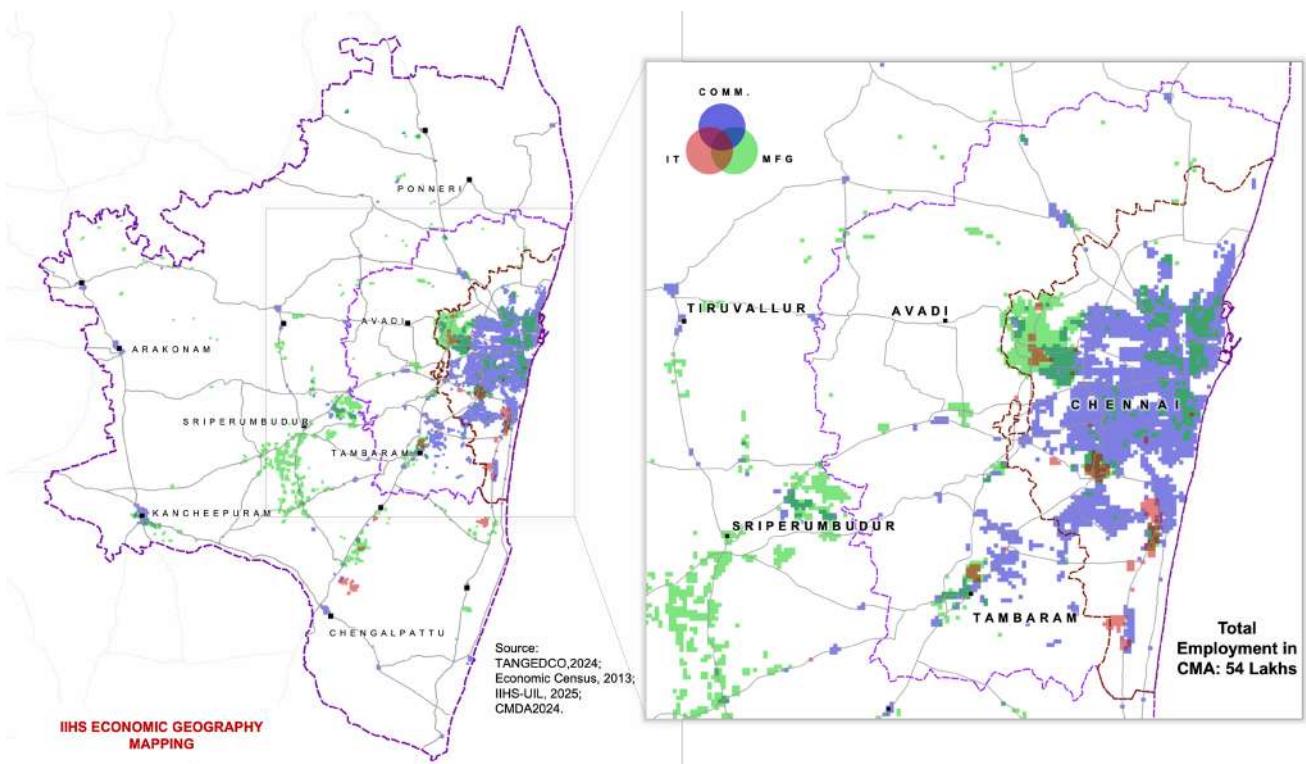


Figure 17: Worker Concentration in CMA across sectors. Note: In order to understand overlapping sectoral employment across sectors, the map above represents pixels with >100 workers (per 270m) for each sector
Source: TANGEDCO, 2024; Economic Census, 2013; IIHS-UIL, 2025; CMDA2024.

The estimated manufacturing employment for Expanded Chennai Metropolitan Area is 8.57 lakh workers. Most of the city's manufacturing is concentrated in SIPCOT and SIDCO industrial parks. Within core areas, manufacturing is concentrated within Ambattur and Guindy SIDCO estates along with George Town, most of which are MSME enterprises. Outside core area, the biggest manufacturing cluster is in Irungattukottai-Sriperumbudur-Oragadam cluster of SIPCOT estates which are primarily large industries.

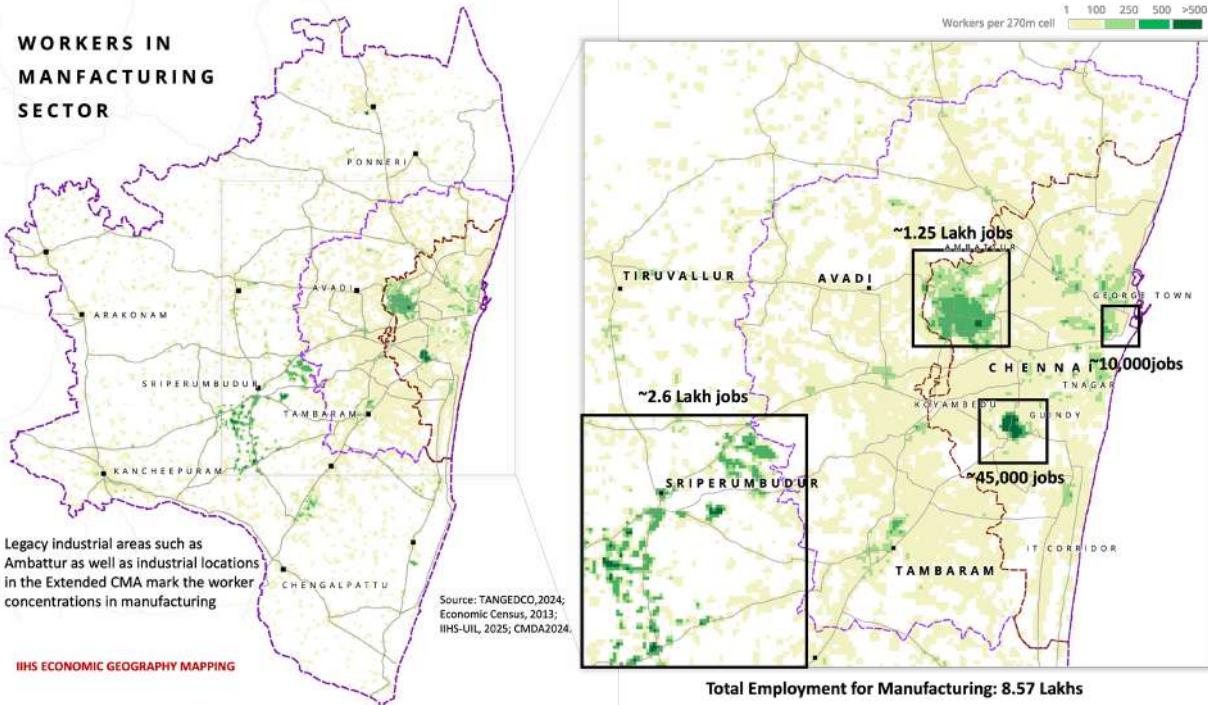


Figure 18: Worker Concentration in the Manufacturing Sector in CMA

Source: TTANGEDCO, 2024; Economic Census, 2013; IIHS-UIL, 2025; CMDA2024.

Most of the commercial employment in the city is concentrated within the core area of Chennai city while limited concentration is observed near large industrial clusters in the Expanded CMA area. The estimated employment for commercial jobs is 12.76 lakh jobs, the highest out of all sectors with high concentrations of it noted along commercial and trade centres within Chennai such as George Town, Koyambedu, and Anna Salai. Outside Chennai, commercial employment is concentrated in urban centres such as Tambaram, Kancheepuram, etc.

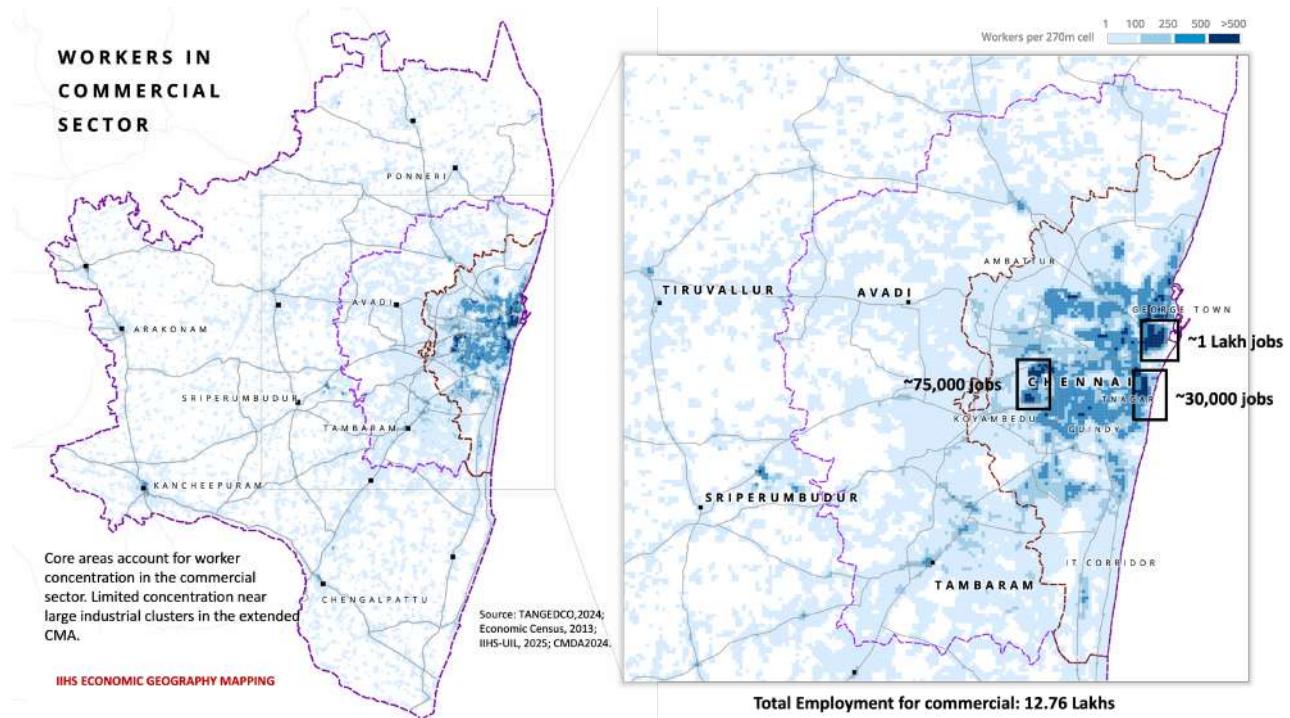


Figure 19: Worker Concentration in the Commercial Sector in CMA

Source: TANGEDCO, 2024; Economic Census, 2013; IIHS-UIL, 2025; CMDA2024.

The estimated employment for IT within the CMA region is 3.25 lakhs workers. IT employment displays the most spatially concentrated pattern of employment with it being spatially concentrated primarily within

Ambattur, Guindy and the IT corridor along ECR-OMR with some peripheralisation of employment in Siruseri IT Park, MEPZ and Mahindra World City.

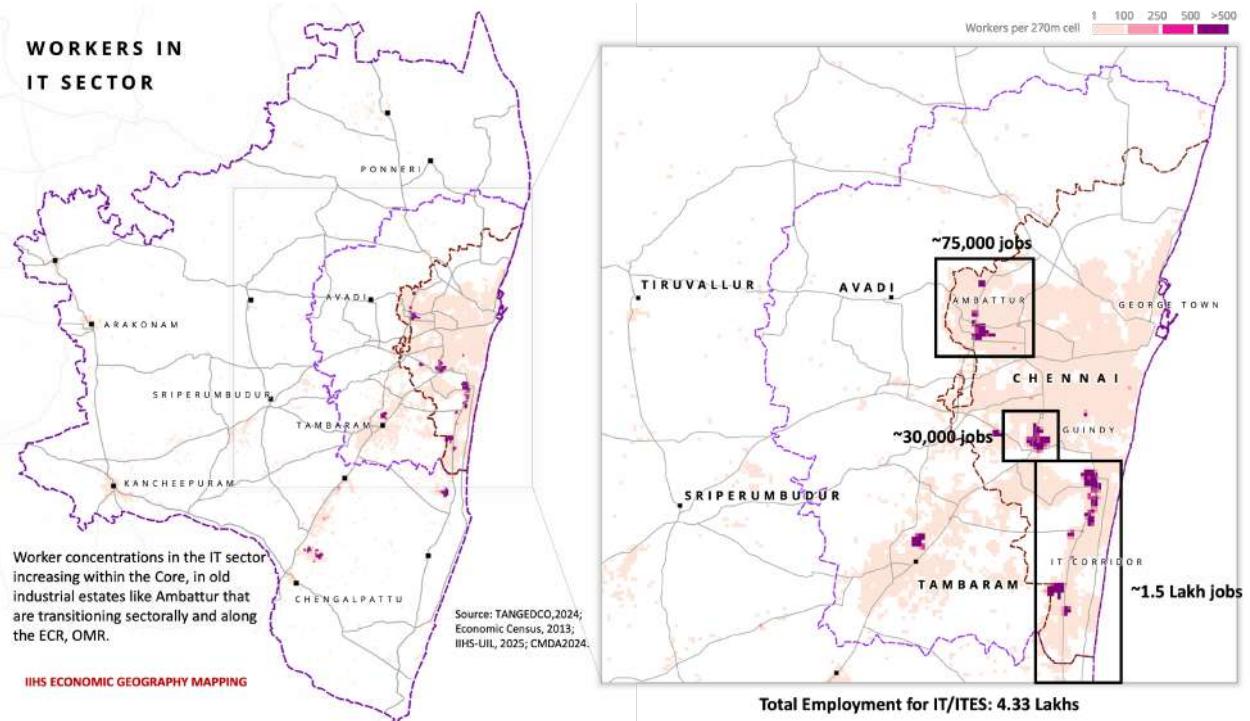


Figure 20: Worker Concentration in the IT / ITES Sector in CMA

Source: TANGEDCO, 2024; Economic Census, 2013; IIHS-UIL, 2025; CMDA2024.

Overall, Chennai's economic geography displays similar characteristics to other Indian cities with peripheralisation of large manufacturing and penetration of tertiary industries into older industrial estates in core city areas. This mixing of economies across sectors within clusters can be seen in Figure 21. Many of the core city areas demonstrate high worker concentration with Ambattur, Guindy, George Town, IT corridor and Sriperumbudur industrial cluster accounting for approximately 38% of employment mapped in IIHS economic geography mapping (25 lakhs) and 18% of total estimated employment in CMDA (54 lakhs).

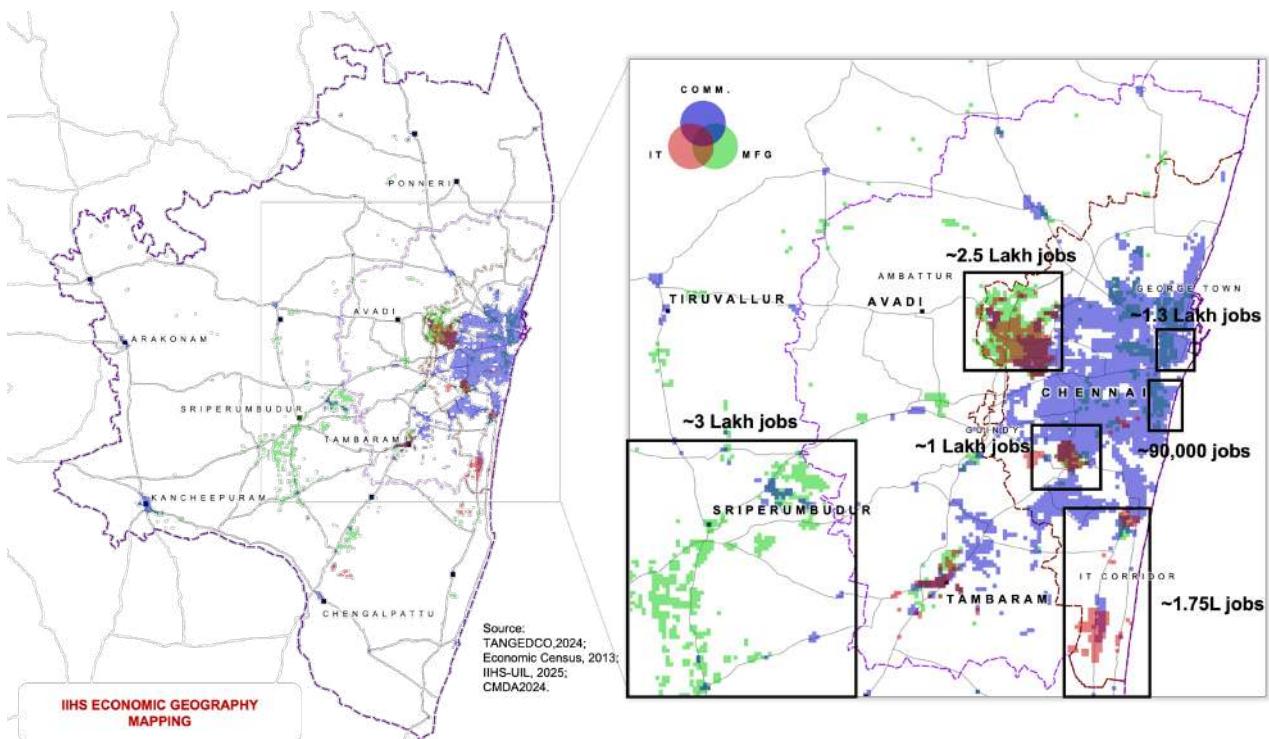


Figure 21: Current Distribution of Employment Across Sectors in CMA

Source: TANGEDCO, 2024; Economic Census, 2013; IIHS-UIL, 2025; CMDA2024.

3.4. Spatial Distribution of Wealth

Using the IIHS SDEIC household survey data, a composite Wealth Index was calculated combining housing quality and asset variables. As the precise location of the households were captured during the survey, it is possible to use spatial statistical modelling techniques to spatially interpolate the wealth index to create a fine-resolution map of the entire study area showing the spatial distribution of household-level wealth. This is done by first training a model at the resolution of a 100m² spatial grid to accurately predict the observed wealth index value using several geospatial covariates including built-up density, vegetation index, density and regularity of the street network, size of building footprints in the neighbourhood, density and type of urban build structures (measured using backscattering intensity from Synthetic Aperture Radar data), and so on. Then, these spatial models are used to predict the wealth level of all residential built-up areas in the Old CMA area, as shown in Figure 22. The spatial patterns are shown in more detail in zone-wise maps in Figure 23 and Figure 24.

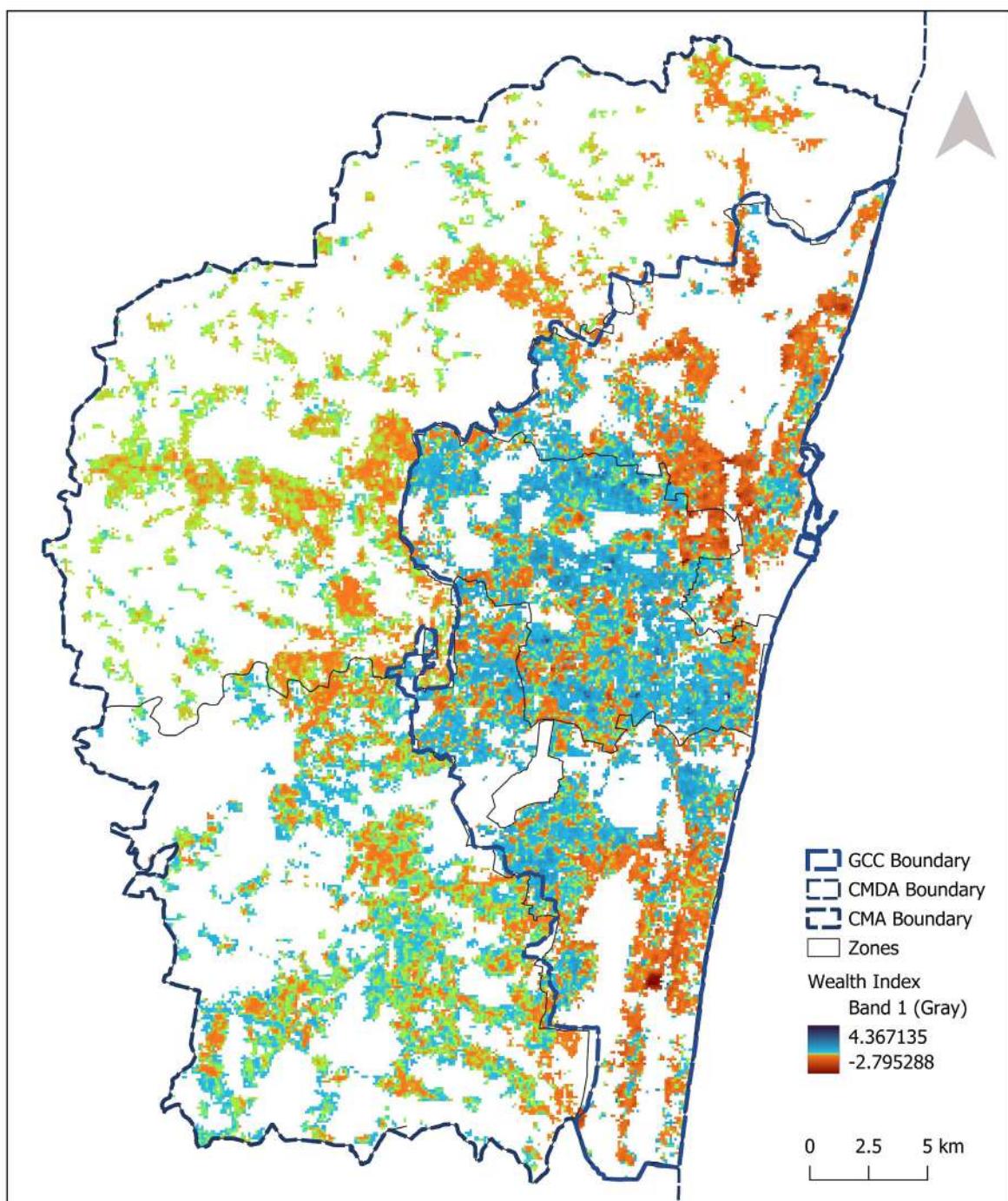


Figure 22: Map showing the fine-grained spatial variation by household wealth in the CMA area
Source: IIHS - SDEIC Household Survey and IIHS Analysis, 2024

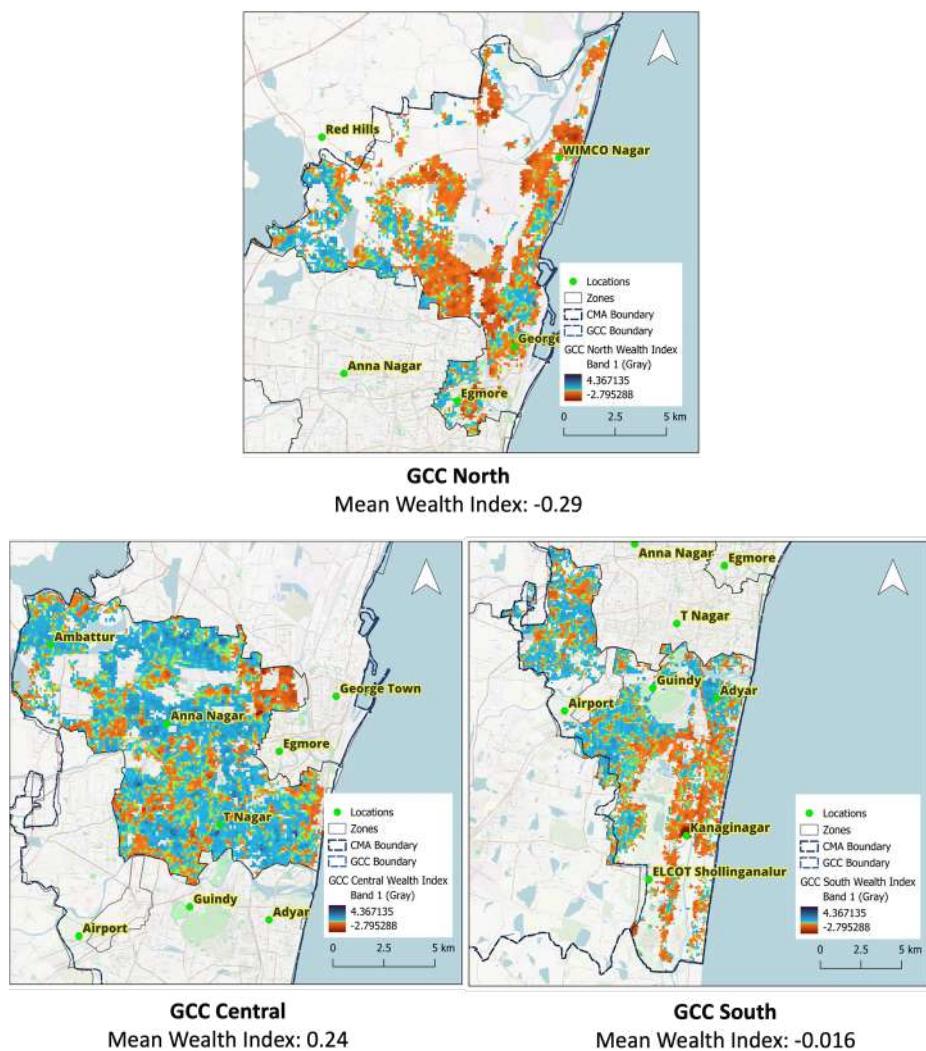


Figure 23: Spatial Distribution of Wealth: GCC Zones
Source: IIHS - SDEIC Household Survey and IIHS Analysis, 2024

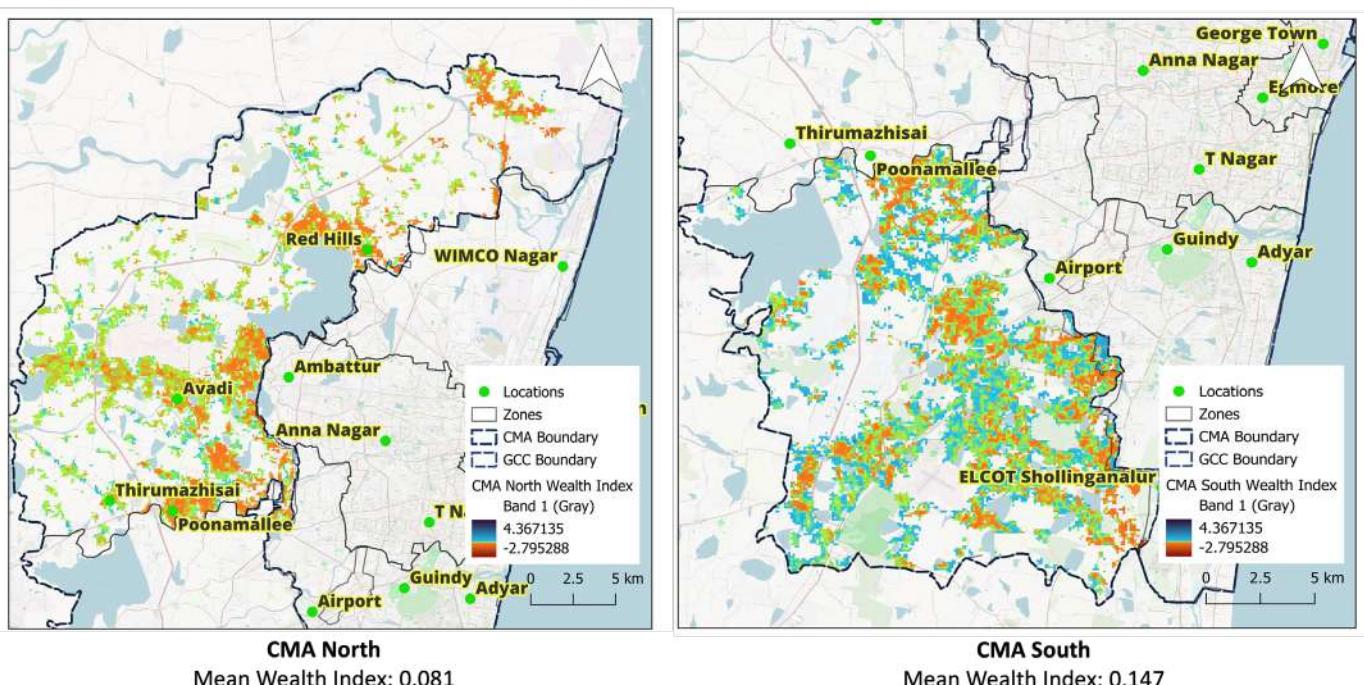


Figure 24: Spatial Distribution of Wealth: CMA Zones Outside GCC
Source: IIHS - SDEIC Household Survey and IIHS Analysis, 2024

3.5. Transport Analysis

The Interim Report 2 explains the full details of the transport analysis undertaken as part of the study. In this section, we present our analysis on work-related commute and public transport accessibility for accessing employment opportunities. By putting together employment clusters mapped as per IIHS' economic geography mapping along with secondary data analysis using network and GTFS data on existing multi-modal transit network, including MTC Buses, Metro, and Suburban rail, we are able to analyse accessibility to job clusters using public transport. Figures 25–27 below show public transport accessibility to different sectors of jobs within 30 minutes of travel time during peak hours on a weekday.

As shown in the maps below, core areas have better accessibility to manufacturing jobs due to the presence of multi-modal public transport and strong connectivity to manufacturing hubs within the city. Similarly, commercial jobs are well accessible, given their broader distribution across Chennai. In contrast, IT jobs have lower accessibility due to their concentrated locations and limited transit connectivity to key clusters.

Neighbourhoods in North Chennai and peripheral areas experience comparatively lower access to manufacturing and commercial jobs due to limited public transport and relatively low commercial development. Access to IT jobs is the weakest from these areas.

