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Project Document
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Sovereign-backed Financing

Republic of India
Chennai City Partnership: Sustainable Urban Services Program

Currency Equivalents
(As on December 31, 2020)

Currency Unit – Indian National Rupee (INR)
INR1.00 = USD0.01
USD1.00 = INR73.07

Borrower's Fiscal year
April 1 – March 31

Abbreviations

AIIB	Asian Infrastructure Investment Bank
CAPEX	Capital Expenditures
COVID-19	Coronavirus Infectious Disease of 2019
CMA	Chennai Metropolitan Area
CMWSSB	Chennai Metropolitan Water Supply and Sewerage Board
CPHC	Comprehensive Primary Health Care
CUMTA	Chennai Unified Metropolitan Transport Authority
DALY	Disability Adjusted Life Year
DLI	Disbursement Linked Indicator
DLR	Disbursement Linked Result
EHS	Environmental and Health and Safety
EIRR	Economic Internal Rate of Return
ES	Environmental and Social
ESP	Environmental and Social Policy
ESSA	Environment and Social Systems Assessment
FM	Financial Management
GCC	Greater Chennai Corporation
GDP	Gross Domestic Product
GoI	Government of India
GoTN	Government of Tamil Nadu
GHG	Greenhouse Gases
HH	Household
IBRD	International Bank for Reconstruction and Development
IFSA	Integrated Fiduciary Systems Assessment
IVA	Independent Verification Agent
M&E	Monitoring and Evaluation
MTC	Metropolitan Transportation Company
NMT	Non-Motorized Transport
NQAS	National Quality Assurance Standards
NRW	Non-revenue water
O&M	Operation and Maintenance
OSR	Own Source Revenue
PAP	Program Action Plan
PforR	Program for Results
PMU	Program Management Unit
POM	Program Operations Manual
PPM	Project-affected People's Mechanism

PPP	Policy on Prohibited Practices
PSC	Program Steering Committee
RA	Result Area
SWM	Solid Waste Management
TA	Technical Assistance
TNIDB	Tamil Nadu Infrastructure Development Board
TPD	Tonnes Per Day
UCHC	Urban Community Health Center
ULB	Urban Local Body
UPHC	Urban Primary Health Center
WB	World Bank
WRD	Water Resources Department
WRM	Water Resource Management

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1. Summary Sheet

Project No.	PD000477-IND
Project Name	Chennai City Partnership: Sustainable Urban Services Program
AIIB Member	Republic of India
Borrower	Republic of India
Program Implementing Entity	The State of Tamil Nadu
Sector	Urban
Sub-sector	Water resource management; water supply and sanitation; urban transport; solid waste management; and public health
Program Objective	To strengthen institutions and improve quality and financial sustainability of selected urban services in the Chennai Metropolitan Area (CMA).
Program Description	The Program is envisioned as a first-phase engagement and a building block for the Bank's long-term partnership in CMA by supporting the government's program of expenditures. As a subset of the overall government program, the Program supported by this Financing will cover the core urban services, including water resource management, water supply and sewerage, urban mobility, solid waste management, and public health.
Implementation Period	Start Date: October 1, 2021 End Date: June 30, 2026
Expected Loan Closing Date	December 31, 2026
Cost and Financing Plan	Indicative Program Cost: USD701 million <u>Indicative Financing Plan</u>: AIIB loan: USD150 million (21.4%) International Bank for Reconstruction and Development (IBRD) loan: USD150 million (21.4%) Government of Tamil Nadu (GoTN): USD401 million (57.2%)
Size and Terms of AIIB Loan	USD150 million. A Sovereign-Backed Loan with the final maturity of 16.5 years, including a grace period of 5.5 years, at AIIB's standard interest rate for sovereign-backed variable spread loans.
Cofinancing (Size and Terms)	World Bank (WB): USD150 million
Environmental and Social Category	WB's Category "*Substantial*" (similar to AIIB's Category B if AIIB's ESP were applicable).
Risk (Low/Medium/High)	Medium
Conditions of Effectiveness	(i) signing of Project Co-lenders' Agreement between the WB and AIIB; (ii) effectiveness of Financing Agreement between the WB and the Republic of India; and (iii) signing of Program Agreement between AIIB and the State of Tamil Nadu.
Key Covenants	GoTN shall:

	(i) no later than one month from effective date, establish and maintain Program Steering Committee; (ii) maintain, until the completion of the Program, a Program Management Unit, with terms of reference, functions and resources acceptable to the WB and AIIB; (iii) within two months of effectiveness, ensure each of the Implementing Agencies designate and maintain a nodal officer to facilitate the coordination of the Program activities; (iv) undertake the actions set forth in the Program Action Plan (PAP) and maintain adequate policies/procedures to monitor and evaluate its implementation, in a manner satisfactory to the WB and AIIB; and (v) within three months of effectiveness, ensure that Program Operations Manual (POM) has been prepared and adopted, in form and substance satisfactory to the WB and AIIB; and (vi) within three months of effectiveness, appoint the Independent Verification Agent with terms of reference acceptable to the WB and AIIB and maintain it until the completion of the Program.
Policy Waivers Requested	The proposed AIIB co-financing of the WB's Program-for-Results (PforR) will require a derogation from AIIB's Procurement Policy in order to allow for the application of the fiduciary provisions of WB's Policy on PforR (PforR Policy) in lieu of the PP.
Policy Assurance	The Vice President, Policy and Strategy, confirms an overall assurance that AIIB is in compliance with the policies applicable to the Program.
Economic Capital (Ecap) Consumption	USD5.58 million (4.6%)

President	Jin Liqun
Vice President	D.J. Pandian
Director General	Rajat Misra
Team Leader	Sangmoo Kim, Sr. Investment Operations Specialist (Urban)
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2. Program Description

A. Program Overview

1. **Program Objective.** The Program objective is to strengthen institutions and improve quality and financial sustainability of selected urban services in the Chennai Metropolitan Area (CMA).

2. **Program Description.** The southern State of Tamil Nadu is one of India's most urbanized states and an economic powerhouse[1]. The CMA dominates the State's demographic and economic landscape[2]. In Chennai city, the capital of the Tamil Nadu state and heart of the CMA, economic growth and dynamism has been coupled with rapid physical growth and changes in its boundaries[3]. At the same time, CMA is facing tremendous infrastructure deficits and low service quality in core urban sectors such as water resource management (WRM), water supply and sanitation (WSS), urban mobility, solid waste management (SWM) and public health. CMA is also highly vulnerable to natural disasters, climate change and, as the COVID-19 emergency revealed, to pandemics[4]. In particular, the COVID-19-induced crises have highlighted the need for better services as well as limitations of current delivery models and have created the momentum to pivot towards sustainable infrastructure delivery and building back better and greener.

3. Further to above urban infrastructure delivery gaps, the CMA suffers from the following cross-cutting challenges: (i) fragmentation of responsibilities across multiple agencies and jurisdictions[5]; (ii) lack of institutional capacity and inter-agency coordination mechanisms for integrated planning, delivery and monitoring; (iii) operating frameworks that focus on infrastructure asset creation rather than on service delivery performance in terms of coverage, quality, customer satisfaction, sustainability and resilience; and (iv) lack of sustainable financing frameworks, with very low own-source revenue generation, excessive and unsustainable reliance on the state government for input-based budget allocations and operating subsidies, and few incentives for cost-effective service delivery and private sector participation.

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[1] Almost half (49 percent) of Tamil Nadu's population of 72 million was already urban in 2011. The urbanization rate is expected to increase to 67 percent by 2030 (GoTN, 2012. 12th Five-Year Plan, 2012–2017). Over the last five years ending Fiscal Year (FY) 2019-2020, the state's GDP (at constant prices) grew at 7.99 percent which is higher than the national-level GDP growth rate of 6.71% in the same period. The majority of GDP is generated in urban.

[2] CMA is the fourth most populous metropolitan area in India, with an estimated population of 10.9 million, encompassing an area of 1,189 sq km which continues to grow faster than rest of Tamil Nadu. CMA is also the fourth largest economy in India, with GDP of approximately USD79.6 billion.

[3] In 2011, the area under the jurisdiction of the Greater Chennai Corporation (GCC) was expanded from 176 sq km to 426 sq km, by incorporating the surrounding 42 local bodies (9 municipalities, 8 town panchayats, 25 village panchayats).

[4] It is, for instance, plagued by recurring cycles of floods and droughts. Frequent disaster events—such as the devasting flood in 2015, debilitating droughts in 2018 and 2019, Cyclone Gaja in 2018, and the ongoing COVID-19 pandemic (2020)—are inflicting huge economic losses, causing loss of life and livelihoods, and adversely impacting infrastructure and service delivery.

[5] Institutional fragmentation and the lack of inter-jurisdictional cooperation in CMA has exacerbated service delivery in terms of coverage, quality and operational sustainability of urban services. The GCC, the largest ULB in the CMA, is directly responsible for delivering several but not all urban services in its jurisdiction. Each service delivery agency, such as Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB), and Metropolitan Transport Company (MTC), has a varying degree of autonomy and capacity and report to different state-level departments.

4. CMA has greater potential to transform the State's economy and promote prosperity and livability of its citizens by leveraging its ongoing and potentially promising urbanization. Acknowledging the scale and complexity of challenges facing CMA, it requires a programmatic long-term approach in providing sustainable and resilient infrastructure and quality urban services.

5. Against the backdrop of these situations, the Government of Tamil Nadu (GoTN) decided to set up a multi-phased urban service improvement program for 2021-2030 (Chennai 2030 program[6]) to transform Chennai into a city that is green, livable, competitive, and resilient. Phase 1 of the Chennai 2030 program will focus on improving the delivery of selected metro-level services, with infrastructure investments that can realize visible service improvements in the short term. Phase 1 will be implemented over 5-years (2021-26) with the objective of improving the quality of and access to core urban services.

Table 1. Program Boundaries

	GoTN program	PforR
Title	Phase 1: Chennai 2030 program	Chennai Sustainable Urban Services Program
Objective	To improve the quality of and access to core urban services in CMA	To strengthen institutions and financing for improving quality and sustainability of selected urban services in CMA
Duration	2021-2026	2021-2026
Geographic coverage	CMA	CMA
Results Areas	Three pillars focusing on (i) infrastructure and service delivery, (ii) policies and institutions, and (iii) funding and financing mechanisms for capital and operational expenditures	Three Result Areas (RAs) focusing on enhancing the quality of urban services (RA1), which would be supported by improving financial sustainability of service agencies (RA2) and institutional strengthening (RA3)
Overall Financing	USD1.46 billion[7]	USD701 million

6. The proposed Program, using the WB's Program for Results (PforR) financing instrument[8], will support Phase 1 of the Chennai 2030 program by focusing on a core set of infrastructure improvements across the identified service sectors with USD701 million in financing over 5-years (2021-2026). As a subset of GoTN's overall program, the Program will cover the core urban service sectors, including WRM, WSS, urban

[6] It is envisaged as a multi-phased program that will pool resources from government sources and development partners and also leverage the private sector for both finance and expertise. All program activities will be structured in the form of three pillars: (i) enhancing the quality of urban services; (ii) improving financial sustainability of service delivery; and (iii) strengthening institutions.
[7] Balance to be supported by GoTN and other development partners including KfW considering its financing.
[8] The WB's PforR instrument is designed to better respond to changing development needs, meet demand from client countries, and enhance development effectiveness by supporting a government program of expenditures and building institutional capacity. Key features of the PforR include: (i) financing and supporting borrower's program; (ii) disbursing upon achievement of program results using DLIs/DLRs; (iii) strengthening the capacity and systems of the institutions that implement the program, thereby enhancing development impact and sustainability; and (iv) using the government's own systems and institutions, based on the WB's assessments on the program's fiduciary and environmental and social (ES) management systems and additional measures as needed to provide for their application consistent with the provisions of the WB's Policy on PforR. High value contracts and activities likely to have significant adverse ES impacts are excluded from PforR operations.

mobility, SWM, and public health and will be supported by a strong infrastructure investment plan to achieve the Program results. The Program is also expected to be followed by two infrastructure projects on Urban Mobility and Spatial Development (FY2022) and Water and Resilience (FY2023) to support Phase 2 of the Chennai 2030 program. The Program will cover the entire CMA and, among the urban local bodies (ULBs) in CMA, the Greater Chennai Corporation (GCC) has a specific focus as the largest and economically most important ULB**.**

7. **Expenditure Framework.** The eligible expenditure framework for the Program[9] will include: (i) infrastructure investments and service delivery contracts for priority expenditures such as expansion of the water distribution network and household connections, augmentation of the bus fleet for public transport, development of '*mega-streets*' (pedestrian friendly streets that also carry multi-utility networks), and rehabilitation of water tanks and reservoirs to augment carrying capacity; (ii) operation and maintenance (O&M) support for delivery of Chennai Unified Metropolitan Transport Authority[10] (CUMTA)'s operational and establishment expenditures, Gender Lab[11] especially for public transportation and public health services; (iii) Technical Assistance (TA) related to critical technical studies and plans such as water security optimization plan, SWM plan, and revenue enhancement plans; and (iv) goods and equipment for systems development, across all the identified sectors.

8. The total Program financing of USD701 million will be used as follows: (i) capital expenditures (CAPEX)[12], estimated at 58 percent of Program expenditures; (ii) service O&M; (iii) staffing costs; and (iv) TA, capacity building and systems improvement. Out of USD701 million, USD300 million from AIIB and WB will be used for: (i) capital expenditures (76%); service O&M (7%); staffing costs (11%); and TA and capacity building (6%). The expenditure items have been finalized based on the Program activities that are critical for achieving the targeted results, known as disbursement linked results (DLRs) that are derived from disbursement linked indicators (DLIs). The eligible expenditure categories and items are fully aligned and anchored within the GoTN's budgetary system for Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB), Water Resources Department (WRD), Metropolitan Transport Company (MTC), and GCC. A summary of the Program's expenditure framework is presented in Table 2. (see Annex 2. for detailed expenditures of the Program by sector).

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[9] The Program excludes activities assessed to have a significant adverse impact on the environment and/or people as defined in the WB's policy on PforR Financing. It also excludes works, goods, and consultancy contracts above the thresholds specified by the WB's operations procurement review committee.

[10] CUMTA will be the key coordinating agency for integrated planning and delivery of all the mobility services in CMA, including bus, metro, rail, road, and pedestrian services and infrastructure. The Program will help integrate different modes of transport so that the citizens in CMA can move safely, conveniently and efficiently across the city. It is also expected to bring synergies with proposed urban transport projects on Chennai Metro Rail (Phase 2) and Peripheral Ring Road, which are under preparation.

[11] An institutional mechanism to support data-driven and gender-informed planning and design.

[12] CAPEX including external funding (AIIB/WB) will consist of: WSS - Non-revenue water reduction, improvement in household connections, and metering in core city, and expansion of water supply and sewage network; WRM - investments in resilient watersheds including reprofiling of drainage channels, groundwater recharge, rejuvenation of reservoirs, lake restoration, and water quality improvements; Urban mobility - integrated public transportation system and bus services improvement including fleet expansion; Public Space: Mega-streets improvement; SWM - selected investments for material recovery and recycling infrastructure; and Public health - digital health system and enhancement of health facility.

Table 2. Program's Expenditure Framework

Expenditure Category	Estimated Amount (USD Million; %)
CAPEX	406 (58%)
Service O&M	38 (5%)
TA and capacity building	46 (7%)
Staff costs	211 (30%)
TOTAL	**701.0 (100%)**

9. **Expected Results.** The Program objectives will be evaluated against the following key result indicators: (i) improvement in service delivery performance[13] for MTC, CMWSSB and GCC, disaggregated by gender and vulnerable groups; (ii) operationalization of CUMTA with enhanced capacity to oversee urban mobility in the metropolitan areas; (iii) percentage increase in GCC annual own source revenues; (iv) improved financial performance for WSS service; and (v) reduction in vacancy rates of professional staff category (Group A & B cadre) of GCC to enhance professional capability. A results framework containing result indicators, and monitoring and reporting arrangements is attached in Annex 1.

10. Program resources will be disbursed based on the achievement of DLRs for each year of the Program, which have been defined by reference to 10 DLIs. These DLIs and their related DLRs have been selected to incentivize the most critical reforms, new models of service delivery, and achievement of improvements in service quality and performance. The weighing of resources across different DLRs reflects their importance toward achieving the overall Program results. Resources allocated to the DLIs/DLRs do not represent the total financial outlay required; the gap will be filled by GoTN. Table 3 below details the DLIs and their allocated funding from WB and AIIB. A complete matrix of DLIs and DLRs is provided in Table A.2 of Annex 2**.**

Table 3. Disbursement Linked Indicators and Allocated Financing

Result Area	DLIs	Responsible Agency	Allocated Amount (USD millions)	
			WB	AIIB
RA1. Enhancing quality of urban services (USD177 million)	DLI1. Improved operational efficiency in water supply (performance contract, NRW reduction) and metering for demand-side management	CMWSSB	17.50	17.50
	DLI2. Improved access to water supply (increase in coverage and reliability)	CMWSSB	10.00	10.00
	DLI3. Performance-based contracts[14] for bus service delivery to enhance quantity and quality of services	MTC	41.00	41.00

[13] A composite index that consists of the following service-specific indicators will be developed and monitored: (i) WSS: additional households connected and receiving assured water supply of at least one hour daily; (ii) Urban mobility: index measuring increase in quantity of service and in user satisfaction; and (iii) Public health: increase in the UPHC service provision improvement index value.

[14] Performance-based contracts will be used to bring in private sector for improving and expanding bus transport and water supply services in Chennai. Under this contracting system, contracts payment will be paid against agreed performances.

