

Evaluating Projected Housing Benefits and Early Livelihood Risks under the Thane Cluster Redevelopment Scheme – the Urban Density Trade-Off

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ABSTRACT

The Cluster Redevelopment Scheme (CRS) is a flagship urban renewal project by the Thane Municipal Corporation to replace the dense informal settlements with planned high-rise residential complexes with better infrastructure, sanitation and formal housing rights. The policy is designed to address the longstanding problems of housing and the environment in the Mumbai Metropolitan Region (MMR), but its overall socio-economic implications are not yet clear, especially at the initial implementation stages.

This paper explores the possible trade-offs of the CRS in Kisan Nagar and similar clusters in Thane. It considers the potential for the impact of improved housing quality to intertwine with livelihood systems that rely greatly on spatial access, informal employment, and intra-community economic networks.

The study uses cluster-level beneficiary housing data from Kisan Nagar, Census of India data on employment and commuting patterns, and municipal planning documents from the Thane Draft Development Plan. The findings indicate that although CRS has the potential to cause a substantial impact on housing conditions through replacing extremely small and structurally weak housing units with formal housing of around 323 sq ft, it can also upset informal economic systems found within the dense housing pattern.

The results emphasise the need to consider livelihood continuity as a part of urban redevelopment policy. The paper proposes that the physical and economic displacement risks need to be considered in a unified socio-spatial perspective, with an integrated connection between housing outcomes and employment accessibility.

1. INTRODUCTION

In the context of rapid urbanisation in developing economies, a significant number of their housing systems are under pressure, leading to an increase in dense informal settlements where the housing system is characterised by overcrowded conditions, poor infrastructure, and limited access to basic services. In the Mumbai Metropolitan Region (MMR), these issues are especially stark in the older low-rise settlements and unauthorised housing clusters, where population density is high, and sanitation infrastructure is weak, buildings are structurally vulnerable, and there are not enough public amenities.

To tackle the above issues, Thane Municipal Corporation introduced a policy for urban renewal under the Cluster Redevelopment Scheme (CRS), which encourages the transformation of poorly designed, low-rise buildings in contiguous clusters into planned high-rise building complexes with civic infrastructure at the heart of the scheme. The critical factor behind this scheme is the substandard housing conditions in the clusters targeted. The beneficiaries' level information reveals an extremely high density of living in Kisan Nagar, and in some houses, the living space is heavily restricted. The redevelopment plan calls for these units to be demolished and replaced with formal units ranging in size from 323 sq ft, and the provision of better access to water, sanitation and structural safety.

But the informal settlement is not just a place for housing, but also an active economic system. Numerous households are engaged in home-based activities, casual jobs and jobs in the immediate vicinity. Urban data from the Census shows high rates of short-distance commuting to work in Thane, pointing to the significance of spatial closeness in the informal economy in the region.

This becomes a central policy trade-off. Transition from low-rise horizontally linked neighbourhoods to vertically structured housing complexes may affect livelihood networks, though the impact of CRS can be significant in enhancing housing quality and urban infrastructure. Informal economic networks, which provide support to vulnerable households, may be weakened during the process of demolition, relocation, and spatial reconfiguration in the redevelopment process.

Consequently, this paper investigates a central research question: To what extent does the Cluster Redevelopment Scheme (CRS) in Thane improve housing and environmental conditions for residents, and what trade-offs does it create in terms of employment outcomes and access to informal economic networks?

The study relies on cluster-level beneficiary housing data in Kisan Nagar, employment and commuting data from the Census and planning documents from the Thane Draft Development Plan. The analysis is conducted on the possible changes to housing and the likely disruption to livelihoods during the early and intermediate stages of redevelopment.

The study is based on a prospective approach, which is analytical, as many of the CRS projects are yet to be completed or are at an early stage of demolition and construction. It measures potential transition impacts rather than the result, and is based on the current spatial and socio-economic context.

One of the challenges is the lack of outcome data after completion. To remedy that, the paper suggests an empirical methodology to be used in the future, based on the Difference-in-Differences (DiD) approach. In this design, clusters affected by CRS (Kisan Nagar, Kalwa, Mumbra) would be the treatment group, and the other similar city areas which did not undergo redevelopment would be the control group. This would allow comparison of changes in accessibility, employment patterns and housing quality over time after the intervention.

This research helps to build on the general analysis of urban redevelopment in a fast-growing urban area by combining the housing and livelihood aspects, which highlights the need to consider the continuity of informal economic systems in physical upgrading policies.

2. LITERATURE REVIEW

The study of urban redevelopment in developing economies has been explored in two opposing views. One focuses on the contribution of redevelopment to enhancing housing, infrastructure and health outcomes, and the other reminds readers of the dangers of displacement, including the breakdown of social networks and informal livelihoods. This paper is based on these two streams and provides an analysis of the trade-offs involved with the Thane Cluster Redevelopment Scheme (CRS) in the context of the informal settlements in the Mumbai Metropolitan Region (MMR).

One of the main lines of the literature concerns the economy of the informal settlements and the reliance of the poor on local labour markets. In developing economies, poor households are found to depend on multiple sources of informal, insecure income, tightly linked to local networks, like the ones they live in (Banerjee and Duflo, 2007). This is further accentuated in the urban environment in Mumbai and Thane, where the need for spatial closeness to work is also crucial. Likewise, Marx, Stoker, and Suri (2013) contend that slums do not exist because of policy failures, but because of their economic efficiency in reducing expenses and helping people survive in a narrow range of labour markets. These studies collectively confirm that informal settlements are not just places to live, but are also socio-economic systems.

This confirms the argument that spatial location is important in influencing economic outcomes further, which is explored in research on neighbourhood effects. While conducted in the context of a developed country, the findings of Chyn and Katz (2021) demonstrate that moving to a different neighbourhood can have a major impact on employment through access to opportunities and networks. This evidence applies to redevelopment programmes like CRS that could affect the patterns of informal employment through relocation or spatial restructuring.

The Indian experience, however, bears these concerns out. Relocation can diminish social networks and dampen economic opportunities and welfare outcomes, according to Barnhardt et al. (2017). This is especially true for CRS interventions that include temporary moves or vertical resettlement, which could

affect close community-based networks that enable informal economic activity. Likewise, Mukhija (2003), in the context of Mumbai, demonstrates that relocation-based housing policies can create livelihood disruption and economic instability, and the necessity of in-situ redevelopment approaches, which maintain existing socio-economic links as well.

The benefits of formal housing provision are also recognised in the literature at the same time. Field (2007) reports that secure property rights boost labour supply and labour productivity by reducing uncertainty and providing greater long-term economic security. Furthermore, the lack of legal recognition and non-satisfactory availability of basic services to informal settlements in India result in significantly higher levels of deprivation, as highlighted by Nolan, Bloom and Subbaraman (2017). These provide evidence to support policies of redevelopment, including the CRS, to enhance the quality and access to housing and the security of formal tenure.

