PERIODIC FINANCING REQUEST

Date:

To: Asian Development Bank
6 ADB Avenue
Mandaluyong City, Metro Manila

ATTENTION: Director General, South Asia Department
Fax No.: +632-636-2212

Sir/Madam:

RE: **Tamil Nadu Urban Flagship Investment Program:**
Periodic Financing Request 1

Please refer to the Framework Financing Agreement (FFA) for **Tamil Nadu Urban Flagship Investment Program** dated 20 July 2018 between Asian Development Bank (ADB) and India. Expressions defined in the FFA shall have the same meanings herein.

Pursuant to the provisions of the FFA, India requests ADB to process this PFR for a tranche, in the form of a loan from its ordinary capital resources (regular). The proposed financing amounts, terms, conditions, and financing plan are specified in Attachment hereto. Descriptions of the project for which financing is hereby requested are set out in Attachment 1 to 10 hereto.

By: India

_____
[Full Name and Title of Authorized Representative]

ATTACHMENT

<table>
<tr><td>Project Description</td><td>The Tamil Nadu Urban Flagship Program (program) will develop priority water supply, sewerage, and drainage infrastructure in at least 10 cities located within strategic industrial corridors of Tamil Nadu (the state),[1] support innovative pilot projects, improve urban governance, and strengthen the capacity of state and local institutions to enhance environmental sustainability, climate resilience, and urban livability.[2] It will develop India's first solar-powered sewage treatment plant (STP) to offset greenhouse gas emissions and improve operational efficiency providing strong demonstration value for scaling up. The impact of the program will be: (i) universal access to basic water and sanitation services achieved, (ii) “world-class cities” and industrial corridors across the state developed,[3] and (iii) water security and reduced vulnerability to climate change in urban areas, and enhanced share of renewable energy achieved.[4] The outcome will be livability and climate resilience in at least 10 cities in priority industrial corridors enhanced.[5]

The Tranche 1 is representative of multitranche financing facility (MFF) investments and will support subprojects in 6 cities (Chennai, Coimbatore, Rajapalayam, Tiruchirappalli, Tirunelveli, and Vellore). ADB will approve financing for subsequent tranches under the MFF subject to good performance of ongoing tranches as assessed by Department of Economic Affairs (DEA) and Asian Development Bank (ADB) and complying with the requirements set out in the framework financing agreement (FFA), including compliance with subproject selection criteria and implementation arrangements.

The program shall have the following 3 outputs (Attachment 1).
a. Output 1: Climate-resilient sewage collection and treatment, and drainage systems developed in six cities.
b. Output 2: Water supply systems in one city improved with smart features.
c. Output 3: Institutional capacity, public awareness, and urban governance strengthened.</td></tr>
<tr><td>Cost Estimates and Financing Plan</td><td>The total cost of Tranche 1 is estimated at $477.5 million, inclusive of taxes, duties, interest and other charges on the loan during construction. The detailed cost estimates and financing plan are in Attachment 3.

Table 1: Financing Plan for Tranche 1
<table><tr><th>Source</th><th>Amount ($ million)</th></tr><tr><td>Asian Development Bank</td><td></td></tr><tr><td>Ordinary capital resources (regular loan)</td><td>169.0</td></tr><tr><td>Asian Clean energy Fund[a]</td><td>2.0</td></tr><tr><td>Government of Tamil Nadu, CMWSSB, ULBs</td><td>306.5</td></tr><tr><td>Total</td><td>477.5</td></tr></table></td></tr>
</table>

[1] The ten cities are Ambur, Chennai, Coimbatore, Cuddalore, Rajapalayam, Thoothukudi, Tiruppur, Tiruchirappalli, Tirunelveli, and Vellore. The cities were selected based on population size, location in economic corridors, and eligibility for central government funds. Other cities are eligible for support under the MFF subject to complying with selection criteria outlined in the Framework Financing Agreement (accessible from the list of linked documents in Appendix 2 of the report and recommendations of the President).

[2] ADB. 2015. *Technical Assistance to India for State-Level Support for National Flagship Urban Programs.* Manila.

[3] “World-class” cities are defined by Tamil Nadu Vision 2023 as existing towns whose infrastructure is to be upgraded significantly including provision of access to 24/7 water supply, efficient mass transit systems while making them open-defecation free and garbage free. (Government of Tamil Nadu. 2012. *Tamil Nadu Vision 2023*. Chennai)

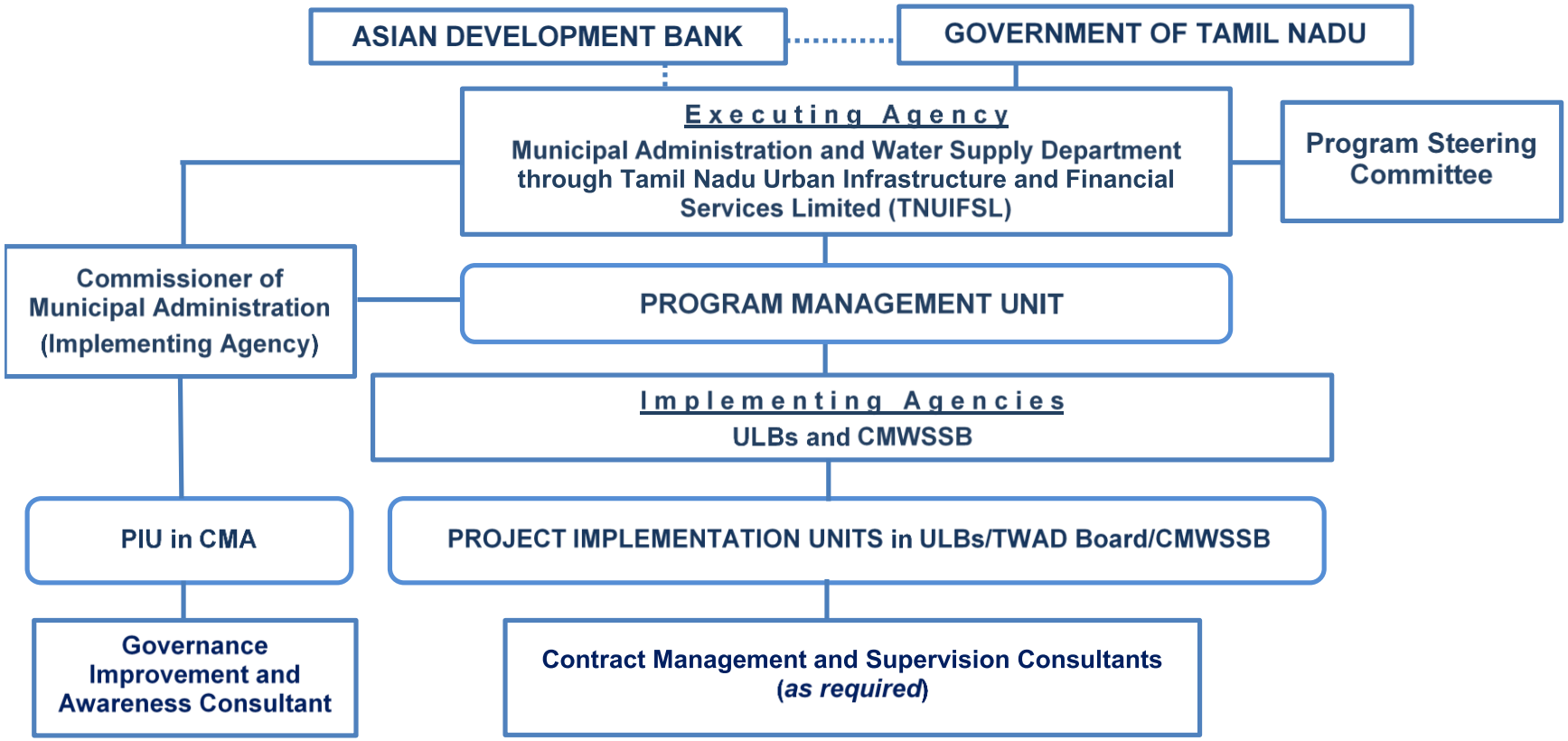
[4] Government of Tamil Nadu. 2015. *Tamil Nadu Sustainable Water Security Mission*. Chennai; and Government of Tamil Nadu. 2014. *State Action Plan on Climate Change.* Chennai.

[5] Government of India, Ministry of Urban Development. 2015. *Smart City Mission Statement and Guidelines*. Delhi. Smart solutions enable cities to use technology, information and data to improve infrastructure and services.

	CMWSSB = Chennai Metropolitan Water Supply and Sewerage Board, ULB = urban local body [a] Established by Government of Japan and administered by the Asian Development Bank (approval on 21 May 2018). Source: Asian Development Bank estimates. **Table 2: Investment Program for Tranche 1 ($ million)** **Item** — **Amount[a]** **A. Base Cost** [b] 1. Client-resilient sewage collection and treatment, and drainage systems developed in six cities — 361.9 2. Water supply systems in one city improved with smart features — 28.6 3. Institutional capacity, public awareness, and urban governance strengthened — 28.7 **Subtotal (A)** — **419.2** **B. Contingencies[c]** — **44.1** **C. Financing Charges[d]** — **14.2** **Total (A+B+C)** — **477.5** [a] In early-2018 prices; exchange rate of US$1 = ₹64.3 is used. [b] Includes taxes and duties of $102.4 million to be financed from government resources by cash contribution. [c] Physical contingencies are computed at 5.0% for civil works and equipment. Price contingencies are computed at 1.5%-1.6% on foreign exchange costs and 4.5%-4.6% on local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate. [d] Includes interest and commitment charges. Interest during construction for the ADB loan has been computed at the 5-year US dollar fixed-swap rate plus a spread of 0.5% and a maturity premium of 0.2%. Commitment charges for an ADB loan are 0.15% per year to be charged on the undisbursed loan amount.
Loan Amount and Terms	Tranche 1 of $477.5 million, of which $169.0 million will be financed by ADB from ADB's OCR and $2.0 million is proposed to be financed on a grant basis from ADB administered Asian Clean Energy Fund (ACEF). The loan will have a 25-year term, including a grace period of 5 years, an annual interest rate determined in accordance with the ADB's LIBOR-based lending facility, a commitment charge of 0.15% per year, and such other terms and conditions set forth in the draft loan and project agreements. Based on 10% annuity repayment method, the average maturity is 18.31 years, and the maturity premium payable to ADB is 0.20% per year.
Expected Project Completion and Closing Dates	Tranche 1 is expected to be completed by June 2023. The closing date of the loan account (Loan Closing Date) will be December 2023 (six months from the physical completion of the project). Withdrawals from the loan account may be made for expenditures incurred on or before the Loan Closing Date. Expenditures incurred after the Loan Closing Date will not be financed under the Loan.
Advance Contracting	Advance contracting is requested for consulting services, and procurement of goods and civil works.
Retroactive Financing	Retroactive financing is requested for the eligible expenditures on advance contracting for consulting services, procurement of goods and civil works, and incremental recurring costs, not exceeding 20% of the loan amount, incurred before loan effectiveness, but not earlier than 12 months before the signing of the loan agreement.
Implementation Arrangements	The executing agency will be the Municipal Administration and Water Supply Department (MAWS) of the state acting through the Tamil Nadu Urban Infratructure Financial Services Ltd. (TNUIFSL). A program management unit shall be established in TNUIFSL. (see Figure 1).

Procurement and Consulting Services	The procurement plan is attached as **Attachment 4**. Terms of reference for the engagement of consultants under this tranche are attached as **Attachment 5**.
Confirmation of Continuing Validity of and Adherence to Provisions of FFA	India confirms that the understandings set out in the FFA have been adhered to, and remain true to date.
Readiness of the Project for Implementation	(i) All bids invited for 14 packages under the project loan, out of which 10 packages (71%) are in advanced stage (technical bids opened). Bidding document for one package under the grant components is still being prepared. (ii) Request for Proposal issued to two out of four construction management and supervision consultant packages. A summary of ongoing advance actions is in **Attachment 6**.
Safeguards	Tranche 1 is categorized as B for environment, B for resettlement, and C for indigenous peoples. As part of the investment program and Tranche 1 preparation, the following documents have been prepared: (i) Environment Assessment Review Framework (**Attachment 8**); (ii) Initial Environmental Examination for 7 subprojects (**Attachment 8**); (iii) Resettlement Framework (**Attachment 7**); (iv) Resettlement Plan for 7 subprojects (**Attachment 7**); and (v) Indigenous Peoples Planning Framework (**Attachment 9**).

Figure 1: Implementation Arrangement



- - - monitoring role

CMA = Commissionerate of Municipal Administration, CMWSSB = Chennai Metropolitan Water Supply and Sewerage Board, PIU = program implementation unit, TWAD = Tamil Nadu Water Supply and Drainage Board, ULBs = urban local bodies.

DESIGN AND MONITORING FRAMEWORK FOR TRANCHE 1

Impacts the Investment Program is Aligned with
Universal access to basic water and sanitation services achieved (Vision Tamil Nadu 2023)[a]
"World-class" cities and industrial corridors across the state developed (Vision Tamil Nadu 2023)[a]
Water security, reduced vulnerability to climate change in urban areas, and enhanced share of renewable energy achieved (Tamil Nadu Sustainable Water Security Mission, State Action Plan on Climate Change)[b]

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
Outcome Livability and climate resilience in six cities in priority industrial corridors enhanced[c]	**By 2024:** a. Collection and treatment of sewage in program coverage areas of six cities increased to 100% households[d] (2017 baseline: sewage collected from 7.6% households in coverage areas) b. Frequency and duration of water supply improved to at least 6 hours/day provided to 100% of households in the coverage area of one city (2017 baseline: water provided on average 1-2 hours/day, once in 1-2 days, 48% pipe water coverage) c. NRW in coverage areas of 1 city reduced to 20% (2017 baseline: on average 30%) d. At least 3,400 tons of carbon dioxide equivalent per year in greenhouse gas emissions avoided (2017 baseline: 0) e. At least 8,000 cubic meters/ day of treated wastewater reused for industrial purposes in one city (2017 baseline: 32,000 cubic meters/day of treated wastewater reused in Chennai) e. Collection efficiency of sewerage user fees in six cities with piped sewerage systems increased by at least 15% (2017 baseline: 49% collection efficiency)	a–d. MAWS annual policy note, and program quarterly progress reports e. ULB annual reports on revenue data, State Finance Commission reports, and recommendations (once every 5 years)	Water shortages from intensified droughts linked to climate change which exceed projections lead to poor performance of water and sewerage facilities. Political pressure prevents regular revisions or collection of water and sewerage tariffs constraining the sustainability of services.
Outputs 1. Climate-resilient sewage collection and treatment, and drainage systems developed in six cities.	**By June 2023:** 1a. One existing STP of 37 MLD capacity rehabilitated and five new STPs with combined capacity of 165 MLD added (2017 baseline: 0 rehabilitated and new) 1b. One solar photovoltaic-powered (clean energy) sewage treatment plant with 2-megawatt solar capacity piloted and commissioned (2017 baseline: 0)	1a–e. ULB records (periodic), and program quarterly progress reports	Construction delays from heavy monsoons that exceed projections and sudden price surges of materials result in cost overruns

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
	1c. 1,864 km of new sewage collection pipelines commissioned and connected to 297,547 households including 100% poor and women headed households in the coverage area (2017 baseline: 0) 1d. 124 sewage pump houses with combined capacity of 4,473 kilowatts added (2017 baseline: 0) 1e. 12 all-female community-based organizations trained as water and sanitation committees and 100% participants reporting improved knowledge of benefits of sewerage collection systems and household connections (2017 baseline:0)		and delays in the work completion.
2. Water supply systems in one city improved with smart features.	2a. 275 km new water distribution pipelines commissioned within 20 new DMAs and metered connections provided to 30,800 households (100% households including poor and women-headed households in coverage area) (2017 baseline: 0) 2b. Five new pump stations with combined capacity of 231 kilowatts installed, and 11 km of new transmission mains constructed (2017 baseline: 0) 2c. Nine new reservoirs with combined capacity of 11 million liters constructed (2017 baseline: 0) 2d. At least 80% technical staff from implementing agency reporting improved knowledge and/or skills in NRW reduction as a result of training with 75% participation of women technical staff (2017 baseline: 0)	2a–d. ULB records, and program quarterly progress reports	
3. Institutional capacity, public awareness, and urban governance strengthened.	3a. By 2026, minimum 50% of 600 school students, teachers and administrators (with at least 50% women) and 18 women SHGs reported improved awareness on water conservation and hygiene in six project cities (2017 Baseline: 0) 3b. By 2023, PDMC established in CMA (2017 baseline: 0) 3c. By 2020,[e] at least 80% of technical staff in PDMC (75% participation of female technical staff) trained in the	3a. Post-awareness campaign sample survey 3b–f. MAWS Annual Policy Note, and program quarterly progress reports	Competing priorities within ULBs and staff turnover hinder participation in capacity building

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
	design and implementation of urban infrastructure projects reported improved knowledge and/or skills (2017 baseline: 0) 3d. By 2020, project design and implementation manuals for urban services delivery with applicable standards for PDMC developed (2017 baseline: 0) 3e. By 2023, new database for at least six cities established at urban data and governance improvement cell, with sex-disaggregated data where applicable (2017 baseline: 0) 3f. By 2026, 10 CMA and 60 ULB staff (including 100% of eligible women staff) reported knowledge on approaches to integrating gender and social inclusion in urban governance, implementing gender action plans, monitoring and reporting on gender equality results (2017 baseline: 0)		
Key Activities with Milestones			
1. Climate-resilient sewage collection and treatment, and drainage systems developed in 6 cities. 1.1 Award all sewerage contracts in Tranche 1 by December 2018, and complete all civil works in Tranche 1 by June 2023 **2. Water supply systems in at one city improved with smart features.** 2.1 Award all water supply contracts in Tranche 1 by December 2018, and complete all civil works in Tranche 1 by June 2023 **3. Institutional capacity, public awareness, and urban governance strengthened** 3.1 Mobilize urban governance and awareness consultants (December 2018) 3.2 Evaluate reform indicators and decide on incentives (Annually from 2018 through 2023)			
Inputs			
ADB: $171 million ($169 million [regular OCR loan] and $2 million grant from ACEF) Government: $306.5 million			

ACEF = Asian Clean Energy Fund, ADB = Asian Development Bank, CMA = Commissionerate of Municipal Administration, DMAs = district metered areas, MAWS = Municipal Administration and Water Supply Department, km = kilometer, lpcd = liters per capita per day, m = meter, MLD = millions of litres per day, NRW = nonrevenue water, OCR = ordinary capital resources, PDMC = project design and management center, SHGs = self-help groups, STP = sewage treatment plant, ULB = urban local body.

[a] Government of Tamil Nadu. 2012. *Tamil Nadu Vision 2023*: *Strategic Plan for Infrastructure Development in Tamil Nadu*. Chennai. Vision Tamil Nadu 2023 defines "world-class cities" as those that are free from garbage and open defecation and whose infrastructure is upgraded with continuous 24/7 water supply access, and efficient mass transit systems and sanitation systems.

[b] Government of Tamil Nadu. 2015. *Tamil Nadu Sustainable Water Security Mission*. Chennai; and Government of Tamil Nadu. 2014. *State Action Plan on Climate Change.* Chennai.