Result Area	DLIs	Responsible Agency	Allocated Amount (USD millions)	
			WB	AIIB
	DLI4. GCC's health system strengthened through improved access to services and quality of cares	GCC	20.00	20.00
RA2. Improving financial sustainability of urban services (USD60 million)	DLI5. Increased annual own-source-revenues in GCC (percentage)	GCC/GoTN	15.00	15.00
	DLI6. Improved financial sustainability of WSS services (with user fees increasingly covering O&M costs)	CMWSSB/GoTN	15.00	15.00
RA3. Strengthening institutions (USD62.5 million)	DLI7. Reduction in vacancy rates of professional staff category (Group A & B cadres) of GCC to enhance professional capability	GCC	7.50	7.50
	DLI8. CUMTA is operational with enhanced capacity and control over sector budget allocation	GoTN/Transport Department and CUMTA	4.00	4.00
	DLI9. Strengthened institutions for coordinated water management and security (Water Regulatory Authority established)	WRD, GoTN	14.62	14.62
	DLI10. Enhanced efficiency and transparency of public procurement (GCC and CMWSSB)	GCC, CMWSSB	5.00	5.00
Front end fee	*(0.25% of loan amount)*		*0.38*	*0.38*
TOTAL			**150.00**	**150.00**

11. **Expected Beneficiaries.** The main target groups that will directly benefit from the Program in CMA include: (i) over 8 million urban residents, through increased access to improved and resilient urban services; and (ii) staff of key service delivery agencies including CMWSSB, WRD, MTC and GCC through improved institutional capacity for planning, implementing, financing, maintaining and monitoring key urban services.

B. Rationale

12. **Strategic fit for AIIB.** The Program is consistent with AIIB's mandate and thematic priority to promote green infrastructure. The Program, as a multi-sector operation, aims to address critical challenges in delivering and maintaining quality urban services including WRM, WSS, SWM, urban mobility, and public healthcare (in response to COVID-19) in an integrated manner, and thus, fits within the strategic focus of AIIB's Sustainable Cities Strategy. The Program also supports developing and operationalizing soft digital infrastructure, including a remote operation to increase efficiency, resilience and sustainability of urban services in CMA, which is in line with AIIB's Digital Infrastructure Strategy. Financing the Program allows AIIB to reach out to the municipal level authority especially those that are relevant to infrastructure interventions in the city. This will open a long-term financing window and opportunities for AIIB to add value in infrastructure interventions in later phases, fully align with a new market segment under the Sustainable Cities Strategy and share valuable lessons and learning from the replicable program interventions for other cities in India and in other member countries.

13. **Value addition by AIIB.** GoTN's ongoing effort to improve urban service delivery and the resilience including climate resilience of CMA, is highly vulnerable to climate change. Moreover, the GoTN has been facing fiscal and operational stress due to rapid urbanization and currently more with the ongoing COVID-19 pandemic. Besides closing the financing gap of the essential urban service delivery of the CMA, AIIB's financing and technical support will enhance GoTN's effort towards building the climate resilience of CMA. AIIB, with skills and experiences gained from other relevant projects, will also contribute to the implementation of various infrastructure-related investments under the Program, including upgrading of water supply and sanitation, and solid waste management, improvement of urban mobility system, implementation of Mega-street, and development of digital infrastructure. AIIB, together with the WB, will also provide the necessary support to enhance the quality of Program implementation throughout the Program life cycle. The Program will support the Government of India (GoI) to meet its related development goals, especially Sustainable Development Goal 11 (Sustainable Cities).

14. **Value addition to AIIB.** The Program will address the multi-sectoral urban challenges with comprehensive solutions at mass scale, carefully designed to lay the groundwork for a series of interlinked potential follow-up investment operations[15] (supporting Phase 2 of the Chennai program). In this regard, AIIB's engagement in this early stage will facilitate AIIB's possible future investment in Tamil Nadu. AIIB's participation in the Program will also help enhance the Bank's reputation as a strong advocate of long-term engagement with the client to resolve development challenges in the particularly complex urban setting of the megacity.

15. Furthermore, the Program is AIIB's first co-financed PforR in the sector, which is designed to improve, as part of the government's own program, development impacts of urban investments and focus on delivery of sustainable results. The Program will also enable the Bank to better leverage its own financing through collaboration with the WB in supporting GoTN's large government expenditure program. AIIB's participation will also help enhance the Bank team's experience with the PforR approach and the underlying fiduciary and safeguards systems assessments, which will facilitate AIIB's due diligence for the preparation of future operations of this nature and also help in working with governments in designing more integrated and comprehensive urban operations in the future.

16. **Lessons learned.** The Program incorporates lessons from similar multi-phase and multi-sectoral programs that include the following: (i) integrated service delivery is required to address the complex challenges facing a large metropolitan city; (ii) inter-jurisdictional coordination mechanisms are critical in planning, financing and delivering quality urban services; (iii) a long-term and systematic engagement is important to improve the institutional and financial capacity of key agencies and service delivery systems for improved quality and sustainability of urban services; (iv) resilience should be built to address not only natural disasters and climate change, but also emergencies such as the COVID-19 pandemic; and (v) dependence on public financing should be reduced by, where feasible, leveraging private investment for service delivery.

[15] Urban Mobility and Spatial Development Project (FY2022); and Water and Resilience Project (FY2023).

17. The Program's approach, proposed activities and expenditures are informed by the WB's experience on urban service improvement PforRs in Pakistan, Morocco, Gaza and the West Bank, Ethiopia and Vietnam, among others. The Program design and rationale draws from previous WB experience with multi-sector metro "*platform*" engagements in Karachi, Dhaka, Colombo, Addis Ababa, and Lagos. In addition, some key lessons from AIIB's first PforR operation[16] include: (i) aligning DLRs, which AIIB finances, with those of the WB to the extent possible is also important for smooth Program preparation and implementation; and (ii) participating in the WB's safeguards and fiduciary systems assessments is critical to better understand the client's systems governing the PforR.

C. Components

18. The Program would support and strengthen the implementation of the GoTN's program by focusing on a core set of infrastructure service delivery improvements across the identified key urban service sectors, including WRM, WSS, urban mobility (with a focus on strengthening bus service delivery, pedestrian infrastructure, and public spaces), SWM, and municipal health care services.

19. The Program has three Result Areas (RA). The **RA1 (enhancing the quality of urban services)** will be supported by **RA2 (improving financial sustainability of service agencies)** and **RA3 (strengthening institutions),** which are essential in improving quality, efficiency, and sustainability of the selected urban services. The detailed description of the RAs and Program activities is provided in Annex 2.

20. **RA 1** will focus on improving the quality and access to selected core urban services in CMA. Key activities include: (i) improving efficiency, quality, inclusiveness, and sustainability of WSS services in GCC area through increasing WSS connections and network coverage, implementing bulk water metering and reducing Non-revenue water (NRW) and/or unaccounted for water; (ii) strengthening municipal SWM services and reducing waste generation through improved recycling and resource recovery from dry waste; (iii) integrated planning and delivery of safe streets, urban spaces, and utility infrastructure lines; (iv) expanding and/or improving delivery of bus services in CMA; and (v) improving the quality of, and access to, public health services with a focus on comprehensive primary health care.

21. **RA 2** will focus on MTC, CMWSSB and GCC and improvements in their overall financial performance and the financial sustainability of targeted urban services and enhancement of resilience to financial and economic shocks. The outcomes of RA2 are closely interlinked to RA1 so that selected urban services are delivered and maintained in a financially sustainable way.

22. **RA 3** will help strengthen key selected service delivery institutions by: (i) establishing integration and coordination mechanisms for service delivery across administrative and institutional jurisdictions[17]; (ii) enhancing the organizational capability

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[16] Egypt Sustainable Rural Sanitation Services Program (approved in 2018, co-financing with the WB).
[17] It includes operationalizing and strengthening CUMTA as the key coordinating agency for urban mobility services across bus, metro, rail, road, and pedestrian services and infrastructure; and supporting the

of key sector agencies; and (iii) strengthening transparency through adopting an e-procurement system by CMWSSB and GCC.

D. Cost and Financing Plan

23. This Program, costing USD701 million, which supports part of the GoTN's overall program, will be co-financed by AIIB (USD150 million) and the WB (USD150 million, IBRD), and counterpart funds to be provided by GoTN (USD401 million).

Table 4. Indicative Program Cost and Financing Plan

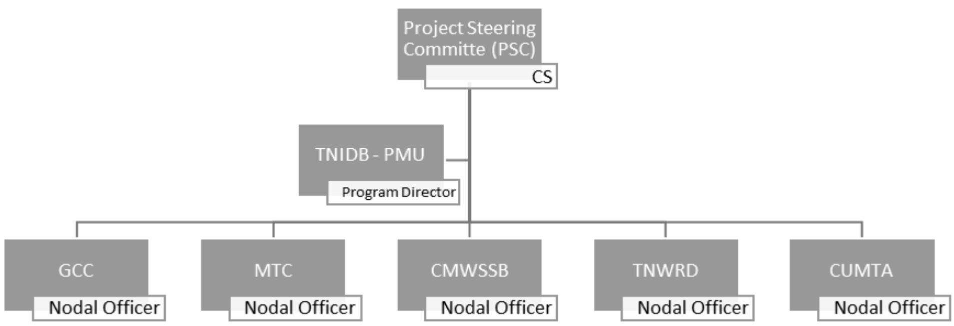
Item	**Program Cost** (USD m)	**Financing** (USD m and %)		
		AIIB	**IBRD**	**GoTN**
Total	701	150	150	401
	(100%)	(21.4%)	(21.4%)	(57.2%)

E. Implementation Arrangements

24. **Implementation period.** The Program is expected to be implemented from October 2021 to December 2026.

25. **Implementation Management.** The Program will rely on GoTN's existing government systems for the implementation of its constituent activities. The Tamil Nadu Infrastructure Development Board (TNIDB), a state-level agency reporting to the Finance Department, will be the Program coordinating agency**.** A Program Management Unit (PMU) will be established under TNIDB and the CEO of the agency will serve as the Program Director. TNIDB will coordinate with the key sector agencies and be responsible for carrying out Program monitoring and reporting activities.

Figure 1. Program Implementation Arrangements



26. The key sector agencies, i.e., CMWSSB, MTC, WRD and GCC, will be responsible for implementing the respective focused Program activities. Each agency will have a focal point and will be supplemented with adequate technical expertise for the implementation of the Program activities. A Program Steering Committee (PSC) shall be constituted for strategic oversight, policy direction and monitoring at the state level under the chairmanship of Chief Secretary of GoTN, with representation of the officials from key state departments and sector agencies.

establishment of a water regulatory authority with powers to coordinate water resource planning and management as well as improve water security and reduce vulnerability to the flood and drought cycles.

27. **Procurement.** The WB's PforR Policy will be applied to this Program. TNIDB will be responsible for overall coordination, management, and oversight of the Program. The key implementing agencies under the Program will be responsible for complying with the procurement requirements as detailed in the Program Operations Manual (POM). Procurement by all the implementing agencies will be carried out following the Tamil Nadu Transparency in Tenders Act, 1998; the Tamil Nadu Transparency in Tenders Rules, 2000 and the Tamil Nadu Transparency in Tenders (Public Private Partnership procurement) Rules, 2012 that broadly meet the core public procurement principles of value for money, economy, efficiency, integrity, transparency, fairness, and accountability. Procurement activities may include: (i) procurement of hardware and IT systems; (ii) civil works including investments in resilient watersheds, groundwater recharge, rejuvenation of reservoirs, lake restoration, water distribution and sanitation network improvement; (iii) new metered connections; (iv) wastewater system; and (iv) water meters to commercial properties; and others.

28. **Financial Management (FM).** The proceeds of AIIB's loan would finance the Program through disbursements made against achievement of DLRs under the Program. The GoTN will pre-finance Program expenditures using its own budgetary resources. The WB and AIIB will then disburse the proceeds of their loans to GoI on the satisfactory achievement of the DLRs, as verified by an Independent Verification Agent (IVA)[18], following the agreed verification protocols. In turn, funds will be released by the GoI to GoTN as per the agreed financing norms between the Central and State Governments. The FM framework of the Program will be based on the existing State Financial Rules, Budget Manual, proposed POM and the Companies Act 2013, by-laws, rules, and regulations under which participating parastatals are formed.

29. The GoTN, through its Finance Department, has issued a comprehensive order, including budget and fund flow arrangements, the timelines for transfer of funds to the implementing agencies, and conditions for transfer, if any. Parastatals follow double entry accrual-based accounting while WRD follows cash-based accounting system. Except MTC and TNIDB, all the implementing agencies have computerized accounting systems. Accounting systems currently followed in these agencies would be followed for the Program. In case of parastatals, Program accounting would be followed; for WRD, accounts would be maintained under the Program budget head. Interim financial reports are not required for the Program. TNIDB will submit the status of overall Program expenditure along with Program reports submitted to the WB and AIIB every six months for information.

30. The Program audit report will be submitted within nine months from end of the financial year. External audit for WRD will be done by the state office of Chennai Accountant General, who would be requested to provide a separate report for selected Program related budget heads. For the other implementing agencies, a Chartered Accountant firm will be hired to provide a consolidated Program audit report covering both financial and procurement aspects.

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[18] An independent firm will be contracted by GoTN to conduct third party verification for all Program DLIs/ DLRs.

31. **Monitoring and Evaluation.** A comprehensive results framework has been prepared in line with the three RAs, Program activities, DLIs and DLRs. The results indicators comprise a mix of outcome and output indicators across all the selected sectors with clearly defined DLRs to be achieved by the respective agencies. The overall responsibility for Program monitoring and evaluation will lie with TNIDB, who shall be required to coordinate with all the key implementing agencies for timely reporting. TNIDB will provide bi-annual progress reports to the WB and AIIB. An outline of what is required in the progress report will be included in the POM. IVAs will confirm achievement of DLRs. AIIB together with the WB will monitor the status of implementation through bi-annual implementation support missions and tracking of DLIs and DLRs.

32. **AIIB's Implementation Support.** The WB, as lead co-financier, will supervise the Program and serve as the focal point for the AIIB vis-à-vis the Borrower. An experienced in-country WB team, as well as various Program consultants will provide regular implementation support to the TNIDB and the relevant sector agencies with additional support from staff located internationally. The Program has laid out a Program implementation support plan for the first two years to enhance the capacity of TNIDB and relevant sector agencies and establish suitable implementation arrangements needed in carrying out the activities.

33. The AIIB team will: (i) provide technical and operational inputs to support implementation of the Program; (ii) periodically join the WB's implementation support missions (virtually or otherwise) as necessary; and (iii) monitor and supervise an appropriate use of AIIB funds. AIIB/WB will carry out more frequent implementation support missions and supervision in the early stages of Program implementation. The WB will provide AIIB with copies of all relevant documents, reports, recommendations, no-objections and communications (whether external or internal) received or sent by the WB in connection with any Program activity. If travel restrictions continue, AIIB will consider hiring a local consultant based in Chennai to help monitor implementation progress.

3. Program Assessment

A. Technical

34. **Program Design.** The PforR financing[19] was determined by the WB and confirmed by AIIB to be the most appropriate instrument to support a multi-sector urban resilience program involving multiple agencies and to enable the linking of policy and institutional shifts at the top with real expenditures and the disbursement of funds against verifiable results on the ground. The use of the PforR instrument will strengthen existing government systems, rather than creating parallel systems. The PforR reflects GoTN's own commitments on the ground in its program of expenditures while recognizing GoTN's strong ownership of the Program. It is expected that the Program will create a foundation for a series of follow-on operations that will deepen and sustain sector reforms and include additional investments in water supply, resilience, urban mobility, and spatial development.

[19] Refer to footnote 8 for key features of the PforR financing instrument.

35. The Program will strengthen the key service delivery institutions in the CMA in delivering quality urban services to the citizens, in line with the Chennai 2030 program. Given its important economic role and urbanization challenges, transformation and preparedness of the CMA for future growth remains a key priority for the state government. The relevance of the Program is particularly high in the context of the ongoing COVID-19 pandemic, which has put infrastructure service delivery systems of the city under enormous fiscal and operational stress and created an urgent need for state and local institutions to build resilience to such crisis and shocks.

36. The Program will focus on activities across three interlinked RAs that correspond to the three pillars of GoTN's program. The RA1 will address the identified urban infrastructure gaps in key urban sectors, i.e., WSS, urban mobility, SWM and public health. RA2 and RA3 will improve quality and sustainability of the selected urban services by strengthening inter-institutional coordination and key service delivery agencies' capacity as well as improving the financial sustainability of the agencies. The Program will also incentivize the key service delivery agencies to expand own-source revenues and increase the share of O&M expenses covered by their own revenues including through a lowering of O&M costs. Together, the activities under these three RAs will lead to improved service levels and quality in the CMA.

37. **Operational sustainability.** The Program adopts a comprehensive programmatic, multi-sectoral approach for improving core urban services by addressing the key infrastructure gaps (in terms of quality, efficiency, sustainability) along with strengthening governance and institutions to ensure long-term sustainability of urban services. The Program will strengthen the resilience and sustainability of critical infrastructure through: (i) strengthening institutions and inter-agency coordination for customer-responsive and affordable service delivery; (ii) improving their operational efficiency and service delivery performance; (iii) enhancing financial sustainability; and (iv) digitalizing service delivery systems.

B. Economic and Financial Analysis

38. **Economic Analysis.** The Program is expected to provide significant economic benefits through improvements in delivery of critical urban services. Improved access to and quality of urban services such as WSS, SWM, public health and public transport are fundamental in improving the quality of life and economic performance of cities. As a lead co-financier, the WB has undertaken economic analysis of the Program. Given that several of the benefits especially those related to broader efficiency gains are more difficult to quantify, only a subset of the benefits has been included in calculation of the Economic Internal Rate of Return (EIRR) for the Program.

39. The cost-benefit analysis includes the following benefits by sector and/or intervention.

(i) *WSS Services.* The benefits arising from improvement in WSS services are: (a) reduction in coping costs for newly connected households, including reduction in time saved in collecting water; (b) reduction in coping costs for connected households, arising from improved quality and reliability of services; and (c) reduction in Disability Adjusted Life Years (DALYs) due to reduction in incidence of water-borne diseases.

(ii) *WRM and SWM.* For improved WRM and flood mitigation, the primary (quantified) benefit is reduction in technical and economic losses from flooding. For improved SWM, the benefits are: (a) value of waste recovered; and (b) reduction in Green-house Gas (GHG) emissions (in CO_2 equivalents) due to improved recycling and reduced volume of waste requiring treatment.