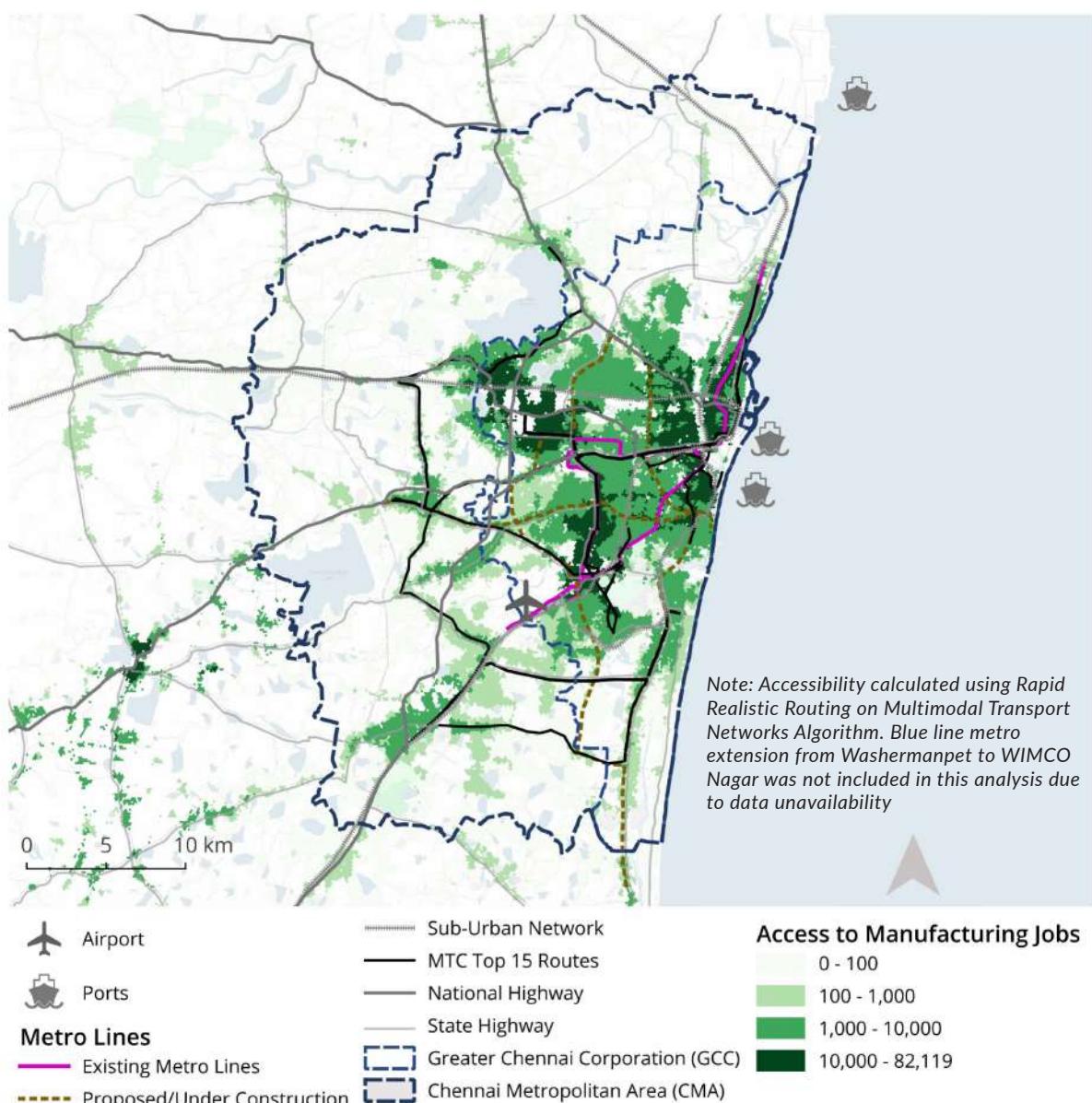


Figure 25: Accessibility to Manufacturing Jobs within 30 minutes using Public Transport
Source: TANGEDCO, 2024; Economic Census, 2013; IIHS - UIL 2025; CUMTA 2024

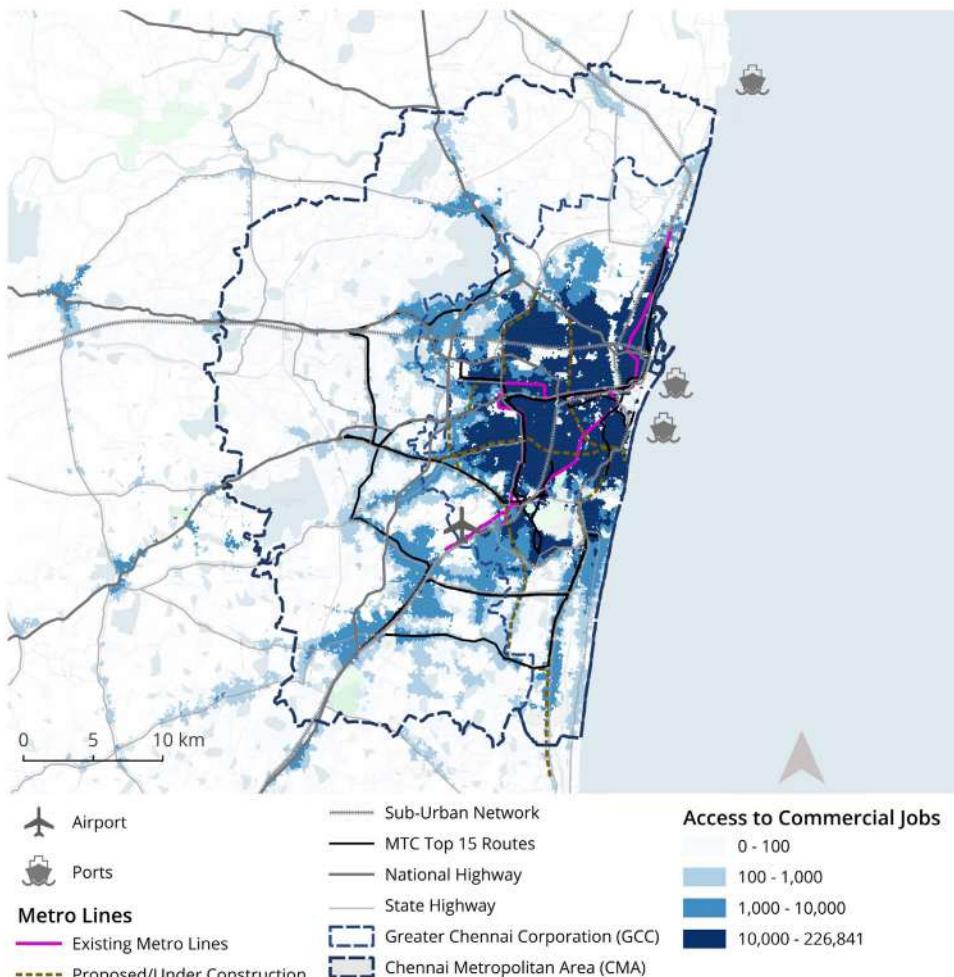


Figure 26: Accessibility to Commercial Jobs within 30 minutes using Public Transport

Source: TANGEDCO, 2024; Economic Census, 2013; IIHS - UIL 2025; CUMTA 2024

Note: Accessibility calculated using Rapid Realistic Routing on Multimodal Transport Networks Algorithm. Blue line metro extension from Washermanpet to WIMCO Nagar was not included in this analysis due to data unavailability

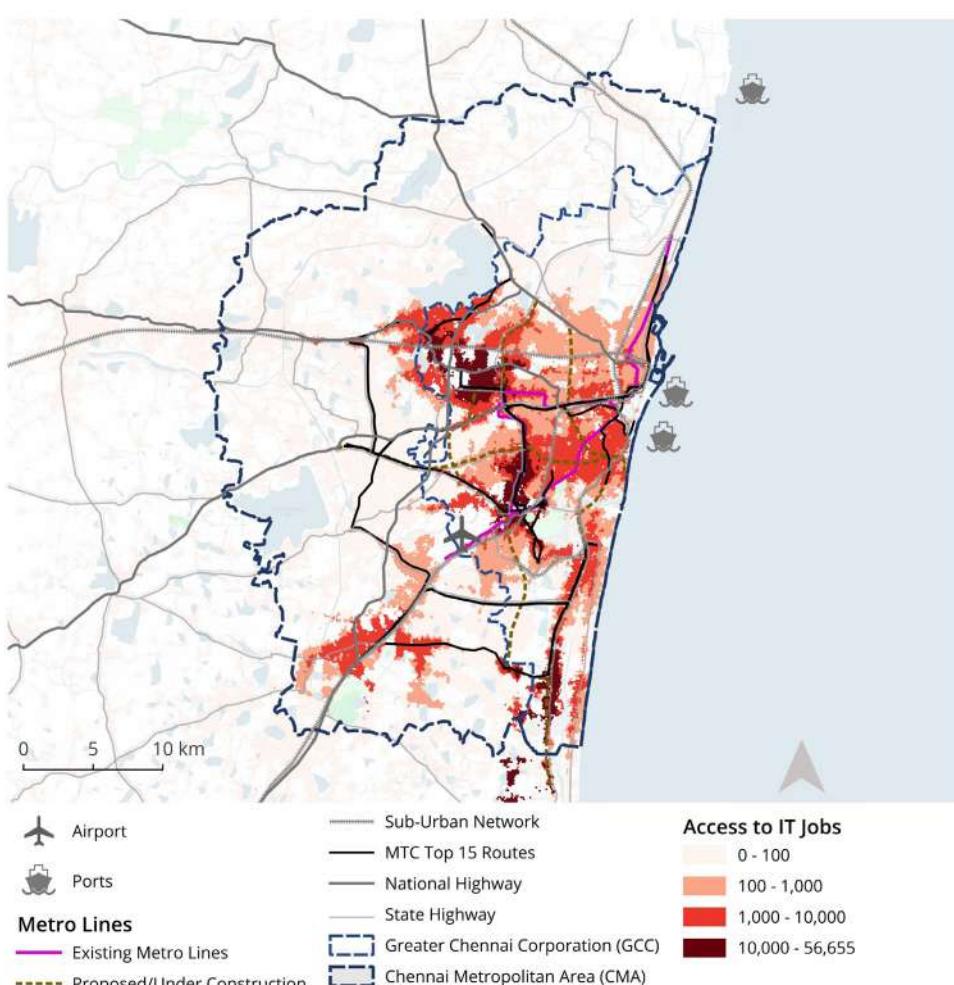


Figure 27: Accessibility to IT Jobs within 30 minutes using Public Transport

Source: TANGEDCO, 2024; Economic Census, 2013; IIHS - UIL 2025; CUMTA 2024

Note: Accessibility calculated using Rapid Realistic Routing on Multimodal Transport Networks Algorithm. Blue line metro extension from Washermanpet to WIMCO Nagar was not included in this analysis due to data unavailability

Further, we bring together IIHS' economic geography mapping, the population density as well public transport network analysis to highlight neighbourhoods' accessibility to jobs. The maps below shows Per Capita Access to Jobs (within 30 minutes) via public transport (Figure 28). This map shows transport deserts and hotspots related to accessibility to jobs.

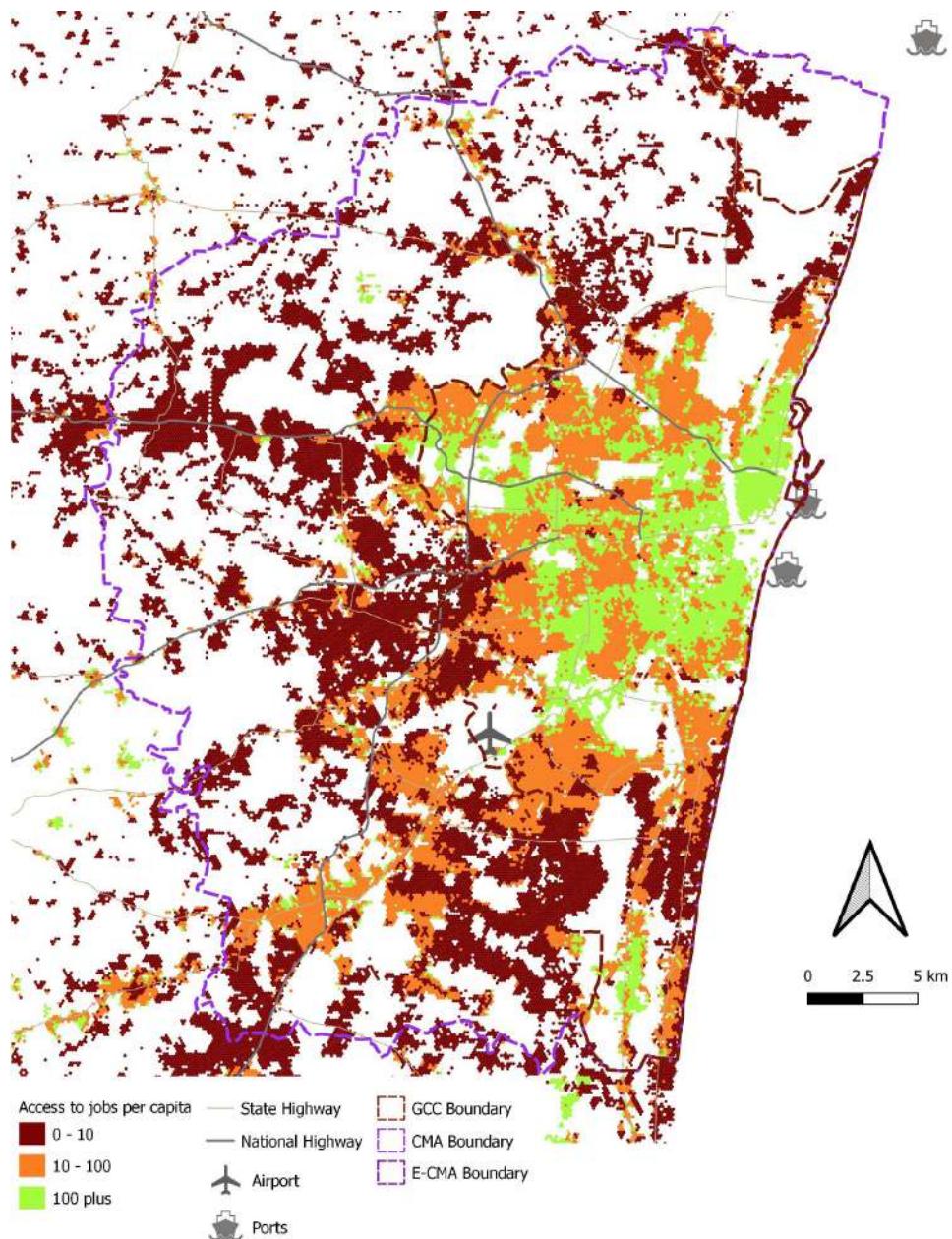


Figure 28: Transport hotspots and desserts (30 minutes)

Source: IIHS Economic Geography Mapping; IIHS-UIL 2025; CUMTA 2024;
Map solve AI Private Limited, 2024

3.6. Stakeholder Analysis

For this study, IIHS held consultations and meetings with government entities, private entities, and representatives of the academia, and civil society. These insights are summarised below on the themes of Land, Industries, Workforce, Infrastructure, Environment, and Housing.

Industry

Tamil Nadu continues to attract large-scale manufacturing and service industry investments, supported by strong institutional linkages between government, industry, and academia. Departments like Guidance and events such as the Global Investors Meet further this ecosystem. New growth sectors include R&D, startups, Global Capability Centres (GCCs), data centres, and the animation industry.

Industrial activity is spread across large clusters (such as Sriperumbudur, Irrungattukottai, and Oragadam) and smaller ones (like Thirumudivakkam, Gummidiyandi, and Ambattur). While major nodes are expanding due to recent investment, older industrial estates require renewed attention and investment. Redevelopment or relocation of markets in central areas has also disrupted local economies, adversely affecting low-income workers and households.

Future growth likely through major transport infrastructure projects, including the greenfield airport, industrial corridors (CBIC and CKIC), Golden Quadrilateral, and the Metro. Public investments are focused on projects like FinTech City in Nandambakkam and new industrial zones near ports in the city's northern region, with land acquisition currently underway.

Workforce

The Sriperumbudur cluster is witnessing expansion in production capacity, expected to generate large-scale regional employment. Similarly, concentration along the IT Corridor is expected to increase.

The region's employment base is increasingly dependent on migrant workers, who face systemic vulnerabilities due to lower wages, lack of registration, and limited social protection. Addressing these requires integrated planning that includes skilling, housing, social infrastructure, and promoting worker registration. Greater attention is also needed to support and increase women's participation in the workforce.

While the region hosts a strong network of Industrial Training Institutes and engineering colleges, additional skilling and training efforts are necessary to meet rising demand for trained workers. The old CMA region remains attractive for professionals due to existing social infrastructure and housing, yet further expansion of housing and worker-oriented infrastructure is critical for inclusive growth.

Land

Delays in land acquisition remain a major impediment to economic development. Challenges stem from limited institutional capacity, regulatory and procedural hurdles, high acquisition costs, weak land records, and the unavailability of large contiguous land parcels. Acquisition is currently underway in the northern parts of the city.

In the older CMA area, densification is being pursued through TOD and enhanced FSI norms. There is a need for systems to be anticipatory and to accommodate residential growth as new industrial areas emerge. This calls for greater flexibility in land-use and development regulations, supported by more frequent re-evaluations of land-use classifications.

The Tamil Nadu Town and Country Planning Act (TNTCP) and the Tamil Nadu Combined Development and Building Rules (TNCDBR) are undergoing amendments. The revised TNTCP is expected to include provisions for setting up a new development authority and aligning better with upcoming land pooling frameworks.

Housing

Housing for industrial workers, particularly in peripheral areas, is currently met informally through surrounding villages, which is both inadequate and poorly planned. There is a pressing need for varied housing types, including dormitory-style and rental options located near workplaces. An estimated shortfall of 3-4 lakh dormitory units exists across Sriperumbudur and the IT Corridor. State investment is essential, including in PPP mode, with SIPCOT having developed housing for 18,000 Foxconn workers as a precedent.

Enhancing housing supply requires more flexible building norms and increased FSI. Expanding mixed-income neighbourhoods and adding housing stock in industrial clusters and near megaproject sites is necessary to meet growing demand.

For EWS and slum housing, the earlier sites-and-services approach offered better outcomes for low-income communities. Peripheral resettlements have created disconnections from employment and support networks. Colonies like Kannagi Nagar, Semmanchery, and Perumbakkam suffer from poor construction, limited infrastructure, and environmental vulnerabilities. These burdens disproportionately affect women, especially in terms of health. Challenges also persist around slum notification and redevelopment on private land.

Infrastructure

Revitalising older industrial estates is essential, while newer ones require targeted investment, particularly to improve connectivity. Social infrastructure, including schools and hospitals, is critical for workers, alongside amenities such as heat shelters that address emerging climate risks. Attention to occupational safety and health is needed, especially in informal sectors like waste and sanitation. The impact of recurrent flooding demands sustained investment in infrastructural repairs, now a pressing concern for industry.

In terms of transport, the new airport and Metro project are poised to reshape the city's economic geography and the nature of investment. CUMTA's second Comprehensive Mobility Plan aims to establish mobility corridors and reduce travel time in the CMA to under one hour. Additional initiatives under development include a one-mobility card, a new parking policy, a complete streets project, and multimodal integration.

Resettlement sites face serious infrastructure gaps. Basic services such as water, drainage, sanitation, anganwaadis, and recreational spaces like playgrounds and parks remain inadequate. Peripheral relocation has also raised transportation costs, disproportionately affecting low-income workers, and women.

Environment

Climate-resilient planning remains a critical need for Chennai. While studies by CMDA and C40 on flood monitoring and blue-green infrastructure have been commissioned, the 2019 Chennai Resilience Strategy remains largely unimplemented. Land acquisition for industrial expansion is increasingly in environmentally sensitive regions, including areas previously marked as wastelands that serve key catchment functions, such as Ennore. Proximity of biodiversity-rich areas like Ennore and Pallikarnai to industrial zones underscores the need for formal recognition and protection in planning processes.

Industrial development continues to face high flood vulnerability due to poor stormwater systems and encroachments on marshland. These concerns have been highlighted by IT Parks and emerging businesses.

Climate risks are especially acute for vulnerable groups. Fisherfolk face rising uncertainty due to unpredicted weather events, while informal workers housed in slum settlements or resettlement colonies bear a disproportionate burden from climate impacts, including flooding and exposure to nearby industrial hazards.

3.7. Informal Economy Consultations

A majority of workers in Chennai are engaged in informal occupations, outside formal ‘workplaces’ and in public spaces, on roads, and from their homes. The master plan presents a unique opportunity to integrate the needs of the informal economy and those that work within it. IIHS’ work on this theme draws from recent research on how to integrate informality in the city into formal planning paradigms (Coelho, et al 2022, Coelho, et al 2013, Kennedy, et al 2014). This section presents key highlights from extensive stakeholder engagements detailed in previous sections. It is summarised to present issues faced by various forms of informal work prevalent in Chennai.

Street Vendors

Street vendors face challenges across housing, infrastructure, and livelihoods. There is limited access to affordable housing, whether through rentals or informal settlements. The absence of designated vendor spaces, basic amenities, storage, and affordable transport options further restricts their operations.

Resettlement housing has resulted in significant income loss. These areas are often peripheral, and the housing form does not integrate with the needs of street vendors.

Allocated vending complexes are designed without vendor participation, disconnecting them from key business areas. Additionally, limited documentation makes it difficult to access loans, while vendor registration processes remains long and tedious.

Environmental risks have worsened due to poor market design, and removal of trees. Heat stress, flooding, and fires are common raising repair costs and product losses.

Waste Workers

Waste workers operate in hazardous low-lying areas, often situated in proximity to landfill sites. They are usually employed on a contractual basis, facing high job insecurity worsened by poor coordination between formal and informal waste management systems. Lack of contracts create greater risk during work and no access to health care.

There is a shortage of appropriately sized segregation centres, along with inadequate provision of basic services such as water, sanitation, and social infrastructure. This particularly affects women waste workers, who struggle to balance their responsibilities with unpaid care work.

Dump yards remain unmanaged and have not been upgraded to proper landfill sites, creating ongoing environmental and health risks.

Sanitation Workers

Sanitation workers often live in overcrowded clusters, with desludging operators frequently residing in lorries or makeshift shelters due to social stigma. They lack access to resting areas, sanitation facilities, and childcare support at workplaces. Housing is commonly in ecologically sensitive areas such as slums and resettlement sites, increasing environmental risks. Infrastructure facilities are typically located in the core city areas and remain poorly connected by public transport. This makes it difficult for workers to meet basic needs near places of stay and work.

The absence of planned parking for heavy vehicles complicates operations. Many workers are employed on a contractual or informal basis, leading to irregular incomes, lack of benefits like leave, and heightened precarity, particularly for women. Workers face hazardous conditions with inadequate health and safety equipment and no social safety nets, resulting in a high number of fatalities.

Domestic Workers

Domestic workers, largely women, face multiple barriers due to inadequate housing and infrastructure. They face a trade-off between insecure housing tenure in centrally located areas and long commutes (with lack public transport connectivity) from peripheral resettlement colonies, which pose further challenges for migrant and single women workers.

The sector is expanding rapidly, yet workers continue to struggle with low wages, violence, lack of social protection, and the burden of unpaid care responsibilities. Essential amenities—such as crèches, public toilets,

rest areas, drinking water, health services, and women's safety centres—remain missing from residential colonies and core areas of the city where they are employed.

There is limited provision of community spaces for livelihood training, skill upgradation, and access to government schemes or support in cases of violence and harassment. Extreme weather events, like flooding, further erode income and health.

Home Based Workers

Home-based workers face zoning-related barriers and insecure tenure, leaving them vulnerable to evictions and unsafe working conditions. This additionally prevents investment in both housing and work. Largely feminized and precarious, home-based work remains unrecognized in government data, policy, and planning interventions. Despite working 7–8 hours daily, they are viewed as part-time workers, with no formal contracts, piecemeal wages, no social protection, or health and safety safeguards.

Poor housing and tenure arrangements limit access to infrastructure necessary for economic activity, while the absence of social support systems hampers women's ability to balance paid and unpaid work. Home-based workers must often choose between insecure tenure in central areas or distant commutes from resettlement sites. Flooding is an additional burden and can severely disrupts livelihoods.

Fisherfolk

Fisherfolk are threatened by evictions and relocations, compounded by declining fish populations due to commercial over-fishing. Reduction of poromboke land used for boat parking, owing to privatisation and land grabbing, further limits capacity.

Financial barriers restrict access to quality education for fisherfolk and families, while sectoral policies tend to prioritize tourism, private investment, and exports. Pollution in the Ennore-Manali corridor is detrimental to health and is reducing the region's biological productivity. Inadequate fish processing infrastructure has increased costs.

There is limited policy recognition of fisherfolk's contributions to the environment, and few avenues to secure livelihoods or pursue alternative pathways

Construction Workers

Construction workers, especially migrants, often live in poor-quality housing—from slums and dilapidated structures to makeshift shelters on poromboke land with limited access to physical and social infrastructure. Despite high employment, significant disparities persist across gender lines and between local and migrant workers.

Cess collection is poor. Over ₹207 crores is pending for disbursal. Enforcement of health and safety regulations is weak. Poor registration systems and ineffective implementation of labour laws further contribute to the precarity of work.

Labour addas across the CMA (over 50 in number) lack essential amenities including healthcare, childcare, sanitation, and education. There is minimal preparedness for extreme weather events, leaving workers vulnerable to heat and flood-related impacts.

Gig and Platform Workers

Gig work in Chennai includes over 2.5 lakh workers and draws from a labour surplus of educated youth, migrants, and women. Categorized as 'partners', they are largely excluded from insurance, social protection, and opportunities for upskilling or reskilling—constraining long-term employment and economic mobility.

Workers live in sub-optimal housing resulting in long commutes. Basic amenities such as toilets, rest areas, and designated parking are missing, alongside inadequate safety measures, especially for women and night-shift workers. Health and livelihoods are vulnerable to extreme weather events. Short delivery timelines imposed by platforms also contribute to hazards, and traffic and mobility challenges across the city.

3.8. Future Scenario Modelling

The full methodology for the future scenario model, along with the description of the input data layers as well as the steps for training the model and error assessments are presented in the Draft Final Report (D-3). Here, we present the key findings from the different scenarios described in Table 1 in the Methods section of this report. The proposed projects that form an input into the different scenarios are presented in Figures 9 and 10.

This section presents the results from the future growth scenarios across the regions of the Greater Chennai Corporation (GCC), Chennai Metropolitan Area (CMA) and the expanded CMA boundary of 5904 sq km (e-CMA). The four scenarios considered are: Scenario 1 (Base Case), Scenario 2A (High Growth), Scenario 2B (High Growth with Transit-Oriented Development), and Scenario 3 (Restricted Growth). Growth is quantified as a percentage change in total floor space (total space across all floors) between 2025–2035 and 2025–2045 for GCC, CMA and e-CMA. The following figures visualise aggregated floor space within 1 sq. km grids, highlighting growth hotspots. Temporal graphs (Figure 29a, 29b, 29c) show the increase in built-up floor space from 1995 through 2045, highlighting the growth post-2025. Figures 30 to 33 highlight each of the individual scenarios and Figures 34 and 35 provide the composite picture with a comparison across the scenarios and highlight the spatial patterns of growth/ change across the two time periods—2025–2035 and 2025–2045.

Scenario 2B has the highest growth with the Transit-Oriented Development (TOD) strategies. Across all scenarios, significant spatial expansion is observed between 2025 and 2045, with e-CMA consistently showing the highest percentage growth in floor space, reaching up to 125.2% in Scenario 2B, see figure 32. This growth has to be read both in the context of large- scale, land- intensive investments that the Chennai region is attracting, as well as the relatively higher land availability in the e-CMA, as compared to the CMA and the GCC areas. The growth in the CMA and GCC are also significant, but they occupy less floor space as compared to the e-CMA, which may be linked both to the ingress of high value, less land- intensive investments getting attracted to these areas and relatively higher land constraints in these areas. The growth in the CMA and the GCC range between 58.8%–65.6% and 26.8%–37.5% respectively. Growth in the e-CMA, CMA and GCC broadly follow spatial patterns of growth along existing agglomerations, such as Sriperumbudur, Tiruvallur, IT corridor, as well as corridors marked by and along the major road and rail networks. However, an incremental pattern of more infill development is also visible.

Scenario 3 (Figure 33), captures a scenario where selected projects located in the environmentally sensitive locations in North Chennai, are modeled with restrictions, highlighting the growth implications of policy restrictions in these environmentally sensitive areas. As the figures in the following pages highlight, it would be possible for the Chennai region to achieve relatively high levels of growth even if policy restrictions in environmentally sensitive areas are instituted.

