



# Technical Assistance Report

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## INTERNAL

Project Number: 52234-001  
Transaction Technical Assistance (TRTA)  
November 2022

## India: Enhancing Urban Mobility and Livability of the Chennai Metropolitan Area

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Asian Development Bank

## CURRENCY EQUIVALENTS

(as of 1 October 2022)

Currency unit	–	Indian rupee/s (₹)
₹1.00	=	\$0.01225
\$1.00	=	₹81.6325

## ABBREVIATIONS

CMA	–	Chennai Metropolitan Area
CMRL	–	Chennai Metro Rail Limited
COVID-19	–	coronavirus disease
LVC	–	land value capture
MMI	–	multimodal integration
TA	–	technical assistance
TOD	–	transit-oriented development

## NOTES

- (i) The fiscal year (FY) of the Government of India and its agencies ends on 31 March. “FY” before a calendar year denotes the year in which the fiscal year ends, e.g., FY2022 ended on 31 March 2022.
- (ii) In this report, “\$” refers to United States dollars.

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## I. THE PROPOSED PROJECT

1. Urban mobility in the Chennai Metropolitan Area (CMA) has been increasingly constrained by the inadequate capacity of the urban road networks and the poor public transport services. To address this issues, the Government of Tamil Nadu refocused its urban transport planning on measures that encourage a significant shift from (motorized) private vehicles to public transport—which will reduce travel time, air pollution, and greenhouse gas emission; improve road safety; and enhance access to jobs, education, and financial and health services.<sup>1</sup> The state government, through Chennai Metro Rail Limited (CMRL), completed the first phase of the Chennai metro development in 2017, which comprises line 1 from Chennai Airport to Washermanpet and line 2 from Central Station to St. Thomas Mount.<sup>2</sup>

2. The proposed Chennai Metro Rail Investment Project will assist the government in implementing the second phase of the Chennai metro development to include three new lines—3, 4, and 5—that will connect the central area of Chennai to major destinations in the south and west of the city. The investment project is aligned with the following impact: urban mobility and livability in the CMA improved (footnote 1). It will have the following outcome: access to and connectivity of public transport in the CMA improved.

## II. THE TECHNICAL ASSISTANCE

### A. Justification

3. The technical assistance (TA) will help CMRL and other urban development stakeholders to fine-tune the project's design and to contribute to the CMA's overall urban resilience, inclusivity, and livability (para. 4); increase multimodal connectivity and ridership of the metro rail system (para. 5); and enhance non-farebox revenue (para. 7). The TA team will contribute significantly to the final project design by bringing together ideas and innovative methods of integrating transport and land use development that it distilled from studies, analyses, and a demonstration program. This initiative will not only yield inclusive socioeconomic benefits for the CMA but also help CMRL sustain its metro operations.

4. **Improving urban resilience, inclusivity, and livability.** From 2011 to 2019, the state gross domestic product grew at an annual average of 7.2% to ₹13.1 trillion (about \$178.6 billion)—most of which is generated from the state's urban areas, particularly Chennai.<sup>3</sup> The pre-coronavirus (COVID-19) trend is expected to resume thanks to the inherent economic potentials of the CMA's manufacturing and information technology industries, and its commercial and financial services. Despite strong economic growth, urban poverty remains a concern in the CMA. People living below the poverty line account for about 2.3% of the urban population, while about 29.0% of the city population lives in slums—significantly higher than the 17.4% average for Indian cities. In this context, the investment project, through the TA, will help CMRL identify innovative measures to improve the accessibility of the metro system for poor communities and contribute to the government's collaborative efforts to enhance the resilience of such vulnerable groups. The TA team will conduct a study to inform the project design of the best ways to enhance first- and last-mile connectivity and inclusivity of the metro system, including well-lit stations, sheltered bus stops, auto-rickshaw and bicycle stands—all with features that are responsive to the needs of the elderly, women and children, and differently abled and transgender people.

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<sup>1</sup> Chennai Metropolitan Development Authority. 2008. *Second Masterplan for Chennai Metropolitan Area, 2026*. Chennai; and Chennai Metropolitan Development Authority. 2010. *Chennai Comprehensive Transportation Study Final Report – Executive version*. Chennai.

<sup>2</sup> A line 1 extension from Washermanpet to Wimco Nagar (9 kilometers) started operations on 14 February 2021.