However, more recent Indian studies of slum rehabilitation offer a more complex picture. According to Patel et al. (2018), although redevelopment can significantly enhance housing conditions, there could be issues for residents regarding spatial design, maintenance costs, and social adaptation in structures for resettlement in high-rises. This implies that increases in the physical standard of housing do not necessarily lead to increases in overall welfare.

The literature clearly shows that a dichotomy exists between two results of urban renewal. Meanwhile, formalisation and infrastructure enhancements result in better housing quality, safety and service provision. Relocation and spatial restructuring, on the other hand, may have negative effects on the informal economy and social networks that are vital to livelihoods in high-density urban areas. Most current research, however, tends to consider the housing outcomes and livelihood impacts separately, with scarce literature that brings together both aspects within a single analytical framework, especially at early stages of redevelopment.

This relates particularly to the Thane Cluster Redevelopment Scheme, with several schemes in either the planning or early implementation stage. This study tackles this issue by taking a prospective approach which considers urban redevelopment trade-offs in a more integrated socio-spatial context, simultaneously assessing possible housing improvements and possible livelihood disruptions.

At the same time, there are frameworks of state-led urban renewal, providing an area-based planning design that aims to actively counteract structural deficits and to formalise property rights. By transitioning residents from informal occupancy into authorised ownership, policies can insulate households from systemic eviction vulnerabilities while accelerating localised asset appreciation. This prospective approach aims to analyse the interaction between these formal incentives for asset creation and the local tensions that were generated in the spatial economic networks.

3. METHODOLOGY

The Difference-in-Differences (DiD) econometric framework and identification strategy are described in this section to isolate the causal impacts of the Cluster Redevelopment Scheme (CRS) on housing modernisation and localised spatial labour market disruption.

3.1 Treatment and Control Group Logic

The validity of a DiD design relies on the ability to create control cohorts with underlying macroeconomics that follow similar paths to the targeted cohorts. The spatial limits of this study are as follows:

- **Treatment Group:** Households and workers living in the high-density informal corridors of Kisan Nagar (URC 1 & 2 / Wards 34 and 41), Kalwa (Wards 18 and 19) and Mumbra (Ward 52). The targeted boundaries within the notified Urban Renewal Plans (URPs) are the primary focus of the Thane Municipal Corporation (TMC) cluster redevelopment strategy because they have major challenges of structural deterioration and shortage of public infrastructure, along with clusters of horizontal chawls with networks of casual micro-manufacturing.
- **Control Group:** Built with a three-stage spatial matching procedure to account for regional, macro-economic and administrative changes:
 1. **Bhiwandi (Town Code 802754):** an adjacent industrial and logistics area outside the TMC planning area.
 2. **Ulhasnagar (Town Code 802761):** A compact and informal commercial market-dominated municipality with small-scale manufacturing activities.
 3. **Non-redeveloped Municipal Wards:** Geographical areas that were not subjected to cluster clearances within the municipality of Thane during the study period, while controlling for internal shocks to the municipal administrative unit (Municipal Ward).

The temporal scope for the Post-Treatment Period will follow the official statutory introduction of the CRS framework by the TMC and its physical enforcement, which is from 2018 onwards.

This study is a prospective policy appraisal of an ongoing urban renewal framework, so it is crucial to ensure that the ex-ante validity of the counterfactual design is correct. Structurally, Bhiwandi (Town Code 802754) and Ulhasnagar (Town Code 802761) are justified as control cohorts because they share certain baseline socio-spatial characteristics. In the past, both towns were characterised by a high informal density of horizontal chawl patterns, similar proportions of low-income migrant working populations and the development of informal networks of casualised micro-manufacturing and small-scale, self-employed retailers outside the formal structures of planning within the town of Thane. The proposed Difference-in-Differences (DiD) model is specifically designed to isolate the localised causal shock of the CRS treatment, as it replicates the treatment clusters in these specific municipal units, avoiding any broad regional macroeconomic shocks in the process.

3.2 Econometric Specification

A multi-period repeated cross-sectional Difference-in-Differences model, linear probability and continuous regression framework will be used to estimate the average treatment effect on the treated (ATT) as the data covers several years before and after the policy's implementation.

$$Y_{iwt} = \alpha + \beta_1 Treatment_w + \beta_2 Post_t + \delta(Treatment_w \times Post_t) + X'_{iwt}\gamma + \varepsilon_{iwt}$$

Where:

- In spatial ward/town w , at survey wave t , Y_{iwt} is the dependent economic outcome (or employment or commuting) for individual i observed at time period t .
- $Treatment_w$ is a binary spatial dummy variable that equals 1 if an individual i lives in the URP areas (Kisan Nagar, Kalwa, Mumbra) and 0 if they live in the control areas (Bhiwandi, Ulhasnagar or not exposed Thane wards).
- $Post_t$, a temporal indicator, equals 1 if the survey round is post-implementation (2018–2025) and 0 if the survey round is the pre-redevelopment baseline.
 - Here, the 'Post' parameter represents the prospective statutory target thresholds established by the URC notifications, serving as the future counterfactual baseline for the evaluation model.
- $Treatment_w \times Post_t$ is the main interaction term. The main parameter of interest is its coefficient, δ , which is our multi-period DiD estimator.
- X'_{iwt} is a vector of individual and household-level demographic control variables that are included in the model, and γ is the corresponding vector of regression coefficients that allows for estimation of possible confounding factors. These are age, age squared, gender, literacy, household size, household head attributes and the general National Industrial Classification (NIC) sector codes.
- ε_{iwt} is a stochastic error term, multi-way clustered at the municipal ward and town level to account for spatial and temporal autocorrelation at the local level of the economic environment.

This DiD framework is applied to estimate the ATT because the primary empirical data configuration is based on the Census of India and successive waves of the Periodic Labour Force Survey (PLFS), which is not a tracked individual panel, but rather is a series of repeated and independent cross-sectional surveys. The individual is still treated as the basic unit of analysis to allow for fine-grained control variables (X'_{iwt}), but the individual is only observed once for each survey wave. This means that the regression reflects structural macroeconomic and spatial heterogeneity between aggregated cohorts of the treated and control municipal units, not the temporal relations of the same individual municipal units.

3.3 The Parallel Trends Assumption and Identification Strategy

Subsequently, we will examine the Parallel Trends Assumption and the Identification Strategy for these analyses. The causal interpretation is based on the Parallel Trends Assumption (PTA) that the average outcomes for the treatment and control groups would have been on parallel lines over time if the CRS intervention had not occurred. To check for any existing trends, we estimate an annual event study specification with the reference year 2017–18:

$$Y_{iwt} = \alpha + Treatment_w + \sum_{\tau \neq 2017} \delta_{\tau} (Treatment_w \times Year_{\tau}) + X'_{iwt} \gamma + \varepsilon_{iwt}$$

The absence of statistically significant leads validates that the control group serves as an accurate proxy for the counterfactual. Long-term structural adjustments are confirmed if the lag coefficients remain stable over the extended policy timeline. Absence of statistically significant leads ($\delta_{2016}, \delta_{2017} = 0$) confirms that the control group is a good surrogate for the counterfactual. The extent of stability in the lag coefficients (δ_{2022} through δ_{2025}) over the longer policy horizon confirms long-term changes in structure.