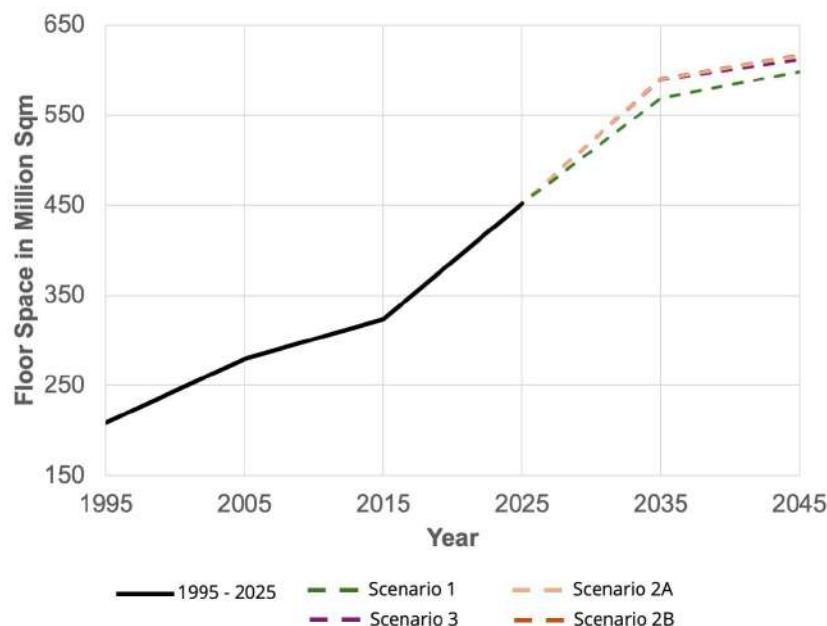


Figure 29(a): Increase in built-up floor space from 1995 through 2045 in Greater Chennai Corporation

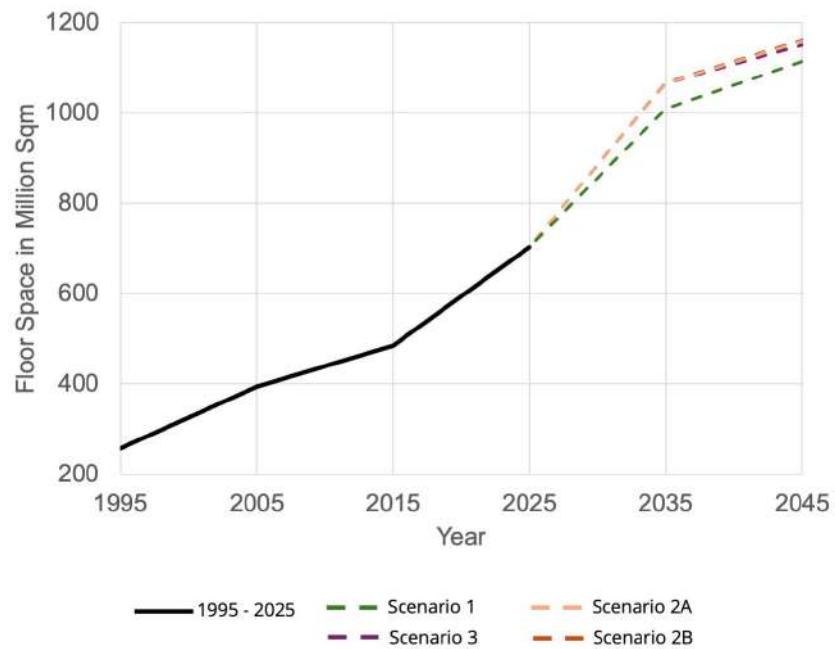


Figure 29(b): Increase in built-up floor space from 1995 through 2045 in Chennai Metropolitan Area (CMA)

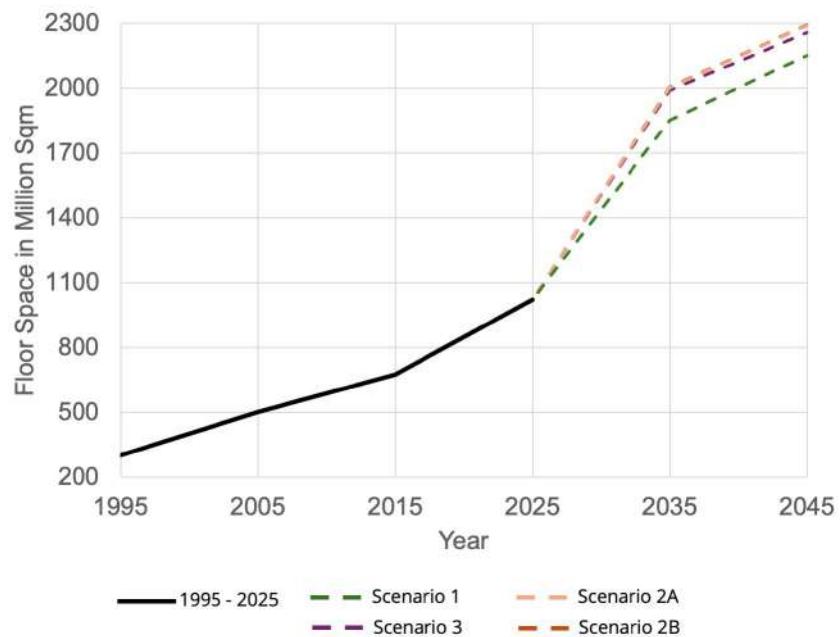


Figure 29(c): Increase in built-up floor space from 1995 through 2045 in Expanded Chennai Metropolitan Area (e-CMA)

Scenario 1: Base Case Scenario

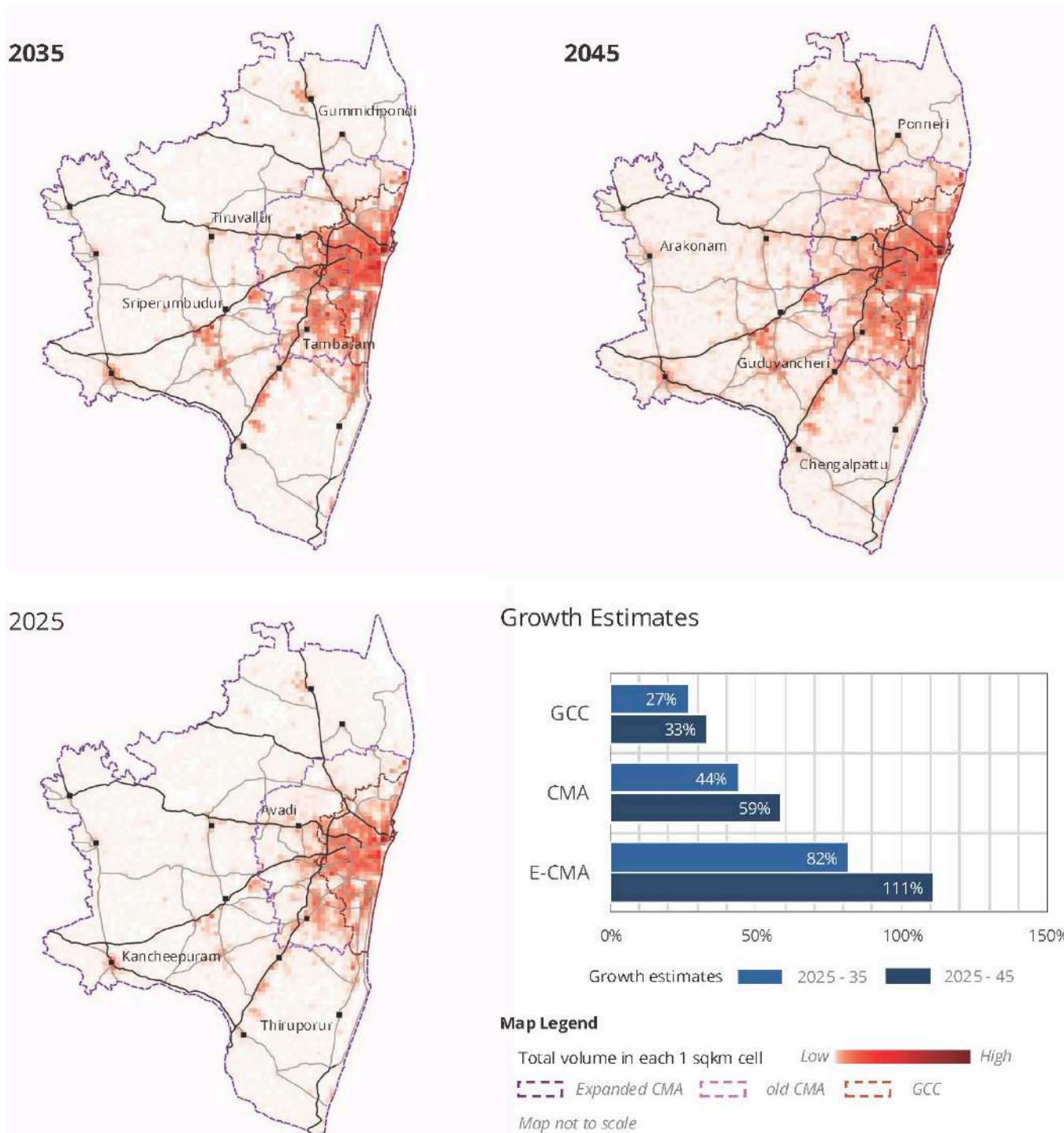


Figure 30: Scenario 1 – Base Case Scenario for 2035 and 2045

Scenario 2A: High Growth Scenario

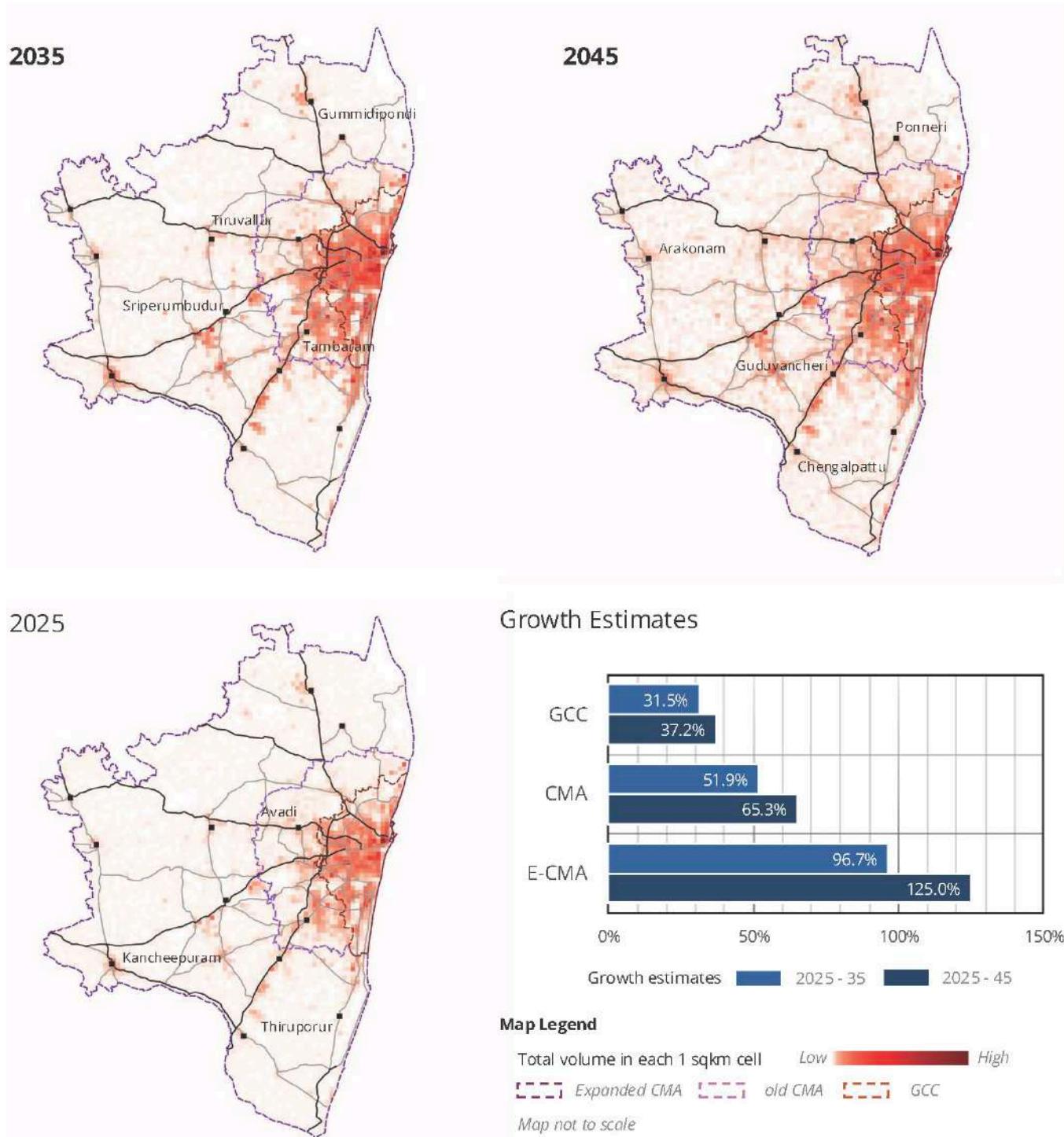


Figure 31: Scenario 2A – High Growth Scenario for 2035 and 2045

Scenario 2B: High Growth Scenario With ToD Projects

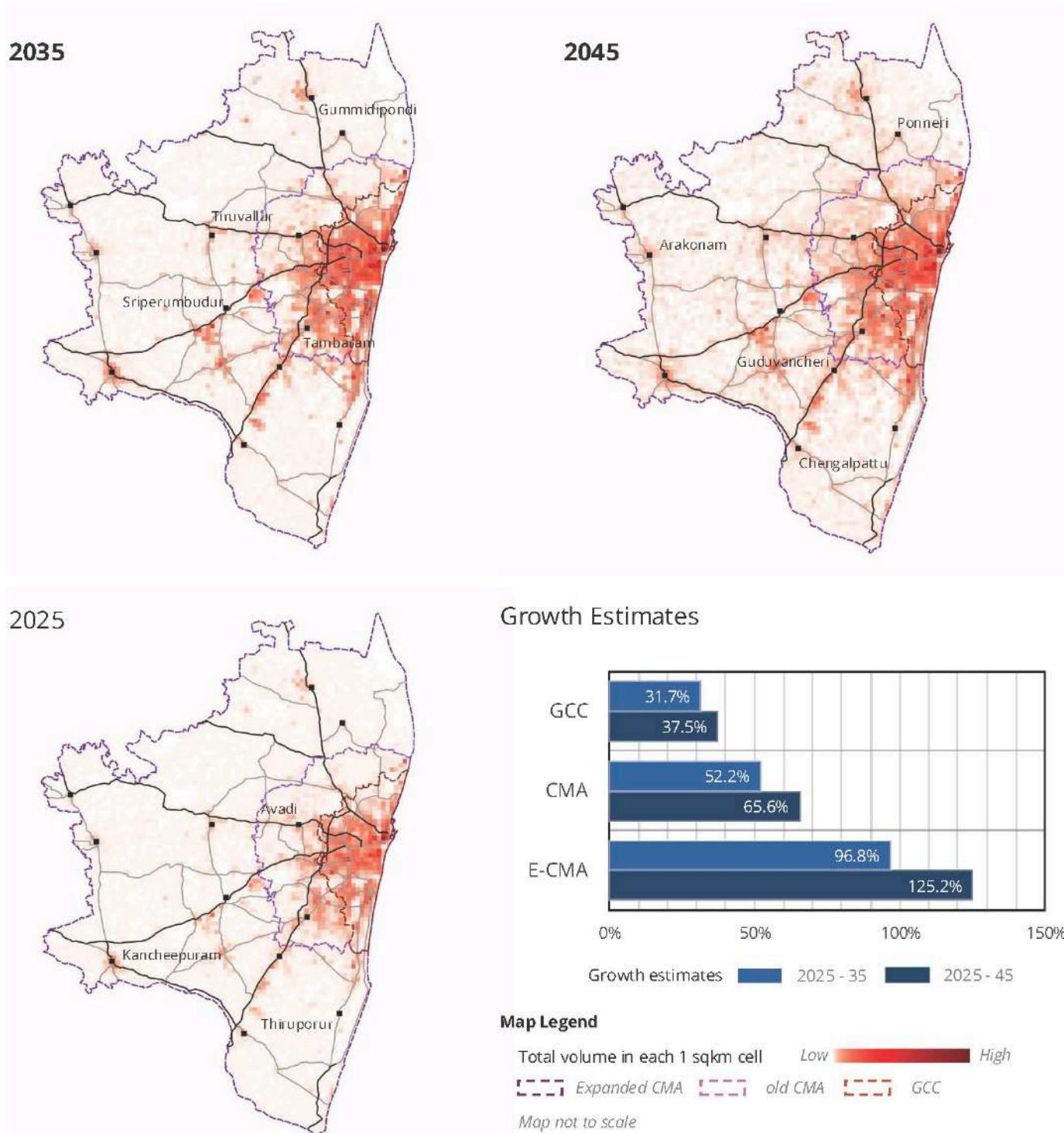


Figure 32: Scenario 2B - High Growth + TOD Projects Scenario for 2035 and 2045

Scenario 3: Restricted Case Scenario

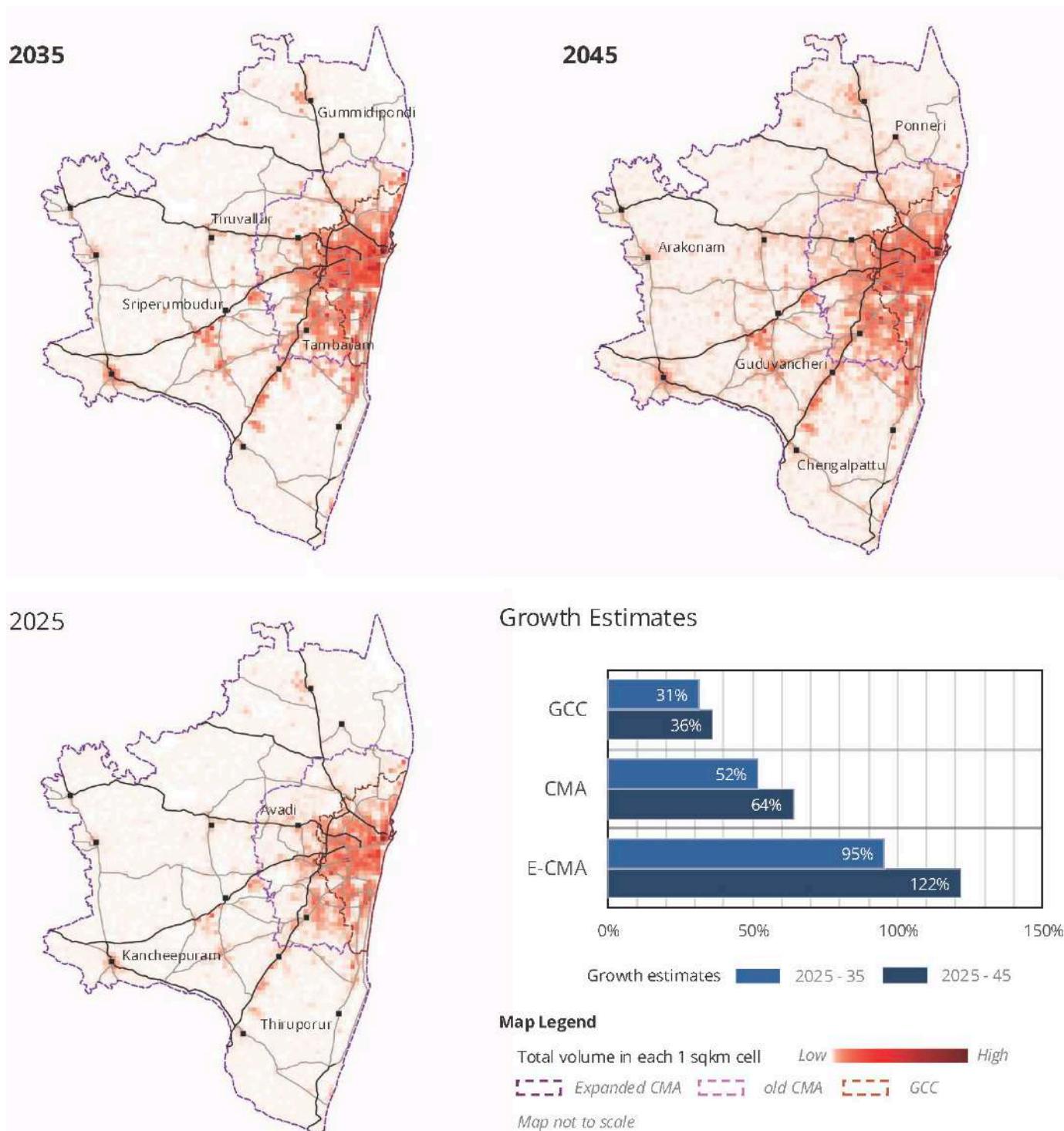


Figure 33: Scenario 2B - High Growth + TOD Projects Scenario for 2035 and 2045



Figure 34: Maps visualising change in 1 sq.km cells in the expanded CMA region

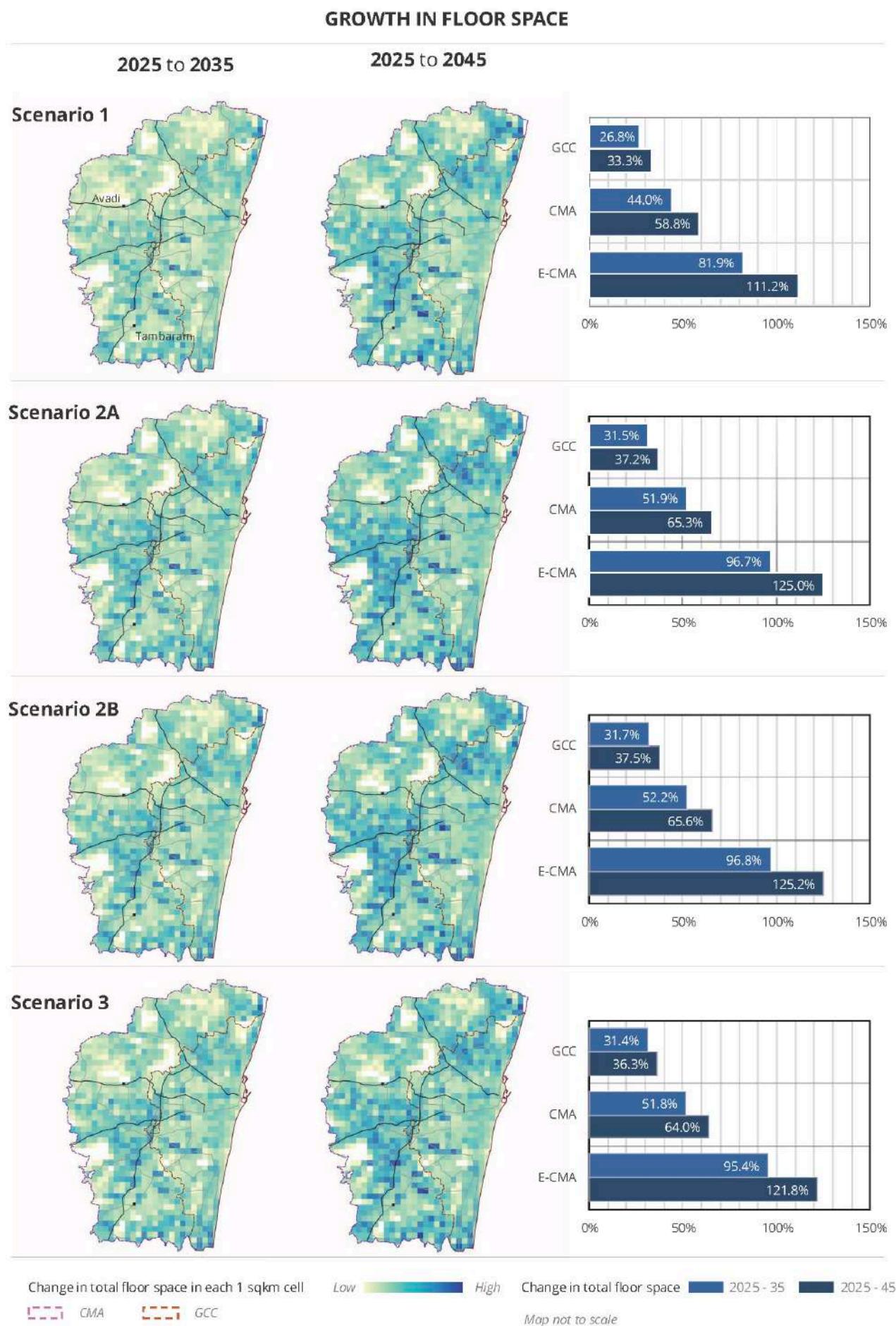


Figure 35: Maps visualising change in 1 sq.km cells in the CMA region

4. KEY FINDINGS

Figure 36 below is the summary of study findings, synthesised from across all the methods adopted for the study. We categorise these into 10 key findings, which are grouped into three buckets - Economic Development, Economic Geography, and Equity and Sustainability. In the remainder of this section, we present the key issues and challenges for the region within these three buckets.

ECONOMIC DEVELOPMENT

Growth and Employment

CMA region's economy is growing more rapidly than the state economy, but increasing output rate is not matched by equivalent increases in quantity and quality of employment

Workforce Characteristics

The local workforce is highly skilled but faces challenges such as ageing and low levels of female workforce participation rate. In the future, the region may need to adapt its economic growth to these changes

Housing and Infrastructure

Employment growth is not matched by public and private investments into housing and infrastructure

EQUITY AND SUSTAINABILITY

Informal Economy

Inadequate recognition and support for informal economy and informal workers in Chennai

Inequality and Vulnerability

Persistent spatial inequalities in income, access to employment, and environmental vulnerabilities

Environmental Risks

The city's ecological systems have been significantly affected due to urban development posing future risks to economic growth and investment

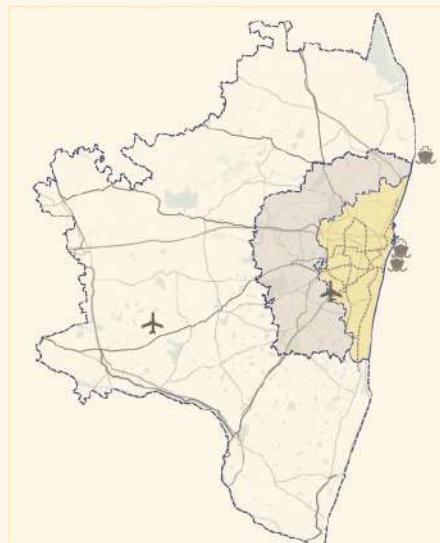
ECONOMIC GEOGRAPHY

Economic Transformation of Core

Nature of economy and employment in the core city is transitioning and leading to a transformation of economic spaces

Industrial Growth and Expansion in Periphery

Chennai is experiencing significant peripheral expansion in a radial pattern, with industrial growth and investment, and emerging gaps in housing and infrastructure



ECR-OMR a Growth Hub for IT

ECR-OMR is emerging as a key area for high-income housing and service sector economies. However, these developments are also increasing inequalities in this region

Ports as Key Infrastructure

Ports and related logistics industries facing constraints due to congestion (both within and outside port areas)

Figure 36: Summary of Study Findings

ECONOMIC DEVELOPMENT

Growth and Employment

CMA region's economy is growing more rapidly than the state economy, but increasing output rate is not matched by equivalent increases in quantity and quality of employment

- Output in the CMA region is increasing at an average annual rate of 10.5%, which is faster than the growth of the state economy.
- This is driven by a robust institutional economic ecosystem, with key linkages between government, industry and academia, and a strong investment climate with high levels of both public and private investment. These will be strong drivers of future growth as well.
- This is also due to sufficient availability of labour, and high level of skills and education in the workforce. However, employment has witnessed a slow growth of 2.3% on average.
- Sectors seeing high output growth and high investment are not necessarily the same ones as those creating employment opportunities at scale. For example, the high growth sectors are real estate and services, whereas the high employment sectors are trade, repair, hotels and restaurants, and manufacturing, construction and IT.
- Further, MSMEs and the informal economy are employment intensive sectors of the economy. These play key roles in the value-chain of large industry productivity through direct or supporting contributions yet are ignored in Investment led growth strategies.
- Quality of employment, as observed through presence of vulnerable work, and wage growth, needs to be improved.

Workforce Characteristic

The local workforce is highly skilled but faces challenges such as ageing and low levels of female workforce participation rate. In the future, the region may need to adapt its economic growth to these changes

- The local workforce in the city is experiencing ageing, which will affect the pool of the local workforce in the future, as highlighted by the current age pyramid. The education levels of the local workforce are high, indicating the need for more high skill jobs
- Low levels of female labour force participation is another challenge and acting as a constraint to economic growth of the region
- These trends are increasing dependencies on migrant workers, leading to increased competition with other states to attract labour.

Housing and Infrastructure

Employment growth is not matched by public and private investments into housing and infrastructure

- Chennai's core has a dense mixed-use economy, including Retail, IT, Logistics, MICE, and Commercial sectors, with a mix of formal and informal economies.

- The core is experiencing changes such as: type of economic sectors showing interest, gigification, significant employment that is not fixed to a single workplace, urban densification of mixed uses, increase in real estate prices, new planning interventions to unlock land and air rights in the core areas.
- The core is transitioning to a service-led economy, with older industrial hubs like Guindy and Ambattur becoming IT and service centers.
- Industrial locations within the core are now being replaced by service industries.
- High-value service sectors like GCC, R&D, Animation, Startups, Data Centers, and Fin-Tech are expanding in the core through land use conversions and mixed-use development. Policies and plans are oriented towards attracting these high-value service industries. GCCs account for 40% of the demand for commercial real estate in the city.
- TOD policies currently being adopted by CMDA will further densify core areas and selected peripheral locations.
- Large-scale Manufacturing, and in some cases, informal economy locations are being relocated to the peripheries.
- In some cases, informal economies are being displaced as an outcome of incoming newer forms of economies and infrastructure (such as the port and metro projects displacing certain livelihoods).
- These shifts make apparent the conflict between prioritising a jobs-intensive, equitable growth pathway in the core city, against prioritising investments in growth sectors that require urban restructuring and exacerbate inequalities.
- Infrastructural inadequacies in older industrial and MSME clusters are leading to the devalorisation of these areas.