[c] The city corporations and municipalities (collectively referred to as cities) are Ambur, Chennai, Coimbatore, Cuddalore, Rajapalayam, Thoothikudi, Tiruchirappalli, Tirunelveli, Tiruppur, and Vellore. Other cities are eligible for support under the MFF are subject to compliance with selection criteria outlined in the framework financing agreement (LD 4).

[d] Poor households are defined as those defined by the state as those below the poverty line (BPL).

[e] Activities for completion by December 2020 are linked to attached technical assistance.

Source: Asian Development Bank.

DETAILED PROJECT DESCRIPTION FOR TRANCHE 1

1. Output 1: Climate-resilient sewage collection and treatment, and drainage systems developed in six cities.

(i) Chennai City includes expansion of the piped sewage collection system in 4 zones and 17 sub-zones of four newly amalgamated un-serviced peri-urban areas. The new facilities include; (i) 113.19 kilometers (km) of new gravity sewer mains; (ii)18 sewage pump/ lift stations; (iii) 28.77 km of pumping/rising mains; and (iv) 26,160 new service connections. Works include all related appurtenances, civil works, concrete structures and mechanical and electrical equipment.

(ii) Coimbatore City includes expansion of the piped sewage collection system in two municipal areas viz. Kurichi and Kuniamuthur amalgamated to the city with 5 service zones with 30 subzones. The new facilities include; (i) 433.74 km of new gravity sewer mains. (ii) 26 sewage pump/ lift stations, (iii) 42.94 km of pumping/ rising mains (iv) 69,700 new household service connections and (v) new 30.53 million liters per day (MLD) sewage treatment plant. Works include all related road restoration of the trenched portion, appurtenances, civil works, concrete structures and mechanical and electrical equipment.

(iii) Under Tranche 1, the proposed grant of $2 million from the ADB administered Asian Clean Energy Fund (ACEF) funded by the Government of Japan will support development of a solar-powered 30.53-MLD municipal sewage treatment plant (STP), one of the first in South Asia, in Coimbatore. This innovative pilot will install up to 2 megawatts of on-site solar photovoltaic panels dedicated for plant operation. The solar installation will result in: (i) meeting 90% of the STP's energy requirement; (ii) cost savings of around $0.32 million per year (72% of annual energy charges); and (iii) 3,400 tons of CO_2 equivalent per year reduced greenhouse gas emissions. The pilot will introduce an innovative approach over the business as usual case of fossil fuel operated STPs and presents significant demonstration value for India and the region.

(iv) Tiruchirapalli City includes expansion of the piped sewage collection system in 5 service zones with 30 subzones in un-serviced areas of the existing city and its peripheral areas. The new facilities include: (i) 313.2 km of new gravity sewer mains; (ii) 29 sewage pump/ lift stations; (iii) 24 km of pumping/ rising mains; (iv) 44,569 new household service connections; (v) rehabilitation of 37 MLD existing sewage treatment plant at Panjappur; and (vi) new 30 MLD sewage treatment plant in Ariyamangalam zone. Works include all related road restoration of the trenched portion, appurtenances, civil works, concrete structures and mechanical and electrical equipment.

(v) Tirunelveli City. Includes expansion of the piped sewage collection system in 3 service zones of the city, west of Tamiraparni river. The new facilities include: (i) 224.56 km of new gravity sewer mains; (ii) 12 new sewage pump/lift station and refurbishment of an existing pump station; (iii) 27.03 km of pumping/rising mains; and (iv) 54,720 new household service connections. Works include all related road restoration of the trenched portion, appurtenances, civil works, concrete structures and mechanical and electrical equipment. Note: sewage treatment will be provided by the existing treatment plant (facultative lagoon) which has spare capacity.

(vi) Tirunelveli city includes expansion of the piped sewage collection system in city areas east of Tamiraparni river. The new facilities include: (i) 417.41 km of new gravity sewer mains; (ii) 19 nos. of sewage lift/ pump station and 39.66 km of pumping/ rising mains; (iv) 43,532 new household service connections; and (v)

new 32 MLD sewage treatment plant. Works include all related road restoration of the trenched portion, appurtenances, civil works, concrete structures and mechanical and electrical equipment.

(vii) Vellore City includes expansion of the piped sewage collection system in 5 service zones in uncovered areas of the city. The new facilities include: (i) 209.50 km of new gravity sewer mains; (ii) 12 new sewage pump/ lift station and refurbishment of an existing major lift station; (iii) 16 km of pumping/rising mains; (iv) 43,270 new household service connections and new 50 MLD sewage treatment plant. Works include all related road restoration of the trenched portion, appurtenances, civil works, concrete structures and mechanical and electrical equipment.

(viii) Rajapalyam Municipality includes construction of a piped underground sewage collection system in the town. The new facilities include: (i) 152.65 km of new gravity sewer mains; (ii) 8 nos. of new sewage lift/ pump stations and 15.20 km of pumping/ rising mains; and (iv) 15,596new lot/ household service connections and new 21.85 MLD sewage treatment plant. Works include all related road restoration of the trenched portion, appurtenances, civil works, concrete structures and mechanical and electrical equipment.

2. Output 2: Water supply systems in at one city improved with smart features.

(i) Chennai City. The component of works include: (i) providing and laying 3,900 meters (m) of ductile iron transmission main, 6,800 m of ductile iron feeder mains and 275.6 km of ductile iron distribution mains in 20 newly established district metered areas to manage and reduce NRW; (ii) constructing 4 underground storage reservoirs, 5 overhead service tanks, 5 pump stations; and (iii) installing 30,800 house service connections with water meters.

3. Output 3: Institutional capacity, public awareness, and urban governance strengthened

(i) **Institutional capacity.** The Commissionnerate of Municipal Administration (CMA) will establish a new project design and management center (PMDC) in CMA. The Tamil Nadu Urban Flagship Investment Program (program) will support CMA in establishing the PDMC in two ways: (i) procure required software and hardware equipment (investment component); and (ii) strengthening capacity (grant transaction technical assistance [TRTA] component administered by Asian Development Bank [ADB]) through training, best practices exposure, and preparing manuals and other required design guidelines. The project design consultants (investment component) will be recruited to prepare new projects including: (i) feasibility studies; (ii) surveys and investigations; (iii) engineering design of projects; (iv) preparation of bidding documents; and (v) safeguard assessment.

(ii) **Public Awareness.** The CMA will recruit a Governance Improvement and Awareness Consultant (GIAC) to support information, education, and communication (IEC) activities in areas of water conservation, sanitation, and hygiene with a target on poor communities.

(iii) **Urban Governance.** The CMA will establish a new Urban Data and Governance Improvement Cell (UDGIC). The program will support CMA in establishing the UDGIC and strengthening its capacity by: (i) providing $10 million in performance-based funds to incentive governance improvement (investment component); (ii) providing consultant services and hardware and software support for administering the governance improvement program under the program (investment component); and (iii) strengthening capacity in governance reforms through

trainings and best practices exposure (grant TRTA component). The CMA will engage an independent verification agency (IVA) to conduct annual performance assessments, regular data collection, field verifications and recommending incentive payouts.[1] The CMA recruited consultants will support CMA in the implementation of the gender action plan.

[1] Independent validation is included in the TOR of the Urban Governance and Awareness Consultants under the program.

DETAILED COST ESTIMATE AND FINANCING PLAN

1. The Tamil Nadu Urban Flagship Investment Program (program) is estimated to cost $1,268.4 million. The Government of India (GOI) requested an MFF of up to $500.0 million from ADB's ordinary capital resources (OCR) to help finance a part of the investment program. The Asian Clean Energy Fund[1] under the Clean Energy Financing Partnership Facility will provide grant cofinancing equivalent to $2 million to be administered by ADB. The program will support the medium-term investment requirements envisaged in the GOTN's Tamil Nadu Vision 2023 and State Annual Action Plan 2016. The Tamil Nadu state government, Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB), and project urban local bodies will contribute $766.4 million to finance: (i) taxes and duties, (ii) road restoration, (iii) land acquisition and resettlement costs, (iv) incremental administration cost, (v) contingencies, (vi) financing charges during implementation, and (vii) part of the civil works and equipment; and will provide the loan proceeds and counterpart funds to the implementing agency as a mix of loan and/or grant. The program will comprise three tranches (each financed by a respective tranche of the MFF), and will be subject to the government's submission of related periodic financing requests, execution of the related legal agreements for each tranche, and fulfillment of terms and conditions set forth in the framework financing agreement.[2] Cofinancing on a collaborative basis will be explored.[3] The investment program is in Table A3.1.

2. Tranche 1 of $477.5 million will be financed by a loan of $169.0 million from ADB's OCR and a grant of $2.0 million from ADB administered ACEF. The loan will have a 25-year term, including a grace period of 5 years, 10% annuity repayment method , an annual interest rate determined in accordance with the ADB's LIBOR-based lending facility, a commitment charge of 0.15% every year, a maturity premium of 0.20%[4] and such other terms and conditions set forth in the draft loan and project agreements.[5] The financing plan is in Table A3.2.

Table A3.1: Investment Program for Tranche 1 ($ million)

Item	Amount[a]
A. Base Cost [b]	
1. Climate-resilient sewage collection and treatment, and drainage systems developed in six cities.	361.9
2. Water supply systems in one city improved with smart features.	28.6
3. Institutional capacity, public awareness, and urban governance strengthened	28.7
Subtotal (A)	**419.2**
B. Contingencies[c]	**44.1**
C. Financing Charges[d]	**14.2**
Total (A+B+C)	**477.5**

[a] In early-2018 prices; Exchange rate of US$1 = ₹64.3 is used.
[b] Includes taxes and duties of $102.4 million to be financed from government resources by cash contribution.
[c] Physical contingencies are computed at 5.0% for civil works and equipment. Price contingencies are computed at 1.4%-1.6% on foreign exchange costs and 4.0%-4.6% on local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

[1] Established by the Government of Japan. ADB secured approval for the Asian Clean Energy Fund grant amount outside the MFF but will disburse funding concurrently with tranche 1.
[2] Framework Financing Agreement (accessible from the list of linked documents in Appendix 2 to the Report and Recommendation of the President to the Board of Directors).
[3] During MFF preparation, ADB initiated constructive discussions with JICA, KfW, and World Bank who are currently implementing urban projects in similar areas of Tamil Nadu. ADB will explore in future tranches parallel collaborative cofinancing to capture the indicative project amounts ($194 million, $100 million, and $197 million, respectively).
[4] The maturity-based premium of 0.2% is based on the loan term and the government's repayment period.
[5] Based on these loan terms, the maturity premium payable to ADB is 0.20% per annum.

[d] Includes interest and commitment charges. Interest during construction for the ADB loan has been computed at the 5-year US dollar fixed-swap rate plus a spread of 0.5% and a maturity premium of 0.2%. Commitment charges for an ADB loan are 0.15% per year to be charged on the undisbursed loan amount.
Source: Asian Development Bank estimates.

Table A3.2: Financing Plan for Tranche 1

Source	**Amount** ($ million)
Asian Development Bank	
Ordinary capital resources (regular loan)	169.0
Asian Clean Energy Fund[a]	2.0
Government of Tamil Nadu, CMWSSB, ULBs	306.5
Total	477.5

CMWSSB = Chennai Metropolitan Water Supply and Sewerage Board, ULBs = urban local bodies.
[a] Established by Government of Japan and administered by the Asian Development Bank (approval on 21 May 2018).
Source: Asian Development Bank estimates.

3. The estimated qualifying cost of climate change mitigation is $225.04 million of which ADB will finance 43.8% and estimated qualifying cost of climate change adaptation measures is $71.82 Million, of which ADB will finance 44.3%.

A. Cost Estimates Preparation and Revisions

4. The cost estimates were prepared based on the detailed project report, where available, and other relevant details of subprojects. The cost estimate model was prepared using Microsoft Excel and, is available from the project preparation team and the PMU. The cost estimates will be further revised during the implementation by the PMU.

B. Key Assumptions

5. The following key assumptions underpin the cost estimates and financing plan:

(i) Exchange rate: ₹64.3 = $1.00 (as of March 2018)
(ii) Price contingencies based on expected cumulative inflation over the implementation period are as follows:

Table A3.3: Escalation Rates for Price Contingency Calculation

Item	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	Average
Foreign rate of price inflation	1.4%	2.9%	4.4%	5.9%	7.5%	9.1%	10.7%	12.3%	13.9%	15.5%	8.4%
Domestic rate of price inflation	4.0%	8.6%	13.1%	17.6%	22.1%	26.6%	31.1%	35.6%	40.1%	44.6%	24.3%

Source(s): ADB estimates.

(iii) In-kind contributions cannot be easily measured and have not been quantified.

C. Detailed Cost Estimates by Expenditure Category

Table A3.4: Cost Estimates by Expenditure Category under Tranche 1 ($ million)

Item		Foreign Exchange	Local Currency	Total Cost	Total Net Cost	Tax	% of Total Base Cost
A.	**Investment Costs**						
1.	Civil works and equipment	72.9	262.2	335.2	299.2	35.9	79.9%
	a. Water supply and sewerage	72.4	260.5	332.9	297.2	35.7	79.4%
	b. Solar development	-	2.2	2.2	2.0	0.2	0.5%
2.	Provisional Items, road restoration, etc.	-	52.6	52.6	52.6	-	12.5%
3.	Resettlement	-	2.8	2.8	2.8	-	0.7%
4.	Performance based governance improvement incentive	-	10.0	10.0	10.0	-	2.4%
5.	Consulting services	3.3	12.0	15.4	13.0	2.3	3.7%
	a. Contract management, supervision	1.6	5.7	7.3	6.2	1.1	1.7%
	d. Project design	0.8	3.0	3.9	3.3	0.6	0.9%
	c. Governance improvement and awareness	0.9	3.3	4.2	3.6	0.6	1.0%
	Subtotal (A)	76.3	339.6	415.9	**377.6**	**38.3**	**99.2%**
B.	**Recurrent Costs**						
1.	Incremental administrative costs (CMA)	-	2.2	2.2	2.2	-	0.8%
2.	Incremental administrative costs (PMU)	-	1.1	1.1	1.1		0.8%
	Subtotal (B)	**-**	**3.3**	**3.3**	**3.3**	**-**	**0.8%**
	Total Base Cost (A+B)	**76.3**	**342.9**	**419.2**	**381.0**	**38.3**	**100.0%**
C.	**Contingencies**						
1.	Physical contingencies	3.1	13.6	16.6	16.6	-	4.0%
2.	Price contingencies	6.0	21.5	27.5	27.5	-	6.6%
	Subtotal (C)	**9.0**	**35.1**	**44.1**	**44.1**	**-**	**10.5%**
D.	**Financing Charges During Implementation**						
1.	Interest during construction	13.5	-	13.5	13.5	-	3.2%
2.	Commitment charges	0.7	-	0.7	0.7	-	0.2%
	Subtotal (D)	**14.2**	**-**	**14.2**	**14.2**	**-**	**3.4%**
	Total Project Cost (A+B+C+D)	**99.5**	**378.0**	**477.5**	**439.2**	**38.3**	**113.9%**

CMA = Commissionerate of Municipal Administration, PMU = program management unit.

Notes: 1. Numbers may not sum precisely because of rounding.
2. The costs of the actual audits of the program are minor and will be borne by the government.
3. Minor environmental monitoring and implementation of resettlement plan and gender action plan cost are absorbed in B1. ADB will not finance land acquisition cost.

Source: Asian Development Bank estimates.

D. Allocation and Withdrawal of Loan and Grant Proceeds

Table A3.5: Allocation and Withdrawal of Loan Proceeds under Tranche 1

No.	Item	Amount Allocated for ADB Financing ($) Category	Basis for Withdrawal from the Loan Account
1	Works and equipment (water and sewerage)	145,979,000	43.8% of total expenditure claimed
2	Performance based governance improvement incentive	10,000,000	100.0% of total expenditure claimed*
3	Consulting services	13,021,000	84.7% of total expenditure claimed
Total		**169,000,000**	

* Exclusive of taxes and duties imposed within the territory of the Borrower
Source: Asian Development Bank estimates.

Table A3.6: Allocation and Withdrawal of Grant Proceeds

No.	Item	Amount Allocated for ADB Financing ($) Category	Basis for Withdrawal from the Loan Account
1	Works and equipment (solar development)	2,000,000	89.3% of total expenditure claimed
Total		**2,000,000**	

Source: Asian Development Bank estimates.

E. Detailed Cost Estimates by Financier

Table A3.7: Tranche 1 Cost Estimates by Financier ($ million)

Item	ADB		ACEF		GOTN				Total Costs
	$	%	$	%	Tax	Non-Tax	Total	%	
A. Investment Costs									
1. Civil works and equipment	146.0	43.6%	2.0	0.6%	35.9	151.3	187.2	55.8%	335.2
a. Water supply and sewerage	146.0	43.8%	-	0.0%	35.7	151.3	186.9	56.2%	332.9
b. Solar development	-	0.0%	2.0	89.3%	0.24		0.2	10.7%	2.2
2. Provisional Items, road restoration, etc.	-	0.0%	-	0.0%	-	52.6	52.6	100.0%	52.6
3. Resettlement	-	0.0%	-	0.0%	-	2.8	2.8	100.0%	2.8
4. Performance based governance improvement incentive	10.0	100.0%	-	0.0%	-	-	-	0.0%	10.0
5. Consulting services	13.0	84.7%	-	0.0%	2.3	-	2.3	15.3%	15.4
a. Contract management, supervision	6.2	84.7%	-	0.0%	1.1	-	1.1	15.3%	7.3
d. Project design	3.3	84.7%	-	0.0%	0.6	-	0.6	15.3%	3.9
c. Governance improvement and awareness	3.6	84.7%	-	0.0%	0.6	-	0.6	15.3%	4.2
Subtotal (A)	**169.0**	**40.3%**	**2.0**	**0.5%**	**38.3**	**206.6**	**244.9**	**58.9%**	**415.9**
B. Recurrent Costs									
1. Incremental administrative costs (CMA)	-	0.0%	-	0.0%	-	2.2	2.2	100.0%	2.2
2. Incremental administrative costs (PMU)	-	0.0%	-	0.0%	-	1.1	1.1	100.0%	1.1
Subtotal (B)	**-**	**0.0%**	**-**	**0.0%**	**-**	**3.3**	**3.3**	**100.0%**	**3.3**
Total Base Cost (A+B)	**169.0**	**40.3%**	**2.0**	**0.5%**	**38.3**	**210.0**	**248.2**	**59.2%**	**419.2**
C. Contingencies									
1. Physical contingencies	-	0.0%	-	0.0%	-	16.6	16.6	100.0%	16.6
2. Price contingencies	-	0.0%	-	0.0%	-	27.5	27.5	100.0%	27.5
Subtotal (C)	**-**	**0.0%**	**-**	**0.0%**	**-**	**44.1**	**44.1**	**100.0%**	**44.1**
D. Financing Charges During Implementation									
1. Interest during construction	-	0.0%	-	0.0%	-	13.5	13.5	100.0%	13.5
2. Commitment charges	-	0.0%	-	0.0%	-	0.7	0.7	100.0%	0.7
Subtotal (D)	**-**	**0.0%**	**-**	**0.0%**	**-**	**14.2**	**14.2**	**100.0%**	**14.2**
Total Project Cost	**169.00**	**35.4%**	**2.0**	**0.4%**	**38.3**	**268.2**	**306.5**	**64.2%**	**477.5**

ADB = Asian Development Bank, ACEF = ADB administered Asian Clean Energy Fund, CMA = Commissionerate of Municipal Administration, PMU = program management unit.