(iii) *Urban Mobility.* Benefits associated with improvement in bus services arise from the proportion of trips that shift to buses and away from higher-cost and more carbon-intensive modes such as personal vehicles (cars and two-wheelers) and auto rickshaws. The benefits include: (a) savings to users of new bus services, given its lower cost relative to alternatives; (b) reduction in GHG emissions which lowers CO_2 abatement costs; and (c) reduction in accidents due to reduced congestion.

(iv) *Public Health.* The primary benefit arising from improved public health services is a reduction in DALYs. In Chennai, non-communicable diseases are estimated to account for 65 percent of the disease burden, and the service improvements are assumed to lead to 1.0 percent reduction in DALYs among the population likely to use the municipal Urban Primary Health Centers.

40. Using only a subset of quantifiable benefits but full costs, the Program has an EIRR of 20.7 percent. The sensitivity analysis indicates that a 10 percent decrease or increase in benefits will result in EIRRs of 18 percent and 23 percent respectively. As noted above, the EIRR is a conservative estimate since benefits that are more difficult to quantify have not been included, for example, benefits from strengthening service agencies, improved efficiency and costs of procurement, reduction in water losses, increase in property value due investment such as mega streets, customer accountability and grievance redressal mechanism etc. The analysis covers a period of 15 years - expenditures shall be incurred up to 2026 and the benefits have been accounted until 2035. (even though the life of and benefits from several assets is likely to be 30 years or more).

41. **Financial Analysis.** Financial analysis was also conducted to assess the GoTN's financial resources to meet the incremental financial burden on account of the Program and financial capacity of the key state agencies involved in executing the components of the Program. GoTN will provide counterpart funding of USD401 million as part of this Program. GoTN has sufficient financial resources to contribute the required counterpart funds and service the debt incurred under the Program. The counterpart funding of USD401 million constitute less than one percent of GoTN's annual budget[20].

42. The financial capacity of four main agencies involved in executing the Program has been analyzed by comparing the annual capital expenditure of these agencies with

[20] State's annual budget (FY2020-21): USD41 bn.

the incremental financial burden on account of the Program. The analysis reveals that it ranges from 10–30 percent of their average capital budgets for last three years, which is not very significant. Further, an analysis has been done of these agencies to analyze the level of dependence on the state budget for sustainable operations (see Annex 3. for details).

C. Fiduciary and Governance

43. **Procurement.** An Integrated Fiduciary Systems Assessment (IFSA) [21] of the Program was conducted by the WB in accordance with the WB's policy and directive for PforR financing. The IFSA concludes that the present systems together with the Program Action Plan (PAP) developed for this PforR and DLRs will provide reasonable assurance that the financing proceeds will be used for the intended purposes, with due attention to the principles of economy, efficiency, effectiveness, transparency and accountability. Based on the IFSA and given the inherent nature of the operation, associated with variations in fiduciary capacity of each implementing agency, the fiduciary risk is assessed as '*Substantial*'. No large contracts valued at or above WB thresholds (USD75 million for works, USD50 million for goods and non-consulting services, and USD20 million for consultant services) are expected to be procured under the Program.

44. As required under the PforR Policy, the WB carried out an assessment of procurement systems of all the implementing agencies except CUMTA. Assessment of CUMTA, a new agency, will be carried out by the WB soon after it is operational and before Program funds are disbursed to CUMTA. All agencies will carry out procurement in accordance with the Tamil Nadu Transparency in Tenders Act, 1998 and the associated rules, 2000 and 2012, which meet the core public procurement principles required by the WB. Procurement systems of the implementing agencies were found to have in place the required processes and procedures for Program implementation. In terms of capacity, each of the implementing agencies has engineers who are engaged in carrying out procurement and are well versed with the Tamil Nadu Transparency in Tenders Act.

45. The IFSA identified key fiduciary risks and recommended system improvement and capacity strengthening mitigation measures that will be implemented during the life of the Program. The proposed mitigation measures include: (i) enhancing transparency and competitiveness by implementing e-procurement; (ii) strengthening staffing and capacity; (iii) ensuring consistency and compliance by adopting standard bid and contract documents; (iv) augmenting transparency by enhancing public disclosure of

[21] IFSA includes: (i) mapping of each implementation agency's role in Program implementation in the State, its accountability relationships including oversight roles; (ii) study of the expenditure pattern of each agency over the last few years; (iii) study of existing systems presently in place for both procurement and financial management of the implementation agencies and their performance which includes but is not limited to: (a) organization structure including reporting structure and delegation of powers, (b) procurement profile of the Program, (c) existing staffing and their capacity, (d) procurement planning and its link to budgeting, (e) adequacy of budget allocation, (f) budget execution and absorptive capacity, (g) applicable procurement rules and regulations, (h) fund flow, (i) accounting systems and financial reporting, (j) internal controls, (k) external audits and internal audits, (l) existing dispute resolution and complaint handling mechanism, and (m) existing governance and anti-corruption arrangements to deal with fraud and corruption cases both at agency level and state level.

procurement information; (v) strengthening internal controls through a robust complaint handling mechanism; and (vi) developing and implementing a management information system for procurement and contract management. These measures have been incorporated, as part of DLIs/DLRs, PAP and POM, and will be monitored during Program implementation.

46. **Financial Management.** The IFSA also concludes that present fiduciary systems of the key implementing agencies together with proposed mitigation measures provide reasonable assurance that the financing proceeds would be used for the intended purposes, with due attention to the principles of economy, efficiency, effectiveness, transparency and accountability. The timebound mitigation measures include: (i) CMWSSB to complete backlog of accounts and audits and update accounts with the current financial year within 18 months of effectiveness; and (ii) TNIDB, CMWSSB, MTC and GCC to prepare and publish annual performance reports along with financial statements and audit reports within 9 months from end of the FY on their websites within first year of Program effectiveness. If other measures beyond these required fiduciary actions are proposed for each implementing agency during the Program implementation, they will be detailed in the POM.

47. *Program Budget.* Each implementing agency shall prepare an annual work plan and annual budget requirements. The GoTN has an established budget preparation process guided by its budget manual. The budget would be provided through the respective administrative departments of each implementing agency for incorporation in the state budget. For GCC, MTC, CMWSSB, and TNIDB, the budgets are prepared and approved by the respective council and board. They have well established budget preparation process. For WRD, the budget is prepared by the department and approved by the legislature as part of the state budget. Program budget headings will be opened, and funds will be allocated as required under the Program. At the beginning of each year, the GoTN will provide a budget based on the annual work plan to the implementing agencies. The implementing agencies will have annual DLRs to be achieved, and Program funds allocated to the DLRs will be disbursed by the WB and AIIB to GoI on the satisfactory achievement of the DLR concerned, as verified by the IVA, following the agreed verification protocols. GoTN would receive the amount and transfer the amount net of the earlier budget transfers to the implementing agencies within 3 months from receipt of the amount.

48. *Staffing.* Finance staff is available in all the agencies except TNIDB and CUMTA. TNIDB and CUMTA each need to hire a FM staff person to support the Program. Other implementing agencies will nominate a staff person to be responsible for Program accounting. FM staff will need training on accounting for Program expenditures, DLR disbursements, and other FM requirements. The implementing agencies can also hire staff from the market on a contractual basis as required.

49. *Accounting in GCC and TNIDB.* GCC follows a double entry accrual-based accounting system. Project accounts are maintained separately. Accounts have been completed till FY19/20. GCC has implemented e-government software in which accounting books and records are maintained. All accounts and payments are centralized at its head office. TNIDB follows cash basis of accounting and maintains manual books of account. The accounts for FY19/20 have been completed.

50. *Accounting in MTC and CMWSSB.* MTC and CMWSSB follow GoI's accounting standards, double entry accrual-based accounting system and maintains accounts as per the Companies Act 2013. In case of MTC, all expenditures, payments, and accounting are centralized in the Head Office. Accounts have been completed till FY19/20. Currently accounts are maintained manually. Computerization of accounts is one area of improvement which MTC plans to achieve within two years. For CMWSSB all project and capital expenditures are centralized, and all major payments and accounting are done at the Head Office level. CMWSSB has implemented the Oracle Financials software for financial accounting. While accounts have been prepared up to FY19/20, since the finalization of old accounts and completion of audit is pending from FY18/19, current year accounts are yet to be finalized. The backlog will be completed within 18 months of effectiveness.

51. *Accounting in WRD.* WRD follows the GoTN's centralized computerized treasury system across all offices, and all payments and accounting are maintained in the system. Apart from the computerized system, the department maintains cash book, cheque issue register, and other basic records as prescribed by the GoTN.

52. *Financial Reporting.* Interim financial reports are not required for the Program. TNIDB will submit the status of overall Program expenditure along with Program reports to the WB and AIIB every 6 months for information.

53. *Internal Control Framework.* It is embodied in the financial rules supplemented by defined delegation of financial powers. Oversight regarding compliance with internal controls are vested with the head of the Administrative Department and Finance Department, and these are reviewed by the Comptroller and Auditor General during annual audits. The internal controls for GCC, MTC, CMWSSB, TNIDB and CUMTA are defined in the Acts, by-laws, rules, and regulations under which they are established. Clear delegation of powers exists and is followed by the entities, and reviewed during audits. All these entities have pre-audit function before payments are made.

54. *Internal Audit.* In case of MTC, all areas of operation are covered by internal audit conducted by Chartered Accountant firms. Internal audit is practiced in a limited way in GCC, CMWSSB, and WRD. Pre-audit of payments is done for all bills in all these entities while a risk-based internal audit commensurate to the business is not practiced. This is a reform area which is beyond the Program and could be pursued by the agencies.

55. *External Audit.* For the Program, a Chartered Accountant firm will be hired as per agreed TOR to conduct the audit of all parastatals and issue a consolidated report. The audit will also cover all aspects of procurement undertaken in the Program by parastatals and WRD. The auditor would be hired within six months of effectiveness of the Program. The Program audit report needs to be submitted within nine months from end of the financial year for the agencies. The report will be displayed in the agencies' websites. The audit of the WRD is carried out by the state office of Comptroller and Auditor General of India. The audit for FY18/19 is completed while the audit for FY19/20 has commenced. There are no separate audit reports for the department. To provide for timely audit reports, the Accountant General can be requested to provide the report for

selected Program related budget heads. The audit will be entrusted to the Accountant General within three months of effectiveness.

56. *Funds Flow Arrangements.* GCC, MTC, CWSSB and TNIDB receive funds from the GoTN and operate through bank accounts. Funds for projects are received and operated through project specific bank accounts. All of these entities maintain project/scheme bank accounts separately through which funds are received and expended. The same arrangement will be followed for CUMTA upon its establishment. For this Program, a separate bank account will be maintained to manage the receipts and expenditure by all above-mentioned implementing agencies. These project bank accounts would be operationalized by the implementing agencies. For WRD, once the budget is approved, allocated expenditures can be incurred by the department through the state treasury, which is computerized. It should be noted that the total amount of all financing from all sources (WB, AIIB, counterpart funds) for the Program cannot exceed the total actual cost of the Program. This will be confirmed in a final review of the total Program expenditures actually incurred.

57. **Disbursement.** The GoTN will provide an initial budget to the implementing agencies every year and after achievement of the relevant DLRs will transfer the balance of the amounts allocated to the DLRs to the implementing agencies. Disbursements will depend on the Borrower (GoI) providing evidence, satisfactory to the WB and AIIB, that DLRs have been achieved as per the agreed verification protocols. Disbursements will be made against the verified achievement of the DLRs, at the time of releasing the amount. The TNIDB will submit the disbursement claim for the DLR amount to GoI's Controller Aid Accounts and Audit (CAAA). The CAAA will submit the disbursement claims/withdrawal applications to the WB and the funds will then be disbursed by the WB and AIIB as per agreed allocations. The GoI will release funds to the GoTN as per agreed financing norms between the Central and the state governments. A copy of the WB's official communications confirming achievement of the DLR(s) will be attached to the disbursement requests.

58. The withdrawal amount against the DLRs achieved will not exceed the amount of the financing allocated and confirmed by the WB and AIIB for the specific DLRs. In the case of non-scalable DLIs, the WB and AIIB will disburse the DLR value only upon full achievement of the DLR. In the case of scalable DLRs, if partially achieved, the WB and AIIB may authorize withdrawal of an amount lesser than the DLR amount allocated to the DLR. The remaining amount allocated to the DLR will be disbursed once the DLR is fully achieved. In case an implementing agency is unable to achieve the DLR amount allocated for a given year, it will be rolled over for future years till such time the DLR is achieved, and the WB and AIIB may reallocate the proceeds of the Loan to another DLR, in consultation with the GoTN. The WB's Disbursement and Financial Information Letter shall detail the authorized signatories, the process for submitting claims, other terms and conditions of disbursements related to the Program.

59. **Governance and Anti-corruption.** AIIB is committed to preventing fraud and corruption in its financing. It places the highest priority on the projects it finances being implemented in compliance with AIIB's Policy on Prohibited Practices (or PPP) (2016). To the extent that the WB's "*Guidelines on Preventing Fraud and Corruption in Program-for-Results Financing*" dated Feb. 1, 2012 and revised July 10, 2015 (Anti-Corruption

Guidelines) are similar to AIIB's PPP, the WB's Anti-Corruption Guidelines will apply to the Program activities financed in whole or in part by the proceeds of AIIB and the WB loans. AIIB reserves the right to undertake investigations regarding the Prohibited Practices not covered under the WB's Anti-Corruption Guidelines.

60. **Institutional Capacity.** Institutional capacity of each implementing agency for Program implementation varies. Capacity strengthening including TA, consultants support and training will be provided under the Program. The Program will also enhance the coordination mechanism of GoTN, encourage transparency and accountability for performance and harness peer learning and knowledge sharing among key implementing agencies. In the long term, the Program is expected to significantly develop the capacity of each of the participating institutions. Institutional building activities will be aligned with the DLIs/DLRs.

61. **Monitoring and Reporting.** TNIDB has the overall responsibility for monitoring and reporting on the Program, but the primary responsibility lies with each implementing agency. Systems and procedures will be developed so that each participating agency is properly equipped to conduct monitoring and provide reports on its monitoring information as and when required and to take informed corrective actions if and when necessary.

D. Environmental and Social

62. **Categorization.** The Program will be co-financed with the WB as lead co-financier, and its Environmental and Social (ES) risks and impacts have been assessed in accordance with the WB's PforR Policy. As permitted under AIIB's Environmental and Social Policy, as revised in May 2021 (2021 ESP), the WB's PforR Policy will apply to this Program. Management has decided to apply the 2021 ESP to this operation in accordance with its provisions, which afford it the discretion to apply the 2021 ESP to operations included in AIIB's investment pipeline prior to October 1, 2021 (see Environmental and Social Framework, Introduction, Section 9). Under the 2021 ESP, AIIB may, when co-financing a PforR with the WB, apply the WB's PforR Policy in lieu of the 2021 ESP (see ESP, Section 10.3).

63. The WB has categorized the ES risks of this Program as "*Substantial*", which is similar to Category B if AIIB's 2021 ESP were applicable. As required under the WB's PforR Policy, the Program excludes activities that are likely to have significant adverse ES impacts that are permanent in nature, irreversible, or unprecedented (similar to Category A if AIIB's 2021 ESP were applicable). As required for a PforR, an Environmental and Social Systems Assessment (ESSA), which involves assessing the country's systems for managing ES risks and impacts of the Program, has been conducted by the WB. The ESSA is complemented by the PAP at the operational level, which includes key capacity strengthening and management measures needed to manage the Program's ES risks and impacts, as well as the POM. A summary of the ESSA is included in Annex 4.

64. **Environmental.** The WB has categorized the environmental risk as "*Moderate*" given that the applicable regulatory systems and organizational capacity are adequate to deal with the environmental impacts associated with the Program activities, which are

expected to be localized, temporary and reversible, and can be mitigated effectively through good practice management measures in an operational setting. Gaps in institutional capacity have been identified and will be addressed under the Program as part of the PAP or POM. The ESSA has focused on the borrower's environmental management systems – both regulatory and organizational, and public and worker safety. The ESSA has confirmed consistency with the environmental core principles applicable to PforRs, and exclusion of activities ineligible for PforR financing.

65. *Environmental Risk and Impacts.* Activities related to the WSS, WRM and urban mobility sectors are likely to have construction-related negative impacts such as air pollution, dust and noise pollution, Occupational Health and Safety issues, and generation of scrap and debris. These impacts are expected to be localized, temporary and reversible, and can be mitigated effectively through good practice mitigation measures in an operational setting. Upstream investments planned in the SWM sector under the Program will contribute to establishing a circular economy and will have positive benefits by reducing solid waste. However, these investments will have to be properly planned to manage the potential negative impacts during Program implementation. The Program's support to MTC for improvement in urban bus services will bring positive city-wide environmental impacts by reducing traffic congestion as well as GHG emissions.

66. *Environmental Management Systems and Capacity.* Capacities for environmental management vary across sectors and, overall, are assessed to be satisfactory. The implementing agencies have appropriate regulatory procedures. The compliance procedures of the GoTN's Department of Environment and State Pollution Control Board are adequate to mitigate impacts associated with Program activities. The National Green Tribunal orders relevant to the city's environmental assets and performance are reviewed periodically and their implementation monitored at the highest level of the GoTN. However, there are gaps in enforcing environmental regulations for which capacity strengthening is needed. Stakeholders' feedback was considered in identifying capacity needs and relevant actions are included in the PAP and will also be included in POM.

67. *Environmental Actions to be Taken.* The ESSA has identified weak enforcement of environmental regulations, and necessary actions to build the capacity of implementing agencies were included in the PAP. Pertaining to WSS and WRM sectors, enhancing organizational capacity on contract management, including preparation of bidding documents, is required so that Environmental, Health and Safety requirements (including COVID-19 pandemic measures) are included. Pertaining to SWM, the proposed upstream dry waste recycling activities are new to GCC. Their capacity (pre-investment reviews, safety protocols and monitoring) to manage environmental impacts needs to be enhanced, and this is reflected in the PAP or POM. Pertaining to public health, strengthening of bio-medical waste management (documented procedures, regular audits, monitoring and adopting COVID-19 practices) in the primary and community health care facilities will be required under the PAP or POM.