ECONOMIC GEOGRAPHY

Economic Transformation of Core

Nature of economy and employment in the core city is transitioning and leading to a transformation of economic spaces

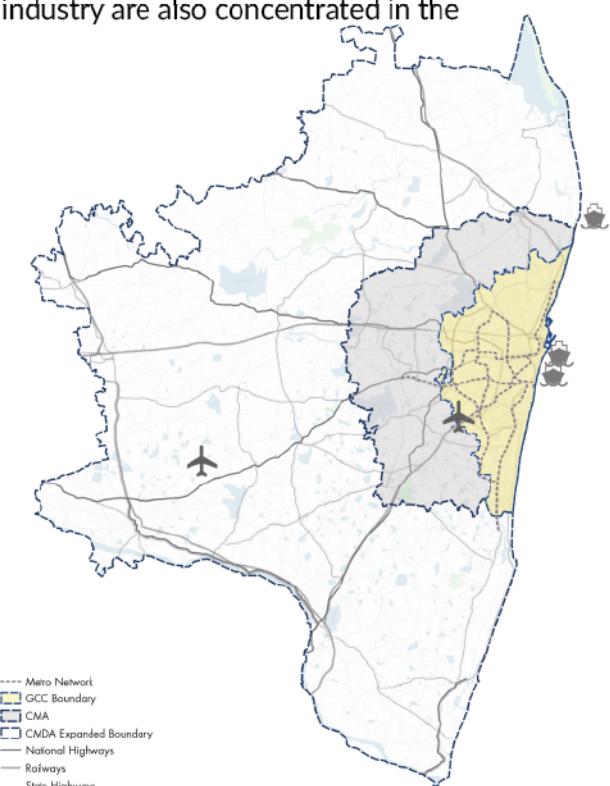
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Industrial Growth and Expansion in Periphery

Chennai is experiencing significant peripheral expansion in a radial pattern, with industrial growth and investment, and emerging gaps in housing and infrastructure

- Chennai is experiencing significant peripheral expansion in a radial pattern along major transport corridors, fueled by large- scale public and private investments, into industries and industrial infrastructure, but with inadequate housing and infrastructure provisioning.
- 54% of the CMA expanded region's population is located within GCC and 76% within old CMA.

- Chennai's peripheral development follows a radial pattern, with ribbon development along arterial roads and development nodes, and limited infill development due to lack of infrastructure availability and market uptake. Industrial agglomerations are concentrated in the peripheries, and future planned investments in industry are also concentrated in the same set of locations.
- The peripheral areas of Chennai are a preferred location for scaling up of production, especially for manufacturing. However, securing land near existing agglomerations, even in peripheral areas, is becoming difficult. New areas where land is being made available are often perceived as lacking economic agglomerations, value-chain connections, and or housing and infrastructure for industries to prioritise them (e.g.: Mammalur Industrial Park located in North Chennai)
- There is an estimated 1.5- 2 lakh housing need gap in these peripheral expansion areas, and a need to prioritise dormitory- style and other forms of innovative housing typologies to accommodate labour (and their different types of housing needs).
- The absence of formal low-income housing near peripheral industrial agglomerations means that migrant workers in this area live in nearby villages and settlements with suboptimal housing arrangements and inadequate social and physical infrastructure
- Concentration of employment intensive economic locations in the periphery combined with restricted expansion in transport networks (especially buses) has increased commute costs for workers in the core city with limited public transport coverage
- Real estate developers are conservative in choosing the location in the periphery due to the high demand and preference of residents to stay in old CMA; Expatriate gated townships in periphery being developed; Middle and high-end housing demand is very high in the core due to better quality of amenities available.



ECR-OMR a Growth Hub for IT

ECR-OMR is emerging as a key area for high-income housing and service sector economies. However, these developments are also increasing inequalities in this region.

- High residential activity along arterial roads of OMR and GST. South Chennai is the most active residential market contributing 60% of the total launches in Q4 2024
 - ECR – OMR has grown as an IT corridor which generates demand for high-income housing. This is a prime location in the periphery for white-collar workers with all the amenities and high quality of life.
 - Blue collar Housing Shortage of 1.5 – 2L units in OMR-ECR
- IT and commercial office workers have the highest proportion of private transport users among all work clusters.
- Global Capability Centres' accounted for 40% to the overall demand for commercial real estate in the city.

Ports as Key Infrastructure

Ports and related logistics industries facing constraints due to congestion (both within and outside port areas)

- Congestion at port facilities and congestion on roads leading to the ports, including issues such as mixing with city- traffic, presence of low- height electricity poles and wires, overall city congestion, etc., were highlighted as concerns
- New investments into new ports and new port related infrastructure, such as warehousing, do not take into account the congestion issues associated with access and logistics management
- Low- value, high- volume (clothing) and high- value, high volume (aeronautics) industries are beginning to use ports outside of the city due to logistical constraints.

EQUITY AND SUSTAINABILITY

Informal Economy

Inadequate recognition and support for informal economy and informal workers in Chennai

- 45.3 percent of workers in Chennai work informally, however these lack adequate recognition and support through data, planning and policy interventions. Within the informal economy, there are many distinctions, with distinct infrastructure and planning needs for different groups of informal workers, such as street vendors, domestic workers, construction workers, gig workers, waste workers, and so on.
- This specifically includes highly prevalent and locationally dispersed informal work in TN, such as construction work, waste and sanitation, domestic work, gig work, as well as small manufacturing, and home-based work.
- In Chennai, 25% of workers have no fixed workplace (examples: gig work), while 28% have multiple fixed workplaces (examples: vendors).
- Concentration of professional and skilled workers in fewer workplace locations, while unskilled workers are more dispersed. This dispersed nature of the economy is neither recognised in planning nor accompanied by the provisioning of infrastructure.
- Resettlement of both housing and market areas disrupt livelihoods and have economic implications for low-income workers
- In core city areas, workers in informal manufacturing and in small-scale retail trade reside in close proximity to work-locations.
- Resettlement comes with economic disruptions affecting access to employment
- These disruptions are exacerbated by weak public transportation that is sporadic, time and cost intensive, and impose limits on carrying equipment and goods.

Inequality and Vulnerability

Persistent spatial inequalities in income, access to employment, and environmental vulnerabilities

- Income levels and wealth are higher in South and Central Chennai when compared to North Chennai, which has significantly lower income levels. North Chennai also faces significant employment, infrastructural and environmental vulnerabilities compared to the central and southern regions.
- These vulnerabilities are exacerbated by proximity to toxic industries, fear of displacement due to port expansion, and being disconnected from employment centres in core city area via public transport.
- In South Chennai, high and low wealth neighbourhoods are often co-located with varying access to jobs, infrastructure and quality of life indicating presence of higher inequality compared to rest of the city. Residents of low-income areas in South Chennai often have to travel farther distances to access employment and face more impacts to incidents of flooding in South Chennai compared to richer areas.
- The expansion of the IT corridor has increased real estate interest in this part of the city, leading to gentrification and inadequate provision for informal economies and workers.

Environmental Risks

The city's ecological systems have been significantly affected due to urban development posing future risks to economic growth and investment

- Many newer economic areas are located in ecologically sensitive areas
- Several proposed investments and projects are also located in proximity to environmentally sensitive areas
- Increase in extreme events resulting in flooding have emerged as a key issue for both industries and residents in the city
- This issue could be exacerbated with future expansion and further densification, if not aligned to the hydrological system of the city
- The southern part of Chennai city consisted of the large Pallikaranai marsh, smaller wetlands and large tracts of pastureland (Vencatesan, cited in Arabindoo, 2017). Over the years, these wetlands have been built upon to accommodate real estate, industrial, housing and infrastructure development (Arabindoo, 2017).
- Traditional water body systems called Erys have undergone zoning reclassification to commercial, residential or industrial uses as the city has grown (Arabindoo, 2017). 1980s, Chennai had over 600 water bodies. Of these, few remain. The area under 19 major lakes has halved, from 1,130 hectares in the 1980s to around 645 hectares in the early 2000s (Arabindoo, 2017).
- These changes to the city's hydrological systems have also been associated with groundwater depletion. The results have been felt in terms of increases in flooding events, as well as water scarcity in the city-region.

5. RECOMMENDATIONS SUMMARY

The following section presents the full set of recommendations mapping to the Key Findings from the previous section. These recommendations address key challenges of economic growth, development, equity and sustainability that have arisen from our study, and also include recommendations for other government departments besides CMDA. In the subsequent sections (Sections 6 and 7), we further narrow down these recommendations to present those specific to the Third Master Plan.

ECONOMIC DEVELOPMENT

1. Growth and Employment

CMA region's economy is growing more rapidly than the state economy, but increasing output rate is not matched by equivalent increases in quantity and quality of employment

RECOMMENDATIONS

1.1. Economic Approach to Planning

Rapid growth in the CMA region requires urban planning to incorporate an economic approach to anticipate and provide housing and infrastructure needs of enterprises and workers. Economic prioritisation needs to recognise economic diversity and support high-value service economies, as well as MSME clusters, informal economies and workers, expanding its current focus on the large-scale manufacturing economy. CMDA must work with urban planning authorities and industrial departments, and establish a system which uses economic data for evidence-based planning and decision-making.

1.2. Employment Growth Approach

Policy focus should facilitate high-value service sector related economies and attract both quality and quantity of jobs that provide high productivity for the economy. In parallel, planning and policy must provide in-situ support for existing low-value, high employment service economies in mixed use zones.

1.3. Recognise, Support, and Encourage MSMEs

Recognise the key role played by MSMEs in supply chains, and use a data-backed approach to map MSMEs and assess their land and infrastructure needs. Support existing MSME clusters (Arumbakkam, Guindy, etc) and encourage future growth by allocating zones, land and resources around formal industries promoting agglomeration.

1.4. Recognise and Integrate Informal Work

Over 45 percent in Chennai work informally. There are many distinctions within informal work and these forms are often locationally dispersed. Workers require recognition, upskilling, educational support, improved living conditions and a higher quality of life.

2. Workforce Characteristics

The local workforce is highly skilled but faces challenges such as ageing and low levels of female workforce participation rate. In the future, the region may need to adapt its economic growth to these changes

2.1. Sectoral Strategy

The city-region needs to adapt its economic growth to the strength of the local workforce, while mitigating challenges arising from an ageing workforce, low female workforce participation, and the need for higher skill jobs.

2.2. Invest in Skilling

Invest in skill development programs for existing and migrant workers to facilitate upskilling, mobility and adaptation to sectoral shifts and changing patterns of work. Skill centers can be included in urban amenities and located in proximity to labour hubs, resettlement colonies, residential hubs and transportation nodes. In parallel, boost connections between educational institutions and economic enterprises.

2.3. Boost Female Labour Force Participation

Increasing female labour force participation can serve as a major growth driver. A favourable ecosystem can create more employment opportunities for women, while ensuring quality of employment through education and training, following mandatory provisions for maternal leave, POSH, childcare centres, and so on.

2.4. Improved Recognition and Support for Migrant Workers

Strengthen inter-city connectivity to the economic hubs of the city to support the intra-state migrants and reimagine housing provisions for all migrant workers. Include options for family housing with adequate social infrastructure support.

2.5. Improved Recognition and Support for Itinerant Workers

Provide state support to gig workers to access personal insurance, social protection and delivery vehicles. Planning should address the social and physical infrastructure needs of itinerant workers to create a better working environment.

3. Housing and Infrastructure

Employment growth is not matched by public and private investments into housing and infrastructure

3.1. Create, Repair, and Renew Mixed Housing Stock in Mixed Use Zones

The shortfall in housing must be met with viable and affordable mixed housing in diverse formats - shared, rental, dormitories, night shelters, etc. Affordable housing zones are required too. For low income populations, resettlement must be discouraged as it brings economic disruptions. Supply of mid to high end housing also needs to be increased through TOD and TDR with locational inputs from the Housing Study.

3.2. Infrastructure and Services must Accompany Low-Income Housing

Special attention needs to be given to infrastructure deficits in low-income housing areas. This includes resettlement housing, in-situ redevelopment projects, and new housing for the poor. Tenure rights are critical for residents to upgrade their housing, and help recognise residential spaces as places of work for informal workers.

3.3. Upgrade and Contextualise Infrastructure in the City

Provide dedicated social and labour-focussed infrastructure and social amenities to support the needs of informal economy workers, especially women, gig, and home-based workers. Economic needs differ and economic infrastructure such as labour nakkas, vending zones, storage spaces are often missing in the Master Plan. These must be climate-proof and weather resilient.

3.4. Transport

Improvements in road infrastructure, cross sections, and public transportation are required. Bus and metro routes need optimisation and should be complemented by an already functional network of mini-buses. Adequate parking for two-wheelers will create last-mile connectivity. Dependency on private vehicles can be lowered through improved and inclusive access to public transportation. Investment in parking spaces for gig workers, and expanded transport amenities are required. Improved data systems and real time tracking will help in route planning and connecting residential areas with economic hubs.

ECONOMIC GEOGRAPHY

4. Economic Transformation of Core

Nature of economy and employment in the core city is transitioning and leading to a transformation of economic space

RECOMMENDATIONS

4.1. Recognise and Support Economic Diversity in CMA's future growth

Nature of economy and employment in the core city is transitioning and leading to a transformation of economic spaces. Planning approaches need differentiated strategies. High end Service Sectors have specific requirements, older estates require revitalization, core areas need physical and social infrastructure upgrades, while informal economy spaces require amenities and spaces such as vending zones and flexible community and storage spaces.

4.2. Improve Public Transport Connectivity

Gauge commuting patterns to improve public transport connectivity to existing and upcoming economic growth and employment intensive areas. In the core, transform transport nodes and hubs into favourable locations of work for informal sector workers.

4.3 Create, Repair, and Renew Mixed Housing Stock

Chennai is experiencing significant peripheral expansion in a radial pattern, with industrial growth and investment, and emerging gaps in housing and infrastructure. There is a high level of spatial dependency on the core. Upper management and workers in the periphery often live in the core; lack of social infrastructure in the periphery implies that blue-collar workers travel for basic services.

5. Industrial Growth and Expansion in Periphery

Chennai is experiencing significant peripheral expansion in a radial pattern, with industrial growth and investment, and emerging gaps in housing and infrastructure

5.1. Recognise Spatial Dependency on Core and Create Counter-Magnet Interventions in the Periphery

Chennai is experiencing significant peripheral expansion in a radial pattern, with industrial growth and investment, and emerging gaps in housing and infrastructure. There is a high level of spatial dependency on the core. Upper management and workers in the periphery often live in the core; lack of social infrastructure in the periphery implies that blue-collar workers travel for basic services.

5.2. Recognise and Prioritise needs of Vulnerable Workers

Manufacturing clusters in the periphery are high GDP and employment locations but require support to improve quality of employment as well as life for vulnerable workers. The state has progressive social protection, but norms need to be revisited and reformed. In addition, plans need to recognise, anticipate and consider the multiplier effect of manufacturing clusters. These clusters attract small scale ancillary enterprises and service populations (food, retail, maintenance, etc). Integration must include thinking about climate adaptive and disaster resilient solutions.

5.3. Integrating Investment Promotion with Urban Planning

Guidance and Industrial promotion departments need to work with CMDA to integrate aspects such as land suitability analysis, carrying capacity, and planning processes to improve housing and infrastructure are likely to provide a fillip for future investment.

5.4. Balancing Investment with Sustainability

Demand for land must be balanced with concerns for sustainability. Environmental and development impact studies need to be integrated, and ecologically-sensitive zones require very strict norms for use. Bottom-up, and community-led development models can be considered in such areas.

5.5. Create Complete Neighbourhoods

Consider planning mechanisms to incentivise in-fill development around growth nodes moving away from ribbon development. Densification is a key motive of the third master plan and must be accompanied by improvements in infrastructure capabilities.

6. ECR-OMR a Growth Hub for IT

ECR-OMR is emerging as a key area for high-income housing and service sector economies. However, these developments are also increasing inequalities in this region.

6.1. Prioritize Low-Income Housing along IT Corridor

In the IT-Corridor, state intervention in housing is an urgent requirement. The state may consider instruments such as ToD to incentivize both private and government developers. Sanction fee waivers and additional waivers are other innovative solutions.

6.2. Provisioning for Infrastructure to support Economic Diversity

Rapid development and an advent of jobs have created an urgent need for basic and social infrastructure, including vending zones, mixed-use retail spaces, and recreational spaces such as green spaces, and cultural centers. For lower income groups - creches, public sanitation facilities, critical infrastructure such as amma canteens and anganwaadis.

6.3 Building Transport Linkages and Last-Mile Connectivity

Sustaining growth and accounting for economic diversity requires design and integration of multiple modes of transport systems. Private-public partnerships with IT Parks can be built to address last mile connectivity for workers.

6.4 Balancing Investment with Sustainability

The IT corridor is located in proximity to Pallikarnai marsh, making it an ecologically sensitive region, and one that is prone to flooding. Balancing investment with sustainability is critical. Environmental and developmental impact studies have to be made mandatory. Additional IT locations along the proposed TOD corridors with higher densities can be considered as alternatives to building in environmentally sensitive zones.

7. Ports as key infrastructure

Ports and related logistics industries facing constraints due to congestion (both within and outside port areas)

Ports and related logistics industries face constraints due to congestion. Alternative routes may be considered to ease movement of goods between ports and industrial areas.

Roads for port-related traffic can be segregated to avoid congestion. The CMP study has strategies for freight transportation.

EQUITY AND SUSTAINABILITY

8. Informal Economy

Inadequate recognition and support for informal economy and informal workers in Chennai

RECOMMENDATIONS

8.1. Recognising and Integrating Informal Work

Over 45% of Chennai's workers work informally yet lack recognition and support. They are dispersed in terms of housing and work locations. An enumeration and spatial mapping of workers and activities is a precursor to integration into planning processes. These processes must include worker groups and organisations, and should be followed by infrastructure provisioning, and upgradation across work and housing spaces.

8.2. Create, Repair, and Renew Affordable Housing Stock

The plan must suggest creation, repair, and renewal of affordable housing, across the city, with priority given to work locations. Diverse housing options socio-economic groups must be considered, and resettlement must be deprioritised.

8.3. Prioritise Transportation and Connectivity for Informal Workers

Grant provisions for subsidies on transport modes, and allowances for carrying goods.

8.4. Improve and Contextualise Social and Economic Infrastructure

Decentralised socio-economic, care, health and educational infrastructure is pivotal. All infrastructure, along with vending zones, construction sites, and other spaces of work must be made weather and climate resilient.

9. Inequality and Vulnerability

Persistent spatial inequalities in income, access to employment, and environmental vulnerabilities

9.1. State-led Investment Following a Participatory Approach for North Chennai

Persistent spatial inequalities between North Chennai and South and Central Chennai exist in income levels, access to employment, infrastructure, and environmental vulnerabilities. The North requires systematic state-led investment using a bottom-up, participatory approach. Improving socio-economic and basic infrastructure, preserving and expanding community spaces, and enlarging economic opportunities are priorities.

9.2. Address Gentrification and Arising Spatial Inequalities, Especially in the IT Corridor Region

High-value service economies need to recognise economic dependencies on services provided by low-wage and vulnerable workers. Reserving land for affordable housing and other informal economic uses, as well as community spaces is required. Mixed housing, and comprehensive social and physical infrastructure will help promote inclusive urban development.

10. Environmental Risks

The city's ecological systems have been significantly affected due to urban development posing future risks to economic growth and investment

10.1. Climate Mitigation, Adaptation and Resilience is a Key Pillar for Chennai's Third Master Plan

City's ecological systems have been significantly affected due to urban development posing future risks to economic growth and investment. Sustainability measures need to include conservation of ecologically sensitive regions, rejuvenation of blue-green infrastructure, planning for climate-resilient infrastructure, and a shift away from private modes of transport. The Master Plan must balance demands of ecological sustainability with requirements of sustaining economic growth. Ecological considerations must be prioritised in land-use planning. At the project scale, the plan must ensure environmental and social assessments for investment projects in proximity to eco-sensitive areas.

10.2. Protect Hydrological Systems

Mapping and prohibiting real-estate and commercial developments in marshes, erys, and other water-bodies.

10.3. Environmentally Viable Solutions for Informal Settlements

Recognise inter-connections and role of informal settlements in conservation of water bodies. Instead of resettlement, adopt in-situ approaches.

10.4. Explore Sustainable Livelihood Models for Vulnerable Workers

Models must explore and support the livelihoods of vulnerable workers. Use care infrastructure in the form of community kitchens and anganwadis, and provide support to specific work such as small-scale fisheries.

10.5. Integrate Climate Resilience Measures in Housing and Infrastructure

Provide heat shelters, and climate proofing for workers and workplaces of informal workers. Infrastructure planning and building regulations must be upgraded to incorporate principles of climate resilience.

6. FRAMEWORK AND APPROACHES FOR INCORPORATING ECONOMIC PLANNING IN CHENNAI'S THIRD MASTER PLAN

In this section of the report, we detail our framework and approaches for incorporating economic planning in Chennai's Third Master Plan. These are spelt out in three sections: (a) Recommendations framework for economic enumeration and analysis in Master Plan Preparation, (b) Recommended methods for economic enumeration and analysis in Master Plan Preparation, and also (c) Recommended list of economic amenities for different urban area typologies in Chennai with recommended suggestions regarding Zoning and other Master Planning instruments. Following this, we provide a summary of economic amenities, which we recommend are incorporated into the Master Plan, in line with the city's economic geography and spatialised according to the different area typologies, identified based on our economic geography analysis.

6.1. Recommendations Framework for Economic Enumeration and Analysis in Master Plan Preparation

While Master Plans may designate areas for economic activities under zones such as industrial, commercial, institutional, etc. there is a lack of recognition of the economic nodes and networks that exist across land uses and the diversity of economic activities that are accommodated within each land use zone in the city. For example, residential areas are typically not seen as places of economic activity. Overlooking the economic geography across land uses leads to failures in recognising the needs of economic actors and workers across economic sectors and their particular spatialised needs.

Further, while formal employment receives recognition, informal and emerging forms of transient labour—such as gig work—remain relatively unrecognised and their needs are often not addressed, as a part of a Master Plan, despite their role in holding up and often cross-subsidising the formal value-chain of commodity production within an urban economy, along with their role in providing labour for service jobs, care work, food economy, repair economy, etc. which help the long-term social and economic reproduction of a city.

These gaps are reflected in Master Planning instruments and methods, such as zoning and development regulations, population and area benchmarks for amenities (such as health, education, recreational), which are primarily based on residential population. Even within work-centric zones of industrial, commercial, and institutional uses, Master Plans do not account for and make provisions for supporting amenities that workers require.

While preparing the next Master Plan for Chennai, there is an opportunity to address these gaps by centering the focus on workers and their diverse economic needs through (re)formulating the zoning and development regulations, key instruments of Master Plan implementation and enforcement.

This section outlines the approach to incorporate needs of workers and economic activities within the master planning framework. Planners are suggested to undertake the following measures:

6.1.1. Map and Enumerate Diverse Economic Activities:

Although economic development is at the center of policy discussions at the national and state level their relationship to spatial city-level Master Plans, and other development processes and outcomes at the city level remain relatively undefined. It is imperative for planners to incorporate and address the diversity of economic activities, their functioning, and their spatial dependencies with the different areas within a city to ensure that the act of planning does not disrupt these diverse activities and rather allows for the preservation and growth of jobs and economy in a sustainable manner.

To make this possible, our first recommendation is that CMDA enumerates these activities as a part of the Master Plan base map preparation process and Master Plan calculation processes. In the next section on Methods in this chapter, we have highlighted our recommendations regarding how this can be done – i.e. undertaking an enumeration of the types of economic activities that the SDEIC study identified into the

process of the next Master Plan preparation. We understand that this exercise has to be pragmatic and structured such that CMDA can continue the exercise on an ongoing basis. For this, the method we propose draws on data bases collated by the CMDA and other government departments and therefore relatively easily available and decipherable as a part of the Master Planning process.

6.1.2. Calculate and Provide Space for 'Economic Amenities' Related to Needs of Workers and Economic Activities:

Our second recommendation is that a process to calculate and allocate space for "economic amenities" is incorporated into the Master Plan, which addresses different types of economic activities and workers, and is based on the distinct nature of different occupations. For example transient labour, like taxi drivers, food delivery agents, etc. need climate responsive resting spots equipped with drinking water facilities, toilets, mobile charging stations. Such economic amenities must be permissible and must have space delineation in different zones.

URDPFI guidelines delineate amenities based on population density of a neighborhood, ward and city level. While this method of distribution, followed by master plans of several cities, is good for allocation of amenities for residential population at different scales, it does not account for amenity needs of workers which we are calling as 'economic amenities'. Master plans must draw up a similar distribution pattern based on worker density and travel distance to the economic amenities at the neighbourhood, ward, subcity, city level. Therefore we recommend that the method used to calculate requirements of 'economic amenities' in a Master Plan, should be linked to spatial scale (and hierarchy such as neighbourhood, zone, city) and proximity to economic nodes and networks. As mentioned, a later section of this report provides the details of our suggested recommendations regarding 'economic amenities'.

Some projects that reflect the vision of our recommendation regarding 'economic amenities' are already underway in Chennai- for example GCC's rest-stops for gig-workers and CMDA's initiative to repurpose public libraries as co- working spaces. There is need to take a comprehensive approach towards such 'economic amenities' and integrate and scale- up these interventions being taken up as pilot projects through a systematic Master Plan based approach, by making use of planning instruments, such as zoning and development controls. Again, in the third section of this chapter, we have provided our suggested recommendations regarding economic amenities, based on the SDEIC study, to be incorporated into the Third Master Plan.

6.1.3. Approaches for Implementation and Enforcement of 'Economic Amenities':

The Third Master Plan needs to incorporate approaches to allocate / reserve space for 'economic amenities'. Approaches for this could include land reservation and demarcation on the plan, exaction of large parcels of private land, with incentives linked to incremental FSI, in lieu of land transfers, etc. 'Economic amenities' could either be co-located as a larger multipurpose economic centre on a larger land parcel or separate amenities could be provided on relatively smaller land parcels in a decentralized manner. While existing layouts might need to retrofit these amenities into existing public buildings or parks and open spaces, permissions for the development of future layouts could incorporate these land requirements and incorporate them into the planning process.

Depending on the area, the amenities are envisioned to be provided through either retrofitting, redevelopment, or new development.

- New Development through Projectisation: Larger multipurpose economic centres may require projectisation and allocation of funds for development.
- Acquiring & retrofitting existing building for economic activities
- New Development through provisions of Development Control Regulations. DCRs could be developed to build public economic amenities through a public private partnership process or mandates.

Given the wide range of amenities that are required to support different economic activities, their implementation and provisioning would also require participation from various stakeholders, besides CMDA, including local bodies, industrial development authorities, market and trade associations, even residents' welfare associations, and so on.

While at a smaller scale, retrofitting can be approved and enforced by the local bodies; it is imperative that CMDA is responsible for all redevelopment and new area development projects, where new layouts will be

prepared in accordance with the Master Plan. Participation of the private sector can be ensured through building in these requirements in their license and registration, either new ones or renewal. This would require an advocacy role from CMDA with all the relevant authorities and agencies.

The responsibility of overall monitoring and evaluation should also be held within the CMDA, alongside overall monitoring and evaluation of the Master Plan provisions.

6.2. Recommended Methods for Economic Enumeration and Analysis in Master Plan Preparation

Based on the analytical work and stakeholder interviews carried out as part of this study, the economy in the city is influenced by (a) The nature of the local economy (size-based, sector-based), (b) Co-location of other uses (mixed or homogeneous) and (c) Location of the industry (Core, Periphery or in Transitioning Areas). Our earlier reports have highlighted the key economic characteristics, opportunities and challenges associated with each of these three criteria on Chennai's urban economy. Based on this, we recommend that CMDA adopt a typology based approach in the Third Master Plan to address the economic needs of the city and target the needs of different economic sectors.

Since the nature of the economy and employment across these areas is diverse, they also have different infrastructure and amenity needs. There is critical need to spatialise these areas in order to make a plan for overall and targeted interventions. For this, as mentioned earlier, there is need for mapping and enumerating the economic clusters in the city. The mapping and enumeration will enable CMDA to gain a deeper understanding of the diverse forms of economic activities taking place in various parts of the city and formulate Master Plan instruments to guide retrofitting and redevelopment of existing areas, and the planning for new economic areas and residential neighbourhoods. For this, we propose a typology based approach described in the next sections.

6.2.1. Mapping and Enumeration

Mapping and enumeration is the first critical step to this typology-based approach. CMDA can do so through the following approach:

- a. Spatialising administrative data available with CMDA on building permits and other layers collected as part of the input process.

CMDA currently has data on building permits and land use dating back to 2006 with categorisation across layouts, multistory (MSB), industrial (channel-c), MSB-IT, etc. Spatialising the building permits data can allow CMDA to first-hand track the development taking place in Chennai. Since CMDA collects detailed information on individual developments along with use, this data could help them address both the data gaps of upcoming and existing economic activities along with development trajectories of neighbourhoods in the city. The data on building permits and land-use mix suffice covers most formal economy related development taking place in the city.

- b. Physical survey of neighbourhoods conducted as part of the Master Planning exercise

CMDA can further improve the process through the physical survey being done as part of the Master Plan process. The physical survey can be used in identifying co-location (based on compatibility) of economic activities with population density, land use mix, building typology, age, and street networks. This will help CMDA identify the built-form for the various typologies and help better target interventions to be in alignment with the local built environment.

- c. Enumeration of informal and transient economies in the city to identify their locations and scale of economic activity.

While majority of the formal clusters can be identified through the administrative data available with CMDA, to integrate informal and transient economy into the planning frame, there is a need to enumerate such economic clusters. This is a critical step for the plan to address economic needs of the city, considering almost 45% of jobs in the city belong to these categories. CMDA can conduct enumerations in identified low-income settlements, resettlement colonies, transport hubs, labour nakas, waste sites, fishing hamlets, etc. to understand the extent and nature of employment in such areas.

d. Using density-based secondary identifiers to identify scale of economic neighbourhoods.

While the administrative data helps identify clusters, CMDA can use population density and employment density metrics to identify the scale of clusters, which will further help understand the intensity and catchment areas of different economic typologies. By overlaying population density data with employment density estimates from the input study, CMDA can establish threshold densities for different economic neighbourhood categories. This approach enables the classification of areas into micro-clusters (serving immediate local needs), meso-clusters (serving ward or zone-level demands), and macro-clusters (serving city-wide or regional functions). Additionally, density inputs can help identify transition zones and mixed-use areas (especially for informal clusters) where economic activities blend with residential uses. These density-based classifications will inform appropriate benchmarks for infrastructure requirements, and regulatory frameworks tailored to the specific scale and intensity of economic activity in each typology.