Notes: 1. Numbers may not sum precisely because of rounding.
2. The costs of the actual audits of the program are minor and will be borne by the government.
3. Minor environmental monitoring and implementation of resettlement plan and gender action plan cost are absorbed in B1. ADB will not finance land acquisition cost.

Source: Asian Development Bank estimates.

F. Detailed Cost Estimates by Outputs and/or Components

Table A3.8: Tranche 1 Cost Estimates by Outputs ($ million)

	Items	Total Cost	Output 1 Sewage collection and treatment, and drainage systemts with climate-friendly designs developed		Output 2 Access to reliable water and smart water supply systems improved		Output 3 Institutional capacity, public awareness, and urban governance strengthened	
			$	%	$	%	$	%
A.	**Investment Costs**							
1.	Civil works and equipment	335.2	320.2	95.6%	14.9	4.4%	-	0.0%
	a. Water supply and sewerage	332.9	318.0	95.5%	14.9	4.5%	-	0.0%
	b. Solar development	2.2	2.2	100.0%	-	0.0%	-	0.0%
2.	Provisional Items, road restoration, etc.	52.6	39.6	75.3%	13.0	24.7%	-	0.0%
3.	Resettlement	2.8	2.1	75.3%	0.7	24.7%	-	0.0%
4.	Performance based governance improvement incentive	10.0	-	0.0%	-	0.0%	10.0	100.0%
5.	Consulting services	15.4	-	0.0%	-	0.0%	15.4	100.0%
	a. Contract management, supervision	7.3	-	0.0%	-	0.0%	7.3	100.0%
	d. Project design	3.9	-	0.0%	-	0.0%	3.9	100.0%
	c. Governance improvement and awareness	4.2	-	0.0%	-	0.0%	4.2	100.0%
	Subtotal (A)	**415.9**	**361.9**	**87.0%**	**28.6**	**6.9%**	**25.4**	**6.1%**
B.	**Recurrent Costs**							
1.	Incremental administrative costs (CMA)	2.2	-	0.0%	-	0.0%	2.2	100.0%
2.	Incremental administrative costs (PMU)	1.1	-	0.0%	-	0.0%	1.1	100.0%
	Subtotal (B)	**3.3**	**-**	**0.0%**	**-**	**0.0%**	**3.3**	**100.0%**
	Total Base Cost (A+B)	**419.2**	**361.9**	**86.3%**	**28.6**	**6.8%**	**28.7**	**6.8%**
C.	**Contingencies**							
1	Physical Contingencies	16.6	15.9	95.5%	0.7	4.5%	-	0.0%
2	Price Contingencies	27.5	23.8	86.7%	1.9	6.7%	1.8	6.6%
	Subtotal (C)	**44.1**	**39.7**	**90.0%**	**2.6**	**5.9%**	**1.8**	**4.1%**
D.	**Financing Charges**							
1	Interest During Implementation	13.5	11.7	86.7%	0.9	6.7%	0.9	6.6%
2	Commitment Charges	0.7	0.6	86.7%	0.1	6.7%	0.1	6.6%
	Subtotal (D)	**14.2**	**12.3**	**86.7%**	**1.0**	**6.7%**	**0.9**	**6.6%**
	Total Project Cost (A+B+C+D)	**477.5**	**413.9**	**86.7%**	**32.2**	**6.7%**	**31.4**	**6.6%**

CMA = Commissionerate of Municipal Administration, PMU = program management unit
Notes: 1. Numbers may not sum precisely because of rounding.
2. The costs of the actual audits of the program are minor and will be borne by the government.
3. Minor environmental monitoring and implementation of resettlement plan and gender action plan cost are absorbed in B1. ADB will not finance land acquisition cost
Source: Asian Development Bank estimates.

G. Detailed Cost Estimates by Year

Table A3.9: Tranche 1 Detailed Cost Estimates by Year ($ million)

	Item	Total	2018	2019	2020	2021	2022	2023
A.	**Investment Costs**							
1.	Civil works and equipment	335.2	16.6	50.2	100.3	90.3	50.5	27.2
	a. Water supply and sewerage	332.9	16.6	49.9	99.9	89.9	49.9	26.6
	b. Solar development	2.2	-	0.2	0.4	0.4	0.6	0.6
2.	Provisional Items, road restoration, etc.	52.6	2.6	7.9	15.8	14.2	7.9	4.2
3.	Resettlement	2.8	1.4	1.4	-	-	-	-
4.	Performance based governance improvement incentive	10.0	-	1.0	2.0	2.0	2.5	2.5
5.	Consulting services	15.4	0.6	2.1	4.2	3.9	2.7	1.9
	a. Contract management, supervision	7.3	0.4	1.1	2.2	2.0	1.1	0.6
	d. Project design	3.9	0.2	0.6	1.2	1.0	0.6	0.3
	c. Governance improvement and awareness	4.2	-	0.4	0.8	0.8	1.0	1.0
	Subtotal (A)	**415.9**	**21.2**	**62.5**	**122.3**	**110.4**	**63.6**	**35.8**
B.	**Recurrent Costs**							
1.	Incremental administrative costs (CMA)	2.2	0.1	0.3	0.7	0.6	0.3	0.2
2.	Incremental administrative costs (PMU)	1.1	0.1	0.2	0.3	0.3	0.2	0.1
	Subtotal (B)	**3.3**	**0.2**	**0.5**	**1.0**	**0.9**	**0.5**	**0.3**
	Total Base Cost (A+B)	**419.2**	**21.4**	**63.0**	**123.3**	**111.3**	**64.1**	**36.1**
C.	**Contingencies**							
1.	Physical Contingencies	16.6	0.8	2.5	5.0	4.5	2.5	1.3
2.	Price Contingencies	27.5	0.5	2.5	6.8	8.1	5.8	3.9
	Subtotal (C)	**44.1**	**1.3**	**5.0**	**11.8**	**12.5**	**8.3**	**5.2**
D.	**Financing Charges**							
1.	Interest During Implementation	13.5	0.1	0.6	1.6	2.9	3.9	4.5
2.	Commitment Charges	0.7	0.1	0.2	0.2	0.1	0.1	0.1
	Subtotal (D)	**14.2**	**0.2**	**0.8**	**1.8**	**3.0**	**3.9**	**4.5**
	Total Project Cost (A+B+C+D)	**477.5**	**22.9**	**68.8**	**136.9**	**126.8**	**76.3**	**45.8**

CMA = Commissionerate of Municipal Administration, PMU = program management unit

Notes: 1. Numbers may not sum precisely because of rounding.
2. The costs of the actual audits of the program are minor and will be borne by the government.
3. Minor environmental monitoring and implementation of resettlement plan and gender action plan cost are absorbed in B1. ADB will not finance land acquisition cost.

Source: Asian Development Bank estimates.

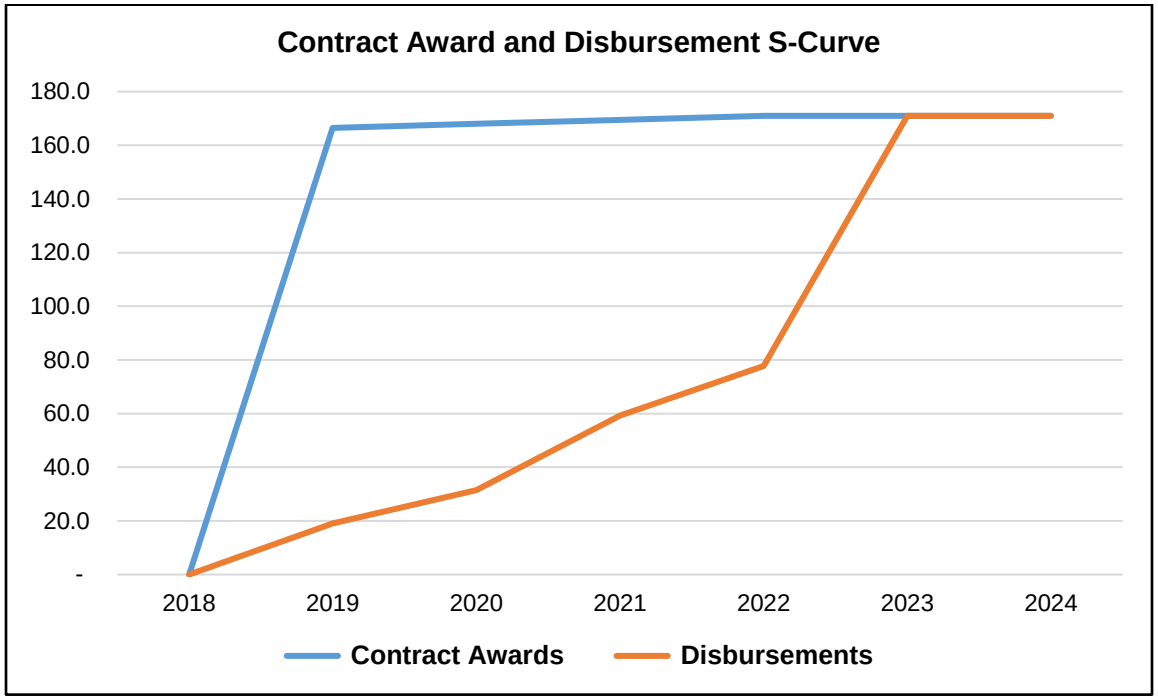
H. Contract and Disbursement S-Curve

1. Projected contract awards and disbursements of the ADB loan are given in Table A3.10 and Figure A3.1.

Table A3.10: Projected Contract Awards and Disbursements

Year	Contract Awards ($ million)				Disbursements ($ million)			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
2018	-	156.20	166.50	166.50	-	8.74	9.25	19.09
2019	168.00	168.00	168.00	168.00	21.05	24.10	25.65	31.40
2020	168.00	169.50	169.50	169.50	38.74	47.99	52.12	59.19
2021	169.50	171.00	171.00	171.00	63.17	68.80	72.94	77.79
2022	171.00	171.00	171.00	171.00	92.78	108.68	139.84	171.00
2023	171.00	171.00	171.00	171.00	171.00	171.00	171.00	171.00

Figure A3.1: S-Curve



PROCUREMENT PLAN

Basic Data

Project Name: Tamil Nadu Urban Flagship Investment Program (TNUFIP) Tranche 1	
Loan No./ Project No.: P49107-IND	**Approval No.** ----------
Country: India	**Executing Agency**: Tamil Nadu Urban Infrastructure Financial Services Limited (TNUIFSL)
Procurement Risk: Moderate **Project Procurement Classification:** Category B	**Implementing Agencies**: • Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB) • Coimbatore City Corporation • Tirunelveli City Corporation, • Vellore City Corporation • Tiruchirappalli City Corporation • Rajapalayam Municipality • Commissionerate of Municipal Administration • Tamil Nadu Water Supply and Drainage Board
Project Financing Amount: $477.5 million ADB Financing: $169 million Asian Clean Energy Fund under the Clean Energy Financing Partnership Facility: $2 million Non ADB Financing: $306.5 million	**Project Closing Date:** December 2023
Date of First Procurement Plan: 15 December 2017	**Date of This Procurement Plan**: 15 December 2017

A. Methods, Thresholds, Review and 18-Month Procurement Plan

1. Procurement and Consulting Methods and Thresholds

Except as the Asian Development Bank (ADB) may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

Procurement of Goods and Works

Method	Threshold
International Competitive Bidding (ICB) for Works	$ 40,000,000 and above
International Competitive Bidding (ICB) for Goods	$ 10,000,000 and above
National Competitive Bidding (NCB) for Works	Beneath that stated for ICB, Works
National Competitive Bidding (NCB) for Goods	Beneath that stated for ICB, Goods
Shopping for Works	Below $ 100,000
Shopping for Goods	Below $ 100,000

Consulting Services

Method	Comments
Quality- and Cost-Based Selection (QCBS) Quality-based selection (QBS) Consultants' Qualification Selection (CQS) Least Cost Selection (LCS) Fixed Budget Selection (FBS) Individual Consultant Selection (ICS)	

2. ADB Prior or Post Review

Except as ADB may otherwise agree, the following prior or post review requirements apply to the various procurement and consultant recruitment methods used for the project.

Procurement Method	Prior or Post	Comments
Procurement of Goods and Works		
ICB Works	Prior	
ICB Goods	Prior	
NCB Works	Prior	All bid document and bid evaluation reports shall be subject to ADB's Prior review.
NCB Goods	Prior	All bid document and bid evaluation reports shall be subject to ADB's Prior review.
Shopping for Works	Post	
Shopping for Goods	Post	
Recruitment of Consulting Firms		
Quality- and Cost-Based Selection (QCBS)	Prior	
Other selection methods: Consultants Qualifications (CQS), Least-Cost Selection (LCS), Quality-Based Selection (QBS), Fixed Budget Selection method (FBS) and Single Source (SSS)	Prior	
Recruitment of Individual Consultants		
Individual Consultants	Prior	

3. Goods and Works Contracts Estimated to Cost $ 1 Million or More

The following table lists goods and works contracts for which the procurement activity is either ongoing or expected to commence within the next 18 months.

General Description	Estimated Value ($ million)[a]	Procurement Method	Review (Prior/ Post)	Bidding Procedure	Advertise-ment Date (quarter/ year)	Comments
TNUFIP/TEVL/01: Providing sewerage collection system in Zone-1,2 & 3 for UGSS in Tirunelveli Corporation under Phase-II.	36.97	NCB	Prior	Single-stage Two-envelope	Q4/2017	Advance Contracting: Yes; Without Pre-qualification: Yes; Bidding Document: SBD Works (Large); Domestic preference applicable: No; Contract Completion Period: 36 months followed by Defect Liability Period.
TNUFIP/TEVL-2/01: Providing sewerage collection system in Zone - 4, 5, 6, PCB, PM and construction of Sewage Treatment Plant of capacity 27 MLD with Waste Stabilization Pond technology for UGSS in Tirunelveli Corporation Phase-III under Package-1.	57.64	ICB	Prior	Single-stage Two-envelope	Q1/2018	Advance Contracting: Yes; Without Pre-qualification: Yes; Bidding Document: SBD Works (Large); Domestic preference applicable: No; Contract Completion Period: 36 months followed by Defect Liability Period.
TNUFIP/CBE/01: Providing UGSS to Kurichi and	64.85	ICB	Prior	Single-stage Two-envelope	Q1/2018	Advance Contracting: Yes;

General Description	Estimated Value ($ million)[a]	Procurement Method	Review (Prior/ Post)	Bidding Procedure	Advertise-ment Date (quarter/ year)	Comments
Kunjamuthur Area Wards 87 to 100 of Coimbatore Corporation Phase II in Coimbatore District						Without Pre-qualification: Yes; Bidding Document: SBD Works (Large); Domestic preference applicable: No; Contract Completion Period: 36 months followed by Defect Liability Period.
TNUFIP/CBE/03: Construction of Sewage Treatment Plant of capacity 30.53 MLD on DBO basis for UGSS in Coimbatore Corporation under Package – 3	6.80	NCB	Prior	Single-stage Two-envelope	Q2/2018	Advance Contracting: Yes; Without Pre-qualification: Yes; Bidding Document: SBD Plant-Design, Build, Supply and Installation; Domestic preference applicable: No; Contract Completion Period: 24 months
TNUFIP/CBE/GR1: Supply, erection installation and commissioning of 2 MW PV Solar power plant for STP in Coimbatore corporation	2.0	NCB	Prior	Single-stage Two-envelop	Q3/2018	Advance Contracting: Yes; Without Pre-qualification: Yes; Bidding Document: SBD Plant-Design, Build, Supply and Installation; Domestic preference applicable: No; Contract Completion Period: 24 months

General Description	Estimated Value ($ million)[a]	Procurement Method	Review (Prior/ Post)	Bidding Procedure	Advertise-ment Date (quarter/ year)	Comments
TNUFIP/TIRP/01: Providing sewerage collection system in the extended areas of Corporation for UGSS in Trichy Corporation under Package – 1	32.37	NCB	Prior	Single-stage Two-envelope	Q4/2017	Advance Contracting: Yes; Without Pre-qualification: Yes; Bidding Document: SBD Works (Large); Domestic preference applicable: No; Contract Completion Period: 36 months followed by Defect Liability Period.
TNUFIP/TIRP/02: Providing sewerage collection system in left out areas of erstwhile Corporation for UGSS in Trichy Corporation under Package – 2	11.58	NCB	Prior	Single-stage Two-envelope	Q4/2017	Advance Contracting: Yes; Without Pre-qualification: Yes; Bidding Document: SBD Works (Large); Domestic preference applicable: No; Contract Completion Period: 36 months followed by Defect Liability Period.
TNUFIP/TIRP/03: Construction of Sewage Treatment Plant of capacity 37 MLD on DBO basis for UGSS in Trichy Corporation under Package-3	5.5	NCB	Prior	Single-stage Two-envelope	Q2/2018	Advance Contracting: Yes; Without Pre-qualification: Yes; Bidding Document: SBD Plant-Design, Build, Supply and Installation; Domestic preference applicable: No; Contract Completion

General Description	Estimated Value ($ million)[a]	Procurement Method	Review (Prior/ Post)	Bidding Procedure	Advertise-ment Date (quarter/ year)	Comments
						Period: 24 months
TNUFIP/VEL /01: Providing sewerage collection system in Zone 3,4 &5 for UGSS in Vellore Corporation under Package – 1	18.91	NCB	Prior	Single-stage Two-envelope	Q4/2017	Advance Contracting: Yes; Without Pre-qualification: Yes; Bidding Document: SBD Works (Large); Domestic preference applicable: No; Contract Completion Period: 36 months followed by Defect Liability Period.
TNUFIP/VEL /02: Providing sewerage collection system in Zone 6,7, PCB & PM for UGSS in Vellore Corporation under Package-2	20.55	NCB	Prior	Single-stage Two-envelope	Q4/2017	Advance Contracting: Yes; Without Pre-qualification: Yes; Bidding Document: SBD Works (Large); Domestic preference applicable: No; Contract Completion Period: 36 months followed by Defect Liability Period.
TNUFIP/VEL /03: Construction of Sewage Treatment Plant of capacity 50 MLD on DBO basis for UGSS in Vellore Corporation under Package-3	9.24	NCB	Prior	Single-stage Two-envelope	Q1/2018	Advance Contracting: Yes; Without Pre-qualification: Yes; Bidding Document: SBD Plant-Design, Build, Supply and Installation; Domestic preference applicable: No;

General Description	Estimated Value ($ million)[a]	Procurement Method	Review (Prior/ Post)	Bidding Procedure	Advertise-ment Date (quarter/ year)	Comments
						Contract Completion Period: 24 months
TNUFIP/RPM/01: Providing sewerage collection system for UGSS in Rajapalayam Municipality under Package – 1	27.87	NCB	Prior	Single-stage Two-envelope	Q1/2018	Advance Contracting: Yes; Without Pre-qualification: Yes; Bidding Document: SBD Works (Large); Domestic preference applicable: No; Contract Completion Period: 36 months followed by Defect Liability Period.
TNUFIP/RPM/02: Construction of Sewage Treatment Plant of capacity 21.85 MLD – 2 modules on DBO basis for UGSS in Rajapalayam Municipality under Package-2	3.40	NCB	Prior	Single-stage Two-envelope	Q2/2018	Advance Contracting: Yes; Without Pre-qualification: Yes; Bidding Document: SBD Plant-Design, Build, Supply and Installation; Domestic preference applicable: No; Contract Completion Period: 36 months followed by Defect Liability Period.
TNUFIP/CMWSSB/01: Providing Water Supply Improvement Scheme for the 5 added areas of Chennai city	14.91	NCB	Prior	Single-stage Two-envelope	Q1/2018	Advance Contracting: Yes; Without Pre-qualification: Yes; Bidding Document: SBD Works (Large);

General Description	Estimated Value ($ million)[a]	Procurement Method	Review (Prior/ Post)	Bidding Procedure	Advertise-ment Date (quarter/ year)	Comments
						Domestic preference applicable: No; Contract Completion Period: 36 months followed by Defect Liability Period.
TNUFIP/CMWSSB/02: Providing Sewerage Collection System in 4 added areas of Chennai city for UGSS in Greater Chennai Corporation.	21.33	NCB	Prior	Single-stage Two-envelope	Q4/2017	Advance Contracting: Yes; Without Pre-qualification: Yes; Bidding Document: SBD Plant-Design, Build, Supply and Installation; Domestic preference applicable: No; Contract Completion Period: 24 months

AMRUT = Atal Mission for Rejuvenation and Urban Transformation; ICB = international competitive bidding; NCB = National Competitive Bidding; O&M = operation and maintenance; SBD = standard bidding document.
[a] Costs include taxes.