68. **Climate Change.** Chennai is highly vulnerable to climate change and to disaster risks such as floods, tsunami, droughts, and cyclones. The 2019 droughts and the 2015 floods adversely affected the city's economy and had a lasting negative impact on the

lives of its citizens. The proposed operation will directly contribute to both mitigation and adaptation efforts. The Program will: (i) support expansion and share of green modes of urban mobility—buses, walking and cycling—to counter the trend towards the use of carbon-intensive modes and personal vehicles; (ii) reduce vulnerability of the city to the cycle of floods and drought (events that are expected to increase in severity), by supporting establishment of Water Regulatory Authority to enhance integrated planning, development, management and use of water resources across WRD, CMWSSB and GCC; (iii) reduce GHG emissions and flooding instances through improved SWM; and (iv) support digitalization of infrastructure facilities and systems (the value chain) to aid remote operation and enhance resilience. Following the joint MDB methodology for tracking climate finance, AIIB's financing for some portions of these components to the extent of USD37.1 million can be considered as climate adaptation finance and USD50.0 million can be considered as climate mitigation finance. The detailed description is provided in Annex 7.

69. **Social Aspects.** The WB has categorized the social risk as "*Substantial*" as challenges were noted in connection with the operationalization and enforcement of Government social policies and the legal framework to achieve social development outcomes, as well as bridging the gap in institutional systems and capacity for evidence-based reporting on social development outcomes. Measures will be included in the POM to strengthen systems for institutionalizing reporting on performance of laws and policies.

70. *Social Risks and Impacts.* The key social risks and impacts under the Program are: (i) construction induced impacts that may lead to temporary loss of livelihood; (ii) inequitable distribution of benefits and exclusion of women and other marginalized groups; (iii) inaccessibility of facilities and services by the persons with disability and old and infirm; (iv) weak consultations and stakeholder engagement; (v) weak systems for effective and accessible grievance redressal mechanisms and addressing the feedback received from the stakeholders; (vi) lack of systems on reporting of implementation of welfare measures for workers and occupational health and safety measures; (vii) weak processes to address gender based violence at the workplace including public places and civil works sites with increased influx of labor; and (viii) weak monitoring, evaluation or management of risks. Assessment against the WB's PforR policy reveals that women and vulnerable groups may not be able to access the benefits. However, disproportionate adverse impacts are not foreseeable, and measures and actions to avoid or mitigate these impacts have been identified in the PAP and will be required to be implemented under the Program.

71. *Social Management Systems and Capacity.* The ESSA has identified that most implementing agencies are well equipped with IT based monitoring systems but do not track performance on social management. The systems for data collection and monitoring on social management across all institutions are fragmented and, in some cases, non-existent. The systems for management of welfare of workers and grievances of temporary staff and workers seem to remain ad-hoc particularly for WSS, WRD and health services. Measures will be included in the POM to strengthen these systems.

72. *Social Actions to be Taken.* The PAP includes measures focused on strengthening institutional capacities for reporting on social risk management, improving social inclusion and stakeholder engagement, and closing gender gaps. This will include

skills and capacities on social management in all the implementing agencies, a training calendar and its implementation to continue strengthening capacities and reporting systems to track social outputs and outcomes. The PAP also includes measures for the application of the screening criteria to exclude activities which exacerbate social risks, such as excluding land management activities that have permanent and long-term impact on non-title holders. These measures will be required to be taken under the Program.

73. **Gender Aspects.** The ESSA explicitly identifies gender gaps in service delivery. The main issues are as follows. First, positions for technical jobs reserved for women are underutilized and women often occupy a higher percentage of low paying formal and informal work positions. Second, poor access to and quality of water supply adversely affects women and girls more than men, in part because they disproportionately carry the burden of collecting water from standpipes, tankers, and handpumps. Third, primary health care has, thus far, underserved women with respect to non-communicable diseases. Fourth, the mobility of women and girls is adversely affected by a gender-blind approach to urban and transport planning despite sexual harassment and gender-based violence in public spaces and public transport; this, in turn, negatively impacts women's access to jobs and leisure and their equal status in society.

74. To address these gender gaps, the Program will support capacity development through a new institutional entity in GCC called Gender Lab. Gender Lab will build an integrated approach across implementing agencies for implementing the safe-city program in Chennai and the adoption of additional initiatives focusing on assessment of the current scenario, policy strengthening, evidence-based improvement in transport services/infrastructure, capacity and awareness building, and robust monitoring. It will build the capacity of the 181 Women's Help Line under the Program to direct women in need of help in relation to GBV concerns to the right service for support.

75. A corresponding Results Framework will measure gender outcomes and will include: (i) percent of women employees hired by GCC in professional grades; (ii) percent of women provided with access to improved water supply services; (iii) increase in percent of women accessing non-communicable diseases services provided by GCC; (iv) percent reduction in women's and men's perceptions of lack of safety in buses and public spaces; (v) number of cases of gender-based violence (including harassment) in public transport and public spaces reported, handled, and referred to gender-based violence services; and (vi) gender-disaggregated transport survey capturing satisfaction and evolution in travel patterns.

76. **Program Grievance Redress Mechanism (GRM).** One of the pillars for this Program is establishing the vision, governance, and institutions necessary for citizen-responsive service delivery. This requires systems and capacities to interface with different stakeholders and a responsive and accessible grievance redress mechanism (GRM) for resolving complaints within a reasonable period. At present, some implementing agencies, such as GCC, have robust GRMs with real time reporting while others require strengthening and improvement. As such, the Program will support strengthening of systems for all key implementing agencies i.e., GCC, MTC, CMWSSB and WRD for: (i) citizen outreach and consultation; (ii) preparation and public disclosure of annual performance reports by GCC, MTC and CMWSSB, (iii) use of consumer

feedback and satisfaction surveys to enhance service delivery; and (iv) grievance redress systems for all key participating agencies. For example, for all implementing agencies, the GRM protocol would include an option for complainant's satisfaction before closure of the complaint and consideration of annual customer feedback surveys and social audits to strengthen service delivery.

77. **Occupational Health and Safety, Labor and Employment Conditions.** Workers face a variety of occupational health and safety risks, not least of which is the risk of catching COVID-19 due to the nature of their work. The ESSA has assessed that the legal framework has robust provisions for employee and labor welfare including occupational health and safety, social security and dispute resolution and necessary provisions have been included in contracts with contractors, consultants and vendors. However, implementing agencies: lack in-house capacity to monitor compliance; lack systems for monitoring enforcement of labor standards and occupational health and safety measures; and face challenges to effectively manage construction induced impacts and systems to implement labor welfare standards, including those relating to safety, sexual exploitation, sexual abuse and sexual harassment at the workplace. Therefore, the ESSA includes measures on the establishment of a labor management system designed to comply with all applicable laws on labor welfare and occupational health and safety standards - with focus on, documentation/ reporting on compliance. It also includes measures for MTC to hire a consultant/ firm to develop appropriate protocol(s) on labor management and subsequently, provide trainings to staff, workers, contractors and contracted bus operators on the protocol.

78. **Stakeholder Engagement, Consultation and Information Disclosure.** During the Program preparation, mapping of stakeholders (direct and indirect) was undertaken and consultations were held with interest groups across all sectors. Following the sector-specific consultations, the draft ESSA has been disclosed on the WB's website[22] and virtual city-wide stakeholder consultation were held in March 2021. With limitations on organizing consultations with the direct beneficiaries due to COVID-19 pandemic, a road map for consultation is detailed out in ESSA to be implemented by implementing agencies and will be included in the POM. The final ESSA report, after incorporating feedback from stakeholders, will be re-disclosed on the respective implementing agencies' websites and the WB's website. Links to these sites will also be posted on AIIB's Project site.

79. **Applicable Independent Accountability Mechanism.** AIIB's Policy on the Project-affected People's Mechanism (PPM) addresses issues raised under AIIB's ESP, which does not apply to this operation. Submissions to the PPM under the Program would, therefore, not be eligible for consideration by the PPM. The WB's independent accountability mechanism addresses issues raised by persons adversely affected by a WB-financed operation and allows them to report alleged noncompliance with the WB's operational policies and procedures, including its PforR Policy.

[22] https://projects.worldbank.org/en/projects-operations/document-detail/P175221

E. Derogation from AIIB’s Procurement Policy and Application of WB's PforR Policy

80. **Co-financier’s Policies in Lieu of AIIB Policies.** Given that this PforR is being jointly co-financed with the WB as lead co-financier, the Program is being prepared in accordance with the WB’s PforR Policy. The procurement provisions of WB's PforR Policy are separate and distinct from the WB’s procurement policy requirements that govern conventional investment project financing, and with which AIIB’s Procurement Policy (PP) is materially aligned. Given the differences in approach between the procurement provisions of the PforR Policy and AIIB’s PP, the PforR Policy cannot be considered to be materially consistent with AIIB’s PP. Nevertheless, for the reasons noted above in paragraphs 43 - 45 relating to the approach adopted for procurement, Management considers the procurement elements of the WB's PforR Policy to be appropriate for use in this type of operation. Therefore, Management requests: (a) a derogation from the application of AIIB’s PP; and (b) the application of the WB's PforR Policy to this co-financing in lieu of AIIB’s PP.

81. The environmental and social elements of the WB’s PforR Policy are also separate and distinct from the environmental and social policy requirements that govern the WB’s conventional investment project financing. However, the recently approved revised 2021 ESP provides that when co-financing a PforR such as this one, the co-financier’s environmental and social policy on such financing may be applied in lieu of the ESP’s requirements. A derogation from the 2021 ESP is therefore not required.

F. Risks and Mitigation Measures

82. The overall Program risk is rated “*Medium*” (see Table 5).

Table 5: Summary of Risks and Mitigation Measures

Risk Description	Assessment (H/M/L)	Mitigation Measures
Political and Governance Risks Uncertain political environment resulting from recent state elections, and fraud and corruption risk.	Medium	Political risk will be mitigated through a broader set of activities focusing on stakeholder engagement, dissemination and Information Education Campaigns that discuss the changes that can deliver robust service delivery systems in a rapidly urbanizing context. High level policy dialogues have also been carried out with the GoTN for effective mitigation of these risks by institutionalizing the reforms and their implementation in the government system in a way that is co-owned by the state, the agencies, and the communities. Further, the Program will be managed by TNIDB will provide financial and technical support to all the key service delivery institutions at metropolitan and ULB level in CMA. Adequate systems shall be built to mitigate corruption and fraud risk.

Macroeconomic Risks Counterpart funding risk	Medium	The counterpart funds constitute less than one percent of the State's annual budget. Thus, the actual annual outlay would be nominal given that the government program is spread over five years.
Institutional Capacity Risks The envisaged transition of the implementing agencies towards close monitoring of overall service delivery performance, an emphasis on improved financial performance, and the use of results-based financing will require significant effort and time.	Medium	The Program design has identified a combination of DLIs and investment items in expenditure framework, that together will serve as a strong-incentive to enable the shift to result-based model. The Program will also provide adequate technical assistance, capacity building, and handholding support will also be provided to all the agencies for implementation of new approaches and instruments.
Fiduciary Risks Given the decentralized nature of the Program, there is an inherent risk associated with variations in fiduciary capacity, compliance and co-ordination of FM and procurement processes.	Medium	The fiduciary risks will be mitigated through development of guidance to address procurement transparency and accountability including streamlining complaint handling, strengthening assessment of internal controls, strengthening of assessment of financial controls at implementing agency level. The actions to mitigate the fiduciary risks have been included in the PAP. With implementation of these mitigation measures, the fiduciary systems are anticipated to provide reasonable assurance that Program funds will be used for the intended purpose.
Environmental and Social Risks The potential environmental and social risks associated with this Program are mainly related to potential negative impacts of construction in WSS, WRM, Urban mobility sectors, such as air pollution, dust and noise pollution, worker and public safety, generation of scrap and debris, and temporary loss of livelihood. These impacts also pertain to inequitable distribution of benefits from resilient watershed, and exclusion of women and other vulnerable groups from the coverage of health, safety, SWM, drinking water and sewerage services.	Medium	The environmental impacts associated with the Program activities are expected to be localized, temporary and reversible, and can be mitigated effectively through good practice management measures in an operational setting. Furthermore, the Program has sufficient regulatory systems and organizational capacity to deal with the environmental impacts. The activities to support the Gender Lab to provide for safe mobility of women on bus services provided by MTC will positively impact the ridership of the women passengers. The WB is providing TA support along with other development agencies to address social measures. The actions to mitigate the environmental and social risks have been included in the PAP, focusing on strengthening institutional capacities and reporting on environmental and social risk management.

Annex 1: Results Monitoring Framework

Program Objective:	To strengthen institutions and improve quality and financial sustainability of selected urban services in the Chennai Metropolitan Area.								
Indicator Name	**Unit of measure**	**Baseline**	**Intermediates Targets**				**End Target**	**Frequency**	**Respon-sibility**
			YR1	**YR2**	**YR3**	**YR4**			
Program Development Objective Indicators by Objectives/Outcomes									
RA1: Enhancing Efficiency & Quality of Services									
Improvement in service delivery performance of MTC, CMWSSB and GCC	Number (disaggregated by socially excluded groups)	Inadequate baseline of service performance (water, transport, health)	Baseline survey of service performance carried out. Composite index created to measure service improvements and baseline value is 100. Data and information breakdown by gender and vulnerable groups are designed.	Index improves to 105	Index improves to 110	Index improves to 120	Index improves to 130	Annual	GCC, CMWSSB, MTC,
Citizen and customer feedback for improved accountability of service delivery Institutions (CMWSSB, MTC, GCC for solid waste management and health)	Yes/ No	NA	Protocols established for regular: (i) customer surveys (annual or biennial) and collection of other customer-end service delivery data; (ii) citizen feedback surveys; and (iii) dissemination of findings to citizens and customers (for services and activities within Program scope).	Surveys and reports on customer feedback and satisfaction begin in second year for relevant services.	Mid-term citizen feedback survey implemented		End-term citizen feedback survey implemented. System established for regular collection, internal use, and dissemination of both citizen and customer feedback.	Annual	CMWSSB, MTC, GCC
RA2: Improving Financial Accountability and Sustainability									

Improved financial performance for WSS services	Percentage	CMWSSB to provide FY 21 financial statement to confirm baseline. (User charges revenue is approx. 54% of Revenue expenditure in FY20)	User charges revenue > 50% of Revenue expenditure	User charges revenue > 60% of Revenue expenditure	User charges revenue > 70% of Revenue expenditure	User charges revenue > 80% of Revenue expenditure	User charges revenue at least 90% of Revenue expenditure	Annual	CMWSSB
Percentage increase in GCC annual own source revenew	Percentage	No revenue improvement plan, Rs 1240 crores (INR) own source revenew from 2017/18	Preparation and adoption of own source revenew improvement action plan by GCC Council	15 percent increase in own source revenew over baseline	30 percent own source revenew increase over baseline	45 percent increase in own source revenew over baseline	60 percent increase in own source revenew over baseline	Annual	GCC, CMWSSB, MTC, PMU
RA3: Strengthening Governance and Institutions for Service Delivery									
Operationalization of CUMTA with enhanced capacity and control over sector budget allocation to oversee urban mobility in the metropolitan areas	Yes/No	No staff, no budget	CUMTA Stage 1 staffing in place	(i) CUMTA approves CMP; (ii) CUMTA Stage 2 staffing in place	N/A	(i) Stage 3 staffing; (ii) CUMTA is approving overall sector funding annually	(i) CUMTA established and has approved sector vision (CMP); (ii) staffing in place; (iii) control over sector funding	Biannual	MTC, CUMTA, PMU
Reduction in vacancy rates of Professional Staff (Group A & B cadre) of GCC	Percentage	Vacancy level for Group A and B cadre at 23 percent. (30% women to be hired as per GOTN Policy).	GoTN issues a Government Order that provides for: (i) an updated recruitment policy for GCC (recruitment through TNPSC for Group A & B cadre); (ii) revised staffing positions at GCC for Group A & B cadre.	N/A	Vacancies in Group A & B as per revised staffing pattern lowered by 12 percentage points	N/A	Vacancies in Group A & B as per revised staffing pattern lowered to < 5 percent	Biannual	GCC, PMU

Intermediate Results Indicator by Results Areas									
RA1: Enhancing Efficiency & Quality of Services									
Improved SWM efficiency	Percent age	(i) No SWM Plan; (ii) Fragmented KPI monitoring system for performance-based C&T contracts; (iii) [4.8%] TPD of resources recovered from solid waste in selected zones; and (iv) Mega-streets pilot completed, ready to be scaled-up	20-year SWM Master Plan prepared and adopted by GCC	Integrated SWM service performance management system operationalized in GCC for monitoring SWM service KPIs.	10% amount (TPD) of resources recovered / recycled from dry waste (in zones 4, 5, 6 & 8) over baseline	N/A	15% amount (TPD) resources recovered / recycled from dry waste (in zones 4, 5, 6 & 8) over baseline	Annual	GCC
Increased availability of pedestrian-friendly multi-utility streets	Yes/ No	Mega-streets pilot completed, ready to be scaled-up		5KMs of mega-streets development completed	15KMs of mega-streets development completed		15KMs of mega-streets development completed		
Improved operational efficiency in WSS	Percent age	No policy for metering or bulk metering adopted by CMWSSB	Policy for metering adopted Bulk water metering implemented	1)Metering of 90% high-rise and commercial connections 2)CMWSSB awards performance-based contract for water supply distribution in zones10 and 13	1)Metering of 30% domestic connections (G+2 and below) 2)non-revenue water / 3)unaccounted for water reduced by 5% Incentive for every 1% reduced	1)Metering of 50% domestic connections (G+2 and below) 2)non-revenue water reduced by an additional 5% over previous year	1)Metering of 80% of domestic connections (G+2 and below) 2)non-revenue water reduced by additional 5% on last year	Annual	CMWS SB, IVA
Improved access to WSS services (Text)	Percent age	No baseline established	CMWSSB enters into Service Delivery Performance	(i) At least 5% increase in HH connections;	(i) At least 5% increase in HH connections on previous year; (ii)	(i) At least 5% increase in HH connections on previous year; (ii)	(i) At least 5% increase in HH connections on previous year;	Annual	CMWS SB, IVA

