



**ASIAN INFRASTRUCTURE  
INVESTMENT BANK**

PD00448-IND  
April 27, 2021

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**Project Document  
of the Asian Infrastructure Investment Bank  
Sovereign-backed Financing  
Republic of India  
Punjab Municipal Services Improvement Project**

## 1. Currency Equivalentents

(As at December 31, 2020)

Currency Unit – Indian Rupee (INR)

INR1.00 = USD0.014

USD1.00 = INR73.40

### Borrower's Fiscal year

April 1 – March 31

### Abbreviations

AIIB	Asian Infrastructure Investment Bank
AMC	Amritsar Municipal Corporation
AMP	Asset Management Plan
AMS	Asset Management System
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
BoD	Board of Directors
C&AG	Comptroller and Auditor General of India
CC	Climate Change
CIP	Capital Investment Plan
COVID-19	Coronavirus Infectious Disease of 2019
DBOT	Design, Build, Operate and Transfer
DLFA	Directorate of Local Fund Audit
DLG	Department of Local Government
EA	Economic Analysis
EIRR	Economic Internal Rate of Return
ENPV	Economic Net Present Value
ES	Environmental and Social
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESMU	Environmental and Social Management Unit
ESP	Environmental and Social Policy
FY	Fiscal Year
GBV	Gender-Based Violence
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GOI	Government of India
GoP	Government of Punjab
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service

IBRD	International Bank for Reconstruction and Development
IGFT	Intergovernmental Fiscal Transfers
IMF	International Monetary Fund
INR	Indian Rupee
IRR	Internal Rate of Return
IUFR	Interim Unaudited Financial Report
LMC	Ludhiana Municipal Corporation
LPCD	Litres Per Capita per Day
M&E	Monitoring and Evaluation
MC	Municipal Corporation
MLD	Million Liters per Day
NRW	Non-Revenue Water
O&M	Operations and Maintenance
OHSR	Overhead Storage Reservoir
OP	Operational Policy
OSR	Own Source Revenue
PAP	Project-affected people
PIU	Project Implementing Unit
PMC	Project Management Consultant
PMIDC	Punjab Municipal Infrastructure Development Company
PMU	Project Management Unit
POM	Project Operations Manual
PPM	Project-affected People's Mechanism
PPSD	Project Procurement Strategy for Development
PST	Point of Source Treatment filters
PWSSB	Punjab Water Supply & Sewerage Board
RAP	Resettlement Action Plan
RPF	Resettlement Plan Framework
SCADA	Supervisory Control and Data Acquisition
SCM	Smart Cities Mission
SDG	Sustainable Development Goal
SEA/SH	Sexual Exploitation and Abuse/ Sexual Harassment
SEP	Stakeholders Engagement Plan
SLB	Service level benchmark
SLIP	Service Level Improvement Plan
TA	Technical Assistance
ULB	Urban Local Body
WB	World Bank
WSS	Water Supply and Sanitation
WTP	Water Treatment Plant

## Contents

<b>1. SUMMARY SHEET .....</b>	<b>2</b>
<b>2. PROJECT DESCRIPTION .....</b>	<b>4</b>
A. Project Overview .....	4
B. Rationale .....	4
C. Components .....	6
D. Cost and Financing Plan .....	7
E. Implementation Arrangements .....	7
<b>3. PROJECT ASSESSMENT .....</b>	<b>10</b>
A. Technical .....	10
B. Economic and Financial Analysis .....	12
C. Fiduciary and Governance .....	14
D. Environmental and Social .....	16
E. Operational Policy on International Relations .....	19
F. Risks and Mitigation Measures .....	20
Annex 1: Results Monitoring Framework .....	22
Annex 2: Detailed Project Description .....	27
Annex 3: Economic and Financial Analysis .....	38
Annex 4: Climate Finance .....	44
Annex 5: Member and Sector Context.....	50
Annex 6: Sovereign Credit Fact Sheet.....	52

## 1. Summary Sheet

### Republic of India

Project No.	PD000448-IND
Project Name	Punjab Municipal Services Improvement Project
AIIB Member	Republic of India
Borrower	Republic of India
Project Implementing Entity	State of Punjab, Punjab Municipal Infrastructure Development Company (PMIDC), Amritsar Municipal Corporation (AMC), and Ludhiana Municipal Corporation (LMC).
Sector	Urban
Subsector	Urban Infrastructure
Project Objective	To support strengthening of urban governance, finances, and delivery of sustainable water services in Amritsar and Ludhiana.
Project Description	The project will establish the foundations for more effective and responsive urban services in Amritsar and Ludhiana by strengthening local service delivery systems and creating performance incentives for the two Municipal Corporations (MCs). The project will support physical investments in bulk water supply systems to shift contaminated and depleting groundwater sources to more reliable surface water in the two cities.
Implementation Period	Start Date: April 2021 End Date: March 2026
Expected Closing Date	September 30, 2026
Cost and Financing Plan	Project cost: USD300 million  Financing Plan: AIIB loan: USD105 million World Bank's IBRD: USD105 million Government of Punjab (GoP): USD90.00 million
Size and Terms of AIIB Loan	USD105 million. The loan will have a final maturity of 12.5 years, including a grace period of three years, and will be made on standard VSL terms for sovereign-backed loans, with the corresponding average maturity.
Cofinancing (Size and Terms)	World Bank's IBRD: USD105 million.
Environmental and Social Category	World Bank Category "High Risk" (similar to AIIB's Category A if AIIB's ESP were applicable).
Risk (Low/Medium/High)	Medium
Conditions of Effectiveness	(i) Effectiveness of the Project's Co-Lenders' Agreement between World Bank (WB) and AIIB; (ii) Effectiveness of the Financing Agreement between WB and the Government of India (GOI); and