4. Consulting Services Contracts Estimated to Cost $ 100,000 or More

The following table lists consulting services contracts for which recruitment activity is either ongoing or expected to commence within the next 18 months.

General Description	Estimated Value ($ million)	Recruitment Method	Review (Prior/ Post)	Advertisement Date (Quarter/ year)	Type of Proposal	Comments
Construction Management and Supervision Consulting firm to assist Tirunelveli Corporation (CMSC-I)	1.88	QCBS (90:10)	Prior	Q4/2017	FTP	Advance Contracting: Yes; Short-listing: National; Contract Type: Time Based; Contract Duration: 36 months.
Construction Management and Supervision	1.74	QCBS (90:10)	Prior	Q4/2017	FTP	Advance Contracting: Yes;

General Description	Estimated Value ($ million)	Recruitment Method	Review (Prior/ Post)	Advertisement Date (Quarter/ year)	Type of Proposal	Comments
Consulting firm to assist Tiruchirappalli Corporation (CMSC-III)						Short-listing: National; Contract Type: Time Based; Contract Duration: 36 months.
Construction Management and Supervision Consulting firm to assist Vellore Corporation (CMSC-IV)	1.74	QCBS (90:10)	Prior	Q4/2017	FTP	Advance Contracting: Yes; Short-listing: National; Contract Type: Time Based; Contract Duration: 36 months.
Construction Management and Supervision Consulting firm to assist Chennai Metropolitan Water Supply and Sewerage Board (CMSC V)	1.95	QCBS (90:10)	Prior	Q4/2017	FTP	Advance Contracting: Yes; Short-listing: National; Contract Type: Time Based; Contract Duration: 36 months.
Governance Improvement and Awareness Consultancy – Firm (Includes hardware and software)	3.50	QCBS (90:10)	Prior	Q2/2018	FTP	Advance Contracting: Yes; Short-listing: National; Contract Type: Time Based; Contract Duration: 36 months.
Project Design Consultants – Firm (PDC)	3.90	QCBS (90:10)	Prior	Q2/2018	FTP	Advance Contracting: Yes; Short-listing: National; Contract Type: Time Based; Contract Duration: 36 months.

QCBS = quality- and cost-based selection method, FTP = full technical proposal, STP = simplified technical proposal, ICS = individual consultants selection, NA = not applicable, CMWSSB = Chennai Metropolitan Water Supply and Sewerage Board, TWAD Board = Tamil Nadu Water Supply and Drainage Board.

5. Goods and Works Contracts Estimated to Cost Less than $1 million and Consulting Services Contracts Less than $ 100,000 (Smaller Value Contracts)

The following table groups smaller-value goods, works and consulting services contracts for which procurement/ recruitment activity is either ongoing or expected to commence within the next 18 months.

Goods and Works

General Description	Estimated Value ($ million)	Procurement Method	Review (Prior/ Post)	Bidding Procedure	Advertisement Date (quarter/ year)	Comments
Office Furniture	0.50	Shopping	Post	Single-stage one-envelope	2017, 2018	Multiple Contracts Each below $10,000;
Regular office supplies and consumables.	0.50	Shopping	Post	Single-stage one-envelope	2017, 2018, 2019, 2020 and 2021	Multiple Contracts Each below $10,000;

Consulting Services

General Description	Estimated Value ($ million)	Recruitment Method	Review (Prior/ Post)	Advertisement Date (Quarter/ year)	Type of Proposal	Comments
Individuals						
Individual Consultants (multiple positions) for Monitoring and Review of Compliance and other support as required time to time.	0.70	ICS	Prior	2017, 2018, 2019, 2020, 2021	NA	Multiple Contracts: Nationality: National; Contract Type: Time Based;

ICS = Individual Consultant Selection method acceptable to ADB; NA = not applicable

B. Indicative List of Packages Required Under the Project

Goods and Works

General Description	Estimated Value	Procurement Method	Review	Bidding Procedure	Advertisement Date (quarter/year)	Comments

Consulting Services

General Description	Estimated Value	Recruitment Method	Review	Type of Proposal	Advertisement Date (quarter/year)	Comments

C. List of Awarded and On-going, and Completed Contracts

The following table lists the awarded and on-going contracts, and completed contracts.

1. Awarded and On-going Contracts

Goods and Works

General Description	Contract Value ($ million)	Procurement Method	Advertisement Date (quarter/ year)	Date of ADB Approval of Contract Award	Scheduled Date of Completion	Comments
Nil						

Consulting Services

General Description	Contract Value ($ million)	Recruitment Method	Advertisement Date (Quarter/ year)	Date of ADB Approval of Contract Award	Scheduled Date of Completion	Comments
Nil						

2. Completed Contracts

Goods and Works

General Description	Contract Value ($ million)	Procurement Method	Advertisement Date (quarter/ year)	Date of ADB Approval of Contract Award	Date of Completion	Comments
Nil						

Consulting Services

General Description	Contract Value ($ million)	Recruitment Method	Advertisement Date (Quarter/ year)	Date of ADB Approval of Contract Award	Date of Completion	Comments
Nil						

- **Non-ADB Financing**

The following table lists goods, works and consulting service contracts over the life of the project, financed by Non-ADB source.

Goods and Works

General Description	Contract Value - Cumulative ($ million)	Estimated Number of Contracts	Procurement Method	Comments
Nil				

Consulting Services

General Description	Contract Value - Cumulative ($ million)	Estimated Number of Contracts	Recruitment Method	Comments
Nil				

TERMS OF REFERENCE FOR CONSULTING SERVICES

ANNEXURE 1: DRAFT TERMS OF REFERENCE FOR CONSTRUCTION MANAGEMENT AND SUPERVISION CONSULTANCY SERVICES FOR IMPLEMENTATION OF WATER SUPPLY/ UNDERGROUND SEWERAGE SCHEME

A. Background

1. The Government of Tamil Nadu (GOTN), one of the most urbanized states in India is committed to improve urban infrastructure and simultaneously address institutional strengthening, and targets reforms in urban governance. Therefore, Government of Tamil Nadu has proposed to undertake "Tamil Nadu Urban Flagship Investment Program (program)". The proposed Program will support the GOTN in improving the infrastructure facilities and implementing reforms in urban sector.

2. The GOTN has been implementing urban investment projects with funds assistance from World Bank, Japan International Cooperation Agency (JICA) and KfW. The investments have made improvements in the living standards of the public, yet there is further scope and accordingly, GOTN is in discussion with the Asian Development Bank (ADB) seeking funds for implementing the program.

3. The proposed program is expected to support both the infrastructure needs and the reform program of the GOTN for sustainable urban infrastructure development and service delivery. The funds will provide financial support to the GOTN to implement reforms that will unlock the potential of various stakeholders, including municipal bodies, individual households, and private sector investors. The loan is expected to support catalytic investments that enhance productivity and leverage finances from various other sources in the project areas. The project will also explore possibilities of applying innovations in water supply and wastewater management, storm water drainage and flood management and reduce water loss in the form of nonrevenue water (NRW).

4. The impact of the program will be improved quality of life for all including the poor and the disadvantaged in Tamil Nadu. The project is envisaged to be implemented in three tranches having an aggregated amount of investment to the tune of around $715 million. The Tamil Nadu Urban Infrastructure Financial Services Limited (TNUIFSL) will implement the program through a program management unit (PMU).

5. The ULB now intends to provide Water Supply / Underground sewerage schemes under the program. The cost of the project is about $XXXXXX million (₹XXXXXX Crores). XXXXXX will implement the project under multiple packages and proposes to employ a Contract Management and Supervision Consultancy firm through TNUIFSL.

B. Objective of the Assignment

6. On behalf of the ULB (hereinafter "the Client"), TNUIFSL shall recruit a competent and professional Contract Management and Supervision Consulting firm ("the Consultant"). The said Consulting firm on behalf of TNUIFSL shall work with XXXXXX. All day-to-day reporting of the Consultant shall be to XXXXXX. The objective of the assignment is to assist and support the XXXXXX in contract management and construction supervision of works covered under the proposed underground sewerage / water supply project taken up under the program.

C. Scope of Services, Tasks (Components) and Expected Deliverables

7. **Scope of Services:** The Consultants' services will be used for carrying out contract and

construction management including supervision of works and overall responsibility to deliver the outputs will rest with the Consulting firm through the Team Leader. The Consultant shall ensure timely delivery of the documents and completion of various works assigned, establish coordination among all stakeholders and within the team members of the Consultant, scheduling mobilization/demobilization of team members and to interact with the client on regular basis.

8. The scope of services inter-alia intended to be provided by the Consultant under this terms of reference (TOR) shall include but not limited to the following:

(i) Setting out of sites for various components involved in the project including field verification of lines and levels;
(ii) Carrying out its duties as Engineer/ Engineer's Representative within the context of provisions of Works and Supply Contracts;
(iii) Support and assist the XXXXXX in contract administration and compliance with contractual conditions;
(iv) Field level supervision and monitoring of progress of works and preparation of progress reports;
(v) Review of designs, drawings, technical specifications and estimation. Ensure compliance with standard Engineering practice by the Contractors;
(vi) Develop Quality Assurance System & Quality Control Plan and prepare quality compliance reports;
(vii) Map all the utilities above and below ground that are falling within the alignment and assist in shifting of the same as required;
(viii) Coordinate with all the stakeholders to achieve timely completion of contractual obligations on the part of Contractors and the Client;
(ix) Assist in compliance with regulatory clearances. Assist in obtaining various permits, for the implementation of the project. Preparing Traffic Management Plan for project implementation;
(x) Assist in monitoring progress of work including financial progress, preparing status reports;
(xi) Develop and promote usage of advanced tools for project scheduling and monitoring;
(xii) Developing and Setting up of management information system (MIS) system;
(xiii) Advise and supervise on safety and security of the labourers, supervising and monitoring officials and public during project implementation;
(xiv) Ensure compliance of ADB safeguard requirements and prepare various documents related to safeguards implementation and monitoring;
(xv) Carryout capacity building of XXXXXX on environmental/social safeguards, good construction practices, environmental assessment and monitoring, gender action plan, and grievance redressal
(xvi) Prepare and submit progress reports capturing physical, financial progress, environmental, social safeguards and gender action plan (GAP) compliance, critical issues, etc., at regular intervals;
(xvii) Assist Client in forecasting the progress of works and finalization of periodic targets for the expenditure and disbursement;
(xviii) Obtain as-built drawings from the contractors and submit the same to the client after verification in the field and certification for its correctness;
(xix) Prepare and submit work completion report including as built drawings;
(xx) Assist the client in settling contractual disputes;
(xxi) Assist and support the client in processing and dealing with contract variations;
(xxii) Advise the client on best practices and innovative approaches in construction, develop site specific construction methodology and supervise such works;

(xxiii) Taking into account the details of the entire project including the plants & equipment furnished by the manufacturers, suppliers & contractors, prepare an Operation and Maintenance Manual for the entire project; and

(xxiv) Prepare an asset management plan and asset register for all the assets created under the project.

9. **Detailed Task and Expected Deliverables:** The scope of Consultant under various activities will include but not necessarily be limited to the following:

a. Construction Supervision and contract management: The Consultant shall assist and be responsible to carry out the tasks appended hereunder. The Tasks appended hereunder are neither limited nor conclusive; the consultant shall be obliged to support the XXXXXX in performing their tasks and responsibilities.

(i) Review construction contracts/ documents and conduct site visit of all ongoing contracts and identify a) potential initial activities to be complied with by the Construction contractors, and b) the obligations of the Client, if any. Bring to the attention of the Client any potential contractual issue and construction Problem that warrants their early attention;

(ii) The Consultant shall maintain sufficient site-based staff, with clear allocation of duties, to supervise day-to-day construction activities;

(iii) Review the Contractor's construction methodology, work proposal and working drawings to the extent required by respective contract. Submit comment on requirement of modifications, if any, and recommend for approval as appropriate;

(iv) Proof checking of the Contractors' drawings, designs and recommend to the client for approval of contractors' design and drawings for execution as required;

(v) Examine, check, comment and recommend for necessary action on the Contractor's proposals, plans, detail designs, drawings, request for change, if any. Monitor and report on physical progress of the works and financial disbursements, environmental and social compliance reports;

(vi) Ensure required instructions received and complied with the requirements of the contract;

(vii) Be responsible for management and supervision of Construction contracts under the current Law of the Employer's country;

(viii) Check the adequacy and quality of Contractor's input in terms of material, equipment and machinery, workers and safety requirement prior to commencement of the works and time-to-time during construction activity;

(ix) Facilitate in setting out the works and ensure its correctness during the implementation;

(x) Checking the line level, layout of the construction to ensure conformity with the contract, proposal for approval of any changes in the plans that may be deemed necessary duly indicating the effects due to the change on contract and preparation of variation orders accordingly;

(xi) Inspect and supervise the day-to-day operations and activities of the contractors to ensure that the works follow the approved drawings and specifications of relevant construction contracts;

(xii) Monitor the contractor's compliance with safety requirements during and prior to the commencement of construction activity. Assist in preparation of Accident report in the event of unfortunate occurrence of any accident on the site;

(xiii) Monitor and report the engagement of child labour by the contractor, if any. Ensure the compliance by the contractor of the Labour protection clause in the Contract or required by the regulatory authority including all relevant statutory provisions on

labour- equal pay for equal work, health, safety, welfare, sanitation and working conditions;

(xiv) Ensure the compliance by the contractor of the Environmental Monitoring/ Environmental Management Plan in the Contract or required by the regulatory authority;

(xv) Ensure the compliance by the contractor of the ADB's safeguard policy and the requirements;

(xvi) Ensure that the Labour Camps are complying with regulations and take steps to conduct frequent health camps, HIV awareness, etc. in the labour camps. Ensure the facilities are provided separately for women in the labour camps;

(xvii) Maintain at site or at project office, all duplicates of the Contracts, technical drawings, catalogues and drawings, and specifications, survey notes, quality control documents and any other documents, as necessary;

(xviii) Ensure that the contractor is setting up all labs, testing facilities as per contract conditions and the equipment are calibrated;

(xix) Assist the Client and the Contractor to develop alternative methods to overcome unexpected obstacles which may affect the execution of the works;

(xx) Assist the Client in identification and documentation of underground utilities and removal designs, as required;

(xxi) Cooperate, facilitate and report on all removal/ relocation of on-site activities pertaining to ground or underground utilities;

(xxii) Review the aspect of Traffic management in the Contractor's programs and, ensure and facilitate its compliance by the contractors during the execution of construction activity and removal/ relocation of utilities;

(xxiii) Examine and ensure the completion drawings/ as built drawings prepared and submitted by the Contractor (hard & soft copies), submit recommendations in the event of change or correction is required therein prior to acceptance by the Client;

(xxiv) Ensure maintenance of documentations on the Quality control and Quality assurance, test reports, log books etc by the Contractors in an acceptable manner;

(xxv) Check internal quality management system of the contractors- documentation, quality management method, quality control reporting, quality control staffing. Submit its recommendation any change if warranted/ deemed necessary. Periodically audit contractor's compliance with quality control/ quality assurance requirements and submit report to the Client;

(xxvi) In case of any new items or modifications of works, prepare specifications, carry out rate analysis (with supporting documents) for justifying / negotiating the rates quoted by the contractors and furnish these to the client for their approval. Check to ensure that type and frequency of test requirements for material on site and in laboratory comply with technical specifications as required in the contract. Test equipment to be used or installed prior to its incorporation in the works;

(xxvii) Carry out, witness and supervise testing of materials and equipment's to be incorporated in the works at site, laboratory, at source of materials and equipment or any other location. Check testing results to ensure compliance with the provisions of the contract;

(xxviii) Ensure contracts are progressing in time and for any deviation initiate imposing of Fine, LD etc.;

(xxix) Ensure that the all the required insurances are available and up to date with the contractor;

(xxx) Ensure that no additional claims (both for quantity as well as additional scope) shall be admitted without the prior written approval of the client;

(xxxi) Store all records and documents related to quality assurance/ quality control at safe custody and make available when required;
(xxxii) In case of such of those works where measurements are hidden after completion as in the case of foundations, reinforcements in RCC structures etc.**,** measurements and check measurements are to be carried out immediately after each activity is completed;
(xxxiii) To check the laboratory and field tests carried out by the contractors and to develop a mechanism in consultation with the client in carrying out independent tests, if necessary, other than the regular testing done;
(xxxiv) To order special tests of materials and/or, completed works, and/or order removal and substitution of improper materials and/or works as required;
(xxxv) Maintain daily notes/ site order book/diary of execution progress for each construction activity on site as well as notes of arising potential problem on site that may affect the execution progress or require change or variation;
(xxxvi) Attend periodic meetings with Client and the contractors to discuss, approve the execution progress, remaining progress, difficulties, and any potential problem anticipated that may affect on execution, progress, propose constructive solutions/ remedies to overcome problem and difficulties for smooth operations of execution progress;
(xxxvii) Attend, facilitate constructively and report all feedback/ complaints of community related to execution of works;
(xxxviii) Recording measurements of works executed at site from beginning to completion of project; sector experts will ensure that work are carried out as per the approved design/ drawings & specification and shall supervise pre-construction, construction activities and commissioning tests at works;
(xxxix) certification that quality is confirming to all relevant specifications and drawings;
(xl) Measurement and certification of the works completed and for certifying and recommending payments to the contractors;
(xli) Approve and/or issue working drawings including variations thereof, in this connection, give instructions to the contractor; Verify and get corrected the "as-built" drawings supplied by the contractor and certify the same;
(xlii) To assist the Client in taking over of completed works from the contractors in particular by preparing list of defects to be corrected by the contractor;
(xliii) To prepare specific engineering reports when required, which shall include an analysis of the problems encountered and proposed solutions;
(xliv) To identify and agree with the contractors on measures necessary to remedy unsatisfactory performance to remain within the cost and time period of the contract; and
(xlv) The Consultants shall carry out their assignment according to the Schedule of the Contractor, including late working hours, weekends and holidays, overtime etc., when approved by the Client.

b. Project Management and Monitoring:

(i) Identify all necessary approvals and permissions etc. that would be required during the implementation of the Contracts in accordance with the Government regulations and provisions of the Contracts;
(ii) Planning and managing the project, and assisting on the project management, including risk management, cost control, scheduling, monitoring, auditing, reporting, and compliance monitoring for the project required under both the government and ADB rules and guidelines;

(iii) Prepare and submit detailed work program, including all pertinent activities and critical paths, responsibility and function of each team member, co-ordination mechanism and procedures between the Consultant, contractor and the Employer; reporting system and the procedure etc. to ensure orderly and uninterrupted progress of the works. The mechanism and procedures set by the Consultant shall be subject to the approval by the Client;

(iv) Plan and assist in obtaining, in a timely manner, the required clearances, permits, approvals, sanctions or any other information from relevant competent authorities so that the project activities are not unduly delayed;

(v) Flag the critical issues encountered during project implementation including social impacts;

(vi) Establish document control and proper filing system for project offices, including official correspondence, drawings, site instructions, variation orders and site records. Establish channel and mode of communications;

(vii) Develop program management and tracking system, using commonly available Computer soft-wares to schedule and monitor all aspects of construction activities;

(viii) Review, comment, and recommend for the approval of the Construction contractor's proposed implementation schedule and programs, including time over-run aspect and cost over-run, if any. Monitor the schedule and proactively instruct the Contractors to take corrective action to complete the works in time;

(ix) To prepare as necessary detailed recommendations for contract variations and addenda to ensure the best possible technical results, achieved with the available funds. To issue variation orders, fix rates for unpriced works, all after obtaining prior approval of the Client, and to make recommendations to the Client;

(x) To control and appraise the progress of the works, to order suspension of works and to authorize, extensions of the period of completion of works;

(xi) Assist, cooperate, facilitate and submit recommendations on the Traffic management during the removal/ relocation of underground utilities and during the execution of construction works;

(xii) Review and recommend on the Contractor's claim for progress payments;

(xiii) Assist in resolution of contractual issues including review, evaluation and confirmation of contract Variation Orders;

(xiv) Review and examine the Contractor's request for variation orders, extra items, new rates, time extension etc. and submit recommendations for approval, if appropriate;

(xv) Assist in constructively and submit recommendations in resolving any potential difficulty or dispute that may arise between the Contractors and the Client;

(xvi) Examine, evaluate and submit recommendations on any claims for additional time or payment submitted by the contractors. Assist in certification of partial, substantial and final completion of the works in accordance with the provisions of the Contracts, including stage certification and final acceptance test;

(xvii) Assist on liaison with local authorities and state/ central government agencies, liaison with ADB. Assist in reporting to these agencies;

(xviii) Assist the Client as may be necessary in meeting its obligations under the Loan agreement/ Project Agreement and assist in reporting;

(xix) Prepare essential works, documents including quick report on progress, quality, disbursement or any other relevant matter as may be required by the Client or the ADB;

(xx) Planning, scheduling and monitoring of the projects using MS project office software or similar software;

(xxi) Assist in conducting regular meetings with all stakeholders, XXXXXX, contractors, and other government entities, etc, to discuss progress and issues related to implementation, and prepare minutes for recording and circulation;
(xxii) Establish all necessary records and the procedures of maintaining/ updating such records for each package and for the entire project;
(xxiii) Develop and implement procedure for timely payments to the contractors and monitor for compliance;
(xxiv) Assist in ensuring compliance with all loan covenants during project implementation;
(xxv) Inspect the works at appropriate intervals during defect liability period and issue Defects Liability Certificates after the rectification, by the Contractor, of possible defects. Ensure that the contractor attends to all kinds of construction defect brought to his notice during defects liability period; and
(xxvi) Monitor implementation of mitigation measures and compliance with the Governance Risk Assessment and Management Plan for the project, and update the Plan as per requirement.

c. Social, Environmental, Archaeological, Occupational Health and Safety aspects:

(i) Review the Resettlement Framework already prepared for the project and Identify any further resettlement requirements/including social impacts identified during project implementation and costs that may be required and provide all information required in relation to right-of-way access as well as the relocation of existing utilities, if required, and other obstructions at the proposed work sites, including vendor stalls;
(ii) Support in establishing grievance redress mechanism acceptable to ADB under the project;
(iii) Monitor implementation of the Community Participation and Gender Action Plan
(iv) Review the Initial Environmental Examination report already prepared and assist the client in obtaining all necessary permissions and complying with statutory requirements as required prior to construction, such as permissions from Railway, National Highway, Department of Archaeology, Department of Forests and National Parks, and tree-cutting etc;
(v) Monitor the implementation of the EMP during construction and pre/post construction phases;
(vi) In compliance with the EMP, develop a strategy to overcome the difficulties of construction/ traffic management in narrow streets and also prepare detailed plans for detour of traffic during excavation for pipe laying. Propose and implement mechanism for coordination among all stakeholders such as traffic police, roads department, user committees, etc, for smooth construction execution;
(vii) Ensure adequate special measures for working near buildings and structures of cultural significance and in heritage zones involving close coordination with the Department of Archaeology etc. If required;
(viii) Lead design of surveys and investigations required for the protection of archaeological sites and heritage areas, if any, and prepare Archaeological Impact Assessments, or other agreed upon document to be approved by the Department of Archaeology (DOA) for the sections that are classified as archaeologically sensitive;
(ix) As part of the EMP, prepare a project focused Occupational Health and Safety Plan (OHS) to be adopted by the Client and the Contractor; and
(x) Provide awareness training on OHS, environmental impacts and mitigation

measures, social and gender aspects to the Client and the contractors including contractors' workers.

d. Other Important activities:

(i) Identify need of training to the Client's personnel;
(ii) Conduct formal and on-job training to the Client's personnel in construction management and supervision activities and maintain sex disaggregated data on participants;
(iii) Establish project performance monitoring system (PPMS) as per the design and monitoring framework (DMF); updating the PPMS on quarterly basis in accordance with ADB guidelines and loan covenant and carry out all necessary benchmark survey, and subsequent monitoring and evaluation surveys as required;
(iv) Preparing initial base line PPMS report and update the status on quarterly basis. Update the Design Monitoring Framework (DMF) and project outputs/ outcomes etc. on regular basis in ADB format by doing the necessary surveys and collecting data in field;
(v) Provide additional services to those specified above, if so required by the Client:
    1. Preparation of reports or additional contract documents for consideration of proposals for carrying out additional work.
    2. Any other specialist services by the Consultant or other specifications as may be agreed upon.

e. Team Composition and Qualification Requirements for the Key Experts (and any other requirements which will be used for evaluating the Key Experts)

10. **Team Composition with estimated Input**: The Consultant team comprises of National Key-experts with estimation of 162 person-months and national Non-key experts of 144 person-months, excluding those required for Consultant's administrative, clerical and support staff. Tentative engagement of the Consulting firm is envisaged to be for a period of Three years. The experts' positions with their estimated inputs are provided in Table A5.1 and Table A5.2 below:

Table A5.1: Team Composition-Key Experts

Sl. No.	Position	Person Months
A	**National Key Experts**	
1	Team Leader cum Construction Management Expert	36
2	Construction Manager	36
3	Waste Water and Drainage Expert	12
4	Water Supply Expert	12
5	Process Engineer – Water Treatment Plant	8
6	Process Engineer – Sewage Treatment Plant	8
7	Structural Engineering Expert	6
8	Electrical / Mechanical Engineering Expert	8
9	Environmental Safeguard Assistant	12
10	Social cum Resettlement Safeguard Assistant	12
11	Gender and community development/participation assistant	12
	National Key Experts Sub-Total	**162**

Table A5.2: Team Composition–Non-Key Experts

S. No.	Position	Person Months
1.	Support Engineers - Construction Supervision & others (4 Nos – 36 man months each)	144
	Total of Non-Key Experts	**144**

11. **Expected Qualification Requirements and Tasks assigned to the Key experts.** The Consultant is expected to propose experts adequately qualified and experienced to undertake efficiently the task/ responsibility assigned to them. The tasks/ responsibility assigned and detailed educational qualification and experience requirement for the respective expert are as mentioned below.

12. **Team Leader Cum Construction Management Expert (National).** Team leader will be responsible for overall project management and administration, appraisal of subproject as required, advice on procurement and bid process management, construction supervision, quality control and monitoring, contract management, establishment of Construction Management and Project Performance Monitoring and Reporting System, Training advice on Institutional matters, assist in resolving contractual issue, preparation of Progress and other Reports as required. Leader cum Construction Manager shall preferably i) be Graduate Civil Engineer and Post graduate in environmental / public health engineering or management (full time, from accredited institutes), ii) have 15 years of working experience in similar works and 10 years of experience in construction management of waste water projects, and iii) experience in the similar capacity and sound knowledge of FIDIC contract conditions, Contract management shall be an added advantage.

13. **Construction Manager (National).** Construction Management Expert will be Responsible for overall construction management, quality assurance/ control and administration of multiple contracts, Supervise the construction activity diligently during the implementation of the work, Provide Training on best practices in construction management, Contract management and Performance Monitoring of various contractors, Support in preparing Project Completion Report and progress reports, Assist in resolving contractual issue, ensure safety at works and compliance with ADB's safeguard policies and procedure. Construction Management Expert shall preferably i) be Graduate Civil Engineer and Post graduate in PHE/ Environmental Engineering, ii) have 10 years of experience in construction management of waste water projects, and iii) experience in similar capacity and sound knowledge of Contract management and experience in FIDIC contract conditions, experience in computer based contract management tools shall be preferred. Experience in externally funded projects shall have added advantage.

14. **Waste Water and Drainage Expert (National).** Waste Water and Drainage Expert will be responsible for implementation of Sewerage network and drainage system collection system and Sewage Treatment Plants, Pumping/ Lift Stations, oversee contract management and performance monitoring, ensuring the quality and progress during construction activities and implementation stage, assist in preparation of Project Completion Report. Waste Water and Drainage Expert shall preferably i) Graduate Civil Engineer with post-graduation in Environmental Engineering/ Public Health Engineering ii) have 10 years of experience in urban Sewerage and Drainage projects, and iii) experience in similar capacity and sound knowledge of FIDIC contract conditions, Contract management, Construction Supervision of Sewerage and drainage system. Experience in externally funded projects shall have added advantage.

15. **Water Supply Expert (National).** NRW Cum Water Supply Expert will be responsible for design and implementation of Water supply works including appraisal, distribution Network and Water Treatment Plants, Pumping Stations, Engineering Design, assist Procurement in activities,

oversee contract management and performance monitoring, ensuring the quality and progress during construction activities and implementation stage, assist in preparation of Project Completion Report. Experience in externally funded projects shall be preferred. Water Supply Expert shall preferably i) be Graduate Civil Engineer, ii) have 10 years of experience in urban Water supply projects, and iii) experience in similar capacity and sound knowledge of FIDIC contract conditions, ADB procedures/ policies, Contract management, Construction Supervision and Design of Water supply system. Experience in externally funded projects shall have added advantage.

16. **Process Engineer–Water Treatment Plant (National).** Process Engineer – Water Treatment Plant will be responsible for design of municipal Water treatment plant, review and approval of designs/ drawings/ details submitted by contractor, identification and appraisal of subproject for subsequent tranches, assist in contract management and performance monitoring, ensure the progress and quality of construction activities, assist in commissioning of water treatment plants (WTP), ensure correctness of as-built drawings and operational manuals, establish operation and maintenance (O&M) procedures and capacity building and training, contribute for preparing Project Completion Report. Process Engineer – Water Treatment Plant shall preferably i) be Graduate Civil/ Engineer and Post-graduation in PHE/ Chemical Engineering, ii) have Experience of 10 years in design, construction and O&M of municipal Water treatment plants, and iii) sound knowledge of ADB procedures/ policies, Contract management, Construction supervision and design of municipal Water treatment plants with using innovative technologies shall be preferred. Experience in externally funded projects shall have added advantage.

17. **Process Engineer–Sewage Treatment Plant (National).** Process Engineer – Sewage Treatment Plant will be responsible for review and approval of designs / drawings / details of sewage treatment plant and recycling of waste water using innovative technologies submitted by contractor, assist in contract management and performance monitoring, ensure the progress and quality of construction activities, assist in commissioning of sewage treatment plant (STP), ensure correctness of as-built drawings and operational manuals, establish O&M procedures and capacity building and training, contribute for preparing Project Completion Report. Process Engineer–Sewage Treatment Plant shall preferably i) be Graduate Civil Engineer and Post graduation in PHE/ Chemical Engineering, ii) have experience of 10 years in design, construction and O&M of municipal sewage treatment plants, and iii) sound knowledge of Contract management, construction supervision and design of municipal STPs with re-use of treated wastewater shall be preferred. Experience in externally funded projects shall have added advantage.

18. **Structural Engineering Expert (National):** Structural Engineering Expert shall be responsible for review and approval of structural designs/ drawings/ details submitted by various contractors. Assist in monitoring and ensure quality assurance and control. Structural Engineering Expert shall preferably i) be Graduate Civil/ Structural Engineering and Post graduate in Structural Engineering, ii) have 10 years of experience in Structural designs and 10 years of experience in review and design of Structural engineering elements related to Water supply system, sewage and drainage system urban Sewerage and Drainage projects, and iii) Construction Supervision, design and implementation of municipal Water supply and Sewerage system and experience in use of latest Design soft-wares shall be preferred. Experience in externally funded projects shall have added advantage.

19. **Electrical/ Mechanical Engineering Expert (National).** Electrical/ Mechanical Engineering Expert shall be responsible for review and approval of designs/ drawings/ details submitted by various contractors, ensure quality assurance and quality control. Assist in resolving

technical and contractual issues. Mechanical Engineering Expert shall preferably i) be Post graduate Electrical/ Mechanical Engineering, ii) have 10 years of experience in Electro-mechanical designs and 10 years of experience in review and design of Electro-mechanical engineering elements related to water supply system, sewage and drainage system under urban Sewerage and Drainage projects, and iii) construction Supervision, design and implementation of municipal water treatment plant and sewage treatment plant shall be preferred. Experience in externally funded projects shall have added advantage.

20. **Environmental Safeguard Personnel (National):** Post graduate in Environmental Science/ Engineering / Planning or in any related discipline with overall experience of 10 years in environmental impact assessment (EIA) studies and implementation of EMPs, of which a minimum of 3 years shall be on infrastructure projects funded by multilateral organizations like ADB The Tasks: (i) Identify regulatory clearance requirements and assist PIU in obtaining the same; ensure all necessary clearances are obtained timely; (ii) guide contractor on updating EMP /preparing Site Environmental Plan at the start of the project; (ii) update IEE and EMP; ensure that IEE reflects the final design being implemented by contractor; (iii) assist program implementation unit (PIU) in public consultation and information disclosure activities; (iv) supervise day-to-day EMP implementation on site by contractor, including the environmental monitoring plan; (v) conduct awareness and training programs to PIU and supervision staff (including contractor's) on EMP implementation; (vi) ensure contractor compliance with staff resources as per the IEE/ EMP/ Bid; (vii) review Contractor's compliance with the measures set forth in the EMP and any corrective or preventative actions set forth in a safeguards monitoring report that the program management unit (PMU0 will prepare from time to time; (viii) advise/ guide on any corrective or preventative actions to be implemented by contractor in case of non-compliance or new/ unanticipated impacts; (ix) inform PIU and PMU promptly in case if any significant impacts surfaces, which were not identified in the IEE and develop necessary corrective actions as necessary and ensure implementation by the contractors; include all such impacts and suggested actions in the quarterly EMPs; (x) assist PIU in implementation of grievance redress system, and advise the PIU and contractor on appropriate actions to redress the complaints; ensure that complaints/ grievances are addressed in a timely manner and resolutions are properly documented; (xi) review and approve monthly progress report on EMP implementation submitted by Contractor; prepare quarterly environmental monitoring reports and submit to PIU for further submission to PMU/ TNUIFSL; and (xii) Assistance in any other environmental safeguard related tasks as required by PIU and PMU.

21. **Social cum Resettlement Safeguard Personnel (National).** (i) Post graduate in Social science (Sociology/ Social Work/ Economics/ Development Studies); and ii) have 10 years of experience in carrying out Resettlement/ Social/ Gender safeguard policies for urban infrastructure projects. The tasks are: i) based on final designs, carry out census and socioeconomic surveys/ verification surveys for the affected people and update resettlement plan in line with the program's resettlement framework; ii) Identify requirement for any EUPs/ NOCs for subproject sites and assist PIUs in obtaining the same prior to start of civil works; (ii) prepare any additional safeguard documentation, if required, such as due diligence reports; iii) assist PIU in day-to-day implementation of resettlement plan activities and ensure contractors comply with conditions of resettlement framework/ resettlement plan; (iv) take proactive action to anticipate and avoid delays in implementation, and ensure gender equality and social inclusion during implementation; (v) assist PIU in conducting public consultation and disclosure activities, v) Prepare periodic social safeguard monitoring reports as per project administration manual (PAM) requirements; (vi) establish a system and indicators, focusing on gender and vulnerable households, to monitor social safeguards including grievance redress mechanism (GRM) activities; vii) extend assistance to PIU/ PMU/ Contractors in carrying out awareness

campaigns/training focused on involuntary resettlement; and viii) assistance to PIU/ PMU in any other social safeguard related tasks.

22. **Gender and community development assistant (National).** Gender and community development/participation assistant will be responsible for developing the workplan, time lines, monitoring and data collation modalities to ensure smooth implementation and monitoring of the GAP and community awareness and participation plan. The candidate shall be Graduate in Social Science/ gender studies or relevant subject and have 5 years of domain experience within the relevant sector.

23. **Expected Qualification Requirements and Tasks assigned to the Non-Key Experts.** The Consultant is expected to deploy non-key Experts having qualified and experienced as described hereunder to undertake efficiently their task/ responsibility as below.

24. **Support Engineers - Construction Supervision (Non-key Expert).** Support Engineers - Construction Supervision shall assist in Construction supervision, Quality assurance and quality control, conduct various surveys, tests, investigations and data collection, Contract administration, Project management, recording of measurement and billing, Preparation of reports and ensure compliance with Safeguard requirements. Support Engineers - Construction Supervision shall preferably be Graduate in Civil Engineering, and have 5 years of relevant experience in implementation and Construction supervision of urban infrastructure projects, Water supply and Sewerage project.

25. **Support and Administrative Staff.** The Consultant shall be required to deploy adequate support staff in the cadre of site supervisors for ensuring minimum level of supervision at all the sites and required number of administrative staff in the cadre of Manager, Clerk, Accountant, CAD Operator etc. for smooth operation of office function.

f. Reporting Requirements and Time Schedule for Deliverables

a. Reporting Requirements: During the performance of the Services, the Consultant shall prepare required reports for submission to the Client in electronic form and/ or hard copies as per Client's instructions and in English language. The report format shall be consistent with ADB's project performance reporting system (PPMS) and to be proposed by the Consultant in its preliminary report. The reporting formats shall be amended as required from time-to-time in consultation with the Client. As a minimum, the Consultant shall submit following reports at periods stated in Table A5.3 hereunder.

Table A5.3: Reporting Requirements

Reports	Number of Copies	Time Schedule
Preliminary Report	5	Within a period of 15 days from the date of issuance of Notice to Proceed.
Monthly Progress Reports	5	Every month within 5 days of the commencement of next calendar month.
Quarterly Progress Reports	5	Every quarter within 10 days of commencement of next quarter.
Annual Progress Report	5	Every year within 15 days of commencement of next year. For the purpose of Annual Progress Report the year shall mean and refer either to Calendar year or other suitable period as the Client may decide in consultation with the Consultant.

