

TN is the second largest state in India in terms of gross state domestic product (GSDP) over the past decade, increasing from US\$90 billion in FY11/12 to US\$217 billion in FY20/21.

With strong macroeconomic indicators, a sound industrial base, and abundant skilled personnel, TN has successfully attracted sizeable volume of foreign direct investment over the last decade.

The TNUDF has supported over US\$3.2 billion in urban investments while maintaining an outstanding track record of 100 percent loan repayments from the ULBs.

However, such initiatives have not been sufficient in the face of fast-paced urbanization and the scale of investment needed for urban infrastructure.

Urban infrastructure investments in TN must be scaled up significantly over the next 15 years in order to meet unmet demands in terms of urban services delivery gaps.

To address gaps in basic services in transport, water supply and sanitation (WSS), and other sectors, the ULBs will require a significant scale-up in capital investments, estimated at US\$2.8 billion

⁷ Mohanty, Abinash, and Shreya Wadhawan.

Moreover, insufficient OSRs, coupled with weak technical capacities and high initial costs, make it difficult for smaller ULBs to tap into municipal bond issuance, which is another much-needed avenue for resource mobilization.

Women traditionally carry most of the burden for collecting water from standpipes, tankers, and handpumps and managing

¹ 2 Data on service gaps and investment needs are from Next Generation of Urban Sector Interventions for ULBs in Tamil Nadu, June 2022.

Further, with an unmetered, erratic rationing water supply regime, many ULBs face high costs and low flat tariffs, which constrain their ability to recover O&M costs and/or limit their capacity to further invest in extended coverage and services quality.

ULBs also have a large role to play in climate change mitigation by taking low-carbon pathways, such as improved energy efficiency and increased use of renewable energy in infrastructure investment and operation.

However, integrated planning at the city level to coordinate the climate investment needs of multiple sectors remains limited.

Aligned with the Sustainable Development Goals, it lays out plans for increasing green spaces and providing safe and adequate drinking water to people, including ensuring water availability and citywide safely managed sanitation in all ULBs.

The proposed Tamil Nadu Climate Resilient Urban Development Program (TNCRUDP) (the Program), a Program-for-Results (PforR) operation with an Investment Project Financing (IPF) component focusing on Technical Assistance (TA), will support implementation of the WSS and Urban Governance pillars of Urban Vision 2031 in 21 participating ULBs where there is high climate vulnerability and there are substantial gaps in WSS services, OSR, and institutional capacity

Pillars I and III of the 2018 Systematic Country Diagnostic (SCD) recognize the role of efficient cities as a direct contributor to a resource-efficient growth path for India. The SCD identifies policies and actions to make cities more productive and livable, including reducing their environmental impacts and strengthening city finances and public sector management. The Program directly contributes to these areas as it supports making ULBs more livable and productive, by investing in urban governance, climate resilience, and WSS.

The World Bank is currently supporting the Chennai City Partnership Program that provides a model of urban reforms and service improvements cutting across sectoral boundaries.

The proposed operation has a strong focus on system-wide institutional reforms on urban management, including improving municipal finance by increasing OSRs and issuing municipal bonds, and mainstreaming climate-resilient actions at the investment and institutional levels.

Globally, the World Bank has a wide and diverse experience of supporting cities in strengthening their governance, financing, institutional, and service delivery systems, especially in Asia, Africa, and Latin America.

The PforR instrument will facilitate: (a) sharpening the focus on institutional strengthening, including scaling up the performance-based grant from three pilot ULBs under the TNSUDP and incentivizing innovative ways to access financing; (b) showcasing an integrated WSS framework to significantly improve coverage, quality, and efficiency of services; (c) incentivizing climate change to be mainstreamed as a cross-cutting theme in investments, service delivery, and institutions; (d) supporting the larger government program in optimizing their outcomes; and (e) using and strengthening existing government systems, building on the past and ongoing systems development and capacity-building efforts.

While an IPF modality with performance-based conditions could have supported larger and more complex investments, the PforR was considered appropriate given the need to incentivize reforms and improve and sustain service delivery and institutional changes.

The service delivery improvement RA will focus on improving access, quality, efficiency, and resilience of WSS services to rising climate risks, particularly extreme heat, droughts, and floods; enhancing energy efficiency in municipal assets; and expanding green cover to mitigate urban heat island effects.