<sup>3</sup> Government of India, Reserve Bank of India. 2020. *Handbook of Statistics on Indian States*. New Delhi.

5. **Improving multimodal connectivity and ridership.** The Chennai metro lines 1 and 2 were opened to the public progressively between 2014 and 2017, with an average ridership of about 113,000 passengers per day by February 2020. The low numbers, compared with the expected 220,000 passengers per day, are attributed to the limited coverage of the metro network, lack of integration with other modes, and lack of first- and last-mile connectivity. The three new metro lines under the second phase will increase the coverage of the metro services in the CMA and is expected to bring more passengers into the system. To aid passenger transfer from other modes, all metro stations have basic provisions for multimodal integration (MMI), facilities for feeder services, and pedestrian access. The TA will therefore support CMRL in enhancing the interchange functionality by preparing design improvement measures and an MMI operational strategy along the corridors. This will also require consultation and coordination with other public transport providers, such as the bus services run by the Metropolitan Transport Corporation or motorcycle rentals run by various startup companies. The MMI strategy is expected to contribute to a comprehensive urban mobility solution that empowers all communities and user groups, particularly women, the elderly and/or differently abled, and the transgender community.

6. **Integrating transport and urban measures.** The TA team will support CMRL in exploring ways to further increase ridership by integrating the metro system with the initiatives of urban development stakeholders in the CMA, especially measures that enable transit-oriented development (TOD). The TA team will formulate design concepts and action plans to transform the station areas into socioeconomic activity centers. Supported by stronger last-mile connectivity, multimodal connectivity, and accessibility, this so-called “placemaking” initiative will attract visitors and create vibrant and livable urban environments conducive to TOD. It will produce multimodal interchanges able to perform a dual function—as a passenger interchange facility and as a destination—and to boost the metro ridership. A demonstration program will be carried out at Alandur Station, an existing stop on line 1, as part of the TA. It will involve the procurement and implementation of small works to retrofit the recommended design at this station. The program will demonstrate the placemaking concept to CMRL, other stakeholders, and the public for evaluation, and will then be replicated at the four selected underground stations to be constructed on line 4 under the investment project. Along with the demonstration program, the TA team will prepare an integrated regulatory framework for TOD to facilitate the creation of vibrant and inclusive neighborhoods that safeguard public health and ensure safety.

7. **Enhancing non-farebox revenue.** Since starting the operation of lines 1 and 2 (phase 1), CMRL has been implementing several non-farebox revenue-generating measures, such as renting out space for retail, banking, and advertising. For fiscal year 2020, CMRL reported about ₹388 million in non-farebox revenue, or about 28% of total revenue that year. To improve non-farebox revenue generation, the TA team will support CMRL in preparing a corresponding business strategy. The TA will also help CMRL improve its current practice, encourage the participation of women, and explore options for innovative measures based on known and implementable international practices, such as land value capture (LVC) financing, particularly in connection with the TOD initiatives.

8. To design these aspects of the TA optimally—in particular, to assist CMRL in gathering baseline data through field-based and desk-based research, and define the pilot interventions—ADB engaged Active Learning Solutions Private Limited, popularly known as Safetipin.<sup>4</sup> Safetipin is currently assisting CMRL in conducting surveys and analyses to prepare demonstration

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<sup>4</sup> Safetipin was engaged under ADB. 2017. *Strengthening Climate Change Resilience in Urban India – Supporting Climate Change-Resilient Smart Cities Mission Projects (Subproject 2)*. Manila (TA 9257-IND)

programs and proposals to improve urban resilience, inclusiveness, multimodal connectivity, first- and last-mile connectivity, and non-farebox revenue at Alandur Station on metro line 1 (para. 6).

9. Given the investment project's goal of introducing new concepts in these areas, the ADB-administered TA will be an additional resource for CMRL,<sup>5</sup> and for the general consultant. Direct supervision of the consultant's activities by ADB will ensure neutrality and quality of services in these relatively new areas. The TA will complement CMRL's physical investment in the development of MMI and first- and last-mile connectivity under the project. The TA will also complement CMRL's measures to build capacity for project implementation on the aspects aided by the TA, and strengthen the partnership with state government bodies in managing the integration of metro and urban development. The TA will facilitate the dissemination of planning concepts, implementation experience, and lessons and challenges, particularly in relation to TOD and LVC, through knowledge products and with support from the Capacity Development Resource Center in ADB's India Resident Mission.