Reports	Number of Copies	Time Schedule
Reports of surveys and studies individually for each study	5	As and when required
Operations manual and As-built drawings	5	Within 10 days of completion of works for each of the packages and for the overall completion of the project.
Completion Report	5	Within 10 days of completion of works for each of the packages and for the overall completion of the project.
Any other reports	As required	As and when required by the Client.

b. Since the Services consist of the supervision of civil works, the following action will require prior approval by the Client: Taking any action under a civil works contract designating the Consultant as "Engineer", for which action, pursuant to such civil works contract, the written approval of the Client as "Employer" is required.

26. **Consultant's Payment.** The consultant's payment for remuneration shall be based on approved rates / time sheets. The out of pocket expenses shall be on a lump sum basis as per the agreed rates for each category. The payment will be done on monthly basis. Timely execution of the project is critical and therefore the client shall impose suitable penalties on delays of works attributable to the consultant at such rates as that of liquidated damages provided under the construction contract. If there is a bonus provision in the construction contract for early completion, the same will be applicable at the same rate for the consultant as well.

g. Client's Input and Counterpart Personnel

(i) **Services, facilities and property to be made available to the Consultant by the Client:** Office accommodation with power and water supply facility for office at XXXXXX. The internal requirements in the office, such as furniture, consumables, office equipment, softwares, refreshments, telephones / communication expenses, office upkeeping, others etc, should be arranged by the consultants at their own cost.

(ii) **Professional and support counterpart personnel may be assigned by the Client to the Consultant's team:** Client may provide the counterpart staff for supervision of works in field as available with the client; it will be discussed during contract negotiations and agreed. Quantities in the contract will be adjusted accordingly.

h. Inputs, project data and reports to facilitate preparation of the Proposals. The Consultant shall have access to the following inputs, project data and reports available with Client to facilitate preparation of the Proposals:

(i) Data, reports, maps etc as available with the Client;
(ii) DPR as available with the client.

ANNEXURE 2: DRAFT OUTLINE TERMS OF REFERENCE FOR GOVERNANCE IMPROVEMENT AND AWARENESS CONSULTANTS

I. Background, Objective and Scope

A. Background:

1. The Tamil Nadu Urban Flagship Investment Program (program) is a $500 million financial assistance as a multitranche financing facility (MFF) from ADB to support Tamil Nadu Government achieve the objectives of urban development as envisaged in the GOTN 12th FYP, Vision Tamil Nadu 2023 and National urban flagship programs such as - AMURT, Smart Cities and Swachh Bharat.The Tamil Nadu Urban Infrastructure Financial Services Ltd. (TNUIFSL) under the Municipal Administration and Water Supply Department (MAWS) is the state-level executing agency for the program. Tranche 1 of the MFF will be implemented in five major city corporations of Tamil Nadu- Chennai, Coimbatore, Tiruchirappalli, Vellore and Tirunelveli. The project ULBs are designated cities for AMRUT as well as the Smart Cities Mission. The investment program will primarily focus on water supply and sewerage sub projects in project cities. The investment aims to achieve three outputs- Sewage collection and treatment systems rehabilitated and expanded in project cities; Access to reliable and smart water supply improved in project cities and Urban governance improved and urban management strengthened in the participating cities. As a part of ADB's "finance plus feature," the program will also include a performance-based governance reforms component. ULBs will be incentivized to carry out priority governance reforms through performance linked incentives. This is in line with the objective to advance the urban reform agenda in the state.

2. The Commissionerate of Municipal Administration (CMA) shall be the Implementing Agency for the urban governance improvement, participation, gender equality, awareness and capacity building components of the program. Capacity building support in trainings, exposure visits and development of guidelines and manuals is provided under a technical assistance support by ADB and shall not form part of this TOR. The consultant recruited under this shall support CMA in rest of its activities as an Implementing agency.

3. The governance improvement and awareness consultants (GIAC) scope of service will include, but not restricted to, design and implementation of a performance based grant incentive governance improvement program in 135 ULBs under CMA, establishing and operating an Urban Data and Governance Improvement Cell (UDGIC) within CMA, procuring and providing software and hardware support to the UDGIC and the Project Management and Design Centre (PMDC) to be established in CMA, implementation, monitoring & reporting of the community awareness and participation plan (CAPP); gender action plan, and supporting in social safeguard activities. The Consultant will be located in the CMA and will work under the overall guidance, supervision and direction of the Commissioner of Municipal Administration. The consultant will mobilize local staff/consultants at the PIU level, for field level implementation, coordination and reporting. Adequate provisions for field level functionaries will be established for effective and timely implementation of activities. To ensure seamless coordination, the consultants will prepare workplans with timelines in close coordination with CMA, PMU, PIU, construction contract management and supervision consultant (CMSC).

B. Objectives, Scope and Tasks Under Urban Governance Improvement

4. The GOTN has requested support for a Governance Improvement Component (GIC). This component will incentivize ULBs to implement governance priorities. This component has been designed in response to the following situation.

a) **Need for focus on the priorities of GOTN:** Tamil Nadu ranks high in reform scores as compared to other states. Under Jawaharlal Nehru National Urban Renewal Mission, Tamil Nadu ranked second in reforms on mission completion; under Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Tamil Nadu ranked fourth in reforms in the year 2015-16. However, GOTN has identified further areas for improvement. For example, even though ULBs in Tamil Nadu complete audit of their financial statements, the process is delayed and the observations of the Local Fund Auditor remain unattended; as on June 2017, more than 148,672 audit observations were pending resolution. Completion of audit takes more than twelve months for most ULBs; as on February 2017, audit for the year 2015-16 was completed for only 11 out of 135 ULBs. Only 71.1% of households were connected to underground drainage and water networks as compared to the project targets; collection efficiency of user charges for underground drainage is only 49%; underground drainage projects are delayed by more than twenty four months. Sanctioned posts remain unfilled and there is an average vacancy of 18.8% in key positions. New areas such as fecal sludge management and wastewater reuse need attention.

b) **Lack of an incentive fund that covers the cross section of ULBs and which has Tamil Nadu specific targets:** The incentive funds in operation are too focused. The Model Cities component of the Tamil Nadu Sustainable Urban Development Project supports only three ULBs. The incentive fund recommended by the fifth State Finance Commission focusses only on property tax. The performance component of 14th Central Finance Commission supports all ULBs, but the targets are based on all India averages and are not relevant to Tamil Nadu. For example, the 14th CFC requires ULBs to demonstrate growth in own revenue. Own revenues of ULBs in Tamil Nadu grew by a CAGR of 13.46% between 2010-11 and 2014-15.

5. The design of GIC has taken into consideration the learnings from other incentive programs which include, a) deepening national incentive programs such as AMRUT, b) focused initiatives as compared to a wide agenda**,** c) setting targets relevant to Tamil Nadu, d) focusing on regular functions of ULBs since their capacity and attention are divided between several parallel programs (which also offer higher incentives than GIC), e) preference for incentivizing outputs and for actions within the control of ULBs and f) simple and objective evaluation methodology to provide clarity to ULBs.

C. Key Tasks

1. Implementation activities of GIC

(i) Procure consultants for annual performance assessment following ADB's procurement procedure for consultants.
(ii) Identify changes required in data collection and information technology systems; design and procure on behalf of CMA required hardware and software for the PDMC and UDGIC.
(iii) Organize dissemination workshop with participating ULBs on regional basis;
(iv) Prepare baseline information as on March 31, 2018;

(v) Prepare a model annual calendar for performance assessment
(vi) Carryout annual performance assessment of 135 ULBs covered under GIC;
(vii) Serve as Independent Verification Agency (IVA) for the GIC
(viii) Oversee field verification and independent verification of ULB performance as may be required;
(ix) Calculation and recommendation of incentive payments and release of payments
(x) Monitor use of funds provided to ULBs under GIC to ensure compliance with financial management safeguards of the program;
(xi) Annual review of performance indicators;
(xii) baseline data collection;
(xiii) updating IT and other reporting systems;
(xiv) revising performance indicators;
(xv) forecast of performance and revision of yearly budgets;
(xvi) expedite state level actions required to improve performance (such as sanctioning of recruitment requests);
(xvii) Support in administering other incentive linked grants entrusted to UDGIC;
(xviii) Support GOTN in developing a statewide performance management framework for ULBs;
(xix) Develop, with the support of MIS and IT Specialist, data collection and online monitoring tools to facilitate performance assessment of ULBs on a single window approach;
(xx) Support UDGIC in developing MIS systems for performance assessment, online data collection and integration with e-Governance modules;
(xxi) Support other divisions of CMA in designing changes/ additions to e-Governance system and coordinate with IT vendors;
(xxii) Reporting to funding agencies, TNUIFSL and the Government of Tamil Nadu; and
(xxiii) Recruit an independent verification agency for annual performance assessment with below scope:
    (a) The annual performance assessment will be completed within the timeframes provided in the GIC to ensure timely release of incentives immediately after completion of a performance year.
    (b) Consultant will refer to all background documents regarding the GIC including the Reports and Recommendations to the President for the MFF Program; the Facility Administration Manual; design document for GIC; relevant Government Orders; MoUs signed between CMA and the ULBs

2. Preparatory activities prior to commencement of annual performance assessment

(i) Review the Definitions and verification protocol for Governance Improvement Component (Tranche 1 only) and recommend modifications that may be required in the verification protocol including in the methodology for data collection, reporting and the E-Governance system.
(ii) Prepare baseline information as on March 31, 2018; identify shortcomings in data availability, reporting requirements and e-Governance systems.
(iii) Propose a verification methodology consistent with the approved verification protocol that would include methodology and timelines for initial data collection, desk verification with access to the relevant e-Governance modules and sample field verification.
(iv) Propose an annual calendar for performance assessment clearly outlining a) the timelines for initial submissions from the ULBs, b) desk verification, c) field verification for sample ULBs, d) finalization of performance assessment and

incentive calculation, e) release of incentive payments to ULBs and f) receipt of expenditure statements from ULBs.

(v) Provide an online data submission tool for performance assessment extracting data from the e-Governance modules and where necessary additional information submission (data, supporting documents)

3. Annual performance assessment

(i) Based on the approve verification methodology and annual calendar for performance assessment carryout performance assessment of participating ULBs; As per the performance assessment requirement seek data from other agencies (such as Local Fund Audit, TNUIFSL, electricity utilities etc.);

(ii) Based on the methodology identified for selecting sample ULBs for field verification (10% of the number of participating ULBs), propose the list of ULBs where field verification would be carried out;

(iii) Submit questionnaire to ULBs for listing databases and documents to be made available to the field verification team;

(iv) During field verification, conduct an entry conference for the officials of the ULBs and an exit conference listing issues identified (in writing); receive written feedback;

(v) Based on the desk and field verifications and feedback received from ULBs and other stakeholders, complete the annual performance assessment of participating ULBs and calculate the incentive payment; identify factual errors and seek clarifications as may be required; receive and incorporate written feedback from stakeholders;

(vi) Submit written report to CMA with recommended incentive payments;

(vii) Present the results of annual performance assessment to CMA; based on written feedback received from CMA, carryout revisions in the report and document the reasons for revisions;

(viii) Based on the annual performance assessment, suggest modifications in the verification methodology and/or other changes required in the Governance Improvement Component; and

(ix) Others

(a) Repeat the performance assessment cycle above for two years; based on the experience of performance assessment, propose revisions to the second tranche of Governance Improvement Component

(b) On completion of the performance assessment cycles for tranche 1, submit a final report to CMA documenting the implementation of the Governance Improvement Component. Prepare a case study in the form of a short report, a power point presentation and a 12-minute audio visual clip with participation and feedback from stakeholders.

4. General qualifications

(i) The consultant will have at least ten years of experience in monitoring and evaluation of programs in urban, education, health or utility sectors. The consultant will have experience of at least three years in reform monitoring and /or evaluation in urban sector;

(ii) The consultant will not deploy any current or past employees of the Government of Tamil Nadu or urban local bodies of Tamil Nadu in the evaluation team of GIC;

(iii) None of the members of the evaluation team of GIC shall be part of project team of any consultancy or other projects with the Municipal Administration and Water Supply Department/ CMA/ Tamil Nadu Urban Infrastructure Financial Services of

the Government of Tamil Nadu or any of the participating ULBs for the duration of the independent verification assignment. This restriction does not apply to other team members who are not part of the independent verification;

(iv) Provide recommendations to the state Government on revenue improvement and financial management of ULBs;
(v) Complete quarterly and annual review reports on financial management and revenue generation of ULBs;
(vi) Develop ULB specific proposals for user charges/non-tax revenue and user charge management system;
(vii) Periodic visits to ULBs for handholding assistance in user charge management within ULBs;
(viii) Oversee and provide guidance to consultant staff engaged in handholding assistance to ULBs on revenue improvement;
(ix) Oversee quality of outsourced consultants assisting ULBs in revenue improvement or performance improvement;
(x) Convert research outputs into capacity building material that could be used by the state Government across ULBs;
(xi) Coordinate capacity building with other programs in the state;
(xii) Design experience sharing and cross learning programs;
(xiii) Interface with delivery institutions and other Ssates for implementation of capacity building program;
(xiv) Interface with CMA and GOTN on providing policy advice;
(xv) Coordinate the activities of the cell;
(xvi) Ensure adherence to annual calendar of activities and outputs;
(xvii) Manage the expenditure of the cell within budget;
(xviii) Provide leadership to the consultant team including in technical aspects;
(xix) Ensure adherence to time and quality;
(xx) Review revenue collection activities of ULBs and prepare quarterly and annual reports;
(xxi) Prepare ULB specific proposals for improving revenue under the guidance of General Manager – Research;
(xxii) Provide periodic handholding support to ULBs in implementing revenue improvement measures;
(xxiii) Prepare financial operating plans for ULBs;
(xxiv) Prepare performance improvement plan for ULBs that are unable to draw down incentives;
(xxv) Support in preparing policy proposals for the Government of Tamil Nadu; capacity building and in handholding support to ULBs;
(xxvi) Review the quality of accounting and budgeting practices in the ULBs;
(xxvii) Review financial statements and budgets and provide support to ULBs in improving accounting and budgeting practices;
(xxviii) Prepare quarterly and annual reports on financial management in ULBs; and
(xxix) Support General Manager Research in preparing policy proposals for the Government of Tamil Nadu; capacity building and in handholding support to ULBs.

D. Objectives, Scope and Tasks Under Community Participation and Awareness Implementation of CAPP and GAP

6. **Baseline data collection & Survey in Vellore, Tiruchirappalli and Rajapalayam:**[1] Prepare socio economic survey methodology including questionnaire for baseline socio economic survey- to include at least 250 households in the project location. Employ stratified sampling to ensure data collection from XX municipal wards, inclusive of YY slum localities in 2 program cities- Vellore and Tiruchirappalli. The survey will include questions on socio economic status, gender, service gaps, vulnerability, poverty and marginalisation, available social capital. The survey will also include data on community expectations and aspirations. An analytical report will be prepared by the end of the survey. The baseline survey will ensure that data is disaggregated based on sex and other relevant exclusion indicators.

7. **Stakeholder mapping to develop customized communication strategies:** Mapping of relevant stakeholders and developing customized/appropriate communication strategy. Identify stakeholders in each ULB through participatory interactions with key stakeholders. Ensure that stakeholder mapping process includes the most disadvantaged and vulnerable. Also ensure that GAP relevant stakeholders are included in the mapping and activities are planned keeping in mind special needs of women and other socially excluded groups. Review existing Information Education & Communication (IEC) materials, media campaigns of various departments - specifically examine ongoing works of Swachh Bharat Mission- and suggest options to converge. Ensure that IEC material is gender focused and messaging does not reinforce stereotypes.

8. **Prepare an event calendar/schedule and detailed activity plan:** To prepare an activity plan based on the following:

(i) **IEC and Awareness Campaigns and Workshops.** On water supply, sewerage, solid waste management (SWM), waste segregation, reforms in WATSAN service delivery, grievance redressal mechanisms, menstrual hygiene, gender and safe mobility etc for key stakeholders. Awareness campaigns in water conservation in Chennai;

(ii) **Awareness on the project.** awareness related to project, benefits, user charges, implementation timelines. The stakeholders will include elected representatives (counsellors) and community members with equitable representation of women/girls. The objective is to facilitate PMU/PIUs towards smooth implementation of civil works and provide support towards addressing concerns and mis-conceptions of general public affecting project progress at each ULB;

(iii) Conduct GAP workshops for PMU, PIUs and ULB staff & awareness activities as indicated in the GAP for all relevant stakeholders;

(iv) Gender and other trainings to contractors and labourers; and

(v) Focused group discussions (FGDs) at regular intervals with relevant stakeholders with an objective to address social concerns without affecting planned project progress.

9. **Assistance to PMU in implementation of GAP:** Assist in implementing all actions identified in the GAP for the project. Ensure that project monitoring formats include GAP indicators and reflect sex disaggregated data. Ensure GAP progress is reported every quarter. Assist the RPMU in ensuring participation of women and socially excluded groups (specially slum dwellers) in all relevant committees of user groups that are constituted as part of the project.

[1] Socioeconomic baseline survey is complete in three ULBs- Chennai, Coimbatore and Tirunelveli

10. **Assistance to PMU in implementation of resettlement plan.** Assist in implementing all actions identified in the resettlement plan ensuring providing compensations and establishing skill development and employment linkage of permanent resettlement affected persons.

11. **Documentation of activities and Impact Assessments**

(i) The consultants will ensure maintaining proper documentation and record of each activity. Local media – print, radio and television- will be used to showcase important events. The PMU and PIU will be given prior intimation of the same;

(ii) Documentation of mass events, consultations, workshops, seminar, trainings etc will include participant list, sex disaggregated participant data, event objectives, methodology, agenda and feedback from participants. A template that covers all these aspects can be created to ensure consistency in reporting; and

(iii) Short term impact assessment methodology will be developed to assess impacts created within community of awareness generation campaigns and activities. This will be supplemented with photographic evidence where ever applicable.

E. Objectives, Scope and Tasks Under Improving Financial Management Capacity

(i) Help executing agency and implementing agencies enhance their financial management capacity; and

(ii) Prepare systematic Financial Improvement plans for CMWSSB and project ULBs.

F. Output/report requirements

(i) Inception report with work plan, implementation framework, monitoring formats and time lines;

(ii) Independent verification reports to ULBs;

(ii) Monthly progress update to PMU/ on CAPP, GAP and resettlement and rehabilitation (R&R) implementation;

(iv) GAP and resettlement plan quarter updates; and

(v) Systematic Financial Improvement Plans.

G. Suggested Team Composition

Sl. No.	Position	Person Months
A	**International Key Experts**	**Nil**
B	**National Key Experts**	
1	Team Leader	48
2	M&E Cum IT Expert	24
3	Financial Management Specialist	12
4	Social & Community Development Specialist	48
5	Public Communication Specialist	24
6	Resettlement/Rehabilitation Specialist	12
7	Gender Specialist Cum Community Organiser	48
8	Documentation Specialist	48
9	Expert on Innovative recycle uses & community/women participation	12
10	Environmental Safeguard Assistant	24
	National Key Experts Sub-Total	**300**

H. Qualification, Experience and Terms of Reference of Key Experts

(i) Team Leader with at least 15 years' experience in urban sector with at least five years of experience in urban reforms. Should be at least Bachelor's degree in Engineering/ Urban Planning or a Chartered Accountant or Masters in Business Administration or a bachelor's degree in other equivalent and relevant discipline.