Most formal economic activities (trade, manufacturing, service) in the city can be mapped and estimated through a combination of administrative data and physical characteristics. Residential-servicing economies, such as domestic work, street vending, security, etc. can be estimated through population density and housing typologies. However, the primary enumeration process is critical to identify vulnerable and transient economies in the city, which are undocumented and are often in the most critical need for recognition, infrastructure and amenity needs. Table 4 below summarises the existing landscape of mapping workers across different economic areas. As seen in the table, while a majority of existing formal industrial/service clusters are already being mapped (or have potential to be mapped), there is a big data gap in the informal sector which is critical for the master plan to address through enumeration.

Worker Category	Economic Nodes	Locations in Chennai	Type Category
Industrial	Large Industrial Area	WIMCO Nagar (Core), Maraimalai Nagar (Core), Manali (Core), Sriperumbudur-Oragadam (Periphery), Gummidiyondi (Periphery), MEPZ (periphery).	Data exists and spatialised for location, employment and sectors.
	Old Industrial Estates in Core	Ambattur, Guindy, Perungudi, Kodungaiyur, Villivakkam, Arumbakkam, Tiruvanmyur,	Data exists and spatialised for location, employment and sectors.
	Mixed Industrial and Residential (Informal Manufacturing)	Vysarpadi, Appalam, Egmore, Kosapettai, Low-income settlements located in buffer areas around industrial estates.	Data does not exist. Needs enumeration
Commercial	IT Corridor	ECR-OMR, Siruseri SIPCOT, Taramani, Mahindra World City, Fintech city* (Large Scale) Perungudi, T-nagar, CBD (MSMEs).	Data exists and partially spatialised for location, employment and sectors. Potential to spatialise MSMEs via Udyam portal.
	Business Districts	Anna Salai, Mount Road.	Data exists and spatialised for locations. Potential to spatialise employment via permits, licenses, MCA and UDHYAM portal.
	Transitioning mid-high end residential to mid-high end commercial	Anna Nagar, Adyar, RA Puram.	Data exists but not spatialised.
Market Areas	Traditional	George Town (Old City, Mixed Housing - Commercial - Logistics Area), Parry's corner, Sowcarpet, Triplicane, Moorthy Nagar,	Data exists on location but not spatialised. Potential to spatialise employment via licenses and UDHYAM portal.
	Wholesale Markets	Koyambedu, Thirumazhisai, Sathangadu.	Data exists on location but not spatialised.
Residential Areas	High to Middle Income	Such as Alwarpet, T Nagar, Besant Nagar, Nugambakkam, Adyar, Poes Garden.	Data exists but not spatialised. Potential to spatialise through CMDA building permits.
	Low Income and Informal Settlements	Saidapet, Vysarpadi, Locke Nagar, Puliyanthope, Giriappa Road (behind AG DMS metro station), Raja Pilai Thottam (T Nagar), KM Garden (Puliyanthope).	Data does not exist. Needs enumeration.
	Resettlement Colonies	Kannagi Nagar, Semmenchery, TNUHDB sites.	Data does not exist. Needs enumeration.
Special Economic Clusters	Labour Nakas and Construction Sites	IT and residential real estate (OMR, Shollinganallur, Taramani, Thoraipakkam, Guindy Pallavaram, Guindy, Koyambedu, Porur Junction) Industrial and logistics (Ennore, Manali, Madhavarmpet) Metro corridors - Current and upcoming Government infrastructure projects like roads, housing, flyovers etc.	Data does not exist. Needs enumeration.
	Fishing Hamlets, Markets, Harbours and Ports	Urban beachfront fishing settlement - Loop road, Santhome, Nochikuppam, Dooming Kuppan, Besant Nagar- Urur Olcott, Thiruvamyur.	Data does not exist. Needs enumeration.
	Sanitation and Waste Work	Dispersed across the city, work sites are concentrated around landfills and waste collection (Kodungaiyur, Perungudi, Vysarpadi, Perumbakkam), waste segregation centres, sewage treatment plants, desludging facilities, etc. and residential areas are in low-income neighbourhoods.	Data does not exist. Needs enumeration.
Mobile and Itinerant Work	Gig and Platform work	Dispersed across the city, but with concentrations around high density commercial areas, service sector hubs and transport hubs, and near dark store locations in the city.	Data does not exist. Needs enumeration.
	Street Vending	Dispersed across the city, but with concentrations around high density commercial areas, natural markets and vending zones, and service sector hubs and transport hubs.	Data does not exist. Needs enumeration.

Table 4: Data landscape for Economic areas in Chennai

6.2.2. Process for Typology Creation

Using the datasets described above, we suggest a three step process-based approach, detailed below, to identify nature of economy in a neighbourhood. A detailed description of the identifiers mapped from the mapping and enumeration has been detailed in Table 5.

Step 1: Identification of Local Economies

The economic geography of Chennai superimposed across land use categories may be broadly classified into the following six area typologies:

1. Industry Areas (Large Industrial clusters such as Sriperumbudur, MSME clusters such as Ambattur, and Informal manufacturing clusters such as Vyasarpadi),
2. Commercial Areas (IT clusters such as ECR-OMR, Business Districts such as Anna-Salai, and Transitioning mid-high end residential to mid-high end commercial such as Anna Nagar)
3. Market areas (Traditional markets such as George Town, and Wholesale markets such as Koyambedu),
4. Residential-based typology (High-income housing areas such as Anna Nagar, low-income/ slum areas and Resettlement areas such as Vyasarpadi, Locke nagar, and Kannagi Nagar),
5. Special Economic Clusters (Labour nakas and construction sites, fishing Hamlets, sanitation, waste work, areas surrounding harbours and ports), and
6. Mobile and Itinerant Work clusters (bus and railway stations and terminals, vending zones, and gig and platform workers).

All of the above typologies have distinct economic and employment characteristics, which can be classified using the data sources listed in the previous section. Many neighbourhoods might fit more than one typology and may need to be classified in the mixed use categories, to address the needs of the particular mixes. The distinct identifiers for each of these typologies has been mentioned in the table below.

Economic Neighbourhoods			Economic Characteristics		Key Identifiers			Secondary Identifiers							
Typology	Classes	Example Locations	Type of Economy Present	Type of Employment Present	Building Permits	Licences	Building Age, Size and Street Width	Population Density	Employment Density	Land Use Mix					
Industrial Areas	Large Industrial Area	Core: WIMCO Nagar, Maraimalai Nagar, Manali Periphery: Sriperumbudur-Oragadam, Guymmidipondi, Manallur, MEPZ	Manufacturing Industries	Factory Workers	Industries Permits (Channel-C)	Industry Permits (above 1 acre)	Industrial Estates, Sheds, Proximity to Highways	Low	High Manufacturing	Low					
	Old Industrial Estates in Core	Transitioning to IT: Ambattur, Guindy, Perungudi, Tiruvanmyur Manufacturing MSMEs: Kodungaiyur, Villivakkam, Arumbakkam	Manufacturing Industries, IT Industries	Factory Workers, IT Workers	Industries Permits (Channel-C)	Industry Permits (under 1 acre)	Industrial Estates, Sheds	Low - Medium	High Manufacturing	Low					
	Mixed Industrial and Residential (Informal Manufacturing)	Vysarpadi, Appalam, Egmore, Kosapettai	Small-Scale Manufacturing	Welders, Tailors, Pottery etc.	Through Enumeration			Medium - High	High Manufacturing	High					
Commercial Areas	IT Clusters	Large Scale: ECR-OMR, Siruseri SIPCOT, Taramani, Mahindra World City, Fintech city MSME: MGR Estate, Perungudi, T-nagar, CBD	IT	Professional Services, Support staff, F&B	IT MSB permits	Shops & Establishments act, MCA registration, UDHYAM portal	High Rise Office Spaces, IT parks	Low - Medium	High IT	Low					
	Business Districts	T Nagar, Anna Salai Road, Mount Road	FIRE	Professional Services, Support staff, F&B	MSB permits	Shops & Establishments act, MCA registration, UDHYAM portal	High Rise Office Spaces	Medium	High Commercial	Medium					
	Transitioning Mid-high End Residential to Mid-high End Commercial	Anna Nagar, Adyar, RA Puram	Restaurants, Retail, Office spaces, Vending	Street Vendors, Professional Services, Informal Services	Land-Use conversion from Residential to Commercial	High concentration of Trade Licenses	Small Buildings, Wide Street	Medium - High	Medium Commercial	High Mix (Residential-Commercial)					
Market Areas (Traditional, Wholesale Hubs, Retail Clusters)	Traditional	George Town, Mylapore, Parry's Corner, Sowcarpet, Triplicane, Moorthy Nagar Old City areas, Areas with Mixed Housing, Commercial and Logistics Uses	Specialized Markets, Small Trade Business, Logistical Hubs	Goods Movers, Street Vendor, Food Sellers, Physical Labour, Rickshaw Pullers	Non High Rise Buildings	High Concentration of Trade Licenses	Old Buildings, Small Buildings (G+2), Narrow Streets	Medium - High	High Commercial	High Mix - Commercial Dominant					
	Wholesale Markets	Koyambedu, Thirumazhisai, Sathangadu	Specialized Markets, Small Trade Businesses, Logistical Hubs	Vendors, Goods Mover, Transport Workers	CMDA Approved/Built Markets	High Concentration of trade licenses, Street vending licenses	Market Complexes	Low	High Commercial	Low					
Residential Areas	High-Mid Income	Alwarpet, T Nagar, Besant Nagar, Nugambakkam, Adyar, Poes Garden	Informal Services	Domestic Workers, Street Vending	CMDA MSB Residential Permits, Layout Permits	Needs Enumeration		Medium - High	Low	Low (Primarily Residential)					
	Low Income and Informal Settlements, as well as Resettlement Colonies	Saidapet, Vysarpadi, Locke Nagar, Puliyanthope, Girippappa rRoad (behind AG DMS Metro Station), Raja Pillai Thottam (T Nagar), Kannagi Nagar, Semmenchery, TNUHDB Sites	Informal Manufacturing and services, Homebased Work	Home Based Industries, Small Scale Businesses, Street Vendors	Needs Enumeration			High	High	High					
Special Economic Clusters	Labour Nakas	Labour Nakas IT and Residential Real Estate: OMR, Shollinganallur, Taramani, Thoraiapakkam, Guindy Industrial and Logistics: Ennore, Manali, Madhavaram Metro Corridors (current and upcoming) Infrastructure Project Locations (roads, housing, flyovers etc.)	Construction Workers, Physical Labourers	Needs Enumeration											
Special Economic Clusters	Fishing Hamlets	Urban Beachfront Fishing Settlement: Loop Road, Santhome, Nochikuppan, Dooming Kuppan, Besant Nagar- Urur Olcott, Thiruvamyur Northern Chennai Coastal Industrial Zone: Ennore, Nettukuppan,N4, Nettu Kuppan, Thazhan Kuppan, Katru Kuppan, Ennore Kuppan, Mugathuvara Kuppan, Sivanpandaliveethi Kuppan, Periyakuppan, Chinna Kuppan	Fisherman	Needs Enumeration											
	Sanitation and Waste Work	Kodungaiyur, Perungudi, Vysarpadi, Perumbakkam Dispersed across the city, work sites are concentrated around landfills, waste segregation centres, sewage treatment plants, desludging facilities, etc, and residential areas are in low-income neighbourhoods	Waste Pickers, Segregators	Needs Enumeration											
Mobile and Itinerant Work	Vending Areas	Dispersed across the city, but with concentrations around high density commercial areas, service sector hubs and transport hubs, and near dark store locations in the city	Street Vendors	Needs Enumeration											
	Gig Work	Dispersed across the city, but with concentrations around high density commercial areas, service sector hubs and transport hubs, and near dark store locations in the city	Drivers, Transport workers	Needs Enumeration											

Table 5: Identifiers for different economic neighbourhoods

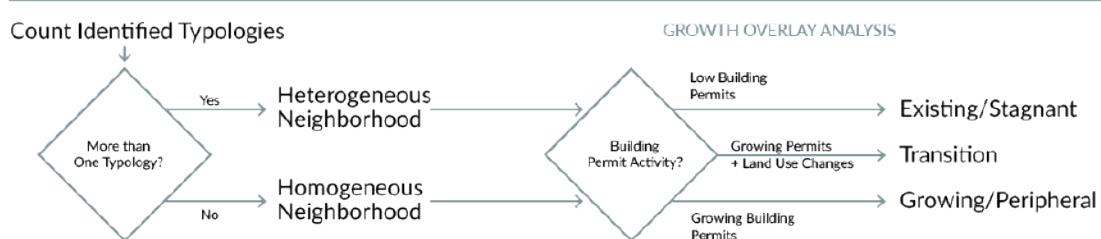
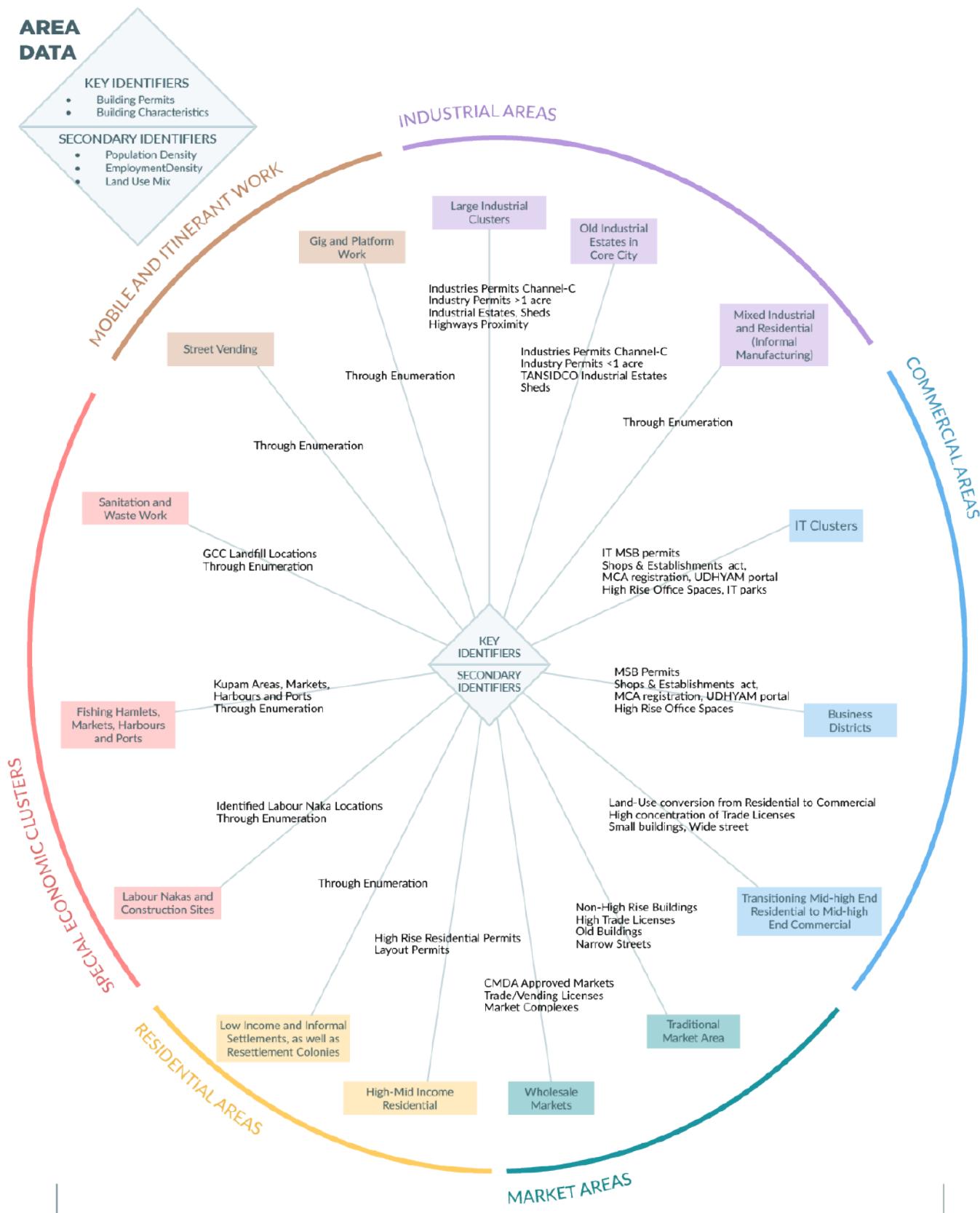


Figure 37: Process diagram to determine economic typologies

Step 2: Identifying Growth Patterns

In addition the Master Planning process would need to incorporate parameters to capture the growth pattern as a key input, to assess development trends being experienced by different areas and identify processes through which interventions can be delivered, while accounting for existing built environment and resource constraints. For this, our suggested recommendation to the CMDA is to use a two part approach, including a tracking of development permissions issued and a tracking of land use change requests, to identify the development trajectory.

The growth pattern can be classified into 3 categories:

- Existing Built/Saturated (completely built with low new permits being issued) : Areas that are already built, do not have vacant land and are not seeing any more building activity. These areas are ideally fit for Retrofit/ Redevelopment. (eg.: George Town, Anna-Salai Road)
- Growing/Peripheral (high building permits being issued): Areas that are experiencing greenfield development. These areas are ideally fit for land reservation and pooling mechanisms. (eg.: ECR-OMR, Poonamalee)
- Transitional (increased building permits and land use changes) : Areas that are transitioning from current uses to a different use and built form. These areas are ideal for redevelopment and retrofit mechanisms along with certain zoning and development regulations. (Eg.: Ambattur, Guindy, Anna Nagar etc.)

6.2.3. Monitoring and Evaluation

In order to track the Master Plan implementation and performance evaluation, we recommend a spatio-temporal approach using the data described in the mapping and enumeration section above. We also recommend that M&E framework may be spatialised at three levels:

- a. Local (neighbourhood scale)
- b. Meso (area including buffer areas around economic clusters - such as zone/ ward scale)
- c. Regional (GCC/ CMDA scale)

Since, majority of the data is administrative, we suggest that the monitoring and evaluation is scheduled on a continuous basis with a more holistic and comprehensive evaluation every five years, which could deploy surveys and satellite-based methods. The M&E framework is suggested in terms of the following three phases:

- a. Baseline Study - Current Assessment as part of the Master Plan process
- b. Continuous Evaluation
- c. Long-term implementation

The key indicators and metrics we recommend for M&E are as follows:

- a. Measuring Growth and Employment: Using data on building permits, business licenses, labour department registrations, there could be a tracking of the increase in number of sectoral workers on a rolling basis. Using data released by Department of Economics and statistics to measure increases in sectoral Gross Value Addition (GVA).

Metrics: Number of Workers (across neighbourhood, ward, GCC, CMDA area) in each sector, Gross Value Addition at district level for each sector

- b. Housing and Infrastructure: We recommend measuring current housing stock per capita across groups (EWS, LIG, MIG, HIG, Worker housing) for both rental and owned markets by housing quality (input study on housing could be used for baseline assessment). We also recommend measuring the per capita access to infrastructure amenities (public toilets, resting area, public spaces, etc.) using population and employment growth. CMDA could also use built area and building space across landuse as a proxy for population and employment density for continuous evaluation using new building permits being issued for residential and commercial purposes. Satellite based data-sources such as GHSL, also offer recent disaggregated population estimates.

Metrics: Housing stock availability by income group and housing quality, Per capita infrastructure availability (Service level benchmarks)

- c. Commuting: We suggest measures of congestion, public transport usage and trip length and time through collaboration with CUMTA. CMDA could use mobile data, mobility data from various transport providers to do this.
- d. Environmental: We suggest measuring of environmental indicators on a continuous basis by collaborating with TNSPCB on metrics of air quality and water quality (ground water and fresh water), local temperature. Further it would be useful to create a digital platform for businesses, workers and residents to report events of severe environmental events such as flooding, oil leaks, etc.

In order to continuously monitor, our suggested recommendations for building a data-collection, integration and monitoring mechanism, includes CMDA working with multiple actors collecting data in the city to be able to better track the development and economy in the city. Some datasets with immense potential for planning that could be integrated include:

- Digitising TNSTC Data and Private transport operators and integrating it with the One Card mobility initiative through CUMTA to be able to better track mobility in the region (especially peripheral areas).
- Digitising and using GST, UPI data to be able to track regional economy
- Using remote sensing and satellite based methods to track development and spatial growth pattern in the region.
- Working with multiple agencies to digitise and spatialise business licenses being issued in the city.
- Integrating alternative datasets such as electricity connections and mobile data to track active day/night locations and estimate density for workers and population.

6.3. Indicative List of Zoning and Development Regulations for Economic Amenities

The suggested recommendations regarding zoning and other Master Plan instruments to integrate economic amenities and other needs of workers across economic sectors have been provided in three parts.

- Identification of different types of economic activities that are located across different land uses (refer to Table 6).
- Suggested recommendations regarding economic amenities' requirements for different types of workers and work/ economic activities (refer to Table 7)
- Suggested recommendations regarding Zoning and Master Plan Instruments to support different economic sectors (refer to Table 8)

With reference to Table 8, please note that the suggested recommendations includes an indicative list of economic infrastructure and amenities for consideration in the next Master Plan of Chennai Metropolitan Area. It also includes details on activities and uses supported by each of these amenities, estimated population norm for these amenities, as well as the broader land use zones and locations in which provision of these amenities need to be prioritised.

These recommendations can be adopted/ adapted based on the broader provisions of the Master Plan under preparation, keeping the following principles in mind.

- Depending upon the location and distribution of economic activities, these infrastructure and amenities are to be planned and provided across scales - from street level to an area/ neighbourhood level to zonal and where necessary, even at the sub-city and city level.
- There needs to be a particular focus on neighbourhood/area level amenities, accessible within walking distance of 500m to 1km of places of work/ living.
- It is ideal to co-locate many of these amenities for ease of access and convenience. However, if there are space constraints, particularly in the existing built-up areas, these amenities can be provided in a decentralised manner.

Economic Activity ► Landuse Zones (based on current plan)	Home-Based Work*	Domestic Work/ Housekeeping /Security	Waste Work	Street Vending & Markets	Gig Economy Workers	Migrant Workers /Daily Wage Workers	Logistics-Traders/ Lorries/ IPTs	Small Manufacturing and Repair	Large Manufacturing	Fishing Activities
Primary Residential										
Mixed Residential										
Residential Resettlement (currently don't exist as a category)										
Residential Urban Villages (currently don't exist as a category)										
Commercial										
Institutional										
Industrial										
Special and Hazardous Industrial										
Open Space and Recreational										
Coastal Regulation Zone										
*All non-polluting activities/industries with permissible decibel levels as per the pollution control board must be permitted in residential areas and economic amenities supporting the same must be provided.										

Table 6: Economic activities located across different land uses

Economic Activity ► Landuse Zones (based on current plan)	Home-Based Work*	Domestic Work	Waste Work	Street Vending & Markets	Gig Economy Workers	Migrant Workers /Daily Wage Workers	Logistics-Traders/ Lorries/ IPTs	Small Manufacturing and Repair	Large Manufacturing	Fishing Activities
Multipurpose Community Work Space/ Multipurpose Community Hall	Common work areas and storage space in case of space constraints at home (could be used as community hall, meeting and functions space)		Sorting Areas							Boat Parking, boat repair areas
Multi-vehicle and Equipment Parking	Parking for Carts, wheelbarrows other moving equipment, small vehicle		Parking for wheelbarrows, waste pickup vehicles, and vehicle repair	Parking for vending carts, goods carriers	Parking for Vehicles for Platform work & e-bike charging stations-delivery, taxi, bike services etc. & vehicle repair			Trucks, lorries, other logistics parking, vehicle repair areas		Boat Parking, boat repair areas
Storage Areas	Storage areas for additional goods		Material storage areas and locker facilities							Cold storage space, locker facilities
Informal Trading & other Service Areas			Sale of recycle materials, ATMs for cash deposit-withdrawal	Retail/service areas and platforms (could be along streets) with infra for cleaning like community taps, waste collection, solar/electricity lamps, cash deposit ATMs						Sorting of the catch, packaging, sale points, cash deposit ATMs
Rest Areas		Climate responsive rest areas, toilets, drinking water, charging stations, changing rooms, atms, locker facilities								
Amma Canteens/Community Kitchens		Government/Community-run kitchens to supplement food requirements								
Emergency Centers		First Aid Clinic catering to work-specific injuries, Public Health Centres Fire Safety Services								
Maternal & Child Care Center/Spaces										
Storage Areas		Drinking Water, Toilets and Changing Areas	Drinking Water, Toilets, Bathing/Washing and Changing Areas	Drinking Water & Toilets	Drinking Water & Toilets	Drinking Water, Toilets, Bathing/Washing and Changing Areas	Drinking Water & Toilets	Drinking Water & Toilets	Toilets, Bathing/Washing and Changing Areas	
E Seval and Economic Service Centres	Provision of Certificates, access to information on govt schemes, with links to FAME registration systems, ATMs, training centres, computer access areas, libraries & information centres related to particular industries									

Table 7: Suggested economic amenities by worker groups

Economic Infrastructure /Amenities	Description	Suggested Norm/ Distance and Location Guidelines	Priority Land Use Zones
Multipurpose Community Work Space/ Multipurpose Community Hall	Climate-responsive flexible community workspaces, with high ceilings, ramps for pickup and drop-off areas. Designed as an expandable space for home based work.	Placed next to resettlement colonies/slums/ residential areas with high density of home-based work: • Smaller block-level centers - 1 in every 500 m radius • Larger neighbourhood centers (could be multipurpose economic centres) - 1 in every 1 km radius	Residential and mixed residential. Special focus on resettlement colonies, EWS neighbourhoods, other residential areas with high intensity of home based work.
Multi-vehicle and Equipment Parking	Designated parking areas (open or sheltered) for different types of vehicles used in economic activities, such as carts, wheelbarrows, rickshaws, fishing boats, two-wheelers, tempo, etc. Repair shops for vehicles and equipment E-bike charging areas.	Space for larger vehicles could be provided at the ward level, depending on the availability of space. Multi vehicle parking could be reserved within public and commercial parking lots. Smaller parking could be allocated along wider roads within the neighbourhood. Designate boat parking areas along beaches.	Mixed residential, commercial, transport, institutional, industrial, open space and recreational.
Informal Trading and Services Areas	Demarcated areas and zones at different levels where informal sector workers can trade in goods and services. Infrastructure includes designed sidewalks to support vending - platforms, community taps, toilets, rest spaces, ATMs, storage spaces.	Streets with existing vending activity must be retained as informal trading and service areas. In new development areas, informal trading and service areas could be allocated pre-emptively next to markets, institutional hubs, transport nodes, open spaces in residential areas, and so on. Informal trading and services areas along streets must be equipped with wide sidewalks (approx. 6m in new development areas).	Mixed residential, commercial, industrial, institutional, open space and recreational.
Rest Areas	Designated sheltered space to take a break and rest, particularly catering to workers who do not have a fixed workplace, for example, gig workers. Climate responsive rest areas, toilets, drinking water, charging stations, changing rooms.	The facilities could be provided as closed shelters or semi-covered shelters in parks and open spaces. These could be also placed close to parking areas and transport nodes, to achieve a density of one rest area for every 1 km radius.	All zones.
Amma Canteens/ Community Kitchens	Affordable, nutritious food service areas - can be run by govt or private vendors.	The facilities could be provided as closed kitchens and service or semi-covered areas serving food during fixed hours. Co-located along rest areas.	All zones.
Emergency Centres	First aid amenities, firefighting equipment, police beat stations, public telephone.	Medium to high density residential/employment areas: 1 in 500m radius Low density areas: 1 in 1km radius.	Mixed residential, commercial, transport, institutional, industrial, open space and recreational.
Maternal and Child Care Centre	Spaces for nursing, creches, palnas, after school activity centres, (play areas, study rooms, libraries, computer access areas etc) for working parents to have safe space child/teen care.	Medium to high density residential/employment areas: 1 in 500m radius Low density areas: 1 in 1km radius.	Residential, mixed residential, commercial, industrial, institutional, open space and recreational.
WASH Block	Water, sanitation and hygiene facilities. Must be gender, age, and ability inclusive-provide accessible toilets, ramps, child-friendly features, menstrual hygiene management, and signage in Braille and local languages. Locker facilities, Handwashing stations, safe treated drinking water, adequate lighting, privacy and security features.	In slums/ EWS areas: 1 WASH block every 500 m radius All transport, institutional and recreational hubs to have WASH blocks All commercial areas/markets/fishing/Industrial areas: 1 WASH block every 750m radius WASH blocks to include: - 1 seat/35 men, 1 seat/25 women - Bath Units - 1 per 50 users - Urinals - 1 per 50 men - Drinking water point in every block - Handwashing stations in every block	All zones.
E Sevai and Economic Service Centers	E-sevai centres with links to FAME registration systems Economic Service centres for training, awareness, consultation, education, and meetings.	At least one every 1 km. Density of centres or their serving capacity can be higher in high population or/and employment density areas.	Residential, mixed residential, commercial, industrial, institutional.
Homeless Shelter/Shelter for Urban Homeless	Accommodation, kitchen, canteen, water and sanitation, first aid, childcare facilities, safety and security.	Minimum 100 occupancy units per one 1 lakh population (area as per the standard operating procedures of Tamil Nadu Shelter for urban homeless program) Near transport and employment nodes - railway, bus, labour nakkas, industrial areas, commercial hubs, markets. Also add homeless shelters near hospitals.	Commercial, industrial, institutional and transport zones close to economic hubs, mixed residential.
Worker Housing	Multi-typology/ different size housing units.	Built as per demand. Ease permissibility for PGs, and hostels built by both government and non-government organisations. Allow mixed use for residential purpose at the zone and building level to enable hostels to be built on top of commercial buildings. Employers to provide for family housing as well.	Residential, mixed residential, industrial, commercial, institutional.

Table 8: Zoning and Master Plan instrument suggestions for economic amenity creation

7. RECOMMENDATIONS AT THE MASTER PLAN SCALE

This section summarises and brings together all the recommendations from the SDEIC study for the Third Master Plan. The section is organised as follows:

7.1. Priority Recommendations for the Third Master Plan

This table summarises all the recommendations from the SDEIC study for the Third Master Plan, bringing together the most important action items for CMDA over a short- and medium-term horizon. It explains the nature of CMDA action required, the other departments that will be involved in implementation, and the time horizon over which this action is to be prioritised.