## B. Outputs and Activities

10. The major outputs and activities are summarized in Table 1.

**Table 1: Summary of Major Outputs and Activities**

Major Outputs	Delivery Dates	Key Activities with Milestones
1. Application-based study of ways to achieve MMI, inclusivity, last-mile connectivity completed	Q3 2025	1.1 Survey, analysis, and application-based study on MMI and inclusivity completed in at least 4 of the locations proposed as metro stations under the investment project (by Q3 2023). 1.2 MMI strategy and implementation plan for lines 3 and 4 developed by Q4 2023. 1.3 Advisory support for the MMI strategy implementation plan provided by Q3 2025. 1.4 Last-mile connectivity design enhancements for 4 new stations prepared and approved for implementation by CMRL by Q3 2024 1.5 At least 5 sensitization workshops for decision makers, and capacity building programs for operational staff of CMRL and related agencies (at least 30% of them women) on MMI and last-mile connectivity enhancements completed by Q3 2024.
2. Demonstration program showcasing placemaking and TOD concepts implemented	Q3 2025	1.1 Review of studies that focus on TOD in Chennai and successfully designed placemaking interventions in India completed by Q3 2023. 1.2 Placemaking concept for the demonstration program completed by Q4 2023. 1.3 Implementation of the placemaking demonstration program completed by Q3 2024. 1.4 Concept for placemaking measures at 4 new stations completed and approved by CMRL by Q3 2024 1.5 Integrated regulatory framework for TOD prepared by Q1 2024. 1.6 Action plan for TOD, with gender equality and social inclusion measures, prepared by Q3 2024. <sup>a</sup> 1.7 At least 5 training sessions and workshops on placemaking and TOD conducted for operational staff of CMRL and related agencies (at least 30% of them women) by Q3 2024. 1.8 Advisory support for TOD implementation provided by Q3 2025

<sup>5</sup> CMRL has already set up a project management cell to manage the urban livability and non-farebox revenue aspects, including TOD and LVC.

Major Outputs	Delivery Dates	Key Activities with Milestones
3. Non-farebox revenue generation measures strengthened with LVC financing strategy	Q3 2025	1.1 Review of CMRL's current non-farebox revenue-generating measures and of LVC studies completed by Q3 2023. 1.2 Workshop on CMRL's current non-farebox revenue strategy conducted by Q3 2023. 1.3 Business strategy for enhanced non-farebox revenue generation, including action plan for LVC, completed by Q4 2023. 1.4 At least 2 sensitization workshops on LVC for all stakeholders, related agencies, and decision makers (at least 30% of them women) completed by Q3 2024. 1.5 Advisory support for implementing the business strategy for enhanced non-farebox revenue generation and the action plan for LVC provided by Q3 2025.

CMRL = Chennai Metro Rail Limited, LVC = land value capture, MMI = multimodal integration, Q = quarter, TOD = transit-oriented development.

<sup>a</sup> The TOD action plan will include recommendations to use universal accessibility design standards in any infrastructure development, and measures to promote the participation of women in any public consultation.

Source: Asian Development Bank.

### C. Cost and Financing

11. The TA is estimated to cost \$1,450,000, of which \$1,000,000 will be financed on a grant basis by ADB's Technical Assistance Special Fund (TASF-other sources). The key expenditure items are listed in Appendix 1. CMRL will provide counterpart support in the form of data collected from previous studies and other in-kind contributions. If required, CMRL will also contribute to any expenditures related to the implementation of the placemaking demonstration program.

### D. Implementation Arrangements

12. ADB will administer the TA. Its South Asia Department will select, supervise, and evaluate the consultants. A dedicated team within CMRL was formed to implement the TA, and to facilitate coordination with the government agencies concerned. The implementation arrangements are summarized in Table 2.