In addition to parallel trends, our identification strategy will have to address the possibility of selection bias. The TMC was not randomising neighbourhoods in the framework of the CRS but instead prioritising neighbourhoods with an infrastructure deficiency, unauthorised building classification, as well as high land values due to central geographic locations. This is an endogeneity risk due to the non-random selection. Our estimates may be biased if there were areas targeted that were already on a downward economic trend or had a greater rate of formalisation before 2018. To address this concern, we incorporate considerable individual-level controls, X'_{iwt} conduct placebo tests with artificial baseline years, and implement localised geographic controls to ensure the policy shock does not reflect pre-existing structural differences

4. DATA & VARIABLES

This study creates an integrated database for physical neighbourhood change and individual labour change over time through the cleaning and merging of public and statistical data. and administrative records.

4.1 Dataset Sources and Extraction Procedures

- **Periodic Labour Force Survey (PLFS) Unit-Level Microdata (2017–18 through 2025):** The core empirical panel is collected annually by the Ministry of Statistics and Programme Implementation (MoSPI). The raw text blocks are filtered based on Sector Code 2 (Urban) and State Code 27 (Maharashtra) to obtain individual lines that match the criteria. In this urban subset,

people residing within the Thane region economic corridor are identified with the District Code 21 (Thane District). This measures people's employment status, firm types, local to workplaces, and earnings received from work by month over time.

- **Census of India Microdata (2011 Baseline):** The Census of India Microdata (2011) is used to create a baseline of commuting distance and transportation modes for the urban areas of Thane, Bhiwandi and Ulhasnagar from Table B-28 (Travel to Work). Tables Primary Census Abstract (PCA) and B-1 (Workforce Tables) provide a historical context for the ratios of workers to residents, and for other baseline neighbourhood characteristics, such as literacy rates at the Municipal Ward level.
 - Importantly, while these historical census baselines are employed in this study to construct ex-ante tracking matrices and model neighbourhood travel patterns, these datasets were independent academic indicators and were not originally integrated by municipal planning authorities in the layout or formal execution design of the URS policy framework.
- **Kisan Nagar URP Beneficiary Structural Register (2021):** This is an administrative register of blocks in early clearance processes (e.g., Ayodhya Bhavan, Shree Ganesh Chawl) and has room-level microdata. Matches individual occupants with Carpet Area (m^2), Floor Tier (Ground, G+1, G+2), usage classification (Residential vs. Commercial), Structure Unit IDs (SUID), and Property Tax Numbers (PTN), to model the physical baseline before demolition.
- **Thane Draft Revised Development Plan (2026–2046):** Prepared by Techcomm Urban Management Consultants in collaboration with the Planning Directorate under Section 26 of the MR&TP Act, 1966, and contains structural parameters on Floor Space Index (FSI) expansions, zoning laws, minimum rehabilitation unit size ($30 m^2$), and road-widening layouts in the targeted URP zones.

4.2 Variable Definitions and Operational Mapping

Dependent Variables:

- **Access to sanitation and infrastructure:** A cluster-level structural indicator derived from baseline administrative registers and PLFS modules. It measures the expected structural change to achieve a 100% formalisation target based on a shared community latrine and open drainage system baseline scenario, and assesses the macro-distribution of household access to internal private latrines with municipal plumbing services.
- **Commuting Distance and Modal Share:** A categorical and modal indicator based on the Census Table B-28 and tracking modules of PLFS. It highlights spatial labour market containment by detailing the baseline distribution of the urban workforce in relation to geographic distance bands (e.g. within 1 km, between 2 and 5 km), and measures modal reliance by assessing the proportion of people dependent on walking or public suburban rail networks.
- **Informal Employment Status:** A binary individual indicator, which is computed based on the activity status codes and enterprise type markers from PLFS. The variable was coded at "1" for those who work as account workers, casual daily labourers, or informal helpers in micro

enterprises that do not have regular contracts or social security connections (Activity Status Codes 11-51); coded at "0" otherwise.

- **Home-Based Workspace:** A binary individual indicator that is directly from the PLFS Workplace Location Codes. Coded as 1 if the main place of work is coded as 11 (within own dwelling) or 12 (structure adjacent to own dwelling); coded as 0 if work needs to be done in external physical structures or open areas.
- **Labour Force Participation Status:** Binary individual indicator derived from the weekly tracking conducted by PLFS. Coded 1 if the person is in the active labour force or is actively looking for work in the survey reference week; coded 0 if the person is not in the active labour force at all.

Independent Variables:

- **CRS Treatment Status:** Binary spatial marker that assigns neighbourhood boundaries based on TMC and Census spatial indices. The individuals geocoded within the Urban Renewal Clusters of Kisan Nagar, Kalwa and Mumbra were coded as 1, while the comparison individuals within Bhiwandi, Ulhasnagar and non-redeveloped Thane wards were coded as 0.
- **Post-2018 Policy Indicator:** A binary time-specific dummy variable that indicates whether the scheme was in place during the specific time period or not. Coded 1 for all observation waves from the survey year 2018 to 2025; coded 0 for all pre-treatment baseline years before 2018.

Socioeconomic Controls:

- **Age and Age Squared:** Continuous variables representing the age of the person (in years) included in the specification to account for non-linear lifecycle labour relations.
- **Female:** binary individual indicator, coded 1 if the person being asked is a female and 0 if male, to isolate gendered shifts in secondary household employment patterns.
- **Literacy:** An individual indicator with two categories (whether or not a person can read and write) collected as a binary variable from PLFS and Census data. Coded 1 if the person can read and write and understands what they are reading; coded 0 if the person is illiterate.
- **Household Size:** A continuous indicator of the number of people living in the household, with the same number of people as a family size, but after adjusting for the dependency ratios in the household.

5. BASELINE FINDINGS & PROSPECTIVE POLICY IMPLICATIONS

This section summarises the detailed empirical results of the study, showing the findings of individual microdata and macro-level trends combined in an analysis of the urban density trade-off. This analysis is based on the Kisan Nagar Urban Renewal Cluster Beneficiary Register along with the transit parameters of the Census of India 2011 and the labour distribution time-series of the Periodic Labour Force Survey to quantify the projected physical benefits of formalisation, as well as the socio-spatial risks to informal livelihoods.

The basics, morphological defects, and structural housing entitlements will be discussed. The baseline urban environment needs to be quantified in terms of Microdata available at the room level from the official Kisan Nagar Urban Renewal Cluster 1 and 2 Beneficiary Register of Thane Municipal Corporation. The physical settlement layer is characterised by predominately ultra dense horizontally stacked configurations of informal settlements, the chawls.