Shall be responsible for overall implementation of all tasks related to the consultancy;

(ii) M&E cum IT Specialist with at least 5 years' experience in design and review of M&E systems/MIS systems preferably in urban sector. Should be a bachelors in Engineering or Computer Science or Statistics or equivalent. Guide procurement of software and hardware required for setting up Urban Data Centre & PMDC. Shall support developing urban data centre in CMA. Develop tools required for performance evaluation, monitoring and disbursement of grant;

(iii) Financial Management Specialist with at least 5 years' experience in financial accounting, with CPA qualifications, cost accounting, cost management in urban sector. Support in developing mechanism for governance improvement performance evaluation and assessment in financial reforms, audit, revenue enhancement etc. Support in calculating and disbursing as well as certifying performance related grants to various ULBs;

(iv) Social and Community Development Specialist. Post Graduate Degree in relevant filed with 10 years' experience. Advice CMA and TNUIFSL on timely actions on various social issues. Oversee awareness program design and implementation. Support in installing Community Water and Sanitation Committees;

(v) Public Communication Specialist – Post Graduate Degree in relevant filed with 10 years' experience. Support in developing and rolling out various information, education and communication activities including print and visual media materials and awareness programs;

(vi) Resettlement / Rehabilitation Specialist. Post Graduate Degree in relevant filed with 10 years' experience. Oversee the resettlement and rehabilitation related issues in implementing ULBs. Help in developing suitable rehabilitation and livelihood programs. Support in monitoring and reporting and grievance redressal;

(vii) Gender specialist & Community Organizer . Post Graduate Degree in relevant filed with 10 years' experience. Update and oversee implementation of GAP program. Monitor and report compliance and achievements. Support in monitoring and reporting and grievance redressal;

(viii) Documentation Specialist. Post Graduate Degree in relevant filed with 10 years' experience. Work with other experts in documentation related to all IEC and Governance activities;

(ix) Expert in practices related to innovative ways of using recycled water and community participation-specially women leadership role- in changing mindsets to create acceptance. Post Graduate Degree in environmental engineering with 10 years' experience. Develop awareness programs in waste water reuse. Plan and conduct awareness programs in program ULBs, help in identifying potential uses, organize interaction with users and educate with suitably designed cost benefit analysis; and

(x) Environmental safeguards specialist . Post Graduate Degree in relevant filed with 10 years' experience. Support in preparing/updating the IEE based on project requirement. Oversee and support in implementing EMP. Support in monitoring and reporting and grievance redressal.

The duration of engagement will be from September 2018 to September 2023.

ANNEXURE 3: DRAFT OUTLINE TERMS OF REFERENCE FOR PROJECT DEVELOPMENT CONSULTANT

1. The Tamil Nadu Urban Flagship Investment Program (program) is a $500 million financial assistance as a multi-tranche financing facility (MFF) from ADB to support Tamil Nadu Government achieve the objectives of urban development as envisaged in the Government of Tamil Nadu (GOTN) 12th FYP, Vision Tamil Nadu 2023 and National urban flagship programs such as - AMURT, Smart Cities and Swachh Bharat.The Tamil Nadu Urban Infrastructure Financial Services Ltd. (TNUIFSL) under the Municipal Administration and Water Supply Department (MAWS) is the state-level executing agency (for the program. Tranche 1 of the MFF will be implemented in six city corporations/municipality of Tamil Nadu- Chennai, Coimbatore, Tiruchirappalli, Vellore, Tirunelveli and Rajapalayam. The project ULBs are designated cities for AMRUT as well as the Smart Cities Mission. The investment program will primarily focus on water supply, sewerage and drainage sub projects in project cities. The investment aims to achieve three outputs- Sewage collection and treatment systems rehabilitated and expanded in project cities; Access to reliable and smart water supply improved in project cities and Urban governance improved and urban management strengthened in the participating cities. As a part of ADB's "finance plus feature," the program will also include a performance-based governance reforms component. ULBs will be incentivized to carry out priority governance reforms through performance linked incentives. This is in line with the objective to advance the urban reform agenda in the state.

2. It is proposed to recruit a consulting firm as project design consultants (PDC)for carrying out design and preparation of detailed project reports that support future investments in selected Tamil Nadu cities

A. OBJECTIVES

3. PDC objectives of service will include, but not restricted to, preparation of investment grade sub projects for water supply, sewerage and urban drainage sub projects in selected cities and towns (with population more than 100,000).
The consultant will be working with the PMU of the program formed in TNUIFSL and will work under the overall guidance, supervision and direction of the program director.

B. SCOPE OF SERVICES

4. The consultancy will cover the following cities/towns: To be determined.

5. This scope of services shall include but not limited to:

(i) Primary and secondary data collection and assessment;
(ii) Review and updating of existing plans and proposals;
(iii) Rehabilitation and expansion of, sewerage network including separation of sanitary sewers from drains, and property connections;
(iv) Modernization and expansion of wastewater treatment plants;
(v) Use of wastewater as a resource including recycling of wastewater, and energy generation through sludge digestion and gasification;
(vi) Automation and instrumentation of system;
(vii) Septage management and decentralized wastewater treatment systems in suitable areas;
(viii) Network modelling;

(ix) Asset condition assessments;
(x) Topographical and geotechnical surveys;
(xi) Preparing Energy Optimization Reports;
(xii) Developing geographic information system (GIS);
(xiii) Conducting a command-area wide NRW study;
(xiv) Preliminary and detailed designs as appropriate;
(xv) Developing a supervisory control and data acquisition (SCADA) system for the treatment plants, transmission/trunk mains and distribution/collection system;
(xvi) Preparing Detailed Project Reports (DPRs);
(xvii) Undertaking an organization review;
(xviii) Economic and Financial Analysis;
(xix) Preparing recommendations and reports for ensuring environment and social safeguard compliance, includes IEE & resettlement plans; and
(xx) Procurement plan and contract packages with bid documents having embedded O&M contract.

C. TASKS AND EXPECTED DELIVERABLES

6. Consultant will be responsible for preparation of all required documents such as detailed design reports; review and update of designs if any carried out as available and bid documents.

7. Consultant will follow the holistic approach in carrying out the surveys and investigation in such a way that it can be used to create/ update GIS/Data base and requirements of all sectors[13] without any repetition of efforts. As far as possible, piecemeal approach will be avoided to have duplicity of surveys.

8. Project documents will be prepared adopting finance plus criteria of GoI which includes but not limited to Systemic and Transformational Innovations, piloting of new approaches, Impact Innovations in financing and leveraging etc.

9. Project activities will include pro-poor and social inclusive activities without any discrimination in service delivery levels. Consultant will prepare policy and documents for pro-poor and social inclusiveness etc.

10. The scope of Design under various activities will include but not necessarily be limited to the following:

(i) The scope of consultancy services includes Detailed Topographic Surveys, soil investigation, condition survey, hydrological data analysis, generating/updating the digital elevation model (DEM) of the project area, detailed Designing of Water Supply, Sewerage & Drainage Network, Preparation of EIA Report, preparation of specification, rate analysis based on accepted Composite schedule of Rates, preparation of detailed bill of quantities (BoQ), preparation of tender drawings, preparation of bid documents etc.; and
(ii) The Consultancy services will be completed in following three stages:

1. Stage – 1: Concept Design Preliminary Design Detailed Design. The scope of works of Concept Design will comprise (not limited) to following activities:

[13] Consultant will transfer records of all surveys in hard and soft copies to TNUIFSL and will be used for all sectors where ever required.

i. Review of the available data and reports to ascertain its adequacy for collection of the requisite additional data. Collection of data (primary/ secondary), Identification of basic issues/ problems and solution thereof;
ii. Prepare or Update the hydraulic model;
iii. Based on review of the available plans and other documents (DPR's prepared if any) and in consultation with PMU:
   a. prepare a due diligence report on the way forward to address the transmission, distribution or collection systems, intakes/treatment systems, storage systems, disposal and management options for water, sewage and storm water and,
   b. prepare conceptual plans and preliminary design reports for priority actions as agreed to with PMU. The consultant will carry out alignment study in order to identify the most suitable alignment. The consultant will compare the identified alignments on the basis of the following two broad criterions:
      - Criterion based on requirements of Engineering Design through gravity flow. However, consultant will be responsible for looking into other suitable options, during alignment study, as considered necessary for selection of a least cost option.
      - Criterion based on factors relating to functional, economical, social and environmental qualification of proposed alignment.

   Due consideration will be given while finalizing the proposed alignment:
      - Following the natural contours.
      - Capable of conveying through gravity.
      - Accessible through existing infrastructure of roads / trails/tacks.
      - The minimum damages to local water resources, monuments.
      - Least interference with the social setup of the area.
      - Minimum social and environmental impacts.
      - Socially acceptable.
iv. Selection of appropriate / suitable material type for structural member;
v. Preparation of strategic plan using the existing system as much as possible;
vi. Assessment of the catchments area & corresponding storm water flow;
vii. Selection of suitable route and design of pumping/force main of appropriate material;
viii. Study different possible options for Treatment/ recycle Plant and recommendation for the technically most feasible and financially viable option;
ix. Study of the uses of treated waste water and designing of proper infrastructure;
x. Assessment of requirement of land acquisition for intakes, treatment plants, pumping stations, storage tanks etc.; and
xi. On the basis of all above studies prepare a strategic plan delineating a short term (05 year), medium term (10 year) and a long term 20-year implementation strategy

2. Stage – 2 Preliminary Design

Detailed Topographic Survey. The consultant will carry out topographic survey along the alignment in sufficient details to prepare plan and profile drawings of effluent conveyance pipeline. The survey is to depict the existing ground features which include all natural and manmade features that exist on the ground.

Detail of Services:

(i) Establishment of permanent control stations at safe and stable locations at suitable interval or as required as per site conditions. The station will be a concrete marker of approved design. Detailed Description sheet on standard format will be prepared for each of the temporary and permanent station;

(ii) Establishment of horizontal control through traversing in the form of closed loop traverse with survey of India (SOI) bench mark. The consultant will establish the control points with the help of DGPS;

(iii) Establishment of vertical control through BM levelling and check levelling using automatic instrument with SOI bench mark or established control points;

(iv) Topographical Survey of road width to property boundary on either side;

(v) Where drain, canal or nullah crossings the proposed alignment, minimum of 5 cross sections will be surveyed in the upstream direction and the same number in the downstream direction. The interval between two consecutive cross sections will be adjusted as per site conditions. The skew angle between proposed alignment and the alignment of drain or stream will be marked on the drawing;

(vi) Cross sections at 25 m interval in straight reaches and at 10m interval in curved reaches plus at change of slope will be taken;

(vii) In the case of open drain or water course or road running parallel to the proposed alignment of effluent carrier pipe line, the cross sections survey (Levels) will be modified accordingly to completely depict the site situation;

(viii) Trees (1 foot diameter and above) located within the right of way (ROW) will be counted and information about their number provided from chainage to chainage on the topo sheet; and

(ix) The topo survey data will be plotted at a suitable scale and Vertical profile at specified scale. This data will be AutoCAD compatible.

D. REFERENCE DATA

11. SOI, GOI datum (which has already been established) will be adopted as reference datum for the survey, if SOI survey control station is available close to the site area or within about 3Km reach of the site. In case SOI datum is not available the consultant will establish the control points with the help of DGPS.

E. GEO-TECHNICAL INVESTIGATIONS

12. The Consultant will carry out soil/geotechnical investigations along the proposed alignments and of the storage, intake or treatment plant site. Necessary laboratory testing will be carried out to assess the engineering properties of the soil strata for detailed design of component of works. Laboratory testing will be conducted by reputed laboratories. The result of the sub soil investigation will be submitted in the form of report.

F. HYDROLOGY

13. The consultant will carry-out hydrological study along proposed alignments in order to identify the requirements of cross sections of drains The consultant will collect the required Meteorological data which will be analyzed and projected for design life of the proposed system. The consultant will also develop digital map (3D) for the catchment area / basin of the project area.

G. ENVIRONMENTAL IMPACT ASSESSMENT STUDY

14. Consultant will carry out Environmental Studies identifying the adverse effects and their mitigation measures due to construction /laying of sewerage network and recycle /disposal system.

H. PRELIMINARY DESIGN

15. The Consultants will carry out the design of conveyance system, pump stations, treatment plants (water/ waste water/ recycle treatment plant) based on appropriate technology in line of CPHEEO/ CPCB standard.

16. Where required, the Consultants will propose relocation of existing lines. Preparation of existing network will be the responsibility of the consultant.

17. The consultant will carry-out hydraulic design of the pipeline/drains. Hydraulic design assumptions and criteria will be established. The design calculation and design criteria will be presented in design report. For gravity based flow design the consultant will recommend the appropriate flow formulas for hydraulic design. Detail calculation for hydrological analysis and hydraulic structure will be provided by the consultant.

18. Selection of suitable Pipe Material and adoption of appropriate values describing the physical properties of the material will be adopted for design. Suitable permissible velocities will be assumed to base the hydraulic design, calculation of losses in transit and ultimately most suitable and economical size of pipe. Hydraulic capacity will be rechecked on the basis of adopted material properties and pipe diameter.

19. For ease of operation and maintenance manholes will be proposed at suitable intervals and at every change of direction. In order to optimize the design the consultant will study and investigate the other options such as adoption closed conduit to follow the natural contours.

20. The Consultant will design of WTP/STP at location finalized with consultation of PMU. Design Standards & Criteria- Following design standard will be followed:

- For Pipeline
- For Material & Testing
    1. Structures
    2. Structure Loads
- Seismic Design
    1. Drainage
    2. Materials & testing

I. PRELIMINARY ESTIMATES

21. The Consultant will prepare preliminary engineering estimates of all components of project such as drains, pipe line, pumping stations, TP etc. along with electric equipment as per relevant SOR or market rates if not a listed item as per SOR. The rates would be analyzed based on standard format / procedure of ULB.

3. Stage – 3 Detailed Design

22. Upon approval of Preliminary Design, the consultant will carry out detailed designs. The Consultant will prepare construction drawings (Contract Plans) in a clear, concise and uniform manner in Digital Format using AutoCAD and will submit final copy of complete drawing after approval to client in DWG format as well as the consultant will submit hard copies of the drawings.

23. Tender documents & BOQ: Contract Documents- performance based O&M embedded contract documents using approved standard bidding documents, with due consideration of appropriate procedures - National Competitive Bidding (NCB), International Competitive Bidding (ICB) etc. Tender Documents will comprise of the following:

Volume-I

- Instruction of Bidders.
- Conditions of Contract (Part-I) (General Conditions).
- Conditions of Contract (Part-II), (Conditions of Particular Application).
- Forms and Appendices.

Volume-II

- General Specifications.
- Mode of measurements.

Volume-III

Particular Specifications, Special Provisions and Bills of Quantities.

Volume-IV

- Drawings as per the following detail:
- Cover Sheet.
- Key plan: Province and Project site Indicated.
- Location Plan
- Structural Plans and Design Drawings for structures.
- Horizontal and Vertical Alignment sheets (1:1000, horizontal 1:100 vertical) for proposed alignment.
- Typical Cross-sections.
- Miscellaneous Details/ Ancillary Works
- Detail drawing folders of Utilities/Infrastructure for Land Acquisition and removal of all utilities/ infrastructure etc., having all the requisite information.
- Details plan and cost for shifting of utilities /HT/LT poles etc.

24. Technical Specifications- The consultants will prepare particular specification for the project for specified items nor covered in the General Specifications.

25. Bill of Quantities-The Consultant will prepare comprehensive Bill of Quantities to be calculated to accuracy of +5% encompassing all the items of work, properly cross referenced to the Technical Specifications. Standard format of Bill of Quantities will be adopted based on General Specifications. The Consultant will prepare taking off sheets of the quantities and submit to client along with BOQ.

26. Engineer's Estimate-The consultant will prepare Engineers Estimate of the project based on detailed design, drawings and final BOQ.

i. SAFEGUARDS, STATUTORY CLEARANCES AND REGULATORY ISSUES

27. Below are the detailed tasks on safeguards and clearances:

i. Prepare, review and update the Resettlement Plan[14] for the project based on detailed designs or review the already prepared resettlement plan and prepare/update resettlement plan accordingly;
ii. Prepare, Review and update the initial environmental examination (IEE) if already prepared for the project; prepare/ update IEE accordingly for new sub projects;
iii. Identify any further resettlement requirements and costs that may be required and provide all information required in relation to right-of-way access as well as the relocation of existing utilities, if required, and other obstructions at the proposed work sites, including vendor stalls;
iv. Obtain all necessary permissions and complying with statutory requirements as required prior to construction;
v. Ensure that all bidding documents and contract documents contain the Environmental Management Plan (EMP) and such items are included in BOQ; also monitor the implementation of the EMP during construction and pre/post construction phases;
vi. In compliance with the EMP, develop a strategy to overcome the difficulties of construction/traffic management in narrow streets and also prepare detailed plans for detour of traffic during excavation for pipe laying. Propose and implement mechanism for coordination among all stakeholders such as traffic police, roads department, user committees, etc, for smooth construction execution. Adequate special measures will be taken for working near buildings and structures of cultural significance and in heritage zones involving close coordination with the Department of Archaeology etc.;
vii. Design of surveys and investigations required for the protection of archaeological sites and heritage areas and prepare Archaeological Impact Assessments, or other agreed upon document to be approved by the Department of Archaeology (DOA) for the sections that are classified as archaeologically sensitive;
viii. Ensure that all bidding documents contain specific measures for working and excavating in archaeologically sensitive areas;
ix. As part of the EMP, prepare a project focused Occupational Health and Safety Plan (OHS) to be adopted by PIU on project work sites: and
x. Provide awareness training on OHS, environmental impacts and mitigation measures to PIU and contractors including contractors' workers.

ii. TEAM COMPOSITION AND QUALIFICATIONS

28. The team will comprise of 6 person months of international consultants and 492 person months of National experts. A more detailed breakdown of the type of consultants, and individual inputs is given in Table 1. The overall responsibility to deliver the outputs will be of the firm through the Team Leader.

29. Requirements for key experts (and any other requirements which will be used for evaluating the Key Experts

[14] Adopt the available/ adopted resettlement framework for similar projects.