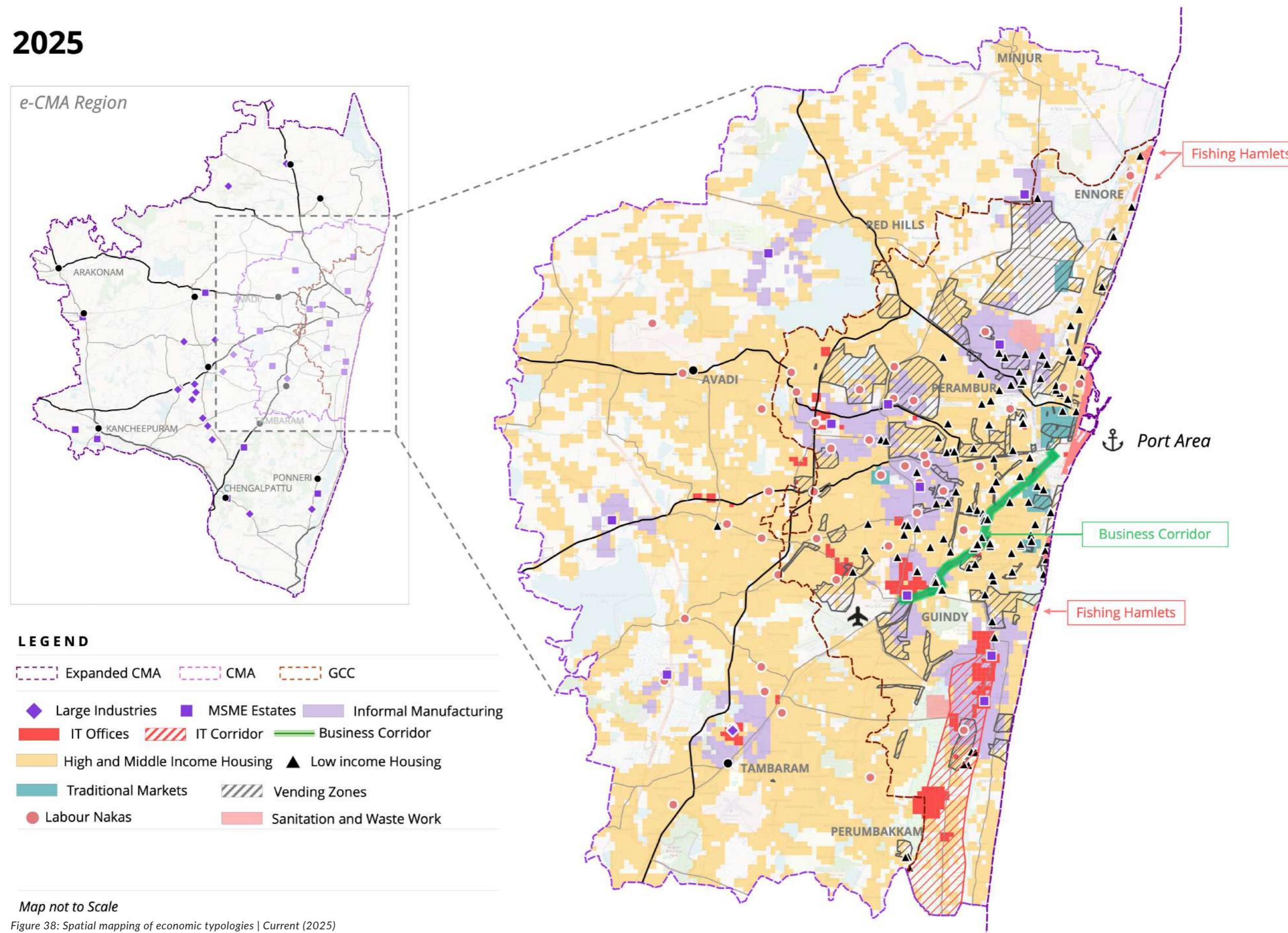
Required Action	Nature of action for CMDA	Other Relevant Departments	Mapping to Goals	Time Horizons
Economy-oriented approach to Master Planning, including undertaking economic and employment calculations and projections, and incorporating impacts of proposed investments ^{*1}	Plan Preparation, Plan Monitoring and Evaluation	Department of Economics and Statistics, Guidance, SIPCOT, SIDCO, ELCOT, TANSIDCO, MSMEs	- Economic Growth and Investment - Economic Diversity - Inclusive Economic Development - Enhanced Quality of Life - Sustainable Economic Development	Short Term
Recognise diversity of economic activities present across different land use types, and incorporate the provision of economic amenities accordingly ^{*2}	Plan Preparation, Plan Implementation (Projects)	GCC and other local bodies	- Economic Diversity - Inclusive Economic Development - Enhanced Quality of Life	Short Term
Anticipate economic shifts and redevelopment in core, provide space and upgrade trunk infrastructure accordingly ^{*3}	Plan Preparation	GCC, MoRTH, MAWS	- Economic Growth and Investment - Economic Diversity	Medium Term
Improve affordable housing provision and social infrastructure in periphery ^{*4}	Advisory	TNUHDB, SIPCOT	- Economic Growth and Investment - Inclusive Economic Development - Enhanced Quality of Life	Short Term
Address rising spatial inequalities in and around IT corridors and clusters ^{*5}	Plan Preparation, Plan Implementation (Projects)	GCC, TNUHDB	- Economic Growth and Investment - Inclusive Economic Development	Short Term
State-led investment through a participatory planning approach for North Chennai ^{*6}	Plan Implementation (Projects (building on existing North Chennai Development Plan)), Local Area Planning	Participation with community organisations and civil society	- Inclusive Economic Development - Enhanced Quality of Life - Sustainable Economic Development	Short to Medium Term
Recognition and support for all workers, particularly women workers, migrant workers, informal workers and gig and itinerant workers, through provision of appropriate spaces for skilling, gender-sensitive infrastructure and mobility, diverse housing formats for migrant workers, and economic amenities for itinerant workers ^{*7}	Plan Preparation, Plan Implementation (Projects)	GCC, CUMTA, Ministry of Labour and Employment, TNUHDB	- Inclusive Economic Development - Enhanced Quality of Life	Medium Term
Support and provide for MSME clusters ^{*8}	Plan Preparation, Plan Implementation (Regulatory), Advisory	MSME Department, FAME TN	- Economic Growth and Investment - Economic Diversity	Medium Term
Address housing deficit for blue collar workers, especially around Sri Perumbudur and the IT corridor ^{*9}	Plan Preparation, Plan Implementation (Regulatory), Advisory	TNUHDB, SIPCOT	- Inclusive Economic Development - Enhanced Quality of Life	Short Term
Address constraints in Ports and related logistics industries ^{*10}	Advisory	Chennai Port Authority, Ministry of Ports, Shipping and Waterways, and MoRTH	- Economic Growth and Investment	Medium Term
Incorporate climate mitigation, adaptation and resilience in all aspects of planning, such as protecting or reserving environmentally sensitive regions from development, protecting hydrological systems, and implementing climate proof housing and structures for economic uses (from factories to offices to vending kiosks to rest spaces and shelters for workers) ^{*11}	Plan Preparation, Plan Implementation (Regulatory)	GCC, TNUHDB, Department of Environment and Climate Change	- Enhanced Quality of Life - Sustainable Economic Development	Short Term
Create a framework for local area planning that can enable zoning and project based interventions to support local residents and economic clusters (for indicative list of priorities, see Section 2 or maps below) ^{*12}	Plan Preparation, Plan Implementation (Regulatory)	GCC and other local bodies, MAWS, TNUHDB	- Economic Growth and Investment - Economic Diversity - Inclusive Economic Development - Enhanced Quality of Life - Sustainable Economic Development	Medium Term

Table 9: Priority recommendations for the third master plan

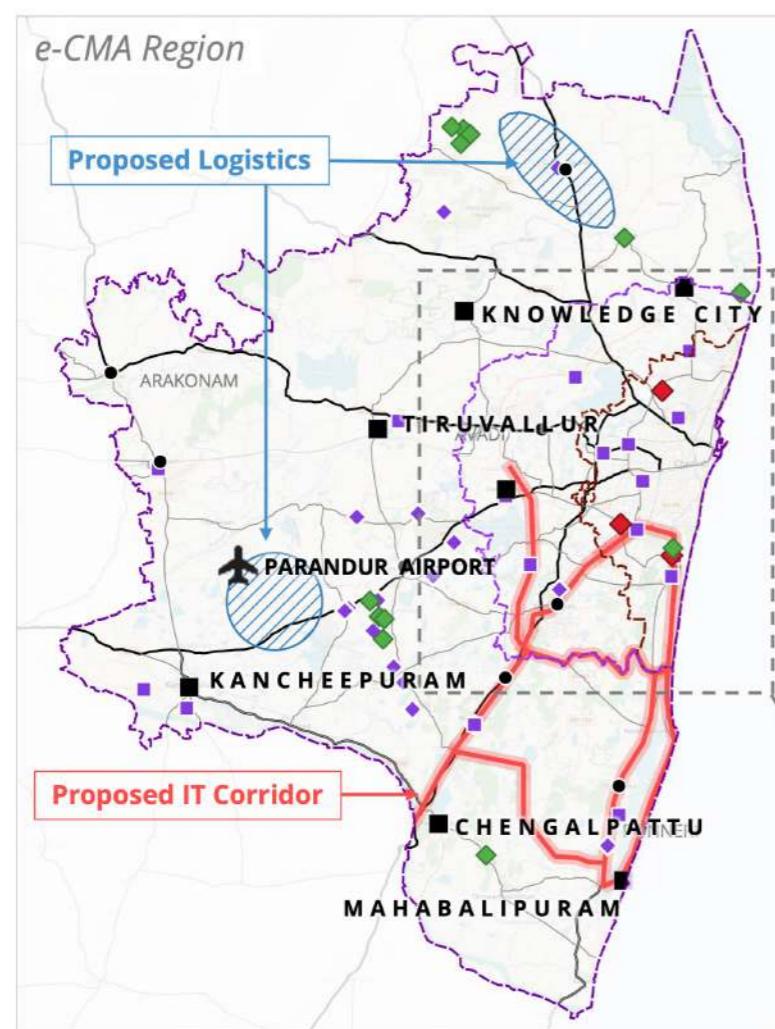
7.2. Economy Typology Maps

This sub-section presents the comprehensive spatial mapping of the economic typologies presented in Section 6 (see Figure 37). It presents the current mapping in Figure 38 (corresponding to the year 2025), and expected changes in this area in Figure 39 (corresponding to the year 2045). The 2045 map is prepared based on the announced projects (that were used as an input for our future scenario modelling), as well as the proposed nodes in the Sustainable Economic Growth Strategy study.

2025



2045

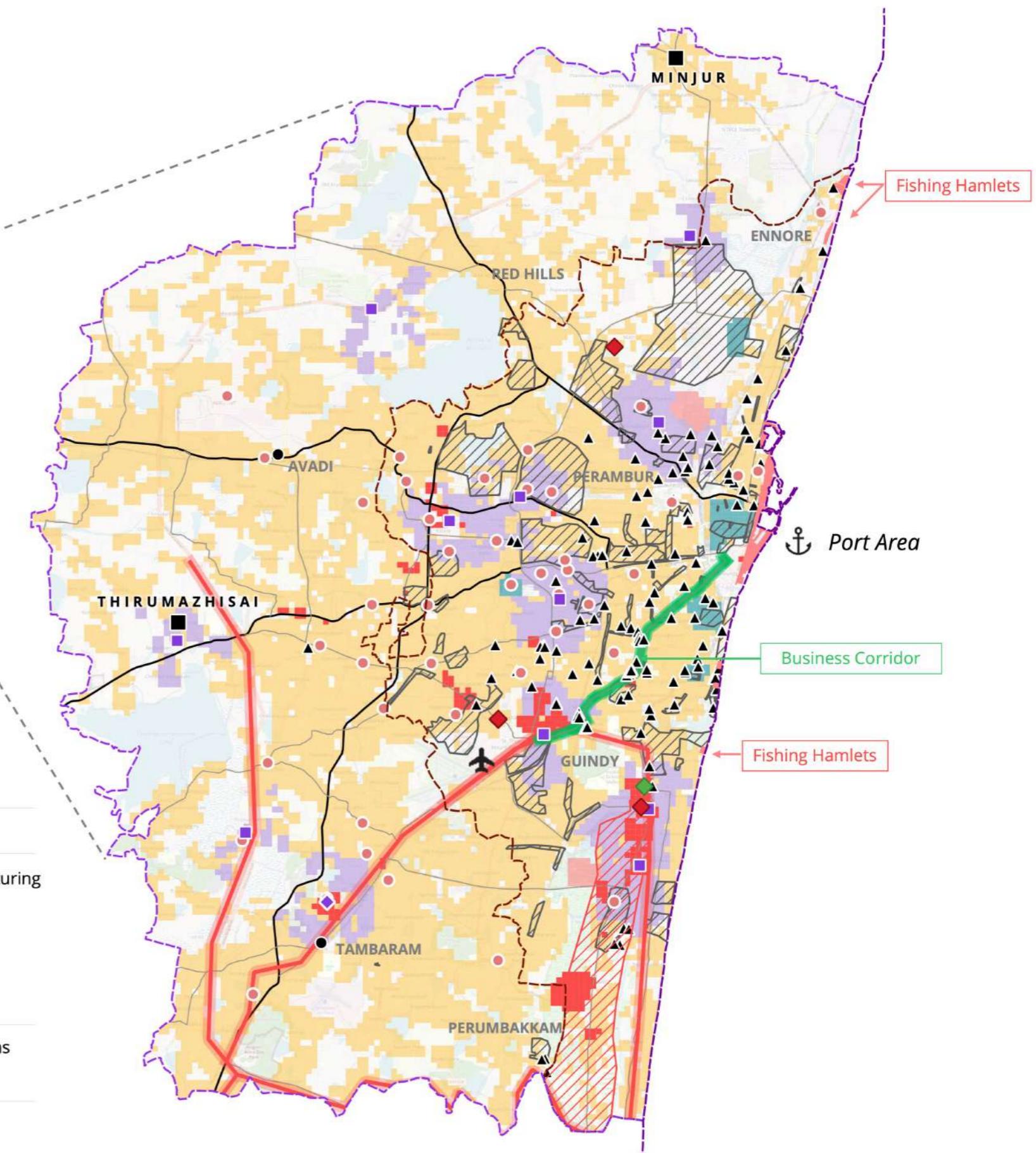


LEGEND

Expanded CMA	CMA	GCC
◆ Large Industries	■ MSME Estates	● Informal Manufacturing
— IT Offices	▨ IT Corridor	— Business Corridor
■ High and Middle Income Housing	▲ Low income Housing	
■ Traditional Markets	▨ Vending Zones	
● Labour Nakas	■ Sanitation and Waste Work	
— Proposed IT Corridor	▨ Proposed Logistics	■ New Towns
◆ Proposed Manufacturing and Industrial Parks	◆ Proposed IT/ITES	

Map not to Scale

Figure 39: Spatial mapping of economic typologies | Expected in the future (2045)



7.3. Mapping Area-based Recommendations

The following maps, Figures 40 and 41 present a summary of the area-based recommendations, while Section 8 provides detailed area-based recommendations for each area presented in this typology.

2045

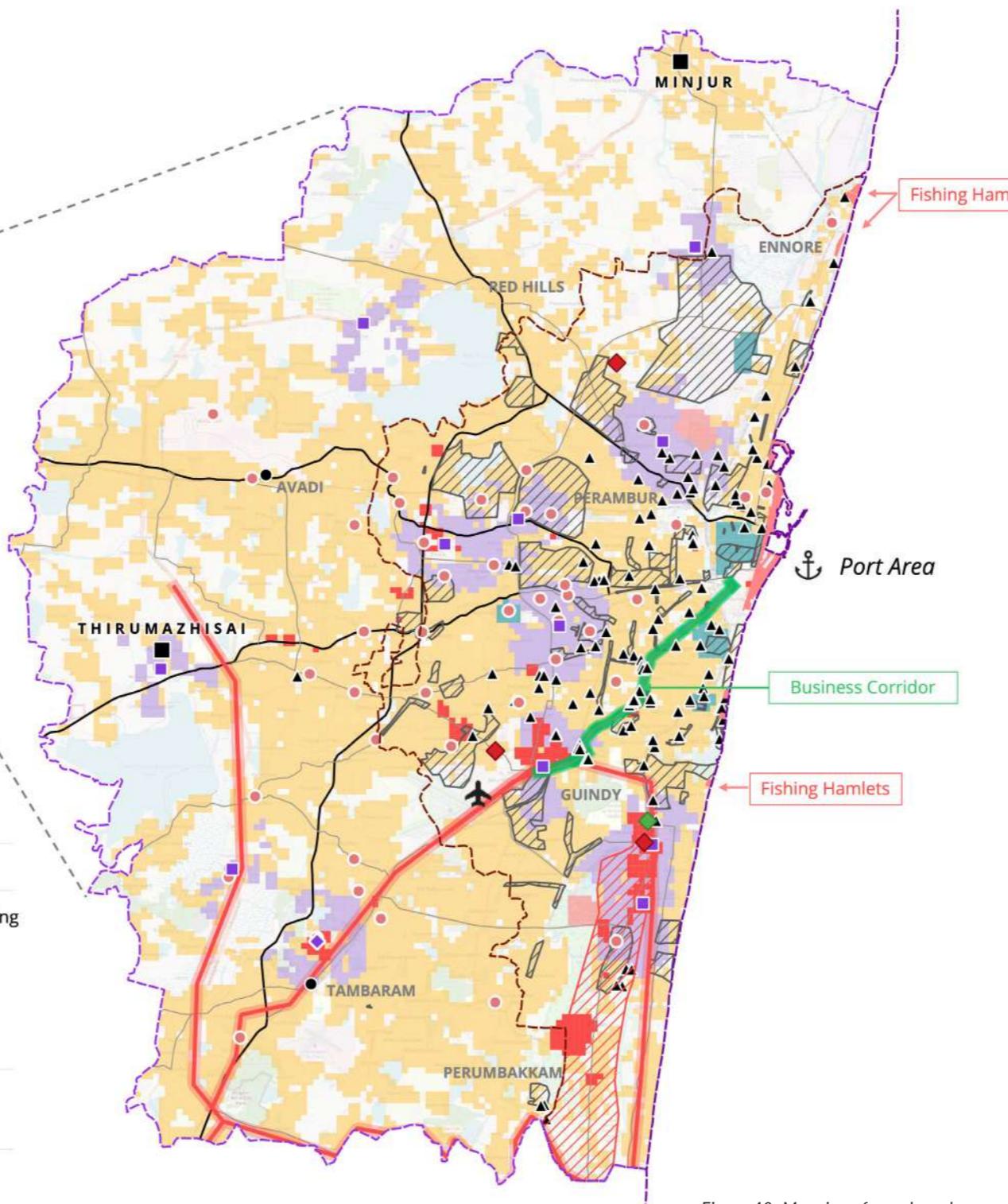
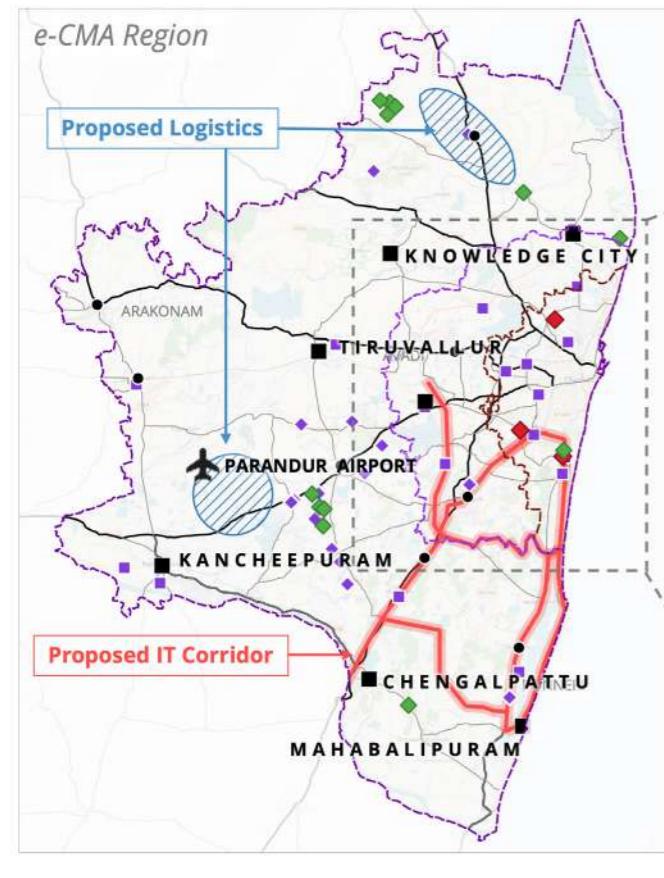


Figure 40: Mapping of area based recommendations for existing land use categories

Industrial Areas:

- Large Industrial Areas:
- Integrate with urban plans, improve housing and transport
- Old Industrial Estates in Core City:
- Revitalisation of old industrial estates, protect space for MSMEs
- Mixed Industrial and Residential (Informal Manufacturing):
- Enumerate informal manufacturing, improve built environment

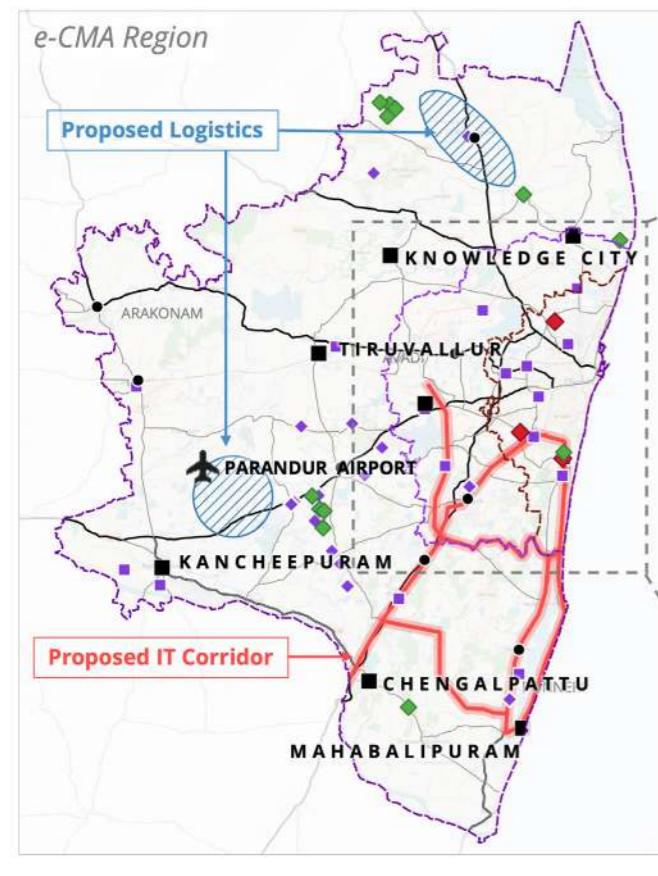
Commercial Areas:

- IT Clusters: Provide low-income housing, create flood management strategies
- Business Districts: Improve trunk infrastructure, integrate heritage buildings
- Transitioning Mid-high End Residential to Mid-high End Commercial: Zone for mixed-use with infrastructure and multi-purpose public spaces

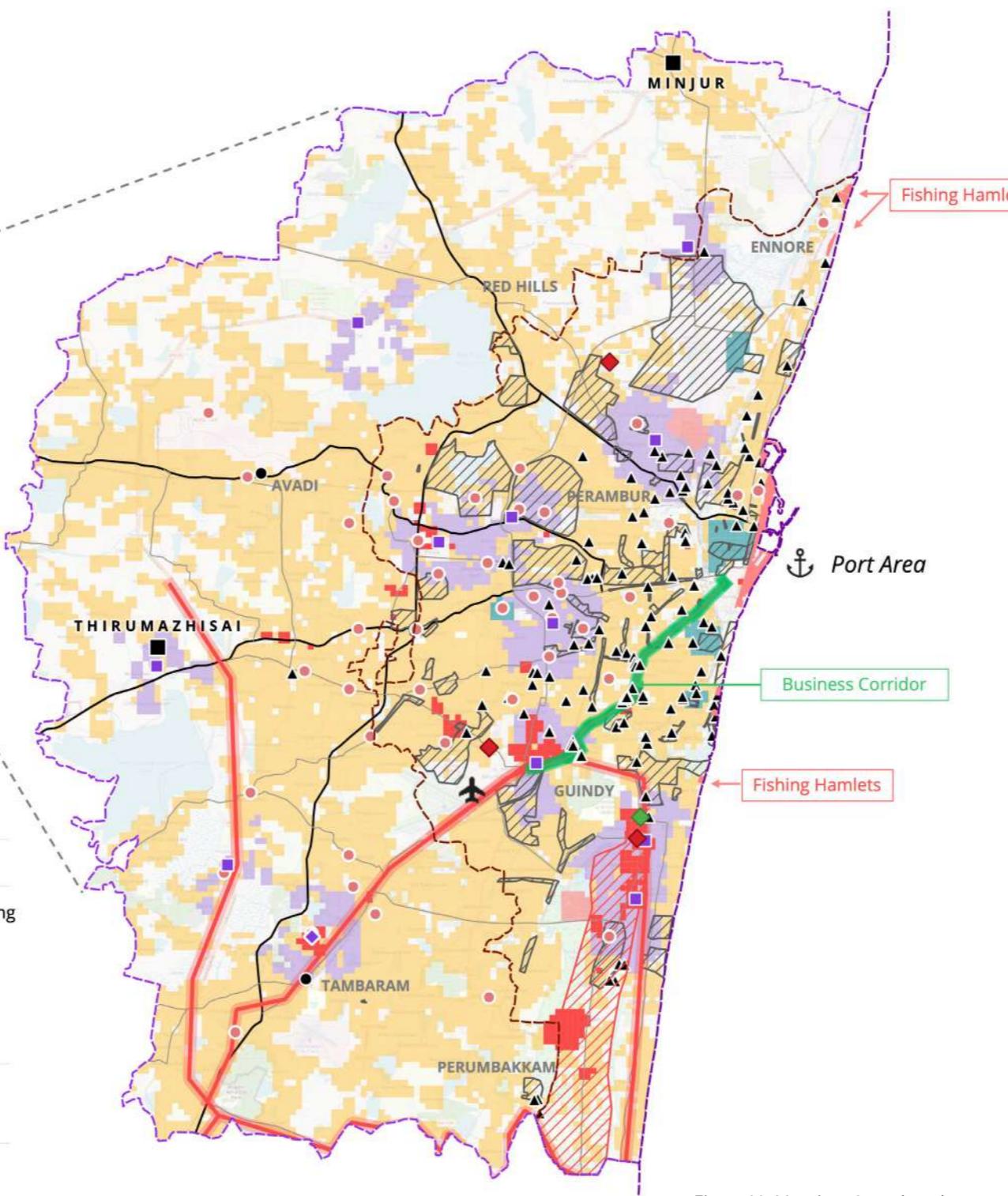
Residential Areas:

- High to Middle Income: Recognise domestic worker needs and create social infrastructure
- Low Income and Informal Settlements: Recognise as economic clusters, improve connectivity and infrastructure

2045



Map not to Scale



Market Areas:

- Traditional: Heritage led urban regeneration, improve mobility
- Wholesale Markets: Enumerate activities through a participatory approach, and improve connectivity

Special Economic Clusters:

- Labour Nakas and Construction Sites: Create proximate affordable housing and infrastructure
- Fishing Hamlets, Markets, Harbours and Ports: Recognise and enumerate spaces and build need-specific infrastructure
- Sanitation and Waste Work: Allocate land for sanitation infrastructure and ensure climate resilience

Mobile and Itinerant Work:

- Gig and Platform Work: Map demand locations and provide amenities
- Street Vending: Designate space for vending zones and infrastructure

Figure 41: Mapping of area based recommendations for categories that need greater support and recognition in the Master Plan

7.4. Expected Areas of Future Growth

Based on the results of the Future Scenario Model, this sub-section explains the areas where growth is expected to take place in the 2025 to 2045 time frame. Given the proposed projects that are currently in the pipeline, redevelopment and spatial expansion is likely to take place in certain parts of the city, highlighted in the set of maps and narrative presented below.

Key Growth Drivers and Development Corridors

This section outlines the major growth areas projected for development by 2045, driven by a combination of employment clusters and infrastructural investments. Key employment drivers include the expansion of IT, industrial, and manufacturing sectors, and infrastructure such as Metro Rail Expansion, Peripheral Ring Road and Transit-Oriented Development (TOD) corridors in addition to existing infrastructure and industrial corridors. While the intensity and pace of development are different across different scenarios, these areas consistently emerge as key growth nodes across all projected scenarios.