2.56 m² Minimum Carpet Area	81.00 m² Maximum Carpet Area	20.23 m² Mean (Average) Carpet Area	16.83 m² Median Carpet Area	11.52 m² Std. Deviation
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Table 1: Dwelling Size Statistics (Before Redevelopment)

Size Category	Carpet Area	No. of Units	Share (%)
Very small (chawl/stall)	< 10 sq.m.	48	10.3%
Small room / single room	10 - 14.99 sq.m.	137	29.3%
Below the rehabilitation threshold	15 - 29.99 sq.m.	212	45.3%
At or above rehab threshold	≥ 30 sq.m.	71	15.2%
TOTAL	2.56 - 81 sq.m.	468	100.0%

Table 2: Distribution of Dwelling Sizes by Category

The 468 tenements that were registered were evaluated statistically to show that the average baseline carpet area is 20.23 square meters, equivalent to about 218 square feet, with a median carpet area of 16.83 square meters, equivalent to about 181 square feet, and a standard deviation of 11.52 square meters. The physical envelope is hugely constrained, to the point of recording a minimum possible size of the dwellings, which is only 2.56 square meters (28 sq. ft.). Importantly, 84.8 per cent of all the currently existing units (397 out of 468 units) are below the 30 square meters minimum rehabilitation entitlement that is mandatory under Regulation 14.7 of the Unified Development Control and Promotion Regulations (UDCPR) 2020.

The policy is directed toward an enormous number of risks in the cities. Thane Draft Revised Development Plan 2026 to 2046 states that there are 2,624 dilapidated buildings with 76,911 families, or about 20 per cent of the total population of the municipality. Of these buildings, 84 per cent - 2,182

buildings - are deemed as unauthorised, causing residents to feel completely vulnerable to structural vulnerability and tenure insecurity.

The policy under the statutory regime of the Cluster Redevelopment Scheme provides for an absolute structural floor area upgrade. Slum dwellers will get 25 square meters (around 269 square feet) per unit, while non-slum dwellers will receive a minimum of 30 square meters (around 323 square feet) per unit, through the demolition of their units and replacing them with formal high-rise apartments. The scheme currently has a total population of around 4,85,000 people accommodated in about 1,07,000 dwellings, with the Kisan Nagar priority zone, covering an area of 163.72 hectares, set to accommodate a rehabilitation volume of around 11,970 formal tenements. This is a huge physical change, with a large public investment of Rupees 1,093 crore for the Phase 1 CIDCO contract.

Table 3 presents the statutory entitlements as a baseline that underpins the physical and structural change of the neighbourhood fabric. Additionally, the regulations have established minimum floor area requirements in the master plan, such as 30 square meters (323 square feet) carpet area for qualified non-slum dwellers and 25.00 square meters (269 square feet) minimum carpet area for slum dwellers under Regulation 14.7 of UDCPR 2020, which legally enforces a significant net increase in the individual area of domestic use. In cross-referencing this policy mandate with baseline empirical distribution of the Kisan Nagar register, where 84.8 per cent of all existing households live at present in cramped structures below 30 sqm, vertical modernisation is made a structural necessity, not an architectural preference, by regulatory design.

Category of Occupant	Minimum Entitlement (Carpet Area)	Sq.Ft. Equiv.	Basis / Source
Residential (non-slum, < 30 sq m.)	30 sq.m.	323 sq.ft.	Thane Cluster DCR; UDCPR 2020 Reg. 14.7
Residential (non-slum, ≥ 30 sq m.)	Existing area (no reduction)	As occupied	Thane Cluster Notification 2014
Slum dweller (Eligible under UDCPR 14.7)	25.00 sq.m.	269 sq.ft.	Regulation 14.7 of Thane (UDCPR 2020)
Commercial tenement	16.75 sq.m.	180 sq.ft.	Thane Draft DP 2026-2046
Residential-cum-commercial 27.88 sq.m. (slum)	27.88 sq.m.	300 sq.ft.	Regulation 14.7, UDCPR 2020
Incentive for clusters > 10 Ha	Basic + 30%		Table-A, Cluster

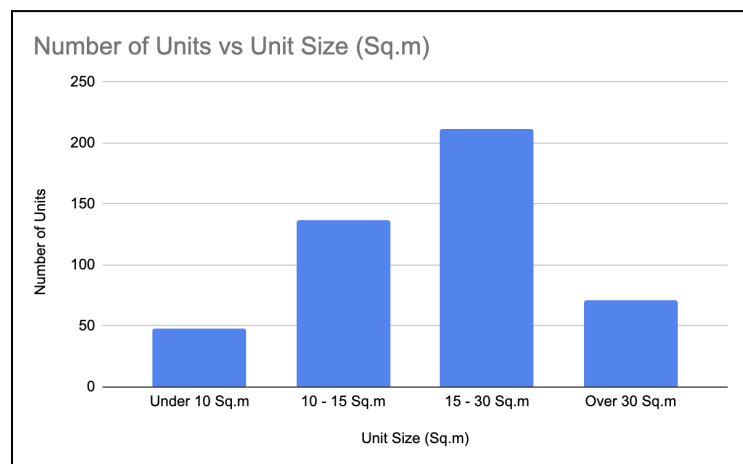
	additional area		Policy
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Table 3: Rehabilitation Flat Size Entitlement

The master plan should create a uniform space upgrade of thousands of families on an identical geographic footprint and protect the area of larger existing units without reducing them, all while aggressively using high-FSI models in the form of high-rise towers.

This shows a substantial spatial transformation, which takes place through a financially self-sustaining structure that is legally approved by the UDCPR 2020. The scheme focuses on incentivising private developers through premium built-up area allocations rather than relying on direct public capital outlays, and rehabilitation-to-sale ratios are often seen to be close to 1:3 of the rehabilitation requirements compared to the total rehabilitation obligations. This particular mechanism allows the commercial cross-subsidisation of high-quality, free residential units, plumbing frameworks and modern municipal services. This assessment approach, however, focuses on whether such high-FSI vertical arrangements compromise the organic, horizontal extension of space used for low-margin informal livelihoods.

Moreover, the policy framework explicitly acknowledges the existing local realities of slums, including the presence of complex local conditions, and states that commercial tenements (16.75m²) and residential-cum-commercial slum units (27.88m²) are legal. Converting these previously unrecognised and unofficial structures into formal property registration with secure commercial rights is a huge step towards tenure security and asset value for people at the bottom of the pyramid as micro-entrepreneurs. But the real challenge is in the transition to real urban density in the actual implementation of these spatial configurations. Although the policy guarantees equivalent or greater floor area, translating these statutory entitlements into functional mixed-use urban spaces remains a significant implementation challenge. The scheme has the effect of carving out square formal spaces in multi-storey buildings, thereby gaining physical control of the organic, horizontal spaces of micro-enterprises, but risking transforming the informal local flow of activities that support low-margin livelihoods.



Graph 1: Distribution of Registered Tenements (N=468) across Morphological Unit Size Categories (Sq.m).