	(iii) Receipt of a legal opinion stating that the Project Agreement has been duly executed by and is binding upon the Punjab Municipal Infrastructure Development Company, the Municipal Corporation of Amritsar and the Municipal Corporation of Ludhiana.
Key Covenants/Conditions for Disbursement	<p>Key Covenants:</p> <ul style="list-style-type: none"> <li>• Within 1 month of Effective Date: adoption of Project Operations Manual (POM);</li> <li>• Within 6 months of Effective Date: each of AMC and LMC has incorporated its Utility and appointed its Board Members;</li> <li>• Within 9 months of Effective Date: each Utility has prepared its transition plan, including a staffing plan and an inventory for transferring relevant municipal assets;</li> <li>• Within 12 months of Effective Date: each of AMC and LMC has developed an action plan for the implementation of its drinking water strategy and started to implement it; and</li> <li>• Within 24 months of Effective Date: each Utility has implemented its transition plan.</li> </ul> <p>Conditions for disbursement:</p> <ul style="list-style-type: none"> <li>• Component 2 to be disbursed once each of AMC and LMC has incorporated its Utility, such Utility's board of directors has been established; and a Memorandum of Understanding has been entered into by PMIDC with AMC and LMC to set out performance framework including key institutional reform areas, targets and outcomes.</li> </ul>
Retroactive Financing	Up to USD10 million (9.5% of the loan amount)
Policy Assurance	The Vice President, Policy and Strategy, confirms an overall assurance that AIIB is in compliance with the policies applicable to the Project.
Economic Capital (Ecap) Consumption	USD6.83 million (8.19%)

President	Jin Liqun
Vice President	D.J. Pandian
Director General	Rajat Misra
Team Leader	Toshiaki Keicho, Sr. Investment Operations Specialist-Urban
Team Members	<p>Amy Chua, Environmental Specialist  Ankur Agrawal, Young Professional  Benedetta Magnaghi, Procurement Associate  Christopher Damandl, Legal Counsel  Georgi Georgiev Dzhartov, Social Development Specialist  Mengmeng He, Finance Associate  Shodi Nazarov, Financial Management Associate  Yuka Terada, Investment Officer - Urban</p>

## 2. Project Description

### A. Project Overview

1. **Project Objective.** The project objective is to support strengthening of urban governance, finances, and delivery of sustainable water services in the cities of Amritsar and Ludhiana.

2. **Project Description.** The project will establish the foundations for more effective and responsive urban services in Amritsar and Ludhiana by strengthening local service delivery systems and creating performance incentives for the two Municipal Corporations (MCs) – Amritsar Municipal Corporation (AMC) and Ludhiana Municipal Corporation (LMC). The project will: (i) invest in bulk water infrastructure; (ii) establish new institutional models for Water Supply and Sanitation (WSS) service delivery; (iii) introduce private sector participation in WSS; and (iv) strengthen financial sustainability and customer orientation in WSS delivery. It will also support AMC and LMC in modernizing administrative systems and institutional capabilities in enhancing Own Source Revenue (OSR); (ii) establishing and rolling out Capital Investment Plan (CIP) and Asset Management Plan (AMP); and (iii) introducing performance measures and social accountability in service delivery and citizen engagement.

3. **Expected Results.** The Project Objective will be evaluated against the following indicators:

- (i) People provided with access to safely managed water supply;
- (ii) Improved operational efficiency in AMC and LMC; and
- (iii) Water utilities established in AMC and LMC.

4. **Expected Beneficiaries.** The proposed project will benefit the residents of Amritsar and Ludhiana. The target beneficiaries of the urban governance and finance strengthening are the MCs and the general population of Amritsar and Ludhiana, totaling approximately 3.4 million in 2025. The water supply component would benefit all water consumers in Amritsar and Ludhiana, which is projected to be 5.1 million in 2055. Industrial and commercial users would also benefit from good quality reliable water supply. On the institutional side, the two MCs will benefit from improved governance and service delivery systems, enhanced capacities of MC's staff and improved resource availability and utilization for service delivery.

### B. Rationale

5. **Strategic fit for AIIB.** The project is aligned with AIIB's thematic priority to promote green infrastructure. It also fits within the strategic focus of AIIB's Sustainable Cities Strategy by aiming to improve city's service provision through efficient water use and allocation. It is also aligned with the Water Sector Strategy aiming to provide better access to quality water supply services in the two cities.

6. **Value addition by AIIB.** The Bank's value addition involves mobilizing sufficient financial resources to fill the financing gap in the project as well as contributing to the

project preparation and implementation support, focusing on financial sustainability of operations and cost recovery. AIIB's close engagement in such areas as environmental and social safeguards during project implementation will facilitate effective monitoring of project activities and achievement of the project objective.

7. **Value addition to AIIB.** The project will strengthen AIIB's partnership with the WB and give an opportunity to the Bank's operational staff to learn about urban governance, utility management and technical designs of shifting groundwater sources to surface water supply systems that can be replicated in cities of other member countries.

8. **Lessons learned