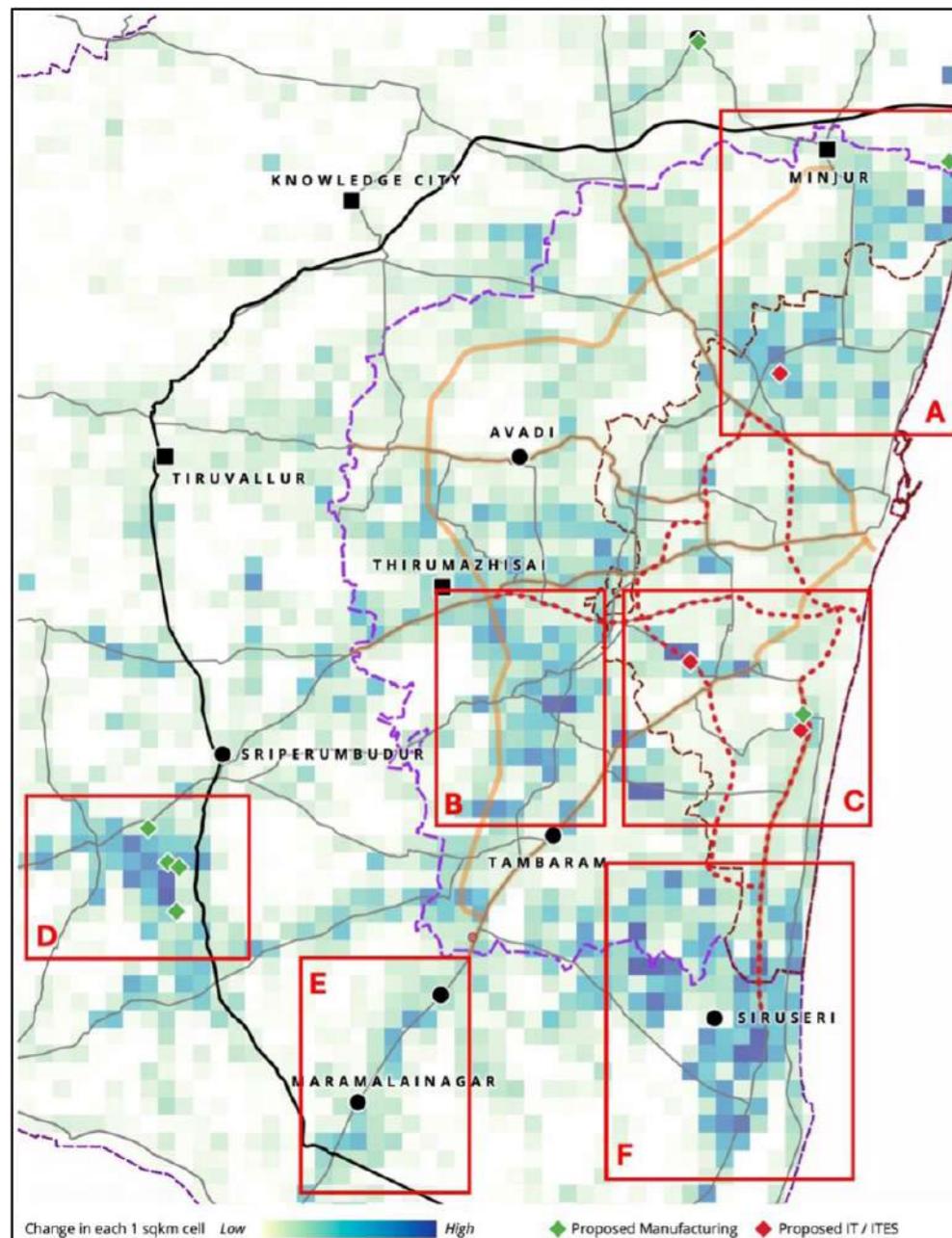


Figure 42: Key Nodes Projected for Growth and Redevelopment by 2045

Area A (Minjur – Ennore Zone):

- Key Projects: North Chennai Development Plan, Manallur Industrial expansion, TN Tech city
- Growth Trend: Industrial and Service-based employment, Logistics hubs, Greenfield Industrial areas
- Planning Needs: Identifying Environmentally Sensitive Areas, Social infrastructure development, Protection of environmentally-sensitive areas, Housing upgradation

Area B (Thirumazhisai – Tambaram Corridor):

- Key Projects: Thirumazhisai New Town, Transit-Oriented Development (TOD), Ring Road development
- Growth Trend: Service-based employment, Greenfield residential development
- Planning Needs: Physical and social infrastructure development, Identification of residential areas, Improving Public transport connectivity

Area C (Guindy – Adyar – Thoraipakkam IT Corridor):

- Key Projects: Fintech city, DLF Downtown
- Growth Trend: Service-based employment, IT Parks, High-end residential
- Planning Needs: Physical and social infrastructure development, Flood-resilient infrastructure, Identifying Affordable housing zones/incentives, Creating flexible zoning norms, Sustainable and equitable development

Area D (Southwest – Sriperumbudur and Aerospace Park Cluster):

- Key Projects: Multimodal Logistics Park, Aerospace Park
- Growth Trend: Industry parks, Warehouses
- Planning Needs: Building Worker housing, Physical and social infrastructure development, Improving Public transport connectivity

Area E (Maraimalai Nagar and Southern Corridor):

- Key Projects: Medical devices park, TOD corridor, Peripheral Ring Road
- Growth Trend: Service and Manufacturing employment hubs
- Planning Needs: Building Worker housing, Identifying Residential areas, Social Infrastructure development, Improving Public transport connectivity

Area F (Siruseri – Coastal IT Corridor):

- Key Projects: Siruseri IT park, Ring Road, Metro expansion
- Growth Trend: Service-based employment, IT Parks, High-end residential
- Planning Needs: Physical and social infrastructure development, Flood-resilient infrastructure, Delineating Affordable housing zones, Identifying residential areas

Based on the future scenario modelling done as part of the city, 6 corridors are identified as key nodes of growth in the CMA region over the next 20 years. While most of the areas are located in the periphery, the core area of Guindy and surrounding neighbourhoods, are likely to experience redevelopment as the economy in the area transitions along with upcoming TOD incentives. A description of the expected growth trends, and key planning interventions are detailed by areas below.

Area A (Minjur – Ennore Zone):

North Chennai is a key node of development for the city over the next 20 years, with the proposed North Chennai Development Plan, and future industrial expansion in the region led by SIPCOT. Going forward, this area is going to experience significant growth in the northeastern corridor supported by the Tamil Nadu Polymer Industries Park and the Manallur Industrial Expansion. The proposed TN Tech City and Heavy Engineering Components Manufacturing Hub further enhance the area's potential, establishing it as a key node for both industrial and service-based employment over the next 20 years. However, the area has many environmental risks associated with the development, which need to be integrated in the development planning process for sustainable economic growth for the region.

Key Projects: North Chennai Development Plan, Manallur Industrial expansion, TN Tech city

Growth Trend: Industrial and Service-based employment, Logistics hubs, Greenfield Industrial areas

Planning Needs: Identifying Environmentally Sensitive Areas, Social infrastructure development, Protection of environmentally-sensitive areas, Housing upgradation

Area B (Thirumazhisai – Tambaram Corridor):

This western urban expansion corridor benefits from the development of a designated new town at Thirumazhisai, with projected employment across industrial, ITES, and commercial sectors by 2045. Its strategic location along the Transit-Oriented Development (TOD) corridor and major transport routes positions it as a significant growth area. The proximity to existing manufacturing clusters (Sriperumbudur-Oragadam) and improved connectivity to the IT corridor via road expansions especially the ring road, make this area a key hotspot for residential expansion as well. There is a need to anticipate this expansion and invest in physical and social infrastructure upgradation to make the area appealing for future growth.

Key Projects: Thirumazhisai New Town, Transit-Oriented Development (TOD), Ring Road development

Growth Trend: Service-based employment, Greenfield residential development

Planning Needs: Physical and social infrastructure development, Identification of residential areas, Improving Public transport connectivity

Area C (Guindy – Adyar – Thoraipakkam IT Corridor):

This corridor comprises major IT employment hubs such as Fintech City, Fintech Tower, and DLF Downtown IT Park, all of which are well connected by the proposed Metro network, further strengthening the area's role as a key IT zone. The IT corridor will continue to be a hotspot for service sector growth in the future with many large scale developments planned in the near future. In order to prepare for future growth, there is a need to invest in physical infrastructure (especially flood proofing and public transport connectivity). With increasing demand and rising land prices, there is a need to identify and create affordable housing zones in the region to ensure equitable development.

Key Projects: Fintech city, DLF Downtown

Growth Trend: Service-based employment, IT Parks, High-end residential

Planning Needs: Physical and social infrastructure development, Flood-resilient infrastructure, Identifying Affordable housing zones/incentives, Creating flexible zoning norms, Sustainable and equitable development

Area D (Southwest – Sriperumbudur and Aerospace Park Cluster):

Centered around the industrial hub of Sriperumbudur, this region benefits from nearby employment drivers like the Aerospace Park and Tata Motors' Greenfield Plant. It is poised for strong industrial growth, with the Peripheral Ring Road enhancing connectivity to proposed ports and other industrial corridors along with growth for the logistics sector with the upcoming Multimodal Logistics Park. In order to accommodate this growth, the region will need adequate worker housing along with supporting social infrastructure to ensure the area continues to attract labour from both local areas and other states.

Key Projects: Multimodal Logistics Park, Aerospace Park

Growth Trend: Industry parks, Warehouses

Planning Needs: Building Worker housing, Physical and social infrastructure development, Improving Public transport connectivity

Area E (Maraimalai Nagar and Southern Corridor):

An established industrial and IT hub, Maraimalai Nagar is expected to witness continued growth through new industrial and IT employment opportunities. The area is further supported by the Medical Devices Park and improved connectivity via the TOD corridors and Peripheral Ring Road. There is a need for housing (for IT professionals and supporting informal services) which is expected to grow with future developments, along with investments in public transport infrastructure to reduce future traffic congestion.

Key Projects: Medical devices park, TOD corridor, Peripheral Ring Road

Growth Trend: Service and Manufacturing employment hubs

Planning Needs: Building Worker housing, Identifying Residential areas, Social Infrastructure development, Improving Public transport connectivity

Area F (Siruseri – Coastal IT Corridor):

Home to key growth nodes such as SIPCOT IT Park, this corridor remains a major driver of ITES expansion. Its proximity to the ECR, alignment with the IT Corridor, improved Metro access, and TOD planning make it a vital and growing IT employment zone. Similar to Maraimalai Nagar, there is a need to create housing supply in the immediate proximity along with improving multi-modal public transport connectivity with the core city area.

Key Projects: Siruseri IT park, Ring Road, Metro expansion

Growth Trend: Service-based employment, IT Parks, High-end residential

Planning Needs: Physical and social infrastructure development, Flood-resilient infrastructure, Delineating Affordable housing zones, Identifying residential areas

The section below outlines the projected growth trajectories under four growth scenarios highlighting the key changes by 2035 and 2045.

Based on the different scenarios projected as part of the future scenario modeling, locations likely to experience high growth in the next 20 years are detailed below by scenario type.

Scenario 1: Base-case Scenario

The Base Case Scenario assumes moderate employment growth, with most projects implemented as planned. Industrial employment is expected to rise incrementally, particularly in key manufacturing zones such as Manallur, Vallapakkam, and the Aerospace Park, while the IT sector sees significant growth in Fintech City and DLF Downtown as hotspots. Emerging new towns like Thirumazhisai and Chengalpattu are projected to

Scenario 1: Base Case Scenario

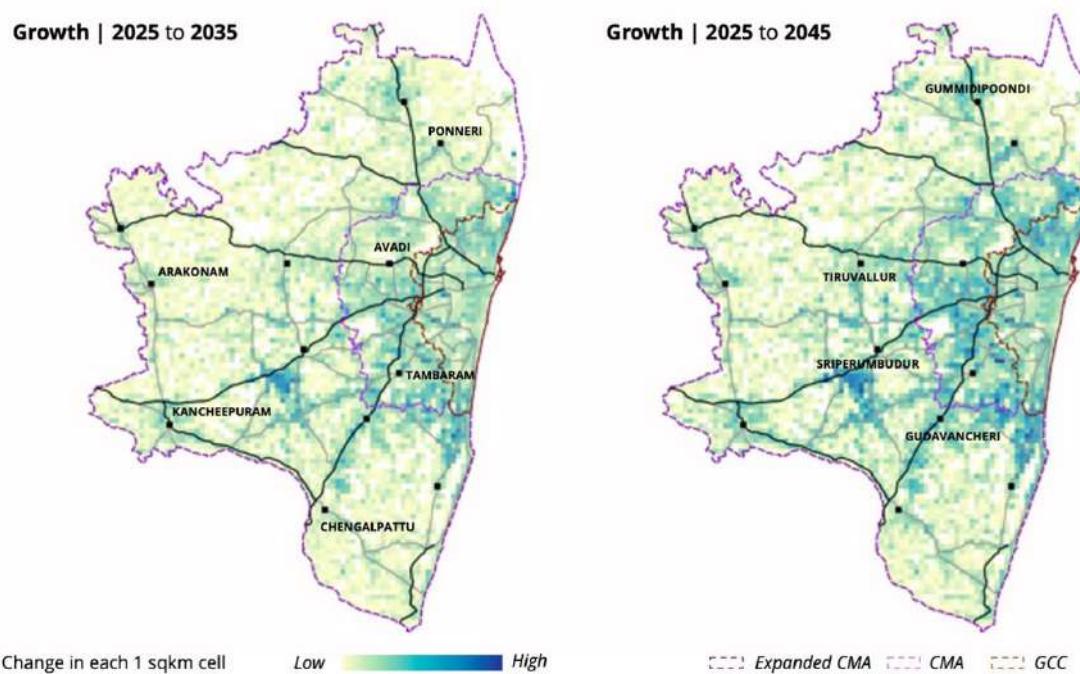


Figure 43: Base Case Scenario Maps with Projected Growth Trajectories for 2035 and 2045

Key transport hubs - Parandur Airport, and the Kilambakkam bus terminal—are expected to become fully operational. Major road networks such as the Peripheral Ring Road and the Port-Maduravoyal Corridor are expected to be implemented on time, the metro rail expansion is delayed until after 2035.

Spatially, the base case scenario reflects a moderate growth trajectory. Between 2025 and 2035, development is largely concentrated along the southwestern and western corridors, especially around Tambaram, Chengalpattu, and Kancheepuram. Pockets of growth also emerge near Avadi, Sriperumbudur, and Tiruvallur, driven by planned industrial and IT investments.

However, Greater Chennai Corporation (GCC) core shows limited additional growth, with higher development intensity shifting towards the southern and southwestern peripheries—areas just outside GCC but within the Chennai Metropolitan Area (CMA) boundaries.

By 2045, with all infrastructure and employment nodes fully operational, growth is expected to spread more evenly across the region, extending into Gummidipoondi in the north and towards Guduvancheri in the south.

Scenario 2A and 2B: High Growth Scenario + TOD

Scenario 2: High Growth Scenario

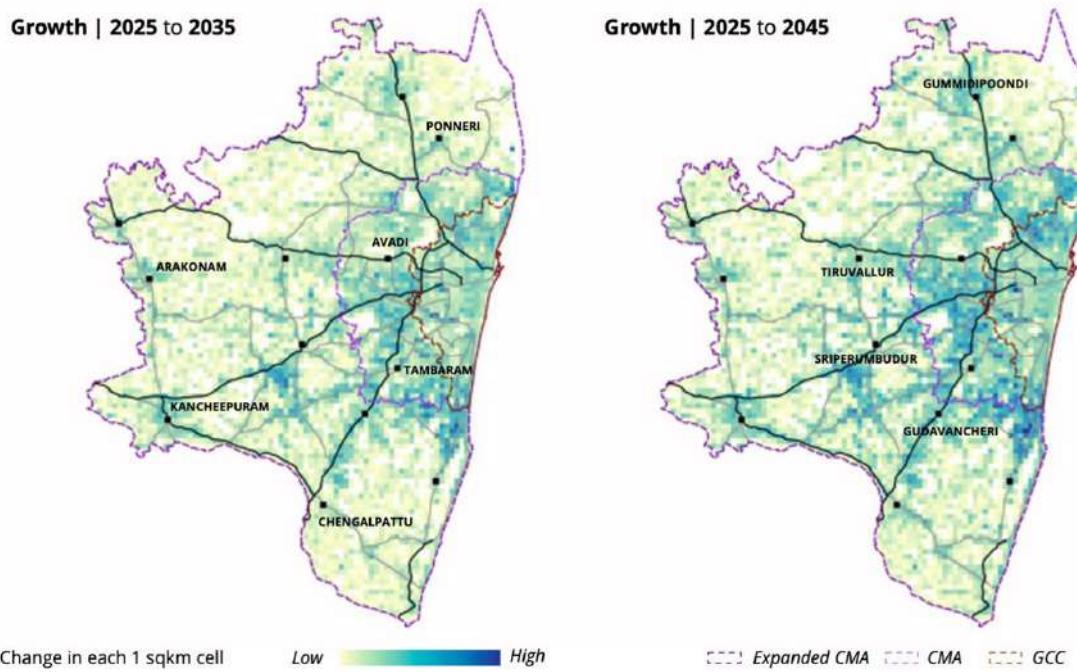


Figure 44: High Growth Scenario (2A) Maps with Projected Growth Trajectories for 2035 and 2045

In this scenario, industrial hubs are expected to grow more rapidly compared to the Base Case, with significantly higher employment across key nodes such as the Aerospace Park, Heavy Engineering Hub, and Medical Devices Park. The IT and ITES sectors are also projected to expand substantially, with Fintech City alone expected to generate up to 150,000 jobs by 2045. New towns like Thirumazhisai and Chengalpattu are expected to support higher commercial employment. Additionally, metro expansion is expected to be fully completed and operational by 2035, acting as a major enabler of growth along the network.

Under the 2A Scenario, between 2025 and 2035, development follows metro corridors, particularly in the south and southwest regions, including Tambaram, Avadi, and Chengalpattu. The OMR corridor and its surrounding areas also emerge as key growth zones, driven by proximity to IT clusters and enhanced metro connectivity.

As in the Base Case, the Greater Chennai Corporation (GCC) core sees limited growth, while the surrounding CMA and expanded CMA regions—notably Kilambakkam, Koyambedu, and Karapakkam—experience significant expansion.

While the overall growth pattern is similar to that of the Base Case, the scale and pace of growth are expected to be greater and expand sooner, driven by the same set of projects but with higher employment generation and transport infrastructure.

In the 2B Scenario, growth is further intensified by the implementation of Transit-Oriented Development (TOD) policies. TOD projects along major transport corridors and around metro stations are expected to promote high density development. Key TOD clusters include Koyambedu, with an estimated employment potential of 35,000 jobs, and Karapakkam, located along the IT corridor, projected to support around 12,500 jobs, predominantly in the IT sector.

By 2045, the region is expected to experience uniform growth with a strong nodal structure, maintaining concentrated development around transit hubs. Peripheral areas such as Gummidi poondi, Sriperumbudur, and Guduvancheri are projected to emerge as regional growth anchors, reflecting the influence of infrastructure-led, employment-driven urban expansion.

Scenario 2B: High Growth Scenario + TOD

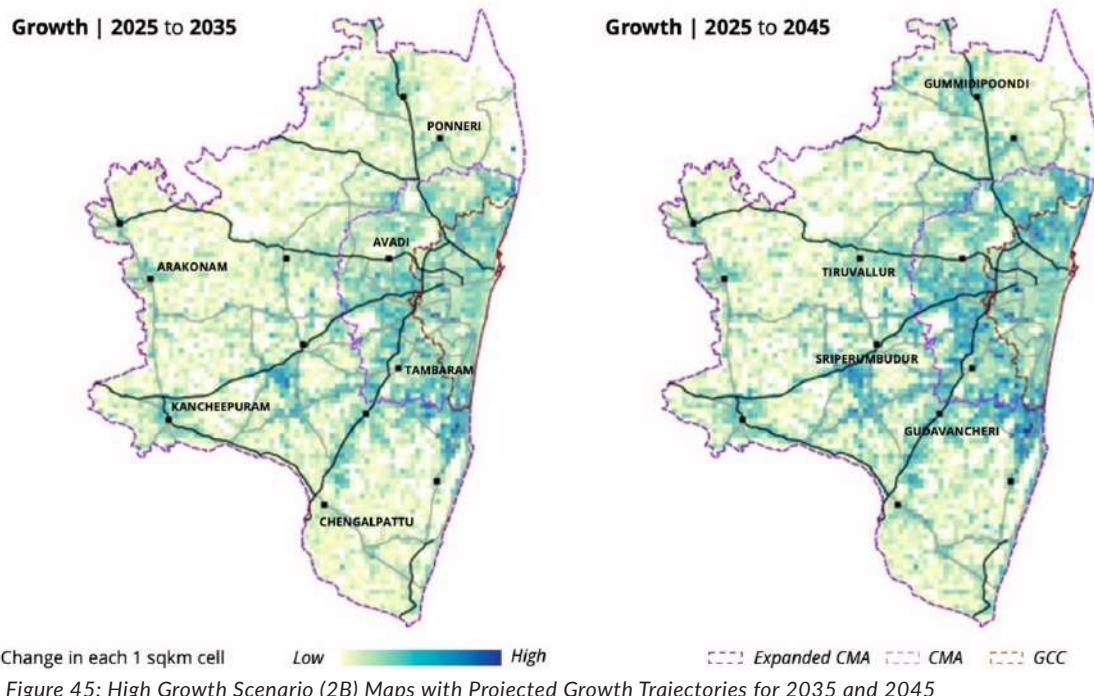


Figure 45: High Growth Scenario (2B) Maps with Projected Growth Trajectories for 2035 and 2045

Scenario 3: Restricted Growth Scenario

Scenario 3: Restricted Growth Scenario

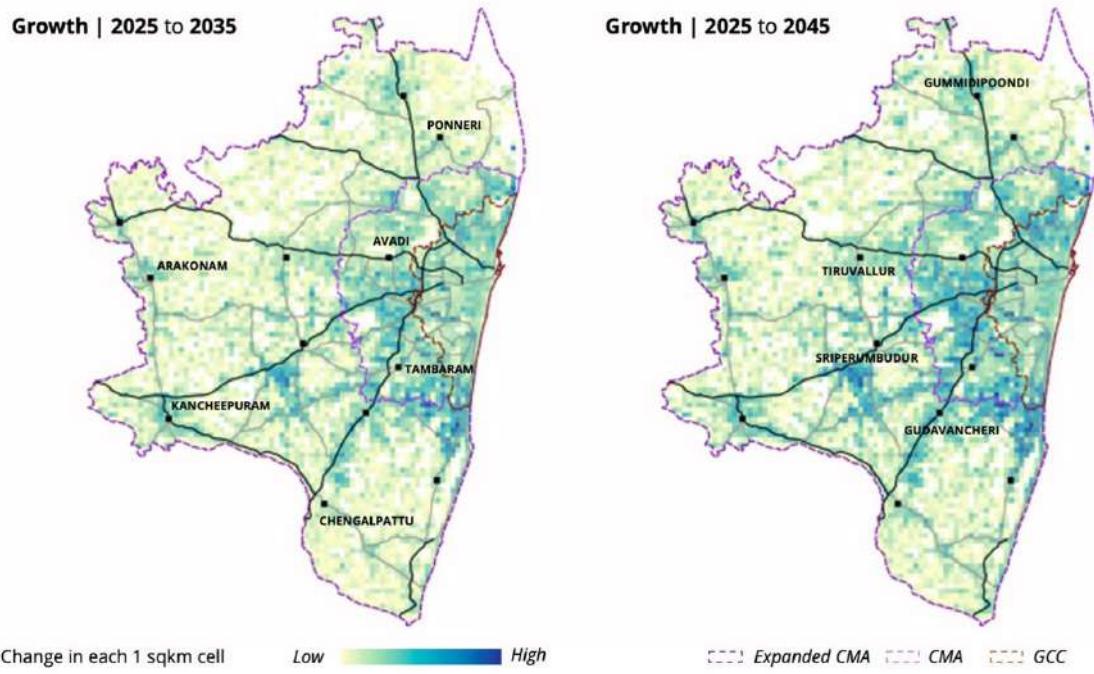


Figure 46: Restricted Growth Scenario Maps with Projected Growth Trajectories for 2035 and 2045

This scenario represents constrained growth in the northern region, where key projects such as the TN Polymer Park and the Heavy Engineering Hub are not implemented as planned.

While the overall spatial patterns of growth are expected to follow a similar structure and scale as in Scenario 2, the intensity of development is reduced in the northern parts, particularly around Ennore. However, with other infrastructure and development initiatives implemented as planned, some growth is still expected, but comparatively lower in the northern region.

8. AREA-BASED RECOMMENDATIONS

While the Master Plan will provide the broad framework for development across the CMA region, the following set of locations as outlined in the typology presented in Section 6.2.2 will also benefit from a set of localised and targeted interventions that could be developed as Local Area Plans. These are applicable for significant neighbourhoods and zones in the city, or areas with high transformation potential such as zones for heritage-led urban renewal, areas experiencing substantial shifts to high-end services activities in the core city, TOD zones, low income, informal settlements and resettlement areas, and other employment centres. This section offers a summary of recommendations for this set of zones, and the Master Plan can adopt these through local area plans or projects with corresponding financial allocations, or through DCRs in the case of new development. Area-based recommendations are detailed in D4.

Industrial Areas

Commercial Areas

Market Areas

Residential Areas

Special Economic Clusters

Mobile and Itinerant Workers

Industrial Areas | Summary

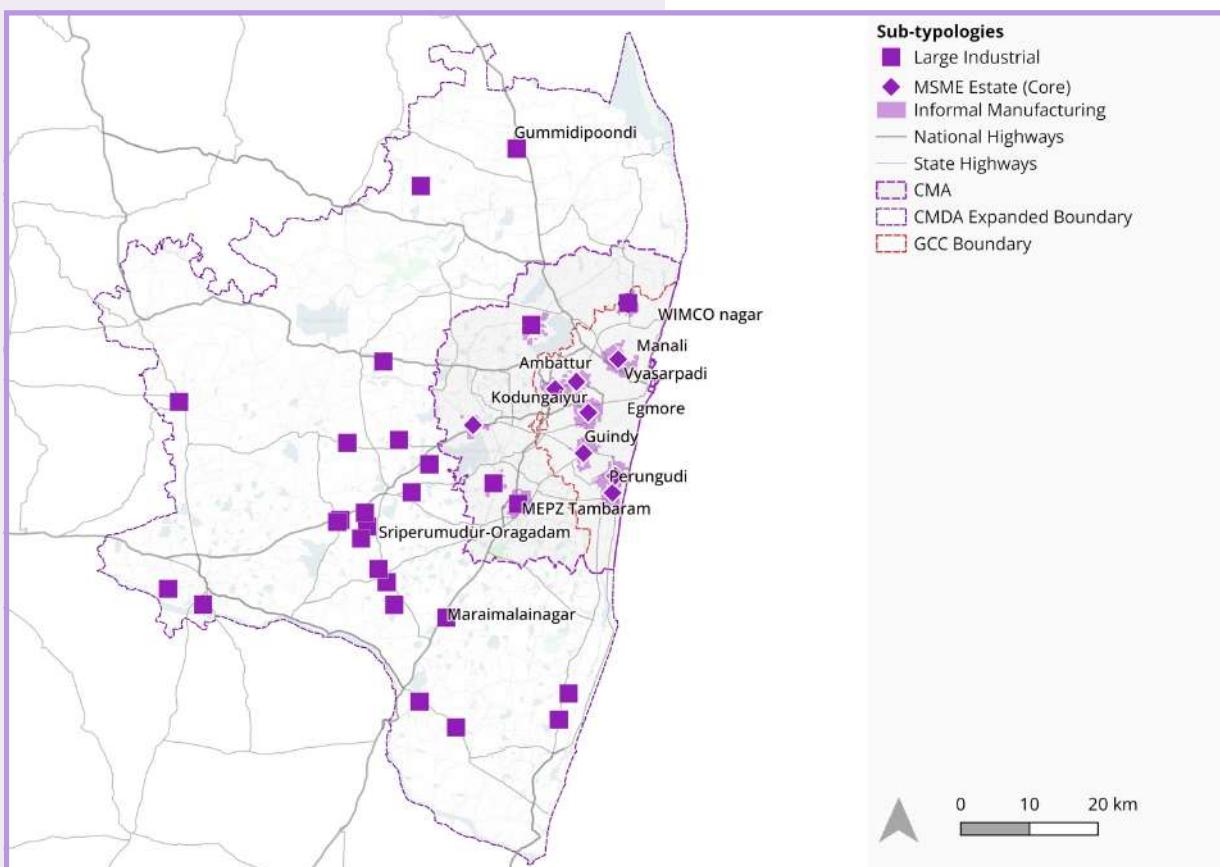


Figure 47: Mapping of Industrial area sub-typologies for recommendations

SUMMARY

Large Industrial Areas

Significant current and future growth nodes for the region are a big focus of economic policy but lack integration with urban planning to anticipate housing and commuting demands.

1. Plan for diverse formats of worker housing and public transport linkages for existing and upcoming industrial parks and zones.
2. Provide land for infrastructure and amenities in proximity to large industrial areas.
3. Cross-department coordination between urban planning (CMDA, TNUHDB) and industrial planning departments (Guidance, SIPCOT, SIDCO) to identify gaps and plan for urban impacts.

Old Industrial Estates in Core City

Old industrial estates transitioning from manufacturing to other sectors, and a site hosting several MSMEs.

1. Need dedicated infrastructure upgradation and improvements in quality of urban space to meet the demand for newer emerging economies in core city areas.
2. Allow for flexible zoning to enable multiple economic uses, provide buffer zones in proximity with a mix of industrial and residential.
3. Promote MSME development in the city, and plan for land use reservation for MSMEs.

Mixed Industrial and Residential (Informal Manufacturing)

Mixed neighbourhoods with dense economic activities linked to supply chains, often with co-location of residential and industrial.

1. Need improvements in built environment, infrastructure and economic amenities to improve productivity of workers and enterprises.
2. Need enumeration to identify clusters of informal manufacturing in proximity to large industrial clusters and in other locations.