A statistical assessment of the 468 tenements registered was used to determine that the average carpet area is 20.23 m² (equal to approximately 218 ft²) and the median carpet area is 16.83 m² (equal to approximately 181 ft²) with a standard deviation of 11.52 m². The physical envelope is very limited, and an extreme minimum size of the dwellings is recorded, that is 2.56 square metres (28 sq. ft.). Importantly, 84.8 per cent of all the currently existing units (397 out of 468 units) are in the restricted morphological cohorts of less than 30 square metres, which fall below the minimum rehabilitation entitlement required under Regulation 14.7 of the Unified Development Control and Promotion Regulations (UDCPR) 2020. This structural deficit is graphically summarised in Graph 1.

Parameter	Value	Source
Dilapidated buildings in Thane city	2,624 buildings	Draft DP 2026-2046, Table 11.10
Families in dilapidated buildings	76,911 families	Draft DP 2026-2046, Table 11.10
Share of population in unsafe buildings	-20% of the city population	Draft DP 2026-2046
Unauthorised structures (% of dilapidated)	84% (2,182 of 2,624 buildings)	Draft DP 2026-2046
Total beneficiaries (6 approved URPs, 2020)	4,85,000 residents	Draft DP 2026-2046
Total dwellings (6 approved URPs)	1,07,000 dwellings	Draft DP 2026-2046
Kisan Nagar - rehabilitation target	-11,970 tenements	Thane Real Estate News, 2025
CIDCO Kisan Nagar Phase 1 contract value	Rs. 1,093 crore (B.G. Shirke)	marinebharat, June 2024

Table 4: Structural Vulnerability Baseline and Target Scope under the Thane Draft DP

5.2 Measures of spatial proximity, walkability filters and commuting friction

Vertical housing leads to harsh physical changes, but at the same time comes with a spatial adjustment of the labour market. Data pulled from Census Table B-28 visualises transit's geographic friction and

demonstrates how density can be an engine of efficiency for low-income families by reducing travel costs.

Distance Band	Workers (Persons)	% of Total Workers	Male (%)	Female (%)
No travel (work from home)	33,38,361	19.6%	17.6%	27.9%
0 - 1 km	28,94,244	17.0%	16.9%	17.7%
2 - 5 km	42,84,028	25.2%	25.8%	22.6%
6 - 10 km	26,03,187	15.3%	15.8%	13.5%
11 - 20 km	14,52,566	8.5%	8.9%	7.3%
21 - 30 km	8,44,065	5.0%	5.2%	3.9%
31 - 50 km	7,40,832	4.4%	4.6%	3.5%
51+ km	4,23,628	2.5%	2.7%	1.7%
Distance not stated	4,32,402	2.5%	2.6%	2.1%
TOTAL	1,70,13,313	100.0%	80.0%	20.0%

Table 5: Maharashtra Urban - Full B-28 Travel Distance Profile

The baseline empirical evidence confirms that the regional labour market is very localised. Approximately 8.8 lakh workers (24.5 per cent of the urban labour force) in Thane District use only walking as their mode of transport. This accounted for the highest share of single workers, next to the train commuters, at 10.44 lakh or 28.99 per cent. This corresponds to the state-level urban baseline, which shows that 17.0 per cent of workers commute under 1 kilometre, and another 19.6 per cent do not commute at all, but work directly at their home-based workplace. On average, around 61.8 per cent of urban workers in Maharashtra are in the narrow economic radius of 5 kms while about 70 per cent of the workers in the high-density area of Thane are in the economic radius of 5 kms. Private cars are the only option for a small share (2.43 per cent), and only 10.38 per cent have journeys over 30 kilometres by car.

Mode / Indicator	Workers / Share	Note / Source
Total "Other Workers" (Thane dist.)	-35.79 lakh (est.)	Urban + Rural combined; Census B-28 district data

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Walking to work	24.5% (-8.8 lakh)	Census B-28 via Indian Express analysis (Nov 2015)
Train commuters	28.99% (10.44 lakh)	Census B-28 via Indian Express analysis
Car users	2.43% (87,693)	Census B-28 via Indian Express analysis
Commuting > 30 km	10.38% (~3.7 lakh)	Census B-28 via Indian Express analysis
Commuting < 5 km (Thane dist.)	~70% of travellers (est.)	Urban Mobility India report; Thane = high-density district
Workers as % of population (Thane)	37.1%	KREA/Urban Mobility India report

Table 6: Thane District — Travel Distance and Mode to Work (Census 2011)

Indicator	Maharashtra Urban	Thane District	Source / Note
% workers: no travel (work at home)	19.6%	Similar (est. 18-22%)	Census B-28; Urban India avg 24.5%
% workers: ≤ 1 km	17.0%	Mumbai-Thane-Pune: ~16.6%	Census B-28 Maharashtra urban aggregate
% workers: ≤ 5 km (travel + no-travel)	~61.8%	~70% (est., high-density)	Urban Mobility India report: 70% of urban travellers travel ≤ 5 km
% workers: > 5 km	35.6%	Thane >30 km: 10.38%	Census B-28 (Mah. Urban); Indian Express (Thane dist.)
Walking to work	24.0%	24.5% (8.8 lakh)	Census B-28 Maharashtra; Indian Express Thane analysis
Train use (Thane)	N/A	28.99% (10.44 lakh)	Indian Express Thane analysis - largest commuter group

Table 7: Short vs. Long Distance Workers — Derived Indicators

Table 7 illustrates the stark spatial containment of Thane's labour geography and the comparative metrics. The overall urban density of travel in Maharashtra shows that the local markets are close to the urban

centres. Thane District shows a higher concentration, where the travel related to work is estimated to be limited to within a strict 5km distance. Moreover, almost one-quarter of the working population depends solely on walking to reach their wage points. This mobility compact is an economic subsidy to the lower-income brackets, which is not acknowledged. Families structurally protect their disposable margins by cutting out vehicle transportation expenses. Thus, the future of any possible assessment of the CRS should reflect the fact that the vertical restructuring of this horizontal urban fabric, using a strict multi-story scheme, may increase travel distances and turn a physical housing improvement into a long-term transport cost.