			Agreement with GOTN and MAWS; Establish service level benchmark through survey of baseline Household (HH) connections and hours of supply	(ii) At least 5% additional HH connections get 1 hour of water supply.	At least 5% additional HH connections get 1 hour of water supply on previous year	At least 5% additional HH connections get 1 hour of water supply on previous year	(ii) At least 5% additional HH connections get 1 hour of water supply.		
Performance-based contracts for bus service delivery (Text)	Percent age	No performance contracts for bus services	DOT awards performance-based contract with MTC for efficient service delivery in bus transit (10% of existing service)	(i) DOT awards long term contract to MTC (30% of existing services); (ii) MTC awards performance-based Gross Cost Contracts with private operators for quality-based bus service provision (equivalent to services by 500 buses); (iii) GoTN provides viability gap funding for (i) and (ii)	N/A	MTC awards performance-based Gross Cost Contracts with private operators for quality-based bus service provision (equivalent to services by 1000 buses)	MTC has 1000 buses operating under gross contract	Annual	MTC
Strengthening GCC's health system through improved access to and quality of care	Number / Percent age	No Quality of Care Strategy and Operational Plan; zero Urban Primary Health Center (UPHC)s providing at least 7 out of 12 Comprehensive Primary Health	i) Development and adoption of Quality of Care Strategy and Operational Plan by GCC	(i) At least 5 UPHCs providing at least 7 out of 12 CPHC service packages (ii) At least 20% of public sector and private	(i) At least 20 UPHCs providing at least 7 out of 12 CPHC service packages (ii) At least 35% of public sector and private sector	(i) At least 40 UPHCs providing at least 7 out of 12 CPHC service packages (ii) At least 50% of public sector and private sector	(i) At least 70 UPHCs providing at least 7 out of 12 CPHC service packages (ii) At least 70% of public sector and private	Annual	GCC

		Care (CPHC)[23] service packages; 10% public and select private sector facilities contributing to disease surveillance; zero UPHCs/ Urban Community Health Center (UCHC)s with National Quality Assurance Standards (NQAS) full certification		sector health facilities annually reporting P forms at least 80% of weeks (iii) At least 5 UPHC or UCHC facilities with NQAS full certification	health facilities annually reporting P forms at least 80% of weeks (iii) At least 20 UPHC or UCHC facilities with NQAS full certification	health facilities annually reporting P forms at least 80% of weeks (iii) At least 40 UPHC or UCHC facilities with NQAS full certification	sector health facilities annually reporting P forms at least 80% of weeks (iii) at least 60 UPHC or UCHC facilities with NQAS full certification		
Accessible and effective grievance redress management for employees and citizens	Percent age	No GRM system		Systems strengthened and/or developed for registering, tracking, escalating and closing the complaint after complainant feedback. MIS to be one point source for data on GRM (MTC, GCC, CMWSSB, WRD)	80% of the grievances redressed and closed following complainant satisfaction within 30 days of registration	90%of the grievances redressed and closed following complainant satisfaction within 30 days of registration	90% of the grievances redressed and closed following complainant satisfaction within 30 days of registration	Annual	M&E cells in MTC, CMWS SB and GCC
RA2: Improving Financial Accountability and Sustainability									
MTC improved revenues from traffic, viability gap fund	Number	1,571.00	1,600.00	1,800.00	2,200.00	2,400.00	2,600.00	Annual	MTC
RA3: Strengthening Governance and Institutions for Service Delivery									

[23] It is an approach to health and wellbeing that is centered on the needs and preferences of individuals, families and communities.

Enhance efficiency and transparency of public procurement in GCC and CMWSSB	percent age	GCC uses e-tendering and CMWSSB uses it partially. Bid evaluation, award and contract management is done offline.	(i) prepare and adopt e-procurement roadmap; (ii) prepare and adopt standard procurement bid document; and (iii) complete training of all procurement staff	(i) Use of online evaluation for at least 25% tenders by value; (ii) use of contract management modules of e-procurement system in at least 10% of the tenders by value.	(i) Use of online evaluation for at least 50% tenders by value; (ii) use of contract management modules of e-procurement system in at least 20% of the tenders by value.	(i) Use of online evaluation for at least 60% tenders by value; (ii) use of contract management modules of e-procurement system in at least 30% of the tenders by value.	(i) Use of online evaluation for 75% tenders by value; (ii) use of contract management modules of e-procurement system in at least 50% of the tenders by value. (iii) At least 75% of the contracts by value awarded are disclosed within service standards published in Citizen's Charter.	Annual	MTC
Reduction in women feeling unsafe in buses and public spaces	Percent age	No publicly available record	(i) Establishment of a baseline, ii) Number of cases of gender-based violence in public transport and public spaces reported, handled and referred to gender-based violence services, publicly available	N/A	NA	10 percent reduction in women feeling unsafe	20 percent reduction in women feeling unsafe		
Strengthen institutions for coordinated water management and security	Yes/No	No Water Act and no Water Regulatory Authority	New Water Act, including establishment of a water regulatory authority and groundwater regulation, submitted to the Cabinet	Water Regulatory Authority established and operationalized. Water Security Plan completed and adopted.	Cascade decision support system including optimization and enhanced monitoring system is established and operational	N/A	N/A		

Annex 2: Detailed Program Description

1. The CMA faces various challenges in delivering urban services due to rapid population growth without adequate urban management. For example, there is high levels of waste leakages, increased open dumping, littering and burning of waste leading to rapid environmental degradation, increased flooding risks, serious public health issues and high GHG emissions. Daily, Chennai generates about 5,100 tonnes of solid waste while very little is processed. The Chennai also faces water shortages which is also partially due to unplanned urbanization that has encroached on natural drainage systems, indiscriminate solid waste dumping in drains and catchment areas, and inadequate maintenance and management of reservoirs.

2. The proposed Program would support and strengthen the implementation of the first phase of the Chennai 2030 program (2021-2030) by focusing on a core set of service delivery improvements across the identified service sectors with USD701 million in financing over 5 years (2021-2026).

3. The Program will cover all the identified service sectors under the Government program including: (i) WRM and urban WSS; (ii) urban mobility, with a focus on strengthening bus service delivery, municipal pedestrian infrastructure, and women's safety in public spaces; (iii) municipal SWM; and (iv) health. In each of these, the Program covers a subset of activities and investments supported under the government program, Detail activities which categorized under three Result Areas (RAs) are described below.

4. **RA1: Enhancing the quality of urban services.** Under this RA, support will be provided to the key service delivery agencies to improve service delivery outcomes and performance.

5. *Improving Municipal Water Supply and Sewage Services.* The Program will improve efficiency, quality, inclusiveness, and sustainability of WSS services. The Program will support CMWSSB in implementation of bulk water metering, establishment of a baseline on non-revenue water, and actions to steadily reduce non-revenue water (NRW) and/or unaccounted for water. It will incentivize steady expansion of customer metering and use of volumetric tariffs as a crucial step in influencing user behavior and enhancing demand-side management. It will also support a phased increase in the number of water supply connections with assured daily water supply, including a robust baseline on quality and quantity of service delivery. At a broader level, it will support CMWSSB in initiating reforms that strengthen the quality and accountability of service delivery, including an agreement between GoTN and CMWSSB to achieve targets for a phased improvement of services in terms of duration, volume and quality of supply at the customer end; annual publication and disclosure of a customer report card; and establishment of two independent directors on CMWSSB Board for greater transparency and customer accountability. The Program will further support performance-based contracts for improvement of WSS services in GCC area, including household connections, metering, and non-revenue water reduction.

6. *Strengthening Municipal Solid Waste Management*. The Program will strengthen the planning and management of municipal solid waste services and reduce waste generation through improved recycling and resource recovery from dry waste. The

Program will support the long-term integrated planning, management, and performance monitoring of SWM services by GCC, to ensure that all performance-based waste management service contracts deliver good quality and socially inclusive services. The Program will also support capacity expansion and efficiency improvement of the resource recovery facilities for dry waste through improved source segregation, logistics and technologies, and integrated system planning for better throughput in selected zones.

7. *Delivering Safe Streets, Urban Spaces, Utility Infrastructure Lines, and Improved Public Transportation.* The Program will plan and deliver safe streets, urban spaces, and utility infrastructure lines. The Program will support GCC in scaling-up the planning and implementation of 15KMs of pedestrian-friendly multi-utility streets under its "*mega streets*" program. Mega streets are pedestrian paths that carry multiple utility infrastructure lines underneath and are often integrated with access to non-motorized transport (NMT) modes (including cycling paths) and public spaces. In addition, capacity will be built in a new Gender Lab to coordinate and enhance the effectiveness of activities under the Women's Safety in Public Space program supported by GoI's Nirbhaya Fund, with a special emphasis on enhancing women's safety in and use of both public transport and public spaces in the city. The Program will further deliver improvement in bus service deliveries of CMA. It will cover implementation of public transport service contracts between GoTN and MTC, as well as gross cost contracts for bus service provision between MTC and private sector providers (equivalent to services by 500 buses by 2022 and 1,000 buses by 2024).

8. *Improving Public Health.* The Program will improve the quality of and access to public health services with a focus on comprehensive primary health care. The Program will support the development of a comprehensive digital health system in GCC; development, adoption and implementation of a comprehensive Quality of Care strategy[24] and operational plan by GCC; expansion of access to comprehensive primary health care services in Urban Primary Health Centers (UPHCs); and, strengthening of disease surveillance systems.

9. **RA2: Improving financial sustainability of service agencies.** Under this RA, support will be provided to MTC, CMWSSB and GCC to improve their overall financial performance and the financial sustainability of targeted urban services.

10. *Strengthening the Resource Base Of GCC.* The Program will strengthen the financial resource base of GCC to meet its expanding service delivery expenditures in SWM, public health, and other key municipal services through steady increase in own-source revenues (OSR). The Program will support development and implementation of an OSR enhancement action plan that includes improvements in its property tax administration system (such as coverage, verification of property features, and so on) and fees for services such as SWM and parking. It will also leverage GoTN's ongoing reform efforts that aim that revising the methodology and rates for property taxation in GCC area.

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[24] The quality of care strategy will use global experiences combined with learnings from the recent development of a Tamil Nadu state-level quality of care strategy and adapt it to Chennai's urban setting. The emphasis will be on "macro" interventions that focus at the system-level that motivate foundations changes and are long-term in nature and at large scale. The strategy will include an M&E framework to effectively measure and monitor quality with a focus on competent care processes and patient experience (rather than only structural, input-oriented elements of quality).

11. *Improving the O&M Cost Recovery of WSS Services.* The Program will improve the O&M cost recovery of WSS services delivered by CMWSSB. The Program will support: (i) policy reforms and implementation of a progressive volumetric user charge framework for WSS services; (ii) reduction of operational inefficiencies and costs, for instance, through adoption of energy efficiency measures; and (iii) improvements in the systems for billings and collection as well as financial management. The user charge framework will be designed to increasingly cover O&M costs of WSS service delivery.

12. *Establishing Viability Gap Funding Mechanisms.* The Program will improve revenues and establish transparent viability gap funding[25] mechanisms for MTC. This activity will support improvements in MTC's cost recovery ratio by increasing OSRs, through increase in ridership, adoption of mechanisms for regular tariff increase for bus services, and enhancement of non-fare box revenues. MTC will develop a five-year business plan, based on which GoTN and MTC will agree on service coverage, quality of services, and efficiency measures. Based on this agreed plan, GoTN will establish a transparent approach to deliver viability gap funding to MTC to ensure long-term viability of efficient bus services, considering GoTN public transport tariff policy as well as MTC fare and non-fare revenues. MTC will issue an annual performance report to enhance accountability towards citizens in CMA.

13. **RA3: Strengthening institutions.** This RA will support the improvement of key Chennai service delivery agencies through critical policy reforms and institutional strengthening. Under this RA, support will be provided to (i) create or strengthen institutions that can improve integration and coordination of service delivery across administrative and institutional jurisdictions; (ii) enhance the organizational capability of key agencies; and (iii) strengthen transparency through rollout of e-procurement.

14. *Operationalizing and Strengthening the CUMTA.* The Program will operationalize and strengthen the CUMTA as the key coordinating agency for the delivery of urban mobility services across providers of bus, metro, rail, road, and pedestrian services and infrastructure. For CUMTA, priorities include the recruitment of needed technical staff, the adoption of a citizen-centric strategic vision plan (that is, the Comprehensive Mobility Plan), and securing authority for budgetary allocation and oversight of urban mobility investments, building on detailed analysis on functions, skills and roles for CUMTA developed during Program preparation.

15. *Establish a Water Regulatory Authority.* The Program will establish a Water Regulatory Authority with power to coordinate water resource planning and management and improve water security. The Program will support development of a Water Act that creates, inter alia, a statutory basis for a water regulatory authority and for groundwater water management. It will also support operationalization of the regulatory authority, preparation of a water security options study and plan, and the introduction of a system for cascade reservoir management, optimization, and monitoring.

16. *Implementing an e-Procurement System.* Adoption of an e-procurement system by GCC and CMWSSB will enhance the transparency and efficiency of procurement. The CMWSSB and GCC will prepare e-procurement roadmaps to achieve, in a phased

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[25] Viability gap funding covers the different between the cost of efficiently delivered services and collected passenger revenue.

manner, targets related to use of e-procurement, contract management modules, and timely public disclosure of contract awards.

17. *Strengthening the Human Resource Capacity*. The Program would support the revision of the staffing norms and cadre structure of GCC with a specific focus on professional employee grades (Groups A & B), strengthen the recruitment process for GCC to enable recruitment of better quality of professionals, facilitate reduction in vacancies, and enhance employment opportunities for women as per the revised staffing norms.

18. The table below summarizes the Program expenditure framework by sector. Out of the total Program financing of 701 million, USD300 million from AIIB and WB will be used for capital expenditures (76%), service O&M (7%), staffing costs (11%), TA and capacity building (6%).

Table A1. Program Expenditure Framework by Sector

S. No.	**Sector-wise allocation**	**Total** (USD m)	**Program expenditures** (financed by WB and AIIB)
1	Water supply and sanitation (CMWSSB)	153.0	Non-revenue water reduction, improvement in household connections, and metering in core city (USD49 m)[26]; and expansion of water supply and sewer network (USD40.5 m).
2	WRM (WRD)	42.5	Investments in resilient watersheds including reprofiling of drainage channels, groundwater recharge, rejuvenation of reservoirs, lake restoration, and water quality improvements (USD24.2 m); IT system development (USD3.5 m)[27] and TA and capacity building activities (USD1.8 m).
3	Urban mobility (MTC and CUMTA)	158.0	Integrated public transportation system (USD7.5 m); and bus services improvement including fleet expansion (USD72 m).
4	Municipal services such as SWM, public space, and public health (GCC)	340.5	SWM: Selected investments for material recovery and recycling infrastructure (USD18.2 m)[28]; Public Space: Mega-streets improvement (USD27 m)[29]; Public Health: digital health system and enhancement of health facility (USD17 m); IT-enabled performance monitoring system development (USD 2.2 m), TA and capacity building activities for GCC (USD8.8 m)[30]; and staff costs for health services (USD26.3 m).
5	Program management and monitoring	7.0	
	Total	**701.0**	

[26] Covering 195,000 residential and commercial connections including 6600 new connections. All connection will be metered including bulk metering of entire system.
[27] Investment in hydrological data monitoring and management (including hydromet stations, SCADA, satellite-based performance monitoring), and water resources assessment, establishment of a reservoir operation system.
[28] Improvement of material recovery and dry waste recycling
[29] Implementation of 15km of integrated pedestrian friendly streets in Chennai to promote non-motorized transport options, and upgrade all utility networks along those streets, and the setting up of a gender lab.
[30] Development of SWM master plan, revenue enhance plan, trainings, and IEC activities.