**Table 2: Implementation Arrangements**

Aspects	Arrangements		
Indicative implementation period	January 2023–December 2025		
Executing agency	Department of Special Initiatives of the Government of Tamil Nadu, acting through CMRL		
Consultants	To be selected and engaged by ADB		
	Firm: QCBS with quality–cost ratio of 90:10, using biodata technical proposal	Preparation of TOD action plan, and measures to enhance non-farebox revenue, including LVC (6 international and 28 national person-months)	\$500,000
	Nongovernment organization: direct contracting	Reports on ways to enhance MMI, inclusivity, and last-mile connectivity designs, and placemaking. (26 national person-months)	\$200,000
	Individual: individual selection	Technical and advisory support for the implementation of MMI strategy, TOD, and LVC-related activities (8 person-months)	\$100,000
Procurement	To be managed by consultants		



Aspects	Arrangements		
	Shopping (works and equipment)	Multiple contracts	\$200,000
Disbursement	Disbursement of technical assistance resources will follow ADB's <i>Technical Assistance Disbursement Handbook</i> (2020, as amended from time to time).		

ADB = Asian Development Bank, CMRL = Chennai Metro Rail Limited, MMI = multimodal integration, QCBS = quality- and cost-based selection, TOD = transit-oriented development.

Source: ADB estimates.

13. **Consulting services.** The TA will require about 68 person-months of consulting services. An international firm with an estimated input of 34 person-months (6 international, 28 national) will be recruited through the biodata technical proposal and quality- and cost-based selection method, with a quality–cost ratio of 90:10 for the TOD and non-farebox revenue components. Depending on the performance of the ongoing survey and preparatory works for the demonstration program, Safetipin will be recruited through direct contracting to deliver the MMI, first- and last-mile connectivity, and placemaking components, in a continuation of its current assignment (para. 9) and with an estimated input of 26 person-months (national). One individual international consultant will be recruited as a technical advisor for 8 person-months to support the MMI, and first- and last-mile connectivity enhancements, TOD and LVC implementation, and general quality control. ADB will engage the consultants following the ADB Procurement Policy (2017, as amended from time to time) and staff instructions.<sup>6</sup> The summary of consulting requirements is presented in Table 3.

**Table 3: Summary of Required Consulting Services**

Positions	Person-Months
<b>CONSULTING FIRM FOR TOD AND NON-FAREBOX REVENUE</b>	
<b>International</b>	<b>6.0</b>
Urban planner and LVC specialist	3.0
Urban transport planner and TOD specialist	3.0
<b>National</b>	<b>28.0</b>
Market analyst / team leader	10.0
Real estate and property specialist	6.0
Financial expert	4.0
Legal expert	2.0
Gender specialist	2.0
Communication specialist	4.0
<b>NONGOVERNMENT ORGANIZATION FOR MMI, LAST-MILE CONNECTIVITY, AND PLACEMAKING</b>	
<b>National</b>	<b>26.0</b>
Urban transport specialist / team leader	6.0
Project analyst	6.0
Urban designer	6.0
Safeguards and gender specialist	2.0
Project coordinator	6.0
<b>INDIVIDUAL EXPERT (National)</b>	<b>8.0</b>
Urban mobility specialist and technical advisor	8.0

LVC = land value capture, MMI = multimodal integration, TOD = transit-oriented development.

Source: Asian Development Bank.

<sup>6</sup> Outline Terms of Reference for Consultants (accessible from the list of linked documents in Appendix 2).

**COST ESTIMATES AND FINANCING PLAN**  
(\$'000)

Item	Amount
<b>A. Asian Development Bank<sup>a</sup></b>	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	129.5
ii. National consultants	595.5
b. Out-of-pocket expenditures	
i. International and local travel	29.0
ii. Surveys	10.0
iii. Training, seminars, and conferences	4.0
iv. Miscellaneous administration and support costs	1.5
2. Pilot testing	
a. Goods (rental or purchase)	50.0
b. Works	150.0
3. Contingencies	30.5
<b>Total</b>	<b>1,000.0</b>

Note: The technical assistance (TA) is estimated to cost \$1,450,000, of which contributions from the Asian Development Bank are presented in the table above. The government will provide counterpart support in the form of counterpart staff, reports and data collected from previous studies, office accommodation, and other in-kind contributions. The value of government contribution is estimated to account for 31% of the total TA cost.

<sup>a</sup> Financed by the Asian Development Bank's Technical Assistance Special Fund (TASF-other sources).

Source: Asian Development Bank estimates.

**LIST OF LINKED DOCUMENTS**

<http://www.adb.org/Documents/LinkedDocs/?id=52234-001-TARreport>

1. Outline Terms of Reference for Consultants