Table A5.4: Team Composition

Position	Requirements
International Consultants	
Waste Water Reuse Specialist	Degree in engineering and PG in environmental engineering with 15 years experience
Drainage Specialist	Degree in engineering and PG in environmental engineering with 15 years experience
National Consultants	
Team Leader	Degree in Civil with 20 years relevant experience in water and sewer system design.
Water Supply Expert	Degree in Civil with 20 years relevant experience specific experience in water systems design
NRW Expert	Degree/PG with 20 years experience with experience in design of NRW reduction program using DMA approach, leak detection etc.
Sewerage and Drainage Expert	Degree in Civil with 20 years relevant experience specific experience in sewerage and drainage design including treatment plants
Water Supply/Sewerage/ Drainage Engineer (3 positions per cluster of tows)	Degree in Civil with 10 years relevant experience
Hydraulic Engineer (2 positions per cluster of towns)	Degree in Civil/Mechanical with 20 years relevant experience.
Structural Engineer	Degree / Masters in Structures with 10 years relevant experience
Mechanical Engineer	Degree in Mechanical Engineering with 20 years relevant experience
Electrical Engineer	Degree in Electrical Engineering with 15 years relevant experience
Environmental Engineer	Degree in Environmental Engineering 10 years relevant experience in EIA/ EMP of infrastructure project with special reference to UGR.
Urban Planner	Master in Urban Planning with 15 years experience in Master/ Infrastructure Planning
Social Safeguards Specialist	Masters in Social Science with 10 years experience in resettlement planning.
Survey Engineer	Degree in Civil 10 years relevant experience or Diploma + 15 years relevant experience
Contract Specialist	Degree in Civil Engineering with 20 years relevant experience in contract design and management.
Quantity Surveyor (2)	Degree / Diploma with 10 years relevant experience
AutoCAD Draftsman (2)	Degree / Diploma with 10 years relevant experience
Support Staff	

**** Note: The key persons for the specific assignments will be finalized at the time of preparation of project specific Terms of Reference.**

iii. REPORTING REQUIREMENTS AND TIME SCHEDULES FOR DELIVERABLES

30. The Consultant will submit following reports:

(a) **Inception Report.** Within two weeks after the commencement of the assignment.
(b) **Data Review Report and conceptual plan.** Within two months after the commencement of the assignment.
(c) **Asset Condition and Valuation Report.** Within three months after the commencement of the assignment.

(d) **Service Level Report.** Within four months after the commencement.
(e) **Hydraulic Model Report.** Within six months after the commencement of the assignment-including survey, Geotechnical Investigation Report and Hydraulic Report
(f) Preliminary Design Report within seven months after the commencement.
(g) Preliminary Tender Documents within seven months after the commencement.
(h) Draft Final Report within 11 months after the commencement.
(i) **Final Report**. Within four weeks after receipt of comments.

J. PAYMENT SCHEDULE

31. The consultant will be paid 10% of agreed fee against each milestones listed above, on acceptance of reports. The final 10% shall be given after final approval of DPR and Bid Documents.

K. DURATION OF THE ASSIGNMENT

32. Duration of consultancy services assignment will be 12 months.

ADVANCE CONTRACTING

1. Project readines is high. 100% of contract packages under the Tranche 1 loan were invited. Of the 15 packages under Tranche 1 loan, the following 10 packages are in advanced stage (i.e. technical bids already opened):

(i) Providing sewage collection system in Zone-1,2 & 3 for UGSS in Tirunelveli Corporation under Phase-II
(ii) Providing sewerage collection system in Zone - 4, 5, 6, PCB, PM and construction of Sewage Treatment Plant of capacity 27 MLD with Waste Stabilization Pond technology for UGSS in Tirunelveli Corporation Phase-III under Package-1
(iii) Providing UGSS to Kurichi and Kuniamuthur Area Wards 87 to 100 of Coimbatore Corporation-Phase-II in Coimbatore District
(iv) Providing sewerage collection system in the extended areas of Corporation for UGSS in Trichy Corporation under Package – 1
(v) Providing sewerage collection system in left out areas of erstwhile Corporation for UGSS in Trichy Corporation under Package – 2
(vi) Providing sewerage collection system in Zone 3,4 &5 for UGSS in Vellore Corporation under Package – 1
(vii) Providing sewerage collection system in Zone 6,7, PCB & PM for UGSS in Vellore Corporation under Package-2
(viii) Providing sewerage collection system for UGSS in Rajapalayam Municipality under Package – 1
(ix) Providing Water Supply Improvement Scheme for the 5 added areas of Chennai city
(x) Providing Sewerage Collection System in 4 added areas of Chennai city for UGSS in Greater Chennai Corporation

2. One package under the grant component (solar facility) will be bid at later stage to coincide with development of Coimbatore STP.

3. The procurement of Works and Goods financed by ADB is being carried out in accordance with *ADB's Procurement Guidelines* (2015, as amended from time to time).

4. Recruitment of four construction management and supervision consultant packages for Tirunelveli, Tiruchirappalli, Vellore and Chennai is ongoing, i.e. Request for Proposals were already issued to shortlisted firms in Tiruchirappalli and Vellore packages. Recruitment of these consulting firms is being done in accordance with *ADB's Guidelines on the Use of Consultants* (2013, as amended from time to time*).*

RESETTLEMENT PLANS AND RESETTLEMENT FRAMEWORKS

Separate Attachments: Website Link

INITIAL ENVIRONMENTAL EXAMINATIONS AND ENVIRONMENTAL ASSESSMENT AND REVIEW FRAMEWORK

Separate Attachments: Website Link

ATTACHMENT 9: INDIGENOUS PEOPLES PLANNING FRAMEWORK

Separate Attachment: Website Link

ECONOMIC ANALYSIS

Assessment items	Assessment
Project in Macroeconomic context	The proposed Tamil Nadu Urban Flagship Investment Program (program) is an investment program designed under the multitranche financing facility (MFF) modality of ADB financing. The program will focus on the improvement of water supply and sewerage sectors in Tamil Nadu, with the following outputs: (i) climate-resilient sewage collection and treatment, and drainage systems developed in at least eight cities; (ii) water supply systems in at least five cities improved with smart features; and (iii) institutional capacity, public awareness, and urban governance strengthened. Tranche 1 is planned to be implemented in six cities of Tamil Nadu, including: (i) Chennai (water supply and sewerage); (ii) Coimbatore (sewerage); (iii) Rajapalayam (sewerage); (iv) Tiruchirapalli (sewerage); (v) Tirunelveli (sewerage); and (vi) Vellore (sewerage).
Project In the Sector Context	Components of the program include: i. Climate-resilient sewage collection and treatment, and drainage systems developed in at least eight cities (Output 1); ii. Water supply systems in at least five cities improved with smart features (Output 2); and iii. Institutional capacity, public awareness, and urban governance strengthened (Output 3).
Demand Analysis	Water supply in the project areas of Chennai is found to be inadequate. The service coverage is only 15% and the average water supply is 14 liters per capita per day (lpcd), less than the recommended minimum required 150 lpcd.[1] No sewerage systems are present in theTranche 1 areas.
Subproject Rationale	The rationale for the government involvement is sound. The government's intervention under Tranche 1 focuses on urban basic infrastructure including water supply and sewerage, where there is a natural monopoly in the sector(s), and the services provided are public goods managed by the government.
Least Cost Comparison	The detailed project report prepared for Tranche 1 subprojects assessed alternative designs for cost-effectiveness. The least-cost analysis has mainly considered: (i) the distribution network of water supply for better management, (ii) optimizing the existing sewerage network, and (iii) selection of pipe material (ductile iron and high-density polyethylene pipes). Based on the comparison study, the Tranche 1 subprojects were found to be the most economical option to meet demand in terms of scale, technology, and timing.
Identification and valuation of economic cost and benefit	**Economic Cost:** The economic analysis covered all the subprojects under Tranche 1 and was conducted in accordance with ADB's Guidelines, including the Guidelines for the Economic Analysis of the Projects (2017) and the Economic Analysis of Water Supply Projects (1998). The following assumptions are made for the analysis of Tranche 1: (i) All costs are used in 2017 constant prices and converted at $1 = ₹64.3; (ii) Economic costs of capital works and O&M are calculated from the financial cost estimates; price contingencies, financial charges, and taxes and duties are excluded, but physical contingencies are included (Table A10.1); (iii) All costs including capital works and O&M are valued using the domestic price numeraire; tradable inputs and unskilled labour costs are further adjusted by

[1] Ministry of Urban Development guidelines suggest 150 lpcd as benchmark water supply. http:// m o u d . gov.in/ upl oad/ uploadfiles/files/NMSH%20Advisory%20on%20Adaptation%20and%20Mitigation%20Measures.pdf

the shadow exchange rate factor of 1.03[2] and the shadow wage rate factor of 0.90;[3]

(iv) The projections cover from 2018 to 2043 including 6 years of construction, and assets created were assumed to have a 20 years' lifespan upon the completion; and

(v) The economic opportunity cost of capital (EOCC) is assumed at 9% in real terms.

Table A10.1: Details of Project Cost for Tranche 1 ($ million)

Particulars	Capital Costs		Operation and Maintenance Costs		Implementation	Operation
	Project Costs	Economic Costs[a]	Project Costs	Economic Costs[a]		
Chennai - Water Supply	49.8	41.5	60.4	50.5	2018-2023	2024-2043
Chennai - Sewerage	44.7	37.3	29.5	24.6		
Coimbatore - Sewerage	101.2	84.4	66.8	55.7		
Tirunelveli - Sewerage	89.8	75.0	59.4	49.5		
Vellore - Sewerage	83.6	69.8	55.4	46.2		
Trichirapalli - Sewerage	63.3	52.8	41.8	34.9		
Rajapalayam Sewerage	44.6	37.2	29.4	24.6		
Total	**477.5**	**398.0**	**342.7**	**286.0**		

[a] Excludes taxes and duties, price contingencies, and financial charges, but includes physical contingencies.
Source: Asian Development Bank estimates

Economic Benefits:

Water Supply Component in Chennai

The piped water is currently supplied to only 15% of households at 14 lpcd in the project areas of Chennai. Most households depend on costly and unhealthy other sources. The district metered area based network development under Tranche 1 plans to increase the per capita water supply to 150 lpcd[4] and total beneficiaries will be 0.16 million persons (39,998 households) in 2023. Difference between the existing piped water supply of 14 lpcd and the average water consumption of 86 lpcd[5] is considered as 'non-incremental' benefits. The water supply beyond the existing consumption up to 150 lpcd is treated as 'incremental' benefits.

Table A10.2: Economic Benefits of the Water Supply Component ($ million) Category	Details	Total benefits (NPV)
A. Non-incremental Benefits		
a. Cost of replaced water from other sources	$1.3/kl[a]	30.6
b. Cost for water collection time	$0.5/kl/day[b]	12.5
c. Savings in earning loss related to waterborne diseases	$41.3/HH/yr[c]	9.8
B. Incremental Benefits		
a. Average unit cost for incremental benefit	$0.1/kl[d]	1.7

HH = household, kl = kiloliter, yr = year, NPV= net present value.
[a] Replaced water breakdown: 23.4% via hand pump at ₹157/kl, 27.5% via dug well at ₹7.7/kl, 31.8% via water procured from tankers at ₹70/kl, and 1.1% via bottled water at ₹1,750/kl. Estimated average procured water cost: ₹80.4/kl. ($1.3/kl).

[2] Shadow Exchange Rate Factor (SERF)

Details	FY 2016	FY 2015	FY 2014	FY 2013	FY 2012	Average
Exports ($ billion)	263.76	291.76	293.08	251.43	225.53	265.11
Imports ($ billion)	382.45	421.09	417.76	410.64	360.84	398.56
Customs Duties ($ billion)	21.62	19.61	19.69	18.62	17.83	19.47
Standard Conversion Factor (SCF)	0.968	0.973	0.973	0.973	0.970	0.97
Shadow Exchange Rate Factor (SERF)	1.03	1.03	1.03	1.03	1.03	1.03

Source: Reserve Bank of India. 2016. *Hand Book of Statistics on Indian Economy, 2015–16.* Manila.

[3] 0.90 (Shadow wage factor) was estimated through dividing $3.19 per day (minimum wage of West Bengal) into $3.55 per day (unskilled labour cost, using practiced labour wage rate paid by contractors to unskilled labourers).

[4] National standards based project design adopted for Chennai water supply component.

[5] Estimated from Baseline Assessment Survey for Chennai City (2017) under ADB TA 9022.

[b] Average daily replaced water: 0.28 kl/₹9.23 (value of daily time savings) = ₹33.0/kl/day ($0.5/kl/day).
[c] Average household daily income ($14.1) x average working days lost/year (11.70) = estimated average household annual earning loss from waterborne diseases ($165.0); 25% of loss ($41.3) is assigned to water supply per World Bank. 2015. *Water, Sanitation and Hygiene Interventions to Combat Childhood Diarrhea in Developing Countries*. Washington, DC.
[d] Baseline Assessment in Chennai City (ADB. 2017. *Baseline Socio-Economic Survey Report for Chennai City. Consultant's report*. Manila; (TA 9022-IND) carried out under the program. WTP = ₹88.3 for 1 month; projected household consumption is 17.6 kl, with an incremental water unit rate estimated at ₹5.0/kl ($0.1/kl).

Sewerage Component in Chennai, Coimbatore, Tirunelveli, Vellore, Rajapalayam and Tiruchirapalli

The absence of sewerage systems in the project areas is posing a major health risk and has been considered as a main challenge for the project cities. A zone-based sewage collection system is proposed based on elevation and physical features to ensure sewage conveyance predominant by gravity. Household connections to beneficiaries are ensured under Tranche 1. The Tranche 1 sewerage component is estimated to benefit about 1.5 million population (357,904 households) in 2023. The benefits are summarized in Table A10.3.

Table A10.3: Economic Benefits of the Sewerage Component ($ million)

Particulars	Total benefits (ENPV)					
	Chennai	Coimbatore	Tirunelveli	Vellore	Tiruchirapalli	Rajapalayam
1. Savings in earning loss during sick days[a]	14.2	32.8	35.4	27.1	28.4	15.4
2. Savings in annual maintenance of septic tank cost[b]	4.0	8.0	10.4	7.5	7.9	4.3
3. Savings in health expenditure due to sanitation improvement[c]	27.2	50.4	43.6	43.7	45.9	24.9
Total	**45.4**	**91.2**	**89.4**	**78.3**	**82.2**	**44.6**

HH = household; ENPV = economic net present value.
[a] Estimated at 43% of household income loss ($63.7–$84.9 per HH/year) during sick days (9.6–12.0 days/year) in the project cities. Based on World Bank. 2015. *Water, Sanitation and Hygiene Interventions to Combat Childhood Diarrhea in Developing Countries*. Washington, DC.
[b] Estimated based on the average annual household savings of maintenance costs for septic tanks ($20.5–$21.5 per HH//year) and low-cost sanitation ($4.7 per HH/year) in the project towns. Based on ADB. 2017. Baseline Socio-Economic Survey Report for Chennai City. Consultant's report. Manila (TA 9022-IND).
[c] Average annual household medical expenditures are $79.7–$137.6 per HH/year, with 43% estimated to result from sewerage. Based on *Water, Sanitation and Hygiene Interventions* (footnote a). 76% of sewerage-related medical expenditures are considered savings; balance of 24% (assumed as doctor's consultation fees) considered a cash transfer within the economy. Estimated using data from Government of India, Ministry of Statistics and Programme Implementation. Key Indicators of Household Consumer Expenditure in India, NSS 68'n Round, 2011-12.

Economic efficiency of the investment, and sensitivity analysis	The economic analysis shows Tranche 1 to be economically viable, with the calculated economic internal rate of return (EIRR) exceeding the EOCC of 9%. The results of the sensitivity analysis are also satisfactory, except the case of all downside risks combined (Table A10.4). Cost benefit flow for the combined is also given in Table A10.5.

Table A10.4: EIRR and Sensitivity Analysis

($ million)

	Overall			Chennai – Water supply			Chennai – Sewerage			Coimbatore – Sewerage		
Particulars	**EIRR**	**ENPV**	**SV**	**EIRR**	**ENPV**	**SV**	**EIRR**	**ENPV**	**SV**	**EIRR**	**ENPV**	**SV**
Base case	12.2%	94.1		13.4%	14.6		11.8%	8.1		10.6%	9.2	
Construction cost (+20%)	10.2%	40.3	35.0%	11.4%	9.0	52.1%	9.9%	3.0	32.0%	8.7%	(2.2)	16.1%
O&M cost (+20%)	11.7%	80.2	136.0%	12.8%	12.2	122.4%	11.4%	6.9	134.6%	10.1%	6.5	67.8%
Benefit (- 20%)	9.3%	7.7	21.8%	10.2%	3.7	26.8%	9.1%	0.2	20.5%	7.7%	(6.8)	11.5%
1-year delay of operation	12.0%	85.6		13.2%	12.3		11.6%	7.1		10.4%	7.8	
Combined	6.7%	(66.0)		7.4%	(4.7)		6.6%	(6.7)		5.2%	(21.9)	

	Tirunelveli – Sewerage			Vellore – Sewerage			Tiruchirapalli – Sewerage			Rajapalayam – Sewerage		
Particulars	**EIRR**	**ENPV**	**SV**	**EIRR**	**ENPV**	**SV**	**EIRR**	**ENPV**	**SV**	**EIRR**	**ENPV**	**SV**
Base case	12.1%	16.8		11.0%	10.0		15.3%	27.6		11.9%	7.8	
Construction cost (+20%)	10.1%	6.7	33.2%	9.1%	0.6	21.2%	13.2%	20.5	77.4%	9.9%	2.8	31.0%
O&M cost (+20%)	11.7%	14.4	139.8%	10.6%	7.8	89.2%	15.0%	25.9	325.5%	11.5%	6.6	130.5%
Benefit (- 20%)	9.2%	0.9	21.2%	8.2%	(3.7)	14.6%	12.3%	13.3	38.5%	9.0%	0.0	20.0%
1-year delay	12.0%	15.5		10.8%	8.6		15.2%	26.2		11.7%	7.1	
Combined	6.6%	(12.6)		5.7%	(16.4)		9.8%	3.4		6.5%	(6.7)	

( ) = negative, EIRR = economic internal rate of return, ENPV = economic net present value, O&M = operation and maintenance, SV = switching value.

Source: Asian Development Bank estimates.

Table A10.5: Costs and Benefits Streams – Combined Subprojects

($ million)

Year	Costs			Benefits	Net Benefits
	Construction	Operation and maintenance	Total		
2018	19.1	-	19.1	-	**(19.1)**
2019	57.4	-	57.4	-	**(57.4)**
2020	114.2	-	114.2	-	**(114.2)**
2021	105.8	-	105.8	-	**(105.8)**
2022	63.6	-	63.6	-	**(63.6)**
2023	38.1	-	38.1	-	**(38.1)**
2024	-	12.8	12.8	73.1	**60.4**
2025	-	12.9	12.9	78.2	**65.2**
2026	-	13.1	13.1	79.7	**66.6**
2027	-	13.2	13.2	81.2	**68.0**
2028	-	13.4	13.4	82.8	**69.4**
2029	-	13.5	13.5	84.4	**70.8**
2030	-	13.7	13.7	86.0	**72.3**
2031	-	13.9	13.9	87.4	**73.6**
2032	-	14.0	14.0	89.3	**75.3**
2033	-	14.2	14.2	90.8	**76.6**
2034	-	14.3	14.3	92.2	**77.9**
2035	-	14.5	14.5	94.9	**80.4**
2036	-	14.7	14.7	95.7	**81.0**
2037	-	14.9	14.9	96.6	**81.7**
2038	-	15.0	15.0	97.5	**82.4**
2039	-	15.2	15.2	98.3	**83.1**
2040	-	15.4	15.4	99.3	**83.9**
2041	-	15.6	15.6	100.2	**84.6**
2042	-	15.8	15.8	101.1	**85.4**
2043	-	15.9	15.9	102.1	**86.2**
Total	**398.0**	**286.0**	**684.0**	**1,810.7**	**1,126.7**
ENPV	**268.7**	**69.1**	**337.9**	**431.9**	**94.1**
EIRR					**12.2%**

( ) = negative, ENPV = economic net present value, EIRR = economic internal rate of return.

Source: Asian Development Bank estimates.