19. The table below summarizes the proposed DLIs and DLRs forming part of this Program.

Table A2. Proposed Program DLIs/DLRs

Disbursement Linked Indicators (RAs)	Disbursement Linked Results			TOTAL Amount of the AIIB Financing (USD million)
	Value	Period	Amount of AIIB financing per year (USD million)	
DLI1: Improved operational efficiency in water supply (RA1)	No metering policy	Baseline		17.5
	(i) Policy for customer metering adopted by CMWSSB. Bulk water metering completed	Year 1	1.5	
	(i) Metering of 90% high-rise and commercial connections CMWSSB awards performance-based contract for water supply distribution in zones 10 and 13	Year 2	8	
	(i) Increase in metering of low-rise (Ground+2 and below) domestic connections reduction in non-revenue water or unaccounted for water	Year 3	8	
	N/A	Year 4	0	
	N/A	Year 5	0	
DLI2: Improved access to WSS Services through increase in coverage, quality, and reliability of service (RA1)	Baseline to be established	Baseline		10
	Establish service-level benchmarking (SLB) baseline through survey including baseline household connections and hours of supply, Service performance agreement between CMWSSB and GoTN	Year 1	1.5	
	At least 5% additional HHs are connected and receiving assured 1 hour of water supply daily (Year 2-5) in the added areas, while maintaining the 1 hour of assured daily supply for HHs from the previous year.	Year 2	8.5	
	N/A	Year 3	0	
	N/A	Year 4	0	
	N/A	Year 5	0	

DLI3: Performance-based contracts for bus service delivery (RA1)	0.00	Baseline		41
	N/A	Year 1	0	
	Contract signed between DOT and MTC (for at least five-year and 10 percent of MTC fleet) and viability gap funding mechanism established; Bus services contracted (equivalent to service capacity of 500 buses and inclusive of viability gap funding)	Year 2	16	
	N/A	Year 3	0	
	Bus services contracted (equivalent to 500 additional buses to Y2 and inclusive of viability gap funding for 1000 buses)	Year 4	25	
	N/A	Year 5	0	
DLI4: GCC's health system strengthened through improved access to services and quality of care (RA1)	No Quality of Care Strategy and Operational Plan at GCC; zero UPHCs providing at least 7 out of 12 CPHC service packages; 10% public and select private sector facilities contributing to disease surveillance; zero UPHCs/UCHCs with NQAS full certification	Baseline		20
	Development and adoption by GO of Quality of Care Strategy and Operational Plan by GCC through issuance of Government Order	Year 1	1.8	
	Increase in number of UPHCs providing at least 7 out of 12 CPHC service packages	Year 2	8.75	
	Increase in percentage of public and selected private health facilities contributing to disease surveillance by submitting P forms[31] reports to [GCC] for at least 42 out of 52 weeks in a given FY.	Year 3	4.2	
	Increase in number of UPHCs/UCHCs with NQAS full certification	Year 4	5.25	
	N/A	Year 5	0	
DLI5: Percentage increase in GCC annual own-source-revenues	No revenue improvement plan, Rs 1240 crores (INR) (USD 16.9 dollars) OSR from 2017/18	Baseline		15
	Preparation and adoption of OSR improvement action plan by GCC	Year 1	1.5	

[31] The form for presumptive cases

(RA2)	Council			
	Year-on-year percentage increase in OSR over baseline	Year 2	13.5	
	N/A	Year 3	0	
	N/A	Year 4	0	
	N/A	Year 5	0	
DLI6: Improved financial sustainability of WSS services, with user fees increasingly covering O&M costs. (RA2)	46	Baseline		15
	0.00 percent	Year 1	0	
	50.00 percent incease	Year 2	0	
	60.00 percent incease	Year 3	3.75	
	70.00 percent incease	Year 4	3.75	
	90.00 percent incease	Year 5	7.5	
DLI7: Strengthened institutions for coordinated water management and security (RA3)	No Water Act and no Water Regulatory Authority	Baseline		14.6
	Draft Water Act, including establishment of a water regulatory authority and groundwater regulation, submitted to the GoTN Cabinet	Year 1	3.75	
	Water Regulatory Authority established and operationalized, Water Security Plan is completed and adopted through a GO.	Year 2	8.75	
	N/A	Year 3	0	
	Cascade decision support system including optimization and enhanced monitoring system is established and operational through a Government Order	Year 4	2.5	
	N/A	Year 5	0	
DLI8: Reduction in vacancy rates of Group A&B cadre of GCC to enhance professional capability (RA3)	Vacancy level for group A and B cadre is 23 percent	Baseline		7.5
	GoTN issues a Government Order that provides for: An updated recruitment policy for GCC Group A & B; Revised staffing positions at GCC for Group A & B.	Year 1	2.5	
	N/A	Year 2	0	
	Vacancies in Group A & B as per revised staffing pattern lowered by 12 percentage points	Year 3	3	
	N/A	Year 4	0	
	Vacancies in Group A & B as per revised staffing pattern lowered to	Year 5	2	

	less than 5%			
DLI9: Operationalization of CUMTA with enhanced capacity and control over sector budget allocation to oversee urban mobility in the metropolitan areas (RA3)	No staff, no budget	Baseline		4
	Hiring or deputation of 10 CUMTA staff has been completed as provided for in the CUMTA Operational Manual	Year 1	0.25	
	CMP adopted by CUMTA Board, and Stage 2 staffing in place (20 staff) as provided for in the CUMTA Operational Manual	Year 2	1.75	
	N/A	Year 3	0	
	Stage 3 staffing (40 staff) as provided in the CUMTA Operational Manual in place, and (2.5) CUMTA approves overall sector funding allocation annually	Year 4	2	
	N/A	Year 5	0	
DLI10: Enhance efficiency and transparency of public procurement in GCC and CMWSSB (RA3)	GCC: Use of e-tendering, with offline evaluation, award and contract management CMWSSB: Partial Use of e-tendering, with offline receiving of bids, evaluation, contract award and management	Baseline		5
	GCC and CMWSSB each prepare and adopt e-procurement roadmap and adopt an e-procurement roadmap and standard bidding documents and complete training of all procurement staff	Year 1	0.5	
	Percent increase of tenders (by value) that are evaluated online, Percent increase of tenders (by value) that are managed via modules of e-procurement system.	Year 2	4	
	N/A	Year 3	0	
	N/A	Year 4	0	
	At least 75% of the contracts by value awarded are disclosed within service standards published in Citizen's Charter.	Year 5	0.5	
Front end fee	(0.25% of loan amount)			0.38
				150

*OFFICIAL USE ONLY

Table A3. Program Action Plan

Action Description	Source	Responsibility	Timing		Completion Measurement
1. CUMTA Board shall establish a Secretariat for Phase 1 and approve the CUMTA Operational Manual	Technical	CUMTA	Other	3 months after Program effectiveness	Establishment of Secretariat with the appointment of at least 5 technical staff and formal approval of Operational Manual by CUMTA Board.
2. MTC shall complete its Business Plan Update. Transport Department to define service obligations and secure viability gap funding.	Technical	MTC, DoT	Other	6 months after effectivess	Business plan approved by MTC Board and Transport Department. Adopted Government Order establishing the process to define service obligations and viability gap funding methodology.
3. Nirbhaya Apex Committee to establish Gender Lab	Technical	GCC	Other	3 months after effectiveness	Establishment of Gender Lab with core staff recruited.
4. Establish service baseline, disaggregated by gender and socially vulnerable groups, and system for reporting services levels and access periodically.	Technical	CMWSSB, MTC, GCC	Other	within 9 months of effectiveness	Baseline complete and system operational for periodic reporting on access and performance
5. Establish systems for conducting and acting on customer and citizen feedback.	Technical	MTC, CMWSSB, GCC	Other	within 9 months of effectiveness	Systems for citizen feedback established and operational.
6. Formulation of detailed action plan for filling vacancies through promotion/recruitment as per revised staffing pattern	Technical	GCC	Other	within 6 months of effectiveness	Action Plan finalized and approved within GCC with detailed processes and timelines for selection of candidates, interviews, appointments, etc.
7. Regular disclosure of procurement information related to bidding and contract award on the agencies/ nodal agency's website and other public dissemination avenues.	Fiduciary Systems	All relevant agencies, TNIDB	Recurrent	Continuous	Regular disclosure of relevant data on nodal agency website
8. Reducing backlog of accounts and audit bringing them up to date.	Fiduciary Systems	CMWSSB	Other	within 18 months of effectiveness	Backlog of accounts and audits completed and accounts are online with the current financial year.
9. Prepare and publish annual performance	Fiduciary Systems	TNIDB, CMWSSB	Other	within first year of	APRs, financial statements and audit

report along with financial statements and audit reports within nine months from end of the FY in the website.		, MTC, and GCC		effectivene ss	reports regularly published on website.
10. IA's to establish a bidding and contract management (procurement) MIS system	Fiduciary Systems	PMU and IAs	Other	within first year of effectivene ss	Procurement MIS system operational, with information on annual planned procurement, bidding stage, contract award, implementation progress till contract completion by each implementing agency.
11. Strengthen systems for sub-project screening as well as preparation, implementation, monitoring and documentation of environmental management plans	Environme ntal and Social Systems	MTC, CMWSSB , GCC, WRD	Other	within 9 months of effectivene ss	Environment staff designated for Program complete required trainings; screening, monitoring protocols are in place.
12. Strengthen institutional capacities and reporting on social risk management	Environme ntal and Social Systems	MTC, CMWSSB , GCC, WRD	Other	Within 9 months of effectivene ss	Skilled social staff designated for program; training to manage social risks implemented; monitoring and reporting systems to track social outputs and outcomes are adopted.
13. Include all provisions to operationalize and implement ACG in POM and provide consolidated quarterly report	Other	PMU and implemen ting agencies	Recurr ent	Continuous	Reports on ACG implementation to be shared with the Bank as part of the regular implementation support reviews.

Annex 3: Economic and Financial Analysis

Economic Analysis

20. *Methodology and approach.* A cost-benefit analysis was carried out to assess the economic viability of the investment under the program comparing "*with*" and "*without-project*" scenarios. The EIRR was estimated based on a discounted cashflow analysis considering costs and benefits. Sensitivity Analysis was performed taking into consideration 10% reduction in benefits.

21. *Assumptions.* The main assumptions used to compute the economic benefits are summarized in the following table:

Table A4. Economic Benefits and Assumptions (selected Investments only)

1	**Sector: Mobility**
1.1	**Vehicle Operating Cost Savings:** Net savings to bus users when shifting from higher-cost modes (2022-2035). Additional bus trips calculated at 886 pax /day for new fleet of 1000 buses, introduced progressively: fleet utilization of 80%, and asset life of 10 yrs.
1.2	**GHG reduction cuts abatement costs:** Net reduction in GHG emissions due to reduction of vehicles on road due to modal shift to buses estimated at 235,000 tons of CO_2 till 2035. All other pollutant emissions converted to cost equivalents, based on treatment costs. Appraisal guidelines for Metro projects, MoHUA, GoI, 2017 estimates cost of treatment at INR 500 per ton of CO_2 and INR 100,000 per ton of other gases
1.3	**Benefits due to potential reduction of accidents.** With modal shift and fewer vehicles on road, about 5% of road accidents averted (or about 1360 fatalities and 7200 injuries). Economic loss of life and injury valued at about USD16800 and USD3863 per injury (2021 price levels).
2	**Sector: Public Health**
2.1	**DALY's averted reduce economic losses:** 20% of the total DALYs are assumed to be due to NCDs. Benefit is assumed: a) to be limited to population accessing UPHCs in Chennai (assumed at 47% of GCC population which is at 4.07 million currently); b) at reduction of just 1.0% of DALYs, working out to about 100 trillion DALYs till 2035. A DALY is valued at 50% of Gross Domestic Product (GDP) per capita for Tamil Nadu.
3	**Sector: Water Supply**
3.1	**Benefits due to reduction of coping costs for households with new connections.** New connections estimated to be 0.15 million, based on addition of 5% per year on base of 0.74 million connections for 5 years. Coping costs are estimated at INR 437/month for unconnected HHs, excluding time spent, by a recent study; coping costs assumed to reduce by 25% once HHs are connected. Time savings for newly connected HH estimated at about 16 mins/day/HH or 1 day/month/HH and valued at Chennai's unskilled wage rate of INR 221 per day.
3.2	**Benefits due to reduction of coping costs for HHs with existing connections.** Coping costs for connected HH are estimated at INR 553/month by recent study (Amit and Sasidharan, 2019). Improved service quality and reliability is assumed to lower coping costs by 25%, for 20% of connected HHs.

3.3	**Benefits due to reduction in DALYs.** Research suggests that waterborne diseases account for about 3% of total DALYs. Of these, incremental 1.25% DALYs are assumed to be reduced owing to improved water supply services resulting in about 51.3billion DALYs averted till 2035. A DALY is valued at 50% of GDP per capita for Tamil Nadu.
4	**Sector: WRM**
4.1	**Averting economic losses on account of better flood mitigation.** Swiss Re estimated a loss of USD2.2 billion on account of Chennai Floods 2015. Chennai witnesses above average rainfall once in 3 years and abnormally high rainfall once in 10 years (trends since 1996). Due to absence of data, an economic loss of just 4% of USD2.2 billion is assumed to be saved once in 3 years where above normal rainfall is witnessed; no savings assumed in other years.
5	**Sector: SWM**
5.1	**Revenue from incremental waste recovery:** Incremental waste recovery targeted at 15% over 5 years and sustaining further, yields a potential 1972 tons of waste recovery till 2035. Chennai generates about 950 TPD of dry waste assumed to increase at about 1.5% per year.
5.2	**Reduced GHG emissions on account of waste recovered:** Report by CRISIL on resource recovery in 4 Zones of GCC suggests savings of about 2.02 tons of CO_2 for every ton of waste recycled. This is about 1.45 million tons of CO_2 till 2035. Cost of treatment at USD7 per ton of CO_2.

22. *Economic costs.* Economic costs include capital costs incurred during the Program period upto the year 2026 and the O&M costs for a period of 15 years.

23. *Results and Sensitivity Analysis.* Using only a subset of quantifiable benefits but full costs, the Program has an EIRR of 20.7percent. The sensitivity analysis indicates that a 10 percent decrease or increase in benefits will result in EIRRs of 23 percent and 18 percent respectively. As noted above, the EIRR is a conservative estimate since benefits that are more difficult to quantify have not been included, for example, benefits from strengthening service agencies, improved efficiency and costs of procurement, reduction in water losses, increase in property value due investment such as mega streets, customer accountability and grievance redressal mechanism etc. The analysis covers a period of 15 years - expenditures shall be incurred up to FY26 and the benefits have been accounted until 2035. (even though the life of and benefits from several assets is likely to be 30 years).

Financial Analysis

24. Financial analysis was conducted to assess the State‘s financial resources to meet incremental financial burden on account of the Program and financial capacity of the key state agencies involved in executing the components of the Program. Overall, this is a multi-sectoral Program targeting different levels of government and the Program outputs primarily comprise of public goods. The public good characteristics and the externalities associated with them reduce their attractiveness to the private sector and merit public and government financing.

25. GoTN will provide counterpart funding of USD401 million as part of this PforR Program. GoTN has sufficient financial resources to contribute the required counterpart funds

and service the debt incurred under the Program. The counterpart funds constitute less than one percent of the State's annual budget and the State's total capital expenditures and less than 0.2 percent on annual basis.

26. The financial capacity of four main agencies involved in executing the Program has been analyzed by comparing the annual capital expenditure of these agencies with the incremental financial burden on account of the Program. The analysis reveal that it ranges from 10–30 percent of their average capital budgets for last three years which is not very significant. Further an analysis has been done of these agencies to analyze the level of dependence on the state budget for sustainable operations (see Annex 3 for details for each agency).

Table A5. Agency-level Budget Analysis (USD m)

	CMWSSB	GCC	MTC	WRD
Average[32] Annual CAPEX	59	212	16	28
PforR- Total External financing -World Bank + AIIB (5 years)	90	100	72	30
PforR - Average Annual External financing	18	20	14	6
Annual External Financing/Annual average CAPEX budget (%)	31	10	87.5	21

27. Further an analysis has been done of these agencies[33] to analyze the level of dependence on the state budget for sustainable operations.

(i) _GCC._ GCC has a robust own revenue base and gets nearly 80 percent of its Own Source Revenue (OSR) from stable property tax and professional tax streams and it generates an operating surplus after meeting all its revenue expenditures. GCC is projected to achieve about 55~60 percent growth in OSR comprising the three main streams (19 percent growth due to natural growth, 24 percent growth due to improved property tax administration, mapping, etc. and 12 percent from new OSR revenue streams such as rolling out of new SWM charges that are already approved, etc.)) and related actions. Hence the Program expenditures that are primarily within the scope of GCC budgets are sustainable.

(ii) _MTC._ Given MTCs dominant role in public transport in the metropolitan area, MTC received the highest level of GoTN support among all agencies in urban mobility. However, a large part of this support was implicit (such as fare subsidy and fuel subsidy) and did not translate in resources that could be invested in upgrading the quality of services and ensuring the competitiveness of its services. Over the past five years its operating revenues from passengers represented just 73 percent of its operating expenses. Farebox revenue declined by about 1 percent in the previous five years while operating expenditures grew by 4 percent, leading to a rapid growth in annual loses, with an estimated deficit of USD102 million including

[32] Average of past three FYs.
[33] Except WRD as it is part of state government directly.

depreciation in the year 2020. Over the past five years, the average annual implicit support and revenue grant support by GoTN has been USD82 million and USD45 million, respectively. The Program through various interventions is expected to significantly improve the financial sustainability of MTC.

(iii) *CMWSSB.* CMWSSB has less than 46 percent cost recovery through user charges and another about 20 percent through water and sewage taxes. Under a business-as-usual scenario, O&M costs are expected to go up from USD132 million in 2020 to USD327 million by 2026. However, the user charge led cost recovery will achieve only between 51 and 56 percent costs till 2026. Revenue through user charges needs to increase by 50 percent during the next five years to meet 100 percent O&M cost recovery. GoTN subsidies will be required in the form of: (a) revenue grant for O&M costs which will increase from USD39 million in 2020 to USD158 million by 2026; and (b) capital grants support of USD1.4 billion till 2026. The Program through various interventions is expected to significantly improve the financial sustainability of CMWSSB.

Annex 4: Environmental and Social Systems Assessment Summary

28. *Objectives, Scope, WB's Requirements.* The assessment focused on the environmental and social (ES) risks, benefits, impacts and opportunities of the PforR Program. It covers ES checks and balances that exist in the policy and guidelines; and maps corresponding risks and gaps. It offers suggestions on possibilities for implementation strengthening through institutional mechanisms for planning and monitoring, opportunities to enhance resilience, inclusion, access, participation, accountability, transparency; reinforcing a robust grievance redressal mechanism; improving gender indicators and environmental performance.

29. *ES Provisions of the WB's PforR Policy.* The WB's PforR Policy requires that the ESSA consider "as may be applicable or relevant in a particular country, sector, or PforR Program circumstances, to what degree the PforR Program Systems: (a) promote ES sustainability in the PforR Program design; avoid, minimize, or mitigate adverse impacts, and promote informed decision-making relating to the PforR Program's ES impacts; (b) avoid, minimize, or mitigate adverse impacts on natural habitats and physical cultural resources resulting from the PforR Program; (c) protect public and worker safety against the potential risks associated with: (i) construction and/or operations of facilities or other operational practices under the PforR Program; (ii) exposure to toxic chemicals, hazardous wastes, and other dangerous materials under the PforR Program; and (iii) reconstruction or rehabilitation of infrastructure located in areas prone to natural hazards; (d) manage land acquisition and loss of access to natural resources in a way that avoids or minimizes displacement, and assist the affected people in improving, or at the minimum restoring, their livelihoods and living standards; (e) give due consideration to the cultural appropriateness of, and equitable access to, PforR Program benefits, giving special attention to the rights and interests of the Indigenous Peoples and to the needs or concerns of vulnerable groups; and (f) avoid exacerbating social conflict, especially in fragile states, post-conflict areas, or areas subject to territorial disputes."