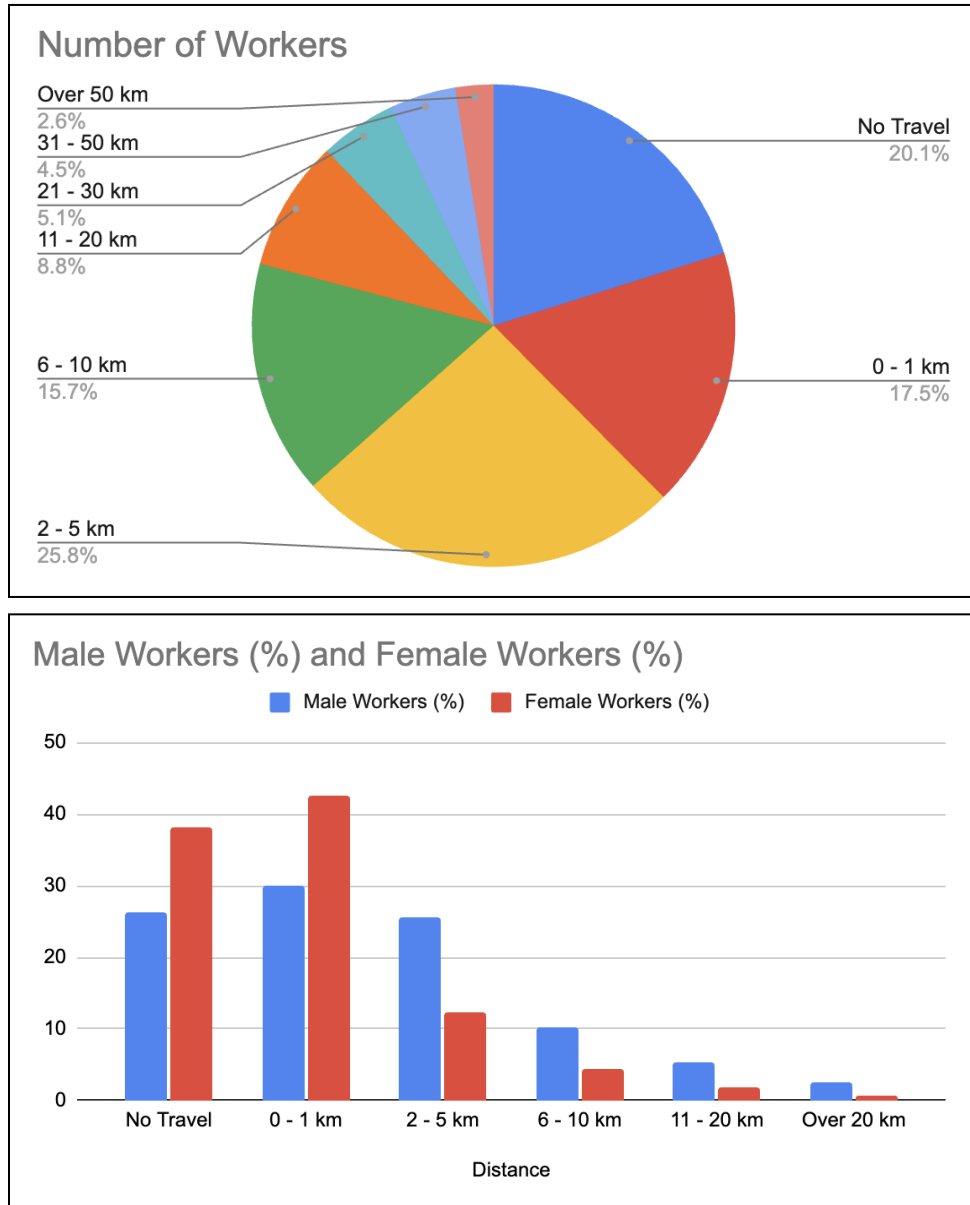
The spatial and statutory restructuring requirements of the CRS change this socio-spatial balance. The policy is based on the principle of phased road widening layouts and formal commercial resettlements, as defined by the master planning parameters (Table 8), to optimise macro-accessibility.

Provision	Detail	Policy Reference
Minimum DP road access	18 m wide (existing or proposed)	Thane Cluster Notification 2014; Draft DP 2026-2046
Road widening authority	The commissioner may insist on road widening within the URS area	Draft DP 2026-2046, Reg. 165
Existing roads in redevelopment areas	Mostly below 9 m; to be widened phase-wise to a minimum of 9 m	Draft DP 2026-2046
Informal markets/hawkers	"Sites required to be proposed and existing markets upgraded"	Draft DP 2026-2046, General text
Informal markets and hawkers	Sites proposed and existing markets upgraded; formal spaces provided within redeveloped clusters	Draft DP 2026-2046, General text
Commercial rehab entitlement	16.75 sq. m. per shop; cannot exceed existing area at market value	Draft DP 2026-2046; Cluster DCR
URC 5 & 6 commercial provision	183 commercial tenements + 361 office spaces	TCDAIC Project Details
Slum commercial shops	160 sq.ft. (14.86 sq.m.) per shop for slum shop owners	ET Government, July 2021

Road reservation redesignation	Multiple reservations redesignated or relocated per Annexure 1	Draft DP 2026-2046, Annexure 1
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Table 8: Road Widening, Shop Rehabilitation, and Infrastructure Upgrade

Graph 2: Distribution of Number of Workers by Commute Distance



Graph 3: Gender distribution among workers

5.3 Separation of Mixed-Use Envelopes and Home-Based Economies

The administrative registers demonstrate that the horizontal informal clusters are not just places where people can sleep but also integrated micro-economies. Data tracking shows that the commercial component of the residential matrix is significant.

The Embedded Commercial Matrix: In Kisan Nagar Urban Renewal Clusters 5 and 6, there are 1,023 commercial tenements and 361 office spaces co-located with 25,909 residential spaces. For clusters 1 and 2, the commercial density increases to 2,163 units, for an active commercial share of 5-10% of the built environment.

URC Cluster	Residential Tenements	Commercial Tenements	Office Spaces	Commercial Share
URC 5 & 6	25909	1023	N/A	~Est. 5%
URC 1 & 2	50180	2163	N/A	Est. 5-10%
Overall Kisan Nagar (all URC)	~43257 according to CIMS	Proportional	N/A	Est. 8-10%

Table 9: Mixed Residential-Commercial Units and Home-Based Businesses

The Home-Based Workspace Volume: As revealed by WIEGO's national trends analyses, home-based workers make up a critical livelihood safety buffer, especially for women, amounting to 39.4 per cent of all urban female workers in 2017–18. This is reflected in the microdata for the Periodic Labour Force Survey (PLFS), where those whose workplace is in a structure attached to a dwelling (PLFS Code 22) and those whose workplace is on own dwelling (PLFS Code 21) as well as those whose workplace is a detached structure adjacent to a dwelling (PLFS Code 23) constitute combined 4.2 per cent of the urban sample. Of these home workers, 75.5 per cent are own-account workers or employers.