The Program recognizes that universal, climate-resilient, and efficient service delivery faces constraints at two levels: (a) individual services are delivered with a focus on infrastructure construction, with a limited quality and sustainability orientation, and (b) the overall municipal administration system faces cross-cutting capacity, financing, and policy constraints, including weak orientation toward climate resilience.

Investments and implementation of service reforms under RA2 will also contribute to achieving targets under RA1, such as increase in OSR through increased WSS revenues

The following aspects are incentivized: (a) staffing and human resource management; (b) capital expenditure and asset management; (c) transparency and timeliness in budget management; (d) mobilization of OSR; (e) adoption and implementation of comprehensive CCAPs, including cross-sectoral CCAP and four WSS subplans on water security and emergency preparedness and response, citywide inclusive sanitation (CWIS), WSS business planning, and stormwater drainage; and (f) citizen engagement and user-centric service delivery. To create an enabling environment for the ULBs to achieve these institutional reforms, a set of actions will also be required at the state level to establish institutional frameworks to (a) strengthen public investment management; (b) improve planning and capacity with respect to local capital expenditure, and (c) prepare and publish an annual performance benchmark report on governance and service delivery at the ULBs.

RA1 also supports cities in accessing private capital.

Thus, cities can draw down funds for infrastructure creation even though their progress on critical reforms may remain weak (as witnessed in a similar arrangement in AMRUT 1.0).

This framework also supports scaling up private finance for WSS infrastructure and services.

Moreover, the systematic capacity building to be supported by the IPF, coupled with enhancements in municipal systems promoted by the DLIs, will enable the ULBs to better manage their resources and services, including preparing bankable pipeline of projects that ultimately attract private financing over time.

Private sector and municipal financing. The Program aims to leverage the private sector for improving the efficiency, quality, and sustainability of urban service delivery. In infrastructure-related sectors, including WSS, critical binding constraints to scaling up private finance are the lack of creditworthiness and financial capacity in the ULBs and the lack of institutional capacity to develop a viable project pipeline and implement in a timebound manner. The Program takes a comprehensive approach to scaling up private finance for urban infrastructure and services improvements in the

⁵ Recent research shows that, in Chennai, time spent on water collection by unconnected households accounts for 22 percent of the coping costs of INR 658 per month.

(partially), 6.3 (fully), 7.1 (partially) and 7.3 (fully).

DLIs supporting sanitation investments are: DLIs 6.1

and/or viability gap funding at the ULBs, which can provide enhanced revenue security for the private sector; (b) strengthening project structuring and contract management systems (for example, using PBCs for WSS services) in the ULBs for service delivery; and (c) building a solid pipeline of WSS investment projects with sound technical and financial viability. In addition, the Program incentivizes the mobilization of private capital through the issuance of municipal bonds by TNUIFSL on behalf of the ULBs for infrastructure services.

These will pave the way for developing a scalable model in TN that can be adopted for all the ULBs to address the expanding urban investment gaps through private finance in addition to government grants in a sustainable manner.

The PDO of the Program is to strengthen urban management and improve access to efficient and climate resilient urban water and sanitation services in participating ULBs in Tamil Nadu.

and development of green space at city level.

RA2 also supports energy efficiency

increase in OSR over their respective baselines in FY21/22.

The ULBs will be rewarded for every percentage point

Funds raised through these bonds will be allocated for investing in the urban water systems, including WSS and stormwater drainage. The IPF TA component will support TNUIFS in the following activities: (a) pooling a set of interested ULBs and subprojects with sufficient creditworthiness to structure a transaction with support from financial advisors; (b) undertaking a credit rating through a rating agency; and (c) appointing a merchant banker to undertake issuance of the bond in capital markets, including ensuring SEBI regulatory

⁸ The total OSR of the participating ULBs was US\$127.23 million in FY21-22.

⁹ Besides TA under the IPF component and utilizing the DLI-2 grant, WSPF is also expected to access the incentive funds for credit enhancement from Ministry of Housing and Urban Affairs that is available to the extent of INR 13 crores (US\$1.57 million) for every municipal bond issue of INR 100 crores (US\$12.04 million) up to a maximum of INR 26 crores (US\$3.13 million).

By undertaking such an initiative, TNUIFSL can further enhance its financial capabilities and contribute significantly to the development and sustainability of urban infrastructure projects across TN.

building.