30. Moreover, under the PforR Policy, activities that are likely to have significant adverse impacts that are sensitive, diverse, or unprecedented on the environment and/or affected people are excluded from the Program.

31. *Stakeholder engagement, consultations, and disclosure.* During the preparation, stakeholder mapping, covering those who will get directly or indirectly impacted by the Program and those who will directly and indirectly impact the Program was prepared. Stakeholder consultations were undertaken with government officials, Residential Welfare Associations, opinion leaders, NGOs, CSOs, and other relevant stakeholders from October 2020 to March 2021. It included team meetings, Key Informant Interviews, and sector-level consultations. Detailed checklists were prepared to guide the same. The draft ESSA was disclosed online on the respective implementing's websites and WB's external website.

32. *Environmental Assessment.* The environmental assessment focused on borrower's environmental management systems – both regulatory and organizational – (Core Principle 1) and public and worker safety (Core Principle 3). The assessment confirmed consistency with the environmental Core Principles, and the exclusion of

activities ineligible for PforR financing. Gaps identified for strengthening environmental management capacity are included in the PAP. The environmental risk is rated as '*Moderate*' pertaining to sufficient regulatory systems and organizational capacity to deal with the environmental impacts associated with the Program. Detailed recommendations related to improving environmental systems are presented in Table A6.

Table A6. Recommendations Related to Improving Environmental Systems

Sector	Agency	Description	Timeline
Water Supply & Sanitation (WSS)	CMWSSB	Establish and maintain documented procedures for environmental management	End of Year 1
		Review and strengthen all the contract provisions (in the proposed performance-based contracts) pertaining to Environmental and Health and Safety (EHS) for proposed civil works under the water supply distribution network and sewerage network	Prior to contracting / bidding whenever undertaken
		Review and use Information and Education Campaign (IEC) with a focus on worker and community safety	End of Year 1 and subsequently
Water Resource and Resilience (WRM)	WRD	Establish and maintain documented environmental systems and procedures (for the entire project cycle including monitoring) for the Environmental Cell	End of Year 1
		Review Detailed Project Reports in line with the requirements with National Green Tribunal (NGT) orders passed on other water bodies, if any, and include EHS good practices in the bidding documents	Prior to contracting / bidding whenever undertaken
Urban Mobility	MTC	Conduct a performance review of the various MTC Divisions / Sections (Depots used for maintenance and disposal) that have environmental functions to determine areas for improvement, if any.	End of Year 1
Municipal Services – Public Health	GCC	Develop and establish the use of documented procedures for UPHCs and UCHCs on BWM management and infection control	End of Year 1
		Monitor and record progress reports on BMW management and infection control from the health care facilities	Half-yearly from the end of Year 1
Municipal Services – Solid Waste Management (SWM)	GCC	Conduct a preliminary environmental review / assessment for the dry waste resource recycling interventions at the time of design / planning, and proper management measures (incl. safety protocol) should be included as part of the construction and implementation phase.	End of Year 1
All sectors	All implementing agencies	Monitor and record progress reports of EHS performance	Half-yearly starting from the end of Year 1

33. *Social Assessment.* Assessment against the PforR Core principles reveals that women and vulnerable may not be able to access the benefits, however, disproportionate adverse impacts are not foreseeable. The systems for management of welfare of workers and grievances of temporary staff and workers seem to remain ad-hoc specially for WSS, WRD and health services. The investments will not lead to land

acquisition from private landowners, but there may be some permanent and temporary impacts on non-titleholders (squatters and encroachers). It is recommended to exclude certain activities which exacerbate risks and are excluded from the Program following the application of the Screening Criteria to select projects. The Institutional capacity across all the agencies requires to be substantially strengthened to ensure that the risks are addressed adequately.

34. The assessment shows that most agencies are well equipped with IT based monitoring systems but do not track performance on social management. The system for data collection and monitoring on social management across all institutions are fragmented and, in some cases, non-existent. PAP is to: "*strengthen institutional capacities and reporting on social risk management*". This will include skills and capacities on social management in all the implementing agencies, a training calendar and its implementation to continue strengthening capacities and reporting systems to track social outputs and outcomes. Detailed recommendations related to improving social systems are presented in Table A7.

Table A7. Recommendations Related to Improving Social Systems

Sector	Agency	Description	Timeline
Water Supply & Sanitation	CMWSSB	Prepare and Review Detailed Project Reports in line with the requirements of exclusion screening criteria	On-going
		Develop, Implement Social Audit tools and disclose reports tracking the vulnerable accessing services and benefits	TOR: Q2 Y1; Onboarding Social Audit agency: Q4 Y2; Social Audit reports: every year starting Y2
		Strengthen GRM system to redress 80% of Grievances within 30 days of registration and close them after complainant's satisfaction.	Every six months starting Q3 Y1
Water Resource and Resilience	WRD	Prepare and Review Detailed Project Reports in line with the requirements of exclusion screening criteria	On-going
		Strengthen GRM system to redress 80% of Grievances within 30 days of registration and close them after complainant's satisfaction.	Every six months starting Q3 Y1
Urban Mobility	MTC	Conduct Audit of MTC's assets for accessibility in compliance with the Persons with Disabilities Act, 1995 and Tamil Nadu Rules, 2018 for all new buses	On purchase of the buses
		Adopt Women Safety Audit to track safe mobility of women in bus routes, bus stops and terminals to improve planning and implementation for enhanced safety.	Once in two years starting Y2
		Strengthen GRM system to redress 80% of Grievances within 30 days of registration and close them after complainant's satisfaction.	Every six months starting Q3 Y1
	Mega Street	Adopt procedures to comply with *Tamil Nadu Street Vendors (Protection of Livelihood and Regulation of Street Vending) Rules, 2015*	Q3 Y1
Municipal Services – Public Health	GCC	Disclose citizen feedback Report (SWM) and patient experience Reports (Health) which include tracking the vulnerable accessing services and benefits	Annual Report available on GCC website starting from Y2.

		Strengthen GRM system to redress 80% of Grievances within 30 days of registration and close them after complainant's satisfaction.	System adoption by Q3 Y1 GRM reports available from Q4 Y1
		Increased employment of women in Group A & B cadres	Annual progress starting Y1

35. The recommended measures and actions required as per ESSA findings will be part of either the PAP or the POM. Details of such required actions and other recommendations and findings of ESSA as well as overall Program principles will be specified in the POM.

Annex 5: Member and Sector Context

Country context

36. After growing at a healthy rate of 7.4 percent between FY2014 and FY2018, the Indian economy experienced a slowdown in recent years. Growth slowed down to 4.2 percent in FY2019 due to distress in the rural economy, financial sector stress weakness in private consumption, investment, and exports, owing to rural distress, stress in the financial sector, and sluggish global demand. Growth in FY2020 was significantly dented by COVID-19 outbreak and the associated lockdown, with economic output contracting by 8.0 percent. Growth is expected to strongly recover in FY2021.

37. The contraction in the economy is expected to impact significantly some of the most vulnerable sections and reverse many of the impressive socioeconomic gains made by India over the last two decades. Between 2004-05 and 2011-12 India is estimated to have pulled 170 million citizens out of poverty, with the poverty rate declining from 39.9 percent of population in 2004-05 to 22.5 percent in 2011-12. Poverty rates are estimated to have further fallen to values ranging between 8.1 to 11.3 percent between 2012 and 2017.[34] More recent household data by the Centre for Monitoring Indian Economy indicate that the job losses due to COVID-19 pandemic is likely to have pushed up poverty rates to levels last seen in 2016, implying around 4 years of setback in its poverty reduction effort.

38. According to the Periodic Labor Force Survey 2017-18 estimates, 77.1 percent of employment in India is non-regular—either self-employed or casual workers with another 13.7 percent in regular jobs that are lacking in social protection. Thus between 364 and 473 million workers face the risk of being adversely affected by the disruptions caused by the pandemic. High frequency employment survey indicates a sharp increase in unemployment rate from 7.9 percent during January to March 2020 i.e., the quarter preceding the lockdown, to 18.5 percent during April to June 2020 when the lockdown policy measures were most stringent. Moreover, there was a sharp drop in the labor force participation rate in mid-2020 compared to the months preceding the lockdown.

39. The Indian economy is expected to recover strongly from the current pandemic growing by over 12.5 percent in FY2021.[35] The growth is expected to be assisted by improvement in business climate as evidenced by India's ranking rising from 130 to 63 in recent years in World Bank's Ease of Doing Business. Other factors which are expected to drive growth include rapid urbanization, unified tax regime and favorable demographics. At the same time, achieving high rate of growth will be contingent on addressing key bottlenecks and emerging challenges including creating job opportunities by raising the competitiveness, resolving infrastructural bottlenecks, bridging the skill deficit, improving institutional capacities, and addressing environmental degradation.

40. Bridging the infrastructure gap is vital for India to achieve rapid and inclusive growth in a sustainable manner. According to Global Infrastructure Outlook, India needs

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[34] South Asia Economic Focus, Fall 2020: Beaten or Broken? Informality and COVID-19, World Bank
[35] World Economic Outlook, April 2021, International Monetary Fund

USD 4.5 trillion investment in infrastructure between 2015 and 2040.[36] Similarly, the Report of the Task Force on National Infrastructure Pipeline has projected total infrastructure investment of about USD 1.4 trillion over the period 2020 to 2025 for India to become a USD 5 trillion economy.

41. The rapid pace of growth in recent years was accompanied with sustained growth in urbanization. The share of urban population in overall population increased from 27.8 percent in 2001 to 31.2 percent in 2011 and further to over 34.0 percent in 2018. The proportion is expected to grow to 43.0 percent by 2031 with Indian cities likely to contribute about 70% of GDP. Similarly, the number of metropolitan cities with a population of 1 million or more is expected to increase from 50 in 2011 to 87 by 2031. However, the rapid growth of urban population was not matched with a commensurate growth in urban infrastructure. The sharp rise in infrastructure gap has manifested itself in traffic congestions, inadequate solid waste management facilities, drinking water scarcity, pollution, etc. The gap in urban infrastructure is estimated at USD 827 billion over the next 20 years.[37]

42. Urban sector infrastructure investments have been traditionally undertaken by the public sector. Central Schemes like Smart Cities, Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Swachh Bharat Mission and Smart City Mission have bolstered public investment in the urban sector. Under AMRUT, more than 3,000 projects have been completed. The National Infrastructure Pipeline envisions completing 7,575 projects by FY2025.[38] More than 700 projects have been identified in the water and sanitation sector, comprising water treatment plants, sewage collection, treatment and disposal, storm water drainage system and solid waste management. Another 200 projects have been identified in the urban transport sector.

43. The state of Tamil Nadu is the second largest contributor to India's economy after Maharashtra. It is one of the more developed states in India with a per capita income of INR 218,599 (USD 2,973) in FY2019; nearly 50% higher than the national average. Moreover, Tamil Nadu is the most urbanized large state of India with urban population accounting for 48.4 percent of the total population in 2011, which is expected to rise to 63 percent by 2030. Majority of the state's GDP is generated in urban areas with services and industry sectors accounting for nearly 88 percent of the state's GDP.

44. The state's capital, Chennai, is located on the shores of Bay of Bengal and is the fourth largest city in India. It has grown as a base for the automobile, information technology, hardware manufacturing and health care industries. As one of the world's fastest growing cities, Chennai is projected to grow by more than 8% annually from 2019 to 2035. However, the city has been vulnerable to climate change, natural disasters and more recently, the COVID-19 pandemic. Floods of 2016, Cyclone Gaja in 2018, droughts in 2018 and 2019 and the COVID-19 pandemic have brought about significant economic and life losses and have negatively affected infrastructure and service delivery.

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[36] Global Infrastructure Outlook, Oxford Economics and Global Infrastructure Hub, 2017

[37] Background Paper for Global Review of Finance for Sustainable Urban Infrastructure, Coalition for Urban Transitions.

[38] National Infrastructure Pipeline (www.investmentgrid.gov.in/national-infrastructure-pipeline), accessed April 8, 2021.

Like many other urban agglomerations in India, urban service delivery responsibilities in Chennai are fragmented across multiple jurisdictions and agencies, resulting in suboptimal outcomes. Other challenges include weak institutional capacity for integrated planning and delivery, lack of sustainable financing due to low own source revenue and greater focus on investment for asset creation rather than service delivery. The COVID-19 pandemic underscored the need for additional, better and more resilient service delivery across multiple areas like water, sanitation, health and public transportation.

45. The GoTN is committed to developing Chennai as a green, livable, and competitive city, which is resilient to climate change. The Tamil Nadu Vision 2023, which is currently under implementation, envisions high-quality infrastructure assets in Chennai. Accordingly, the government has been investing heavily in high-quality infrastructure assets in CMA. However, this needs to be associated with institutional improvements to ensure that the investments translate into significant improvements in service delivery for residents. As a key step, GoTN is embarking on a program—Chennai 2030—that will facilitate transformation of the city and its services and, simultaneously, and accelerate Chennai's shift to a growth trajectory that is lower-carbon and more resilient.[39]

Sectoral Context

46. Prior to the pandemic, India was one of the fastest growing economies in the world and its growth was largely driven by urbanization. Oxford Economics' Global Cities report[40] predicts that over 80% of the fastest growing cities in the world between 2019 and 2035 will be located in India. The report further stipulates that similar to urban areas of other Asian emerging economies, cities are expected to account for 70% of India's Gross Domestic Product (GDP) by 2030. While this urbanization trend presents encouraging economic growth prospects, it brings with it a set of challenges in relation to livability. The Economist Intelligence Unit's Global Livability Index 2019[41] revealed that in spite of sustained economic growth, Indian cities are also hubs of high income inequality and poor quality of life. The Index ranked Delhi and Mumbai 118th and 119th in a survey that covered 140 global mega-cities.

47. Despite cities enjoying economies of agglomeration leading towards rapid economic growth and job creation, urban infrastructure development did not keep pace with burgeoning population growth and took place in a haphazard, ill-planned manner. Public utilities (housing, water, waste, transport and health) largely depend on allocations from the Government budget to ensure the operation and maintenance and lack funding for the required extension of service areas or service improvements. The World Bank[42] described India's urbanization as "*messy*" after unveiling its report entitled

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[39] World Bank (2021) Appraisal Stage Program Information Document (PID) - Chennai City Partnership: Sustainable Urban Services Program - P175221 (English). Washington, D.C.: World Bank Group.
[40] Oxford Economics (2020) Global Cities 2030: Future trends and market opportunities in the world's largest 750 cities, Oxford, United Kingdom
[41] Economist Intelligence Unit (2019) The Global Liveability Index 2019 The Global Liveability Index 2019: The free overview report (eiu.com)
[42] The Hindu Business Line (Jan 22, 2018) Indian urbanization 'messy', reforms needed: World Bank, PTI, New Delhi, India Indian urbanisation 'messy', reforms needed: World Bank - The Hindu BusinessLine

"*Leveraging Urbanization in South Asia*". The report highlighted that cities and towns suffer from deteriorating infrastructure, and service quality (gas, water, electricity and sewerage) and face a shortfall of infrastructure upgrade and investments. At the same breadth, it outlined reforms and mechanisms that could address the ill-effects of urbanization by addressing three major deficits: empowerment of local governing bodies, resources and accountability.

48. This report and similar urban studies have recognized that the Southern State of Tamil Nadu as one of India's most urbanized states. The Asian Development Bank (ADB)[43] reports that close to half of the State's 72.1 million population live in urban areas, and this share is projected to increase to 63% of 2030. The State is forecasted to be the second largest contributor, by province, to India's GDP. Economic activities in Tamil Nadu are largely driven by manufacturing but urbanization has brought forth the following challenges:

(i) Population growth has far outpaced accompanying social and public infrastructure development;

(ii) Water catchment and water-ways pollution;

(iii) Poor project planning and implementation capacity; and

(iv) Mixed performance in key areas of governance, including local revenue generation, financial management and municipal administration.

49. Hydro-disasters such as repeated droughts and urban floods triggered by climate change, are made worse by high water losses, due to poorly maintained water networks and old drainage systems are unable to cater to extreme rainfalls.

50. Given this backdrop, the Government of Tamil Nadu (GoTN)[44] embarked on strategic plan, i. e., Vision 2030 Tamil Nadu which is aimed at increasing competitiveness and quality of life in Tamil Nadu. The plan unveiled investment opportunities totaling USD 203 billion for the State over a 10-year period. Out of 10 focus areas, three address urbanization challenges i. e. improving quality of institutions and governance, protection for the socially disadvantaged and provision of world-class infrastructure. The document also encapsulates an Urban Development Sector plan that gives priority to Chennai to be a world-class city with investment plans for these urban infrastructure areas: water supply and sanitation (WSS); public transport; public health; and solid waste management (SWM).

51. In line with the focus on improving economy, infrastructure and quality of life, the GoTN[45] recently unveiled its Chennai 2030 program (2021–2030). This program envisages a green, livable, competitive and resilient Chennai. Drawing lessons from

[43] ADB (2015) Technical assistance to India for State-level support for National Flagship Urban Programs. Manila
[44] Government of Tamil Nadu (2017) State Annual Action Plan, 2017 – 2020. Chennai, India
[45] World Bank (2021) Project Information Document Chennai Partnership City. Chennai, India World Bank Document

past and on-going investments and economic programs in CMA, the program further advocates the following reforms:

(i) From distinct vertical programs in disparate geographic locations to an integrated, multi-sectoral, comprehensive program focused on an enlarged metropolitan area;

(ii) From investment volume focus to service delivery results; and

(iii) A new priority to overcome obstacles common across different services and openness to try out innovative models of service delivery.

52. In tandem with this, the WB's urban program for Chennai will have its activities structured around the following three pillars:

(i) Enhancing quality of urban services;

(ii) Improving financial sustainability of service delivery; and

(iii) Strengthening institutions.