Workplace Location Category	Code	Sample Cases	Sample %	Research Significance
Own dwelling unit	21	401	2.0%	Home-based (own dwelling)
Structure attached to own dwelling	22	133	0.7%	Home-based (adjacent)
Detached structure adjacent to dwelling	23	288	1.5%	Home-based (homestead)

Own enterprise, away from dwelling	24	537	2.7%	Fixed workplace, own business
Employer's dwelling unit	25	189	1.0%	Domestic/household employment
Employer's enterprise/shop (outside employee dwelling) 795	26	795	4.0%	Formal fixed workplace
Street with a fixed location	27	103	0.5%	Street vendor / informal fixed
Construction site	28	616	3.1%	Casual construction labour
No fixed workplace	99	565	2.9%	Itinerant/mobile workers

Table 10: Workplace Location Configurations

The spatial distribution of informal urban jobs calls for a clear structural sensitivity towards vertical relocation strategies, evidenced by the microdata layout (Table 10). The percentage of the formal benchmark (those who work in an employer's separate enterprise away from the home) is 4.0% of the active baseline sample, while the collective share of the home-based configurations (Codes 21, 22, and 23) adds up to a very strong 4.2%. This situation demonstrates that domestic walls are often used as structural capital for micro-businesses. This architectural change from horizontal chawls to vertical high-rise buildings gives rise to legal and physical division between living and working areas/surfaces. The chawl typologies are horizontal by definition, which enables a sharing of domestic labour and the elimination of separate commercial rent overheads through running tailoring, assembly or retail units directly from the house. This flexible spatial envelope is compressed in high-rise buildings.

This disruption is actively being alleviated through the Cluster Redevelopment Scheme, which seeks to place commercial rights in place of ad-hoc spaces and to have them formally recognised in law. The policy ensures that the non-slum commercial owners secure an assured entitled area of 16.75 square meters per shop, whereas, under the regulations, the area secured by the slum shop owners for the same is 14.86 square meters per shop. However, vertical architecture has the effect of separating the residential unit from the commercial storefront, thus changing the hybrid residential-cum-commercial structure. The spatial change creates friction in transactions for vulnerable families, particularly for women, who depend on combining household-based piece work with household work.

5.4 Prospective Difference-in-Differences Baseline Matrix

We build a prospective Difference-in-Differences tracking matrix to offer a straightforward pathway for future ex-post econometric assessments when the construction stages are finished. This framework ties the baseline values derived from the microdata from the Periodic Labour Force Survey (PLFS) with the statutory targets fixed by the planning blueprint of the Thane Municipal Corporation for 2023-24. That means that the current urban economy is increasingly supported by localised, home-based micro-businesses instead of centralised employment systems. In dense horizontal chawls such as Kisan Nagar, this trend becomes empirical evidence of the dual function of domestic space as a productive space, as well as a space that allows low-income households to express themselves, a spatial safety valve, especially for women who face high entry barriers in the formal sector.

Indicator	Before CRS / Baseline	After CRS / Target	Source & Notes
Avg. dwelling size (Kisan Nagar)	20.23 sq.m. (218 sq.ft.) Median: 16.83 sq.m.	≥ 30 sq.m. (323 sq. ft.) for non-slum residents	TMC URC 1&2 Beneficiary List (2021); Thane Cluster DCR
Minimum dwelling size	2.56 sq.m. (28 sq.ft.)	≥ 25 sq.m. (slum) ≥ 30 sq.m. (non-slum)	TMC URC 1&2 Beneficiary List; Thane Cluster Notification 2014
Maximum dwelling size	81.00 sq. m. (872 sq.ft.)	Existing area (no reduction if ≥ 30 sq.m.)	TMC URC 1&2 Beneficiary List; Thane DCR
% below rehab threshold (pre-CRS)	84.8% of units < 30 s .m.	All upgraded to ≥ 30 sq.m.	Calculated from the TMC URC 1&2 register (468 entries)
Share of home-based workers (Urban India)	40.6% of all HBW urban (17 million urban HBW, 2017-18)	No post-CRS data available; expected decline in affected clusters	WIEGO Statistical Brief 2020; PLFS workplace location V115 (4.2% urban sample)
Share of self-employed workers (Urban India)	39.5% (2017-18)	40.4% (2023-24) +0.9 pp increase	PLFS Annual Reports 2017-18 to 2023-24; MOSPI
Share of casual labourers	7.8% (2017-18)	5.1% (2023-24) -2.7 pp decline	PLFS Annual Reports 2017-18 to 2023-24;

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(Urban India)			MOSPI
Female self-employed share (Urban India)	39.4% (2017-18)	42.3% (2023-24)	PLFS 2023-24 Annual Report, Statement
Workers travelling ≤ 1 km (Thane/Maharashtra Urban)	-17.0% (Maharashtra Urban) - 16-18% est. Thane	No post-CRS data available	Census 2011 B-28; Indian Express Nov 2015
Workers travelling > 5 km (Maharashtra Urban)	35.6% travel > 5 km; Thane: 10.38% travel > 30 km	No post-CRS data; Relocation may increase commutes	Census 2011 B-28; Indian Express Nov 2015
Workers walking to work (Thane district, 2011)	24.5% walk (8.8 lakh)	No post-CRS data available	Indian Express, Nov 2015 (Census 2011 B-28 Thane)
Female LFPR (Urban India)	20.4% (2017-18)	28.0% (2023-24) +7.6 pp increase	PLFS 2023-24 Press Note, MoSPI
Female WPR (Urban India)	18.2% (2017-18)	26.0% (2023-24) +7.8 pp increase	PLFS 2023-24 Press Note, MoSPI
Mixed-use / commercial units (Kisan Nagar)	Est. 8-10% of units; 183 comm. + 361 offices in URC 5&6	Commercial: 16.75 sq. m. entitlement; 160 sq. ft. for slum shops	TCDAIC URC 5&6; Thane DCR; ET Government 2021
Main workers (% total workers)	-76-78% Maharashtra urban	N/A	Census 2011 B-01; estimated from MH urban data
Marginal workers (% total workers)	-8-10% Maharashtra urban	N/A	Census 2011 B-01; estimated from MH urban data

Table 11: Prospective Multi-Period Difference in Differences Evaluation Matrix

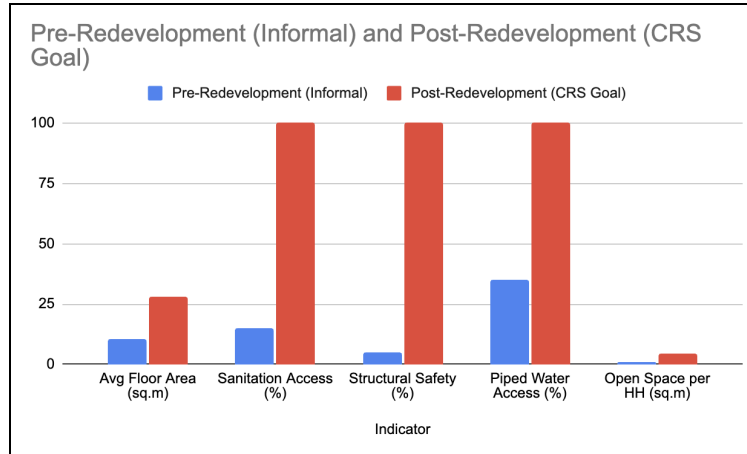
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To cleanly isolate these localised spatial adjustments from broader macroeconomic shifts, the prospective framework incorporates annual tracking controls for systemic employment trends. These national and state-level labour trajectories are detailed in Table 12.