The IPF component will support the participating ULBs to develop these plans through TA and capacity

This DLI provides incentives to install and operationalize functional water tap connections (FWTCs) and functional sewerage connections (FSCs) with service delivery parameters exceeding AMRUT 2.0 requirements and the current service levels in the state under a PBC framework. Under DLI 6, the ULBs will achieve one or more of the following: (a) improve citywide water supply covering 70 percent of the city with functional water connections at household level that deliver a minimum of three hours of supply every day, (b) establish 24x7 water supply in demonstration zones with metered connections to encourage water conservation and financial sustainability, and (c) provide sewerage connections at household level that are further connected to a functioning STP that meets effluent disposal standards.

A higher

and more reliable WSS service delivery (through WSS household level connections) and additional volume of water (due to NRW reduction) to targeted communities will help them withstand climate-related shocks to water supply (such as droughts/water shortages and heat waves) and improve public health outcomes by improving availability of potable water, access to safely managed sanitation solutions (through sewerage) and increasing of wastewater treatment.

Moreover, the package of WSS interventions has been carefully designed to ensure that infrastructure is provided, operated, and maintained efficiently by coupling them with institutional sector measures, operational and financial incentives, and a performance-based contracting model.

RA2 incentivizes the ULBs to mainstream climate resilience aspects in investment design, planning, and operation of WSS services.

- (a) A quantitative economic analysis was conducted for the DLIs related to WSS investments under RA2, which will have more than 750,000 and 1,300,000 people with access to safe water supply and sewerage connections, respectively. The results show that there will be an economic net present value (NPV) of US\$166.1 million and an economic internal rate of return (IRR) of 18.1 percent at a discounted rate of 12 percent. An economic analysis of energy savings proposed under DLR 8 shows that there will be an economic NPV of US\$8.8 million and an economic IRR of 25 percent.
- (b) Significant economic and social benefits, which could not be quantified, are also expected from implementing the series of policy and institutional reforms supported under RA1 and energy efficiency measures and green space development under RA2. For example, measures for increased OSR supported by the PforR will result in an estimated revenue increase of US\$4.45 million in NPV terms. Over time, increased OSRs and issuance of municipal bonds help the ULBs keep up with rising expenditures, improve their fiscal sustainability, and access to finance.

component will support only TA and capacity-building activities including preparation of investment subprojects.

The IPF

DLI 2	Increased access to financial market
Description	ULBs in Tamil Nadu, with the support of TNUIFSL, have issued municipal bonds aggregating US\$30 million, for urban water systems.
PAF Scoring	US\$1 million for every US\$7.5 million of successful issuance of municipal bonds.

DLI 6	Delivery of functional water and sewerage connections
DLI 6.1	ULBs implementation of WSS investments incorporating climate resilience guidelines
Description	Participating ULBs have implemented WSS investments incorporating climate resilience guidelines developed by TNUIFSL.

Formula

\$45 per connection for water supply projects achieving NRW of 20% or below.

Formula

\$68,400 per MLD of additional sewage treated in eligible existing STPs (as set forth in POM).

Urban Vision 2031 aims to achieve universal basic infrastructure and services in all ULBs with the key priorities: (a) improving accessibility and quality of urban services, especially in smaller ULBs; (b) ensuring that infrastructure design and urban development are climate resilient and low-carbon in line with climate change projections; and (c) strengthening the institutional capacity of ULBs to better plan, deliver, and manage urban services and their public assets in a financially sustainable manner.

Urban services are supported under RA2, focusing largely on WSS services, together with energy efficiency and green space investments.

Investments and implementation of service reforms under RA2 will also contribute to achieving DLIs under RA1, such as increase in OSRs through increased WSS revenues.

Both RAs will incentivize the ULBs to strengthen the FM systems and expand its resource base in an incremental manner that will lead to overall creditworthiness improvement.

RA1 incentivizes ULBs to augment their OSR (DLI 1) and issue municipal bonds (DLI 2), to meet their recurrent expenditures and reduce their dependence on fiscal transfers.

RA2 orients cities toward higher coverage, quality, efficiency, and climate resilience of WSS services concurrently.

DLI 6 supports expanding access to FWTCs and sewerage connections, with service delivery parameters exceeding AMRUT 2.0 requirements and current service levels in the state.