53. In response to the investment and reform areas identified by the above urbanization policy documents, the following sections illustrate the challenges faced by each of the four essential services faced by a fast-growing Chennai, i. e., WSS, transport, SWM, and public health[46]:

(i) **WSS** – As India's fourth largest city by population, Chennai also faces chronic and irregular water shortages. A 2021 water assessment report[47] reveals that current water demand is 1,333 million liter per day (MLD) but supply is about 800 MLD. This is worsened during drought seasons as supply may drop to above 500 MLD. The report goes on to suggest that water stress is largely attributable to poor management of water resources, the supply and demand system rather than of resource inadequacy. For example, the water shortage arises from inadequate harnessing of run-off water rather than rainwater shortages. Other causes include unsystematic urban planning, indiscriminate dumping of rubbish in drains and water-ways and poor maintenance of reservoirs. All these are also factors contributing to floods in Chennai during the monsoon season.

(ii) **Transport** – In recent years, Chennai has recorded an increase in use of personal motorized vehicles on its road networks. Non-motorized transport (NMT) and public transport use have not picked up as fast as personal vehicles. This surge in personal vehicles have led to air pollution, congestion, greenhouse gas emissions and also road fatalities. In fact, use of public transport is declining due to poor connectivity, shortage of bus services and

[46] World Bank (2021) Technical Assessment Report Chennai Partnership City. Chennai, India [World Bank Document]

[47] Sumant Nigam, Alfredo Ruiz-Barradas and Agniv Sengupta (2021) The Chennai Water Crisis: Insufficient rainwater or suboptimal harnessing of runoff? Current Science, Vol. 120, No. 1 43.

low service quality. Less than 40% of working population in Chennai can access 30% of work locations within a 45-minute timeframe via public transport. Despite Chennai's relatively high rank in urban safety within India, female mobility is impaired due to harassment, unsafe settings / design in public transport facilities, systems and services. Little budget, incentive and resource allocation have yet to be allocated to address these transport gaps. An institutional co-ordination body known as the Chennai Unified Metropolitan Transport Authority (CUMTA) has been proposed to co-ordinate the overlapping and at times disparate land, transport and urban functions of more than 10 Government agencies. However, Chennai is still far from delivering a seamless and safe public transport system with an integrated multi-modal connection, significant improvements in quantity and quality of bus services and getting public pathways to be pedestrian and cyclist-friendly;

(iii) **SWM** – Chennai accumulates about 5,100 tons of solid waste per day (TPD). Although over 90% of it is collected and transported, only 8% is safely disposed or treated largely due to insufficient sanitary landfills. Hence, the impact from lack of disposal facilities is proliferation of open dumping, littering, burning of waste and high levels of waste leakages which in turn causes environmental harm, heightened flooding and public health risks and elevated GHG emissions. Moreover, weak institutions overseeing service performance and contract management, coupled with poor track record of cost recovery all aggravate the city's challenge of attracting the needed investments in this area. More efforts are required on waste reduction, resource efficiency, promotion of waste reuse, recycling and recovery as well as finding new modalities that will make operations and maintenance financial sustainability through the entire SWM value chain;

(iv) **Public health** – Chennai is known to have achieved commendable results in providing reproductive, maternal, new-born and child health (RMNCH) services via its public primary healthcare system. Despite this achievement, quality of care leaves much room for improvement. In addition, the public health system is facing a surge in non-communicable diseases (NCDs). The on-going pandemic has also revealed further gaps in disease surveillance and overall quality of comprehensive primary healthcare services. Other systemic weaknesses identified by the World Bank include lack of trained health workers, weak capacity to provide an end-to-end range of primary healthcare services, disparate referral systems between healthcare facilities run by the State health authorities and municipal, an emphasis on inputs rather than results, and again poor quality of care. In addition, application of secondary and tertiary level facilities for patients that could have been addressed at primary level facilities reflect inefficiency. All these lead towards delayed identification and access to care. Lack of communication and co-ordination between the state and municipal health departments, low levels of community outreach with information and services, and gaps in cross sectoral linkages such as health, water and sanitation and transport authorities plague accessibility and efficiency of essential health services; and

54. Hence it comes as no surprise that WSS services provided by the municipal is poor. This is reflected by a 2018 ADB[48] Technical Assistance report that records:

(i) Only 48% of households are served by piped water supply;

(ii) Non-revenue water is relatively high 30-50%;

(iii) Only 42% of households are covered by a sewerage network;

(iv) Wastewater treatment capacity is 43% sewerage production; and

(v) Urban drainage coverage is only 50%.

55. Given these challenges, to improve water supply and sanitation services and mitigate flood and drought risks, Chennai needs to pivot towards an integrated water resource management (WRM) approach where multiple agencies, from the municipal to water supply company and water resource management authorities can collaborate on a comprehensive program that ameliorates water conservation, storage and provisioning, demand management, urban drainage and wastewater management.

56. In summary, these challenges resulting from rapid urbanization facing Chennai are also reflective of those in other urban areas in India. Grappling with the pandemic further underscores the need for cities to approach multi-dimensional challenges in an integrated manner, to focus not only on inputs but also on outcomes by strengthening institutions, service delivery models and embarking on integrated programs that can deliver quality urban services.

[48] ADB (2018) Proposed multi-tranche financing facility, TA grant and administration of grant India: Tamil Nadu Urban Flagship Investment Program, Manila

Annex 6: Sovereign Credit Fact Sheet

Recent Economic Development

57. India is a lower-middle-income country, with a GDP per capita at USD2,104 and a population of 1.34 billion[49]. It is the world's third largest economy by purchasing power parity. India's economy grew at an average annual rate of 7.4 percent between FY2014 and FY2018 but has slowed down in recent years[50]. Following disruptions due to the demonetization initiative in November 2016 and the rollout of goods and services tax in July 2017, growth slowed to 7.0 percent in FY2017 and 6.1 percent in FY2018[51]. Growth slowed down further to 4.2 percent in FY2019 due to sluggish growth in private consumption, investment and exports, owing to weak rural income growth, stress in the financial sector, and sluggish global demand. Growth in the last quarter of FY2019 (January to March 2020) and first quarter of FY2020 (April to June 2020) was significantly dented by COVID-19 outbreak and associated lockdown introduced by the government[52]. The Indian economy contracted by 23.9 percent in the first quarter of FY2020.

58. Low food prices contributed to a decline in inflation, from 4.5 percent in FY2016 to 3.4 percent in FY2018. This allowed the central bank to reduce key policy rates by 135 basis points between February 2019 and October 2019. Inflation inched up during the second half of FY2019 on account of higher food prices and rise in retail oil prices. Inflation averaged around 6.0 percent in the first quarter of FY2020 due to supply side disruptions. In spite of this, the central bank reduced the repo and reverse repo rates by 115 and 155 basis points to 4.0 and 3.35 percent respectively, to stimulate aggregate demand, which had declined due to the lockdown. The central bank also introduced a series of measures to reduce the borrowing cost, bolster liquidity, improve credit flow to the productive sectors and offer loan moratorium.

59. After rising for two years, the current account deficit shrank to 1.1 percent of GDP in FY2019. Slowdown in economic activity led to a contraction in merchandise imports while exports remained weak as global demand turned sluggish. Services' trade surplus improved in FY2019. A drop in oil prices and weak economic activity resulted in merchandise imports contracting by more than 50 percent in the first quarter of FY2020 while exports declined by 37 percent.

60. General government fiscal deficit at 7.9 percent of GDP remained high in 2019, reflecting tepid growth in revenue and higher recurrent expenditure. A downturn in revenue due to economic slowdown and higher spending on the stimulus package

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[49] The income group classification for fiscal year 2019 is based on World Bank criteria, details seen: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519; Population and GDP per capita data use World Bank 2019 data.
[50] Data is based on fiscal years. Fiscal year 2019 (FY2019) begins on 1 April 2019 and ends on 31 March 2020.
[51] On Nov. 8, 2016, India's government announced withdrawal of the legal tender of INR500 and INR1,000 notes, which accounted for 86 percent of the value of currency in circulation, and introduction of new INR500 and INR2,000 notes.
[52] On March 24, the government announced a nationwide lockdown till April 14, subsequently extended to May 30. Lockdown was eased beginning June 1.

resulted in the fiscal deficit in the first quarter of FY2020 being 20 percent higher than previous year.

B. Economic Indicators

Table A8. Selected Macroeconomic Indicators (FY2015-FY2021)

Economic Indicators#	FY 2016	FY 2017	FY 2018	FY 2019*	FY 2020*	FY 2021*
Real GDP Growth	8.2	7.0	6.1	4.2	-4.5	6.0
Inflation (% change, average)	4.5	3.6	3.4	4.5	3.3	3.6
Current account balance (% of GDP)	-0.6	-1.8	-2.1	-1.1	-0.6	-1.4
General government overall balance (% of GDP)	-7.1	-6.4	-6.3	-7.9	-12.1	-9.4
Nominal gross public debt (% of GDP)	68.8	69.4	69.6	72.2	84.0	85.7
Public gross financing needs (% of GDP)*	11.1	11.0	10.5	11.4	16.4	13.8
External debt (% of GDP)*	20.6	20.0	18.9	19.1	19.9	20.4
Gross external financing need (% of GDP)*	9.3	9.6	10.4	10.0	10.0	11.3
Net Foreign Direct Investment Inflow (% of GDP)	1.6	1.1	1.1	1.3	1.2	1.3
Gross reserves (USD billion) **	370.0	424.5	412.9	434.0	537.5	…
Broad money (M2, % change)	10.1	9.2	10.5	9.7	11.3	11.6
Exchange rate (Rupee/USD, EOP) **	67.9	63.7	69.6	76.6	73.3	…

Note: # Data is based on fiscal years.
* denotes projected figures.
** FX data from Thomson Reuters. FX rate as of September 03, 2020 while Reserves data pertains to August 2020.
1 For FY2020 and FY 2021, AIIB Staff Estimates based on IMF Data
Source: IMF, World Economic Outlook Database, April 2020, IMF Country Report No. 19/385, December 2019 and Ministry of Statistics and Program Implementation, Government of India.

61. Recognizing that an expansionary fiscal policy is required to mitigate the economic effect of COVID-19 pandemic, the central government has already announced a $22.5 billion economic relief package including a USD2 billion package to strengthen the health sector at a fiscal cost of 1.0 percent of GDP. Various states have also announced additional relief measures. The anticipated growth slowdown in FY2020 will also negatively impact tax collections while a subdued equity market will make it difficult to raise revenue from disinvestment. The fiscal deficit is expected to significantly increase to 12.1 percent of GDP in FY2020. Public debt is also estimated to rise sharply to 84.0 percent of GDP in FY2020, levels last witnessed in early 2000s. Despite being high, India’s public debt remains sustainable given favorable debt dynamics and the projected increasing economic growth trend in the medium term. Furthermore, with public debt having a long and medium maturity, being denominated in domestic currency and primarily held by residents, the debt profile is favorable. India’s external debt, currently at 20.6 percent of GDP, remains sustainable.

62. The current account deficit is expected to narrow in FY2020 on account of weak domestic demand. Sluggish domestic economic activity will result in import bill declining

significantly, but a weakening of the rupee and a rise in oil prices could increase the import bill. Exports of goods and services are likely to contract given the decline in global demand. Remittances are also expected to decline as lower oil prices in Middle East and spread of the COVID-19 pandemic in advanced economies reduce economic activity in these countries, where most migrant Indian workers are employed.

Annex 7: Climate Finance

63. **Climate Change and Disasters:** Chennai is known for its multi-hazard vulnerability and CMA is exposed to a wide range of hazards, including floods, earthquake, cyclone, storm surge, tsunami, fire accidents and pandemics. Raising temperatures and varied precipitation patterns will only intensify these existential threats. With reference to the baseline (1970-2000), Chennai is expected that maximum temperature would increase more than 2.5 °C in 50 years, and minimum temperature would increase more than 3 °C. The projections also indicate a higher possibility of extreme rainfall events in the northern coastal areas and a lower level of rainfall in the inland southern and western regions with risk of prolonged drought conditions. Projected Sea Level Rise along the eastern cost of India is likely to increase coastal flooding and salinity ingress in surface waters. Recurring floods and drought are two serious impacts of Climate Change in Chennai. Warming of the Bay of Bengal due to climate change will also impact the intensity and frequency of cyclones in the region. This would also mean direct impacts on seawater current, atmospheric pressure, atmospheric temperature and uneven tropical rainfalls.

64. **Urbanization:** Chennai constitutes more than 25 percent of the Tamil Nadu State urban population and more than 12 percent of the Tamil Nadu State total population. Rapid urbanization, congestion, more buildings and increasing commercial activity in certain pockets of the city, has led to higher temperature levels[53]. Chennai lost 33 per cent of wetlands during the last decade. Sea water incursion causes reduction in drinking & irrigation water supplies of potable and usable quality respectively. Moreover, emissions from automobiles, air conditioning and industries have turned them into heat islands that are hotter than their surrounding areas.

65. Rapid and unplanned expansion of the city at the expense of water bodies, wetlands and flood plains has contributed to the flood-drought cycle and highly site-specific water vulnerabilities. This situation is further aggravated by the high water losses associated with aging distribution networks, and inadequate drainage systems not adapted to heavier monsoon rains. Climate change and extreme weather events also impact quality and availability of water, as also cause damage to water supply and drainage/sewerage infrastructure assets.

66. Waste generation based on GCC's reported waste collection is approximately 2 million tonnes annually. The way the wastes are handled, stored, collected or disposed can impact the environment and public health. The growing trend in the per capita waste generation, increasing urbanization and population makes it very difficult for the local body to provide the basic service. This results in the contamination of the groundwater sources, uncontrolled emission of methane by decomposition of waste, spreading of vector-borne diseases, rodents and so on, that result in adverse impact on the environment. In many places, the wastes are dumped in unscientific manner in landfills, unmindful of both the nature of waste and the local environment.

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[53] A recent study on urban heat islands by the Centre for Climate Change and Adaptation Research Centre, Anna University , indicates people who live in parts of central and north Chennai experience the heat more than those residing in suburbs with green cover.

Table A9. Proposed Climate Resilient Interventions under the Program

Activities	AIIB financing (USD m.)	Adaptation Actions	Mitigation Actions
DLI1: Improved operational efficiency in WSS service delivery (performance contract, NRW reduction) and enhancement of demand-side management (RA1)	17.5	Climate Change Vulnerability context: reference Para 63-66 Intent to address identified vulnerabilities: There is growing pressure on available water resources given the burgeoning demand for water in Chennai city. It is critical to reduce water leakages for enhanced water availability through reduction in NRW and/or unaccounted for water, metering, installing meters for bulk water transmission lines, enhancing energy efficiency of pumps, and demand-side management. Explicit link between identified climate change risks and specific project activities: Proposed activities will help maintain water supply for the city especially in case of any extreme weather event.	
DLI2: Improved access to WSS Services through increase in coverage, quality, and reliability of service (RA1)	10.0	Climate Change Vulnerability context: reference Para 63, Para66 Intent to address identified vulnerabilities: The project will support GCC in developing a long-term waste management plan that would focus on all aspects of the SWM value chain, including waste minimization, recycling, and recovery and minimizing disposal infrastructure requirement, treatment and disposal of both dry and wet waste. This would also include recycling strategy to align market linkages, enhance resource recovery & circularity and enable GCC to plan the recycling infrastructure as well as city level allied collection & sorting infrastructure in an integrated manner. These activities will lead to increase in total dry waste recovery/ recycling which will potentially reduce transportation costs of sending the dry waste to landfill and have positive environmental impacts. The improvement in upstream SWM with respect to segregation and recycling facilitated by the proposed initiative will	Net reduction in GHG emissions due to resource recovery on dry waste including plastics estimated at 1.45 million tonnes of CO_2 till 2035. Resource recovery in 4 Zones of GCC's savings is estimated to be 2.02 tonnes of CO_2 for every ton of waste recycled. Cost of treatment at INR 500 (USD 7) per ton of CO_2.

Activities	AIIB financing (USD m.)	Adaptation Actions	Mitigation Actions
		also help reduce the air, water and soil pollution in settlements and other areas around the dumpsite. Explicit link between identified climate change risks and specific project activities: The project will ensure household are connected to the sewer network and transmission to the existing Sewage Treatment Plants. The climate benefits of adopting these waste practices will result in avoiding landfill emissions, reduced raw material extraction and manufacturing, recovered materials and energy replacing virgin materials and fossil-fuel energy sources, carbon bound in soil through compost application, and carbon storage in landfills.	
DLI3: Performance-based contracts for bus service delivery (RA1)	41.0		Net reduction in GHG emissions due to reduction of vehicles on road due to modal shift to buses estimated at 235000 tons of CO2 till 2035. All other GHG emissions converted to CO2 equivalents, based on treatment costs. Appraisal guidelines for Metro projects, MoHUA, GoI, 2017 estimates cost of treatment at INR 500 per ton of CO2 and INR 100,000 per ton of other gases
DLI7: Water Act prepared, Water Regulatory Authority established, and cascade reservoir	14.6	Climate Change Vulnerability context: reference Para 63-65 Intent to address identified vulnerabilities: The Program will support preparation of the legislation for management of surface and groundwater resources in consultation with stakeholders and	

Activities	AIIB financing (USD m.)	Adaptation Actions	Mitigation Actions
management system operationalized (RA3)		establish a Water Regulatory Authority. It will also support preparation of a long-term integrated water security plan that address the challenges of climate change and extreme weather events for water resources and supply sector. Integrated cascade reservoir management system to help improve coordination among different agencies operating reservoirs for Chennai. Thus, improved co-ordination among these agencies will help avoid any extreme weather event due to climate change and enhance water security. Explicit link between identified climate change risks and specific project activities: These efforts would not only contribute to meeting 80% of the city's water supply, but more importantly ensure that the water supply will be resilient to climate change impacts.	
DLI9: CUMTA is operational with enhanced capacity and control over sector budget allocation (RA3)	4.0		Completion and implementation of a revised Comprehensive Mobility Plan will help address urban mobility issues such as congestion, enhanced access to public transport, availability of quality sidewalks/cycle lanes leading to reduction in GHG emissions.