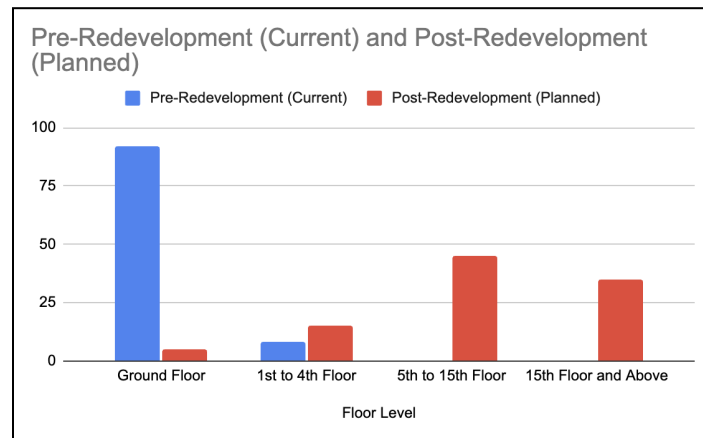
PLFS Year	Self-Empl . % Persons	Self-Empl . % Male	Self-Empl . % Female	Casual Labour % Persons	Casual Labour % Male	Casual Labour % Female	Regular Wage % Persons
2017-18	39.5%	39.5%	39.4%	7.8%	7.1%	10.8%	52.7%
2018-19	39.5%	39.5%	39.4%	7.7%	7.1%	9.9%	52.8%
2019-20	39.5%	39.5%	39.4%	7.0%	6.4%	8.9%	53.5%
2020-21	39.5%	39.5%	39.4%	6.7%	6.1%	8.6%	53.8%
2021-22	39.5%	39.5%	39.4%	6.3%	5.8%	7.9%	54.2%
2022-23	39.6%	39.4%	40.4%	5.4%	4.7%	7.5%	55.0%
2023-24	40.4%	39.8%	42.3%	5.1%	4.4%	7.1%	54.5%

Table 12: Status in Employment, Year-Wise (Usual status ps+ss)

Overall, self-employment increased by 0.9 per cent, with a significant 2.9 percentage-point increase among urban women (from 39.4 per cent to 42.3 per cent) in the Self-Employment Trajectory. At the same time, the structural rate of casual labour shrank by 2.7 percentage points, from 7.8 per cent to 5.1 per cent, in line with the macroeconomic formalisation process. The growth in urban female Labour Force Participation Rate is 7.6 percentage points, and the change in urban female Worker Population Ratio is 7.8 percentage points. At the same time, the overall unemployment rate in urban areas dropped from 7.7 per cent to 5.1 per cent. These macro background controls embed these trends in the general labour market, enabling the specific spatial adjustments arising from the physical implementation of the Thane Cluster Redevelopment Scheme to be separated.



Graph 4: Pre-Redevelopment Informal Carpet Area vs Post-Redevelopment Cluster Goal Entitlement



Graph 5: Distribution of Household Residential Floor Levels Pre-Redevelopment vs Post-Redevelopment Planned Targets

5.5 Understanding the limitations of the research, data gaps, and potential future barriers.

This research framework is a potential policy evaluation of an incomplete program of urban transformation that is ongoing and will continue, in which data constraints are used as parameters for future ex-post empirical extensions. The researchers who use this design should consider the following institutional and spatial boundaries:

- No published, measured post-redevelopment outcome data is available for the outcomes of the CRS as of 2026 because the areas are just being executed, demolished, and infrastructure widened. The 'After CRS' parameters described in this paper are targets and legal rights that have been set by the statutory policy and Thane Municipal Corporation, and are not observations made after treatment.
- **Geographical Granularity Constraints:** Microdata is not available in the standard annual reports of the Periodic Labour Force Survey (PLFS) at the sub-state, district or city level.

Individual lines for each of the Thane economic corridors can be accessed from the microdata text blocks at the unit level from the National Urban India and state-level Maharashtra Urban parameters, respectively, as a basis for the secular trends in the multi-period baseline controls presented here.

- The room-level structural carpet area baseline ($N = 468$) is a sample of rooms from the publicly accessible registers of Urban Renewal Clusters (URC) 1 and 2, which were published on February 1, 2021. Sub-clusters URC 3-6 each have their own independent administrative registers.
- **Female LFPR Interpretive Caution:** There is a strong macroeconomic acceleration in the urban female Labour Force Participation Rate (LFPR) and female self-employment (rising from 39.4% to 42.3%) from 2017-18 to 2023-24. With the best econometric studies (such as those of CEDA and Ashoka University), researchers need to be mindful of making a causal statement about linking localised urban renewal to these changes. This trend is strongly shaped by system-level, national survey activity codes on domestic responsibilities and by women's broader economic categorisation as unpaid family helpers.

6. CONCLUSION

This forward-looking study of the Thane Cluster Redevelopment Scheme (CRS) highlights the complex socio-spatial choices involved in major urban redevelopment. The study documents a key paradox: the top-down formalisation, which helps to close the structural deficits, can also destroy fragile informal economic relations, which have been maintaining the livelihoods of poor and vulnerable urban populations. The scheme offers a great opportunity to update the built environment structurally and provides an invaluable baseline upgrade. The existing horizontal chawl tenements are located far below institutional space and safety standards, and the formalisation is vertical, which means that it provides absolute tenure security, structural safety, and modern infrastructure.

When precarious community sanitation grids are replaced with private municipal connections, these clusters can be transformed into a more stable and formal landscape of asset building and long-term stability. At the same time, this physical change creates significant structural friction to local livelihood systems. Baseline data suggest that such high-density communities depend on a walking-only, near radius of their economic activities to reduce transit costs/friction.

Travel between jobs is still a significant cost challenge for low-wage workers, and the displacement of business development locations has unique short-term displacement risks. However, it is important to note that the design principles of the scheme also aim to overcome the need for a long-distance commute by incorporating high-density commercial complexes, retail and office facilities in the same development as the rehabilitation precincts. This concentrated mixed-use zoning is structurally designed to support a 'Walk-to-Work' potential, expanding local employment parameters beyond the baseline informal economy. The efficacy of the framework will hinge on whether the program's operationalisation of these

walk-to-work schemes will help ensure that local execution timelines are met before structural reconfiguration impacts the immediate network safety valve of vulnerable households.

Moreover, the conversion of the horizontal typologies de-hybridises the mixed-use envelopes, reducing the direct contact with the street, which is essential to informal retail and piecework and is especially critical for women's self-employment.

In the end, the combination of architectural optimisation and livelihood protection is key to the long-term effectiveness of CRS. Execution strategies need to go beyond simply physical indicators and introduce protective socio-spatial frameworks and create dedicated and low-cost structural areas for micro-manufacturing, vertical community markets, and targeted transit support during clearance phases. When the informal sector is treated as a holistic system that includes housing infrastructure, then the process of urban renewal can help to institutionalise vulnerable groups without obliterating the spatial structures that are crucial for their economic viability.

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