Moreover, DLI 7 will also incentivize higher O&M cost recovery, fostering higher financial and operational efficiencies combined and creating the basis for sustained WSS service delivery at the city level, extending beyond the areas in which assets are being created.

The Program takes a comprehensive approach to scaling up private finance for WSS infrastructure and services improvements in participating ULBs by (a) addressing fundamental institutional capacity and creditworthiness related constraints in ULBs, (b) building a solid pipeline of WSS investments projects with sound technical and financial viability, and (c) supporting pilot municipal bond transactions to provide impetus to TNUIFSL to resume its municipal bond program (under RA1). These will pave the way for developing a scalable model in TN that can be adopted for all the ULBs to address the expanding WSS investment gaps through private finance in addition to government grants in a sustainable manner.

There are already successful cases, such as Hubli, Malviya Nagar, Delhi, Nagpur, Kolkata, and Pune, where the service levels have significantly improved through PBC incentives, especially in terms of increased water supply hours, wastewater collection and treatment, and the associated customer services including billing and collection.

The Chennai Metropolitan Water Supply and Sewerage Board is designing and procuring a PBC for water system improvement in two zones of the core Chennai city area.

RA2 also aims to enhance the ULB capacities for climate resilience through specific targets on reducing energy consumption in key municipal assets (such as WSS, streetlighting, public buildings, and so on) and increasing green cover through expansion of municipal parks using nature-based solutions (DLI 8).

This initial batch of subprojects correspond to about 30 percent of DLI 6 amount that directly goes to fund physical investments.

investment.

The state has steadily increased its budget allocation for urban infrastructure

⁵ 1 The FY22/23 approved budget for water supply, sanitation, housing, and urban development has increased by 18 percent from the FY21/22 budget estimate and by 95 percent from the actual budget for FY20/21.

Therefore, the benefits estimated through the economic analysis are deemed considerably lower than what the actual stream of benefits from the Program would be.

Economic benefits and cost. The benefits and costs included in the analysis are the following:

- (a) **Direct financial benefits.** These are measured by incremental cash revenue receipts that are expected from improved physical and commercial loss, metering, billing, tariff restructuring, and adding more water and sewerage connections.

This would constitute 0.02 percent of the total benefits.

The economic net benefits for WSS investments related DLIs are US\$166.1 million in the base case at a 12 percent discount rate. The base case was stress tested for capital cost overrun, increase in O&M costs, reduced expected benefits, and delayed implementation (table 3.2). The results show that there will be net economic benefit under potential high-risk scenarios.

Implication for supervision to ensure economic viability. The sensitivity analysis shows that the economic performance of DLIs 6 and 7 depends on, in order of significance, realizing economic benefits to the beneficiaries, preventing capital costs overrun, preventing implementation delay, and controlling the O&M costs.

The economic assessment of the energy efficiency DLR proposed under DLI 8 shows that there will be an economic NPV of US\$8.8 million and an economic IRR of 25 percent at a discounted rate of 12 percent.

In addition, RA1 supports institutional reforms to improve climate change planning, financial sustainability, transparency, accountability, governance, and institutional performance for service delivery, and RA2 supports development of parks using nature-based solutions. This is expected to bring the following benefits:

- (a) Mobilizing OSR and issuance of municipal bonds help the ULBs keep up with rising expenditures and improve their fiscal sustainability and access to finance. Measures for increased OSR supported by the PforR will result in an estimated increase of OSR of US\$4.5 million in NPV terms. Over time, enhanced OSR and fiscal management could allow the ULBs to mobilize more resources by accessing more and better term financing and unlock development opportunities.

To mitigate these risks and strengthen the sustainability of investments and services, the following activities will be supported by DLIs and by the IPF component to support the strengthening of relevant state and ULB institutions.

The IFSA found that present fiduciary systems together with proposed mitigation measures provide reasonable assurance that the proposed financing would be used for the intended purposes, with due attention to the principles of economy, efficiency, effectiveness, transparency, and accountability.

The GoTN has been having a higher fiscal deficits ratio to GSDP than the mandated 3 percent in the last three years and it is expected to normalize from FY24/25.

This system requires upgradation to integrate additional procurement metrics to aid procurement planning, include procurement KPIs to cover the procurement and contract management stages, and embed seamlessly within the overall public financial management cycle.

The average cost estimate was INR 182.70 crore (US\$22.28 million), and these contracts were awarded at a 17 percent average over the cost estimate.