Commercial Areas | Summary

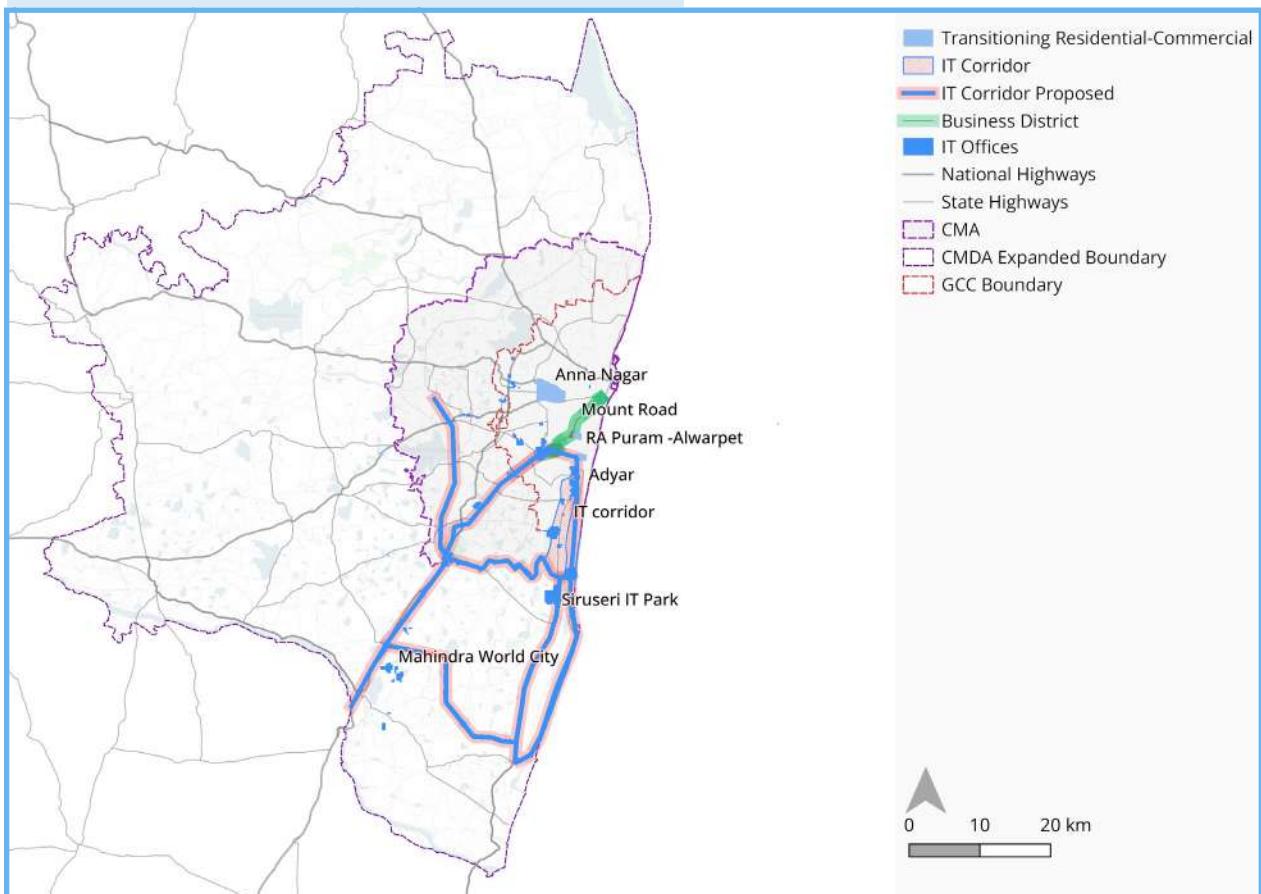


Figure 48: Mapping of Commercial area sub-typologies for recommendations

SUMMARY

IT Clusters

High growth region witnessing residential and commercial developments.

1. Use participatory planning processes, map infrastructure deficits and plan for future expansion possibilities.
2. Address gaps in low-income housing through the use of instruments such as TOD and FAR. TOD can also be used to promote high-density mixed use developments along metro and bus corridors.
3. Integrate multimodal transit hubs to provide seamless connectivity and efficient transfer of passengers.

Business Districts

High density mixed economy urban clusters expected to attract high value sectors such as GCCs.

1. Enable redevelopment form-based codes to create high density mixed economy clusters.
2. Create zonal level flood management strategies. Use hydrological modeling to identify flood-prone zones.

Transitioning Mid-high End Residential to Mid-high End Commercial

Transitioning residential to mixed use zones that might attract high-value services sectors such as GCCs in the future.

1. Classify areas as transitioning mixed-use zone to enable permission for easy change of land use.
2. Plan trunk infrastructure with future commercial development projections and create design guidelines for future developments.
3. Repurpose buffer land and underused road edges to multi purpose public spaces integrated with toilets, drinking water, shaded seating spaces.

Market Areas | Summary

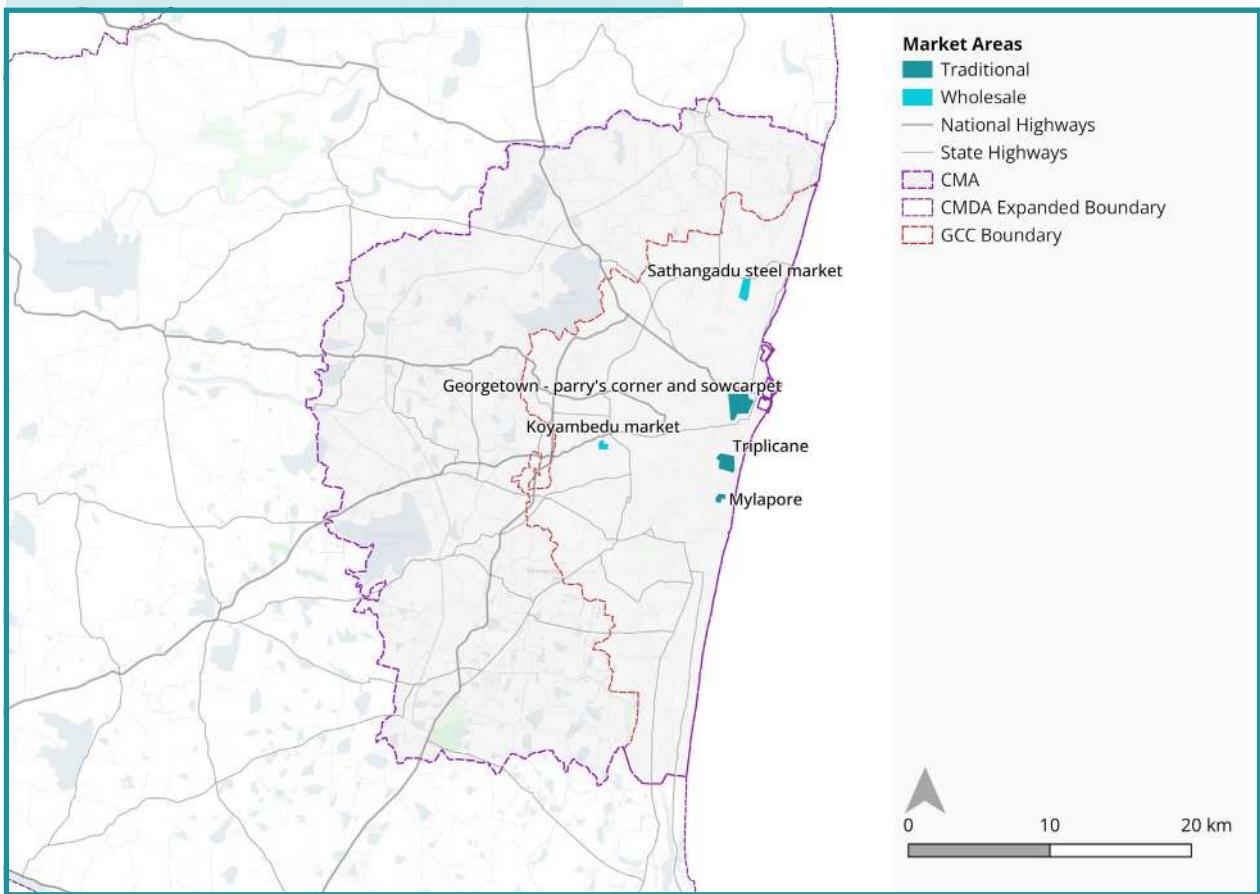


Figure 49: Mapping of Market area sub-typologies for recommendations

SUMMARY

Traditional

Historic core city area with mixed commercial, residential and logistics uses.

1. Needs heritage led urban regeneration through adaptive reuse and retrofits. Tools such as TDR, and heritage TOD can be used to create incentives. Processes should be participatory and collaborative.
2. Basic infrastructure needs mapping and improvement. Real-time data sharing systems need to be created and used for inter-departmental collaboration.
3. Strengthen mobility and last mile-connectivity for pedestrians and goods through multi-modal transport systems. Introduce feeder buses and electric shuttles and provision real-time information for users.

Wholesale Markets

Wholesale markets function as critical agricultural and material trade centers that facilitate daily movement of goods in the city, functioning as economic arteries.

1. Recognise and integrate markets into the Master Plan through zoning as wholesale commercial or mixed use. Avoid resettlement as it disrupts livelihoods.
2. Participatory enumeration processes must map economic activities and infrastructure deficits, and be the basis for any market redevelopment and planning.
3. Improve connectivity, prioritise pedestrian movement, and improve vehicular flow and parking.

Residential Areas | Summary

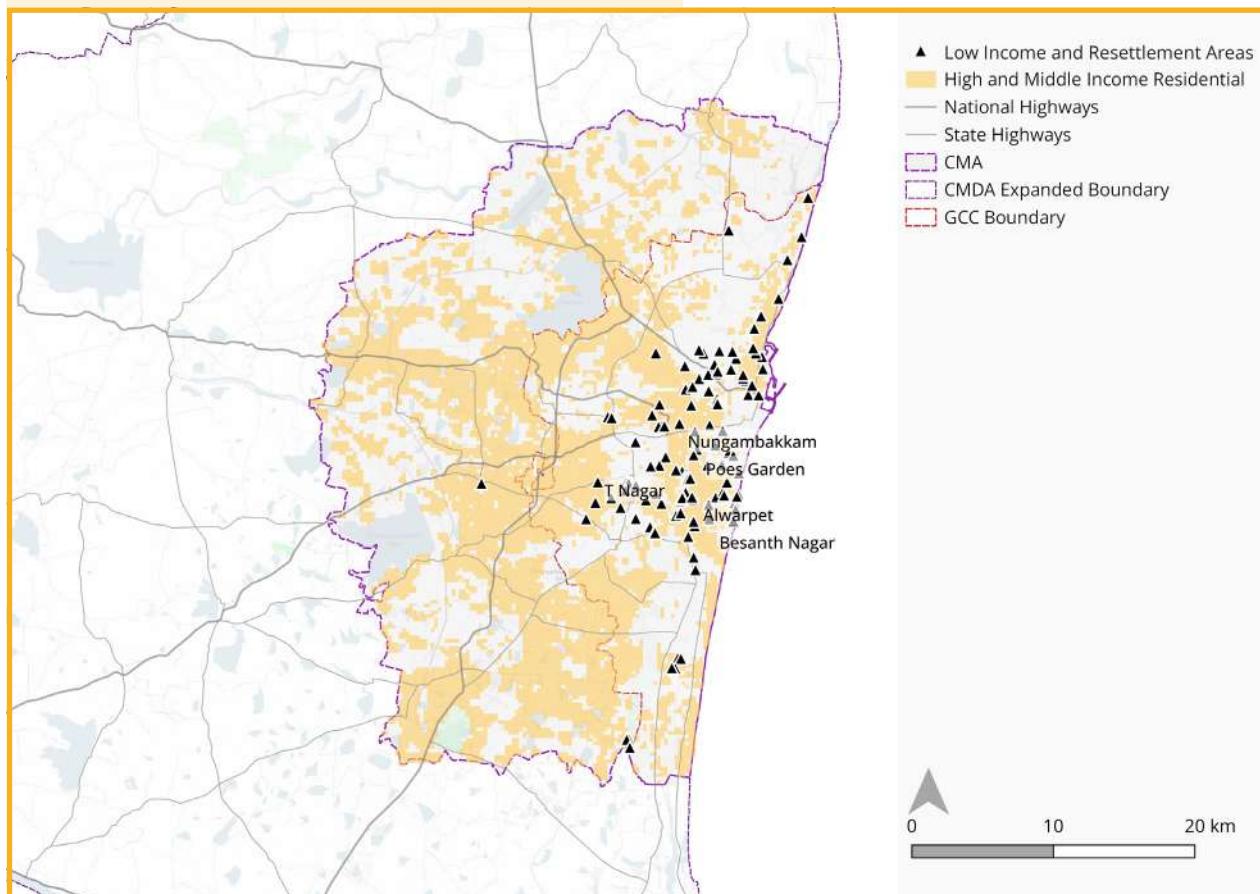


Figure 50: Mapping of Residential area sub-typologies for recommendations

SUMMARY

High to Middle Income

Recognise high- and middle-income residential neighbourhoods as spaces of work for domestic workers, drivers, security guards, sanitation and waste workers and gig workers. These areas require corresponding provision of economic amenities for such activities.

1. Enumerate and recognise the domestic workers in these areas and create plot level regulation to provide basic facilities.
2. Create a strong network of social infrastructure around these areas to increase female workforce participation.
3. Integrate commute patterns of domestic workers in mobility planning and integrate gender sensitive mobility infrastructure.

Low Income and Informal Settlements

Recognise the inter-connections between informal work and informal housing, and strengthen both the quality of living and work for residents and workers in these settlements.

1. Recognise such zones as economic clusters to provide easy permissions for home based work.
2. Improve access to basic services in these zones and create multi use public spaces to cater to different demographics and functions
3. Create a framework to regulate home based work in Tamil Nadu with regulatory and governance mechanisms including a home-based workers welfare board.
4. Provide access and last mile connectivity to peripheral areas for easy access to markets and workplaces.

Special Economic Clusters | Summary

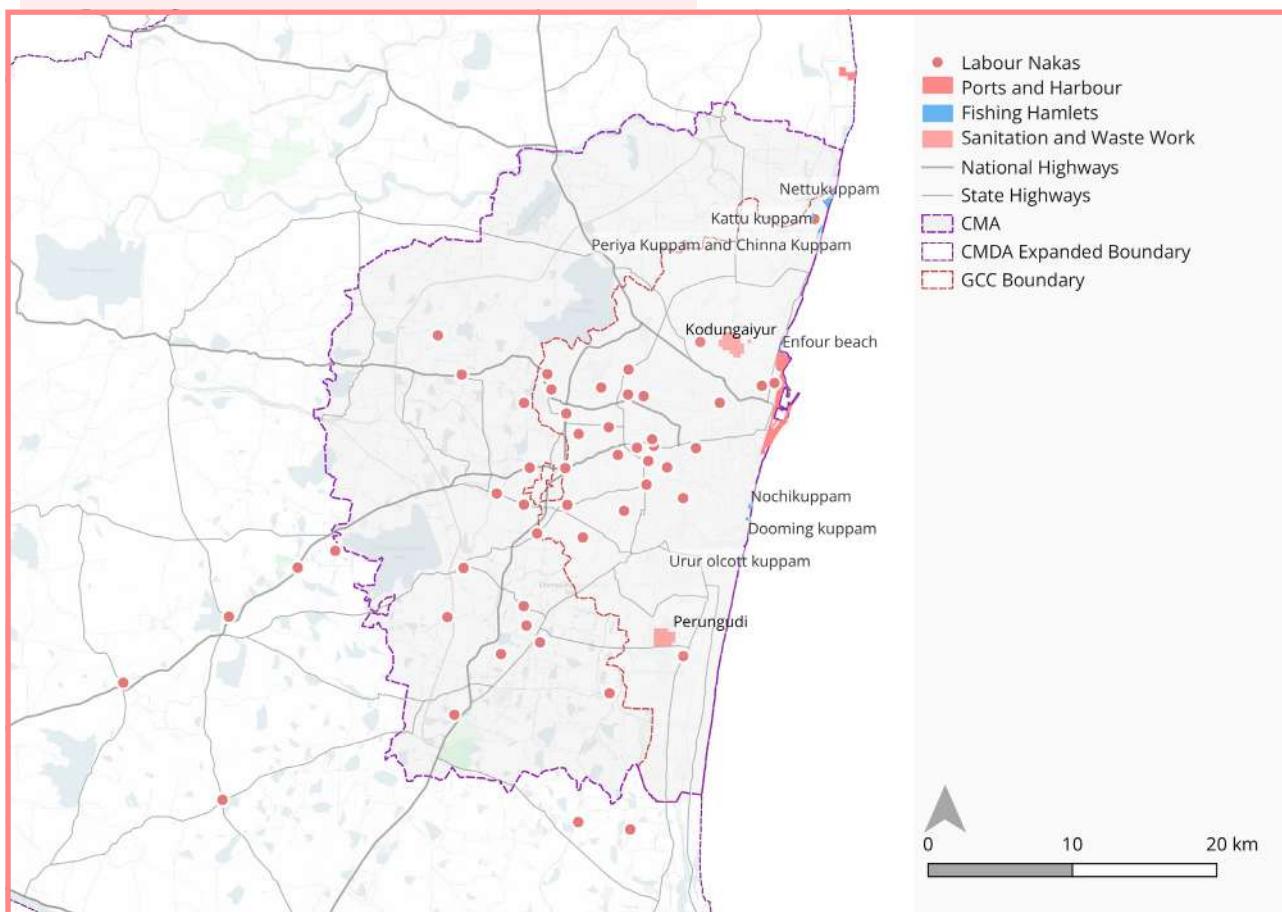


Figure 51: Mapping of Special-Economic Cluster sub-typologies for recommendations

SUMMARY

Labour Nakas and Construction Sites

Construction work is integral to the city's growth and development, and also has a high concentration of vulnerable and migrant workers.

1. This segment of workers need planning attention to gain affordable access to housing in proximity to identified labour nakas in addition to creating stricter mandates for construction sites to provide in-situ housing and infrastructure for construction workers and their families.
2. Planning attention in terms of monitoring and evaluation is also recommended to ensure that housing and infrastructure being provided at construction sites are as per mandated requirements.
3. Planning permissions should ideally mandate construction sites to provide gender sensitive infrastructure such as, creches. Plans should allocate space at labour nakas for nursing stations and child and mother-friendly infrastructure, via CSRs and/ or private partnership models, as required.

Fishing Hamlets, Markets, Harbours and Ports

Fishing Hamlets, Markets, Harbours and Ports serve as the economic backbone of Chennai's fishing community, providing livelihood to thousands of fishing families.

1. These areas need participatory planning to map and enumerate fisher settlements and markets.
2. Planning attention is needed in these areas to avoid development that hinders their access to the coast
3. The Master Planning process needs to recognise the inter-linkages between housing, work and vending in these areas and facilitate co-location and allocate adequate space. Space also needs to be provided for boat parking, net mending and cold storage facilities.

Sanitation and Waste Work

Sanitation and waste workers provide essential services for urban functioning, yet their residential and work sites are stigmatised.

1. Planning needs to make land allocations for existing and upcoming waste and sanitation infrastructure (landfills, treatment facilities, etc).
2. Planning attention is also needed to ensure adequate supply of affordable housing, night shelters and hostels.
3. Plan needs to incorporate heat, flood and climate - responsive infrastructure such as rest areas at the neighbourhood scale for workers in this sector.

Mobile and Itinerant Work | Summary

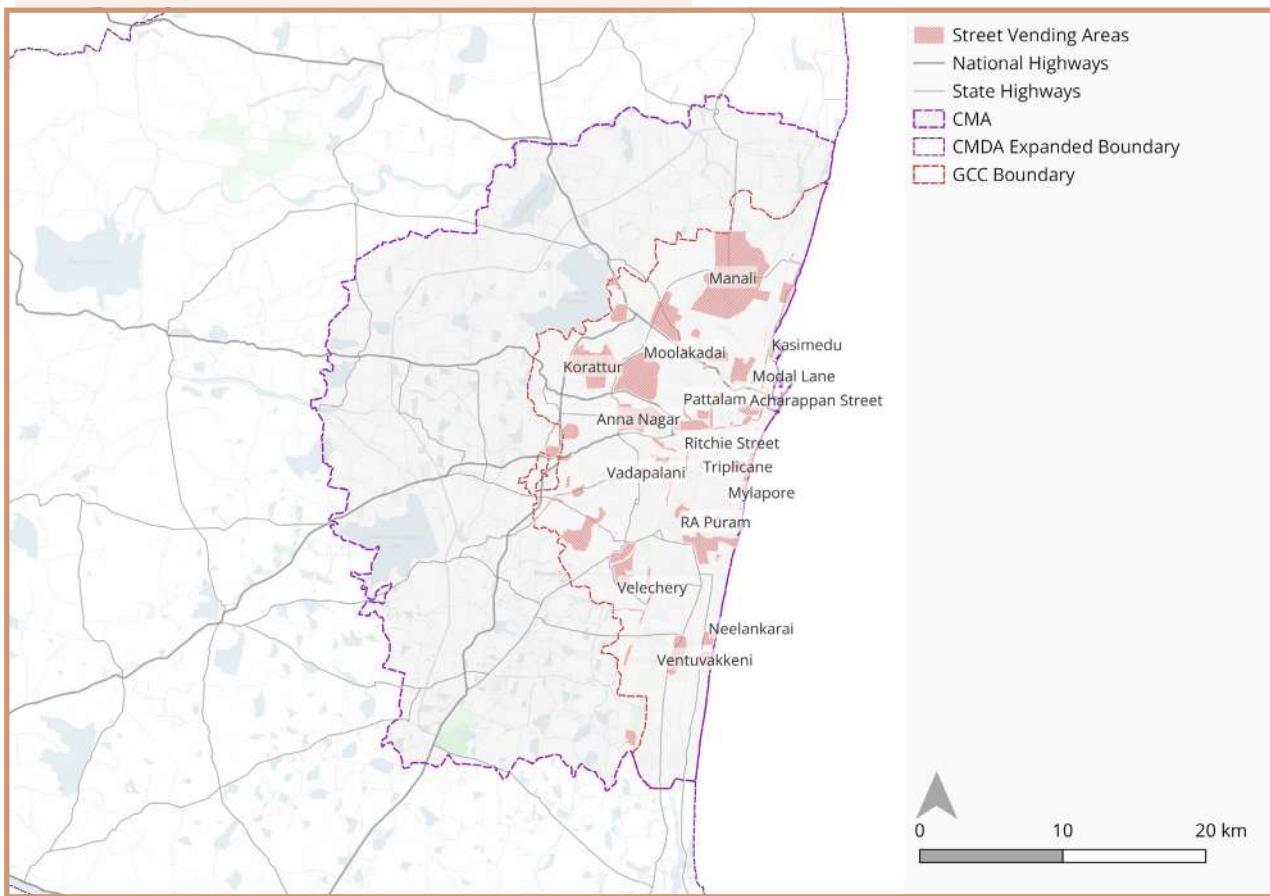


Figure 52: Mapping of Mobile and Itinerant Work for recommendations

SUMMARY

Gig and Platform Work

Recognise gig work as a key and growing sector that is providing livelihoods to professionally educated youth, new migrants and women workers^{*42}.

1. Map high demand locations and provide economic amenities such as rest spaces, drinking water and toilets, charging points, and loading and unloading areas
2. Implement participatory planning mechanisms by engaging gig workers, unions, and platforms in the enumeration, mapping and planning process
3. Coordinate with the Tamil Nadu Gig and Platform Workers' Welfare Board for delivery of infrastructure and related services

Street Vending

Recognise the role of street vendors in providing essential goods and providing livelihoods to a substantial number of people. Support them through the Master Plan and address infrastructure deficits^{*43}.

1. Need participatory planning approaches in partnership with Greater Chennai Corporation and the Town Vending Committee (TVC) in order to designate vending zones and natural markets
2. Designate space to improve infrastructure for vendors such as toilet blocks, and storage facilities
3. Enable integration with public transport for goods.

9. GOVERNANCE ARCHITECTURE

An overall governance architecture is proposed in order to integrate economic development and urban planning for the CMA region, and more specific sectoral governance recommendations are also included within each type of local area. The overall governance architecture consists of two aspects:

9.1. Economic and Urban Development Council

This body has a focus on economic growth and livability for workers of all kinds, and is responsible for infrastructure support for enterprises and associations.

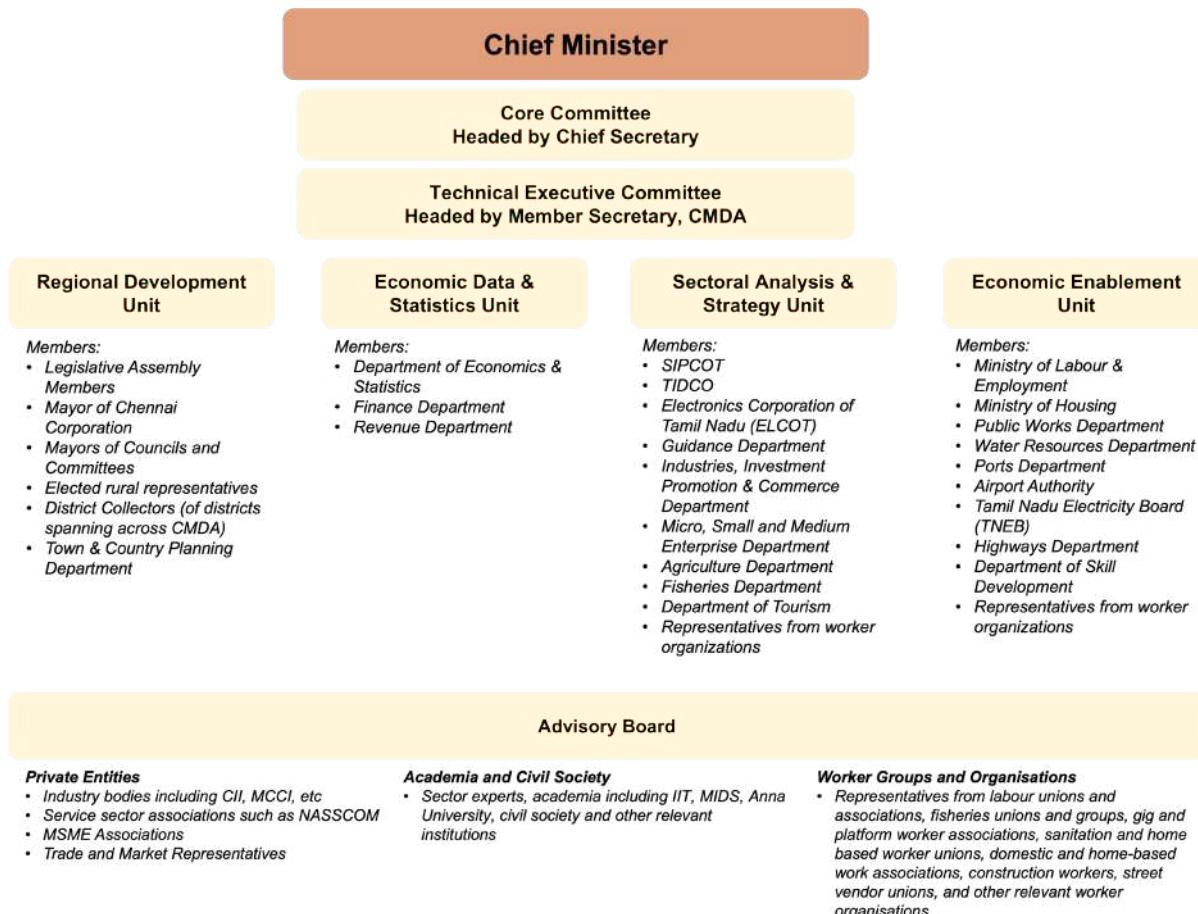


Table 10: Suggested Organogram for Economic and Urban Development Council

9.2. Economic Cell within CMDA for Integrating Economic Aspects in Plan Development, Plan Implementation, Impact assessment, and Monitoring and Evaluation

The Economic Cell within CMDA will be responsible for integrating all aspects related to economic development within the Master Plan. It will provide inputs for Plan preparation, Plan implementation, as well as Impact assessment related to upcoming investments/projects, and Monitoring and Evaluation. It will also play a core function of maintaining socio-economic datasets that will be used as inputs into the planning processes.

The Cell will be responsible for coordinating on an ongoing basis with the various relevant departments for data collection, for preparing and updating CMDA's data records. The cell shall also be responsible for identifying impact for projects in the CMDA region and identify infrastructure needs associated with investments. The

details of coordination required for various sectors of work are included in (i) the Methods section of this report, and (ii) the detailed recommendations under Governance Architecture for each location.

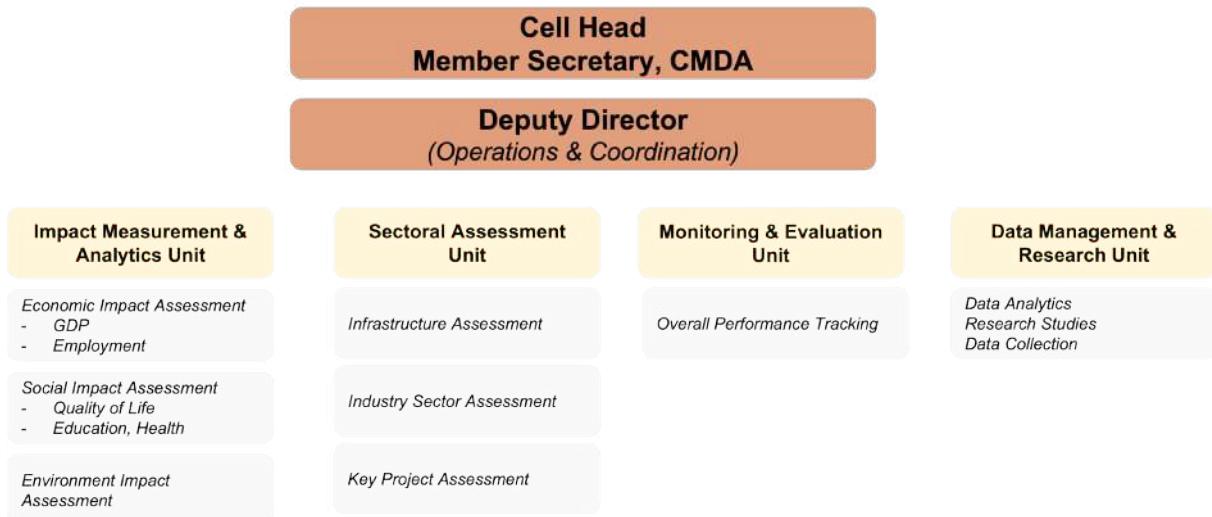


Table 11: Suggested Organogram for Economic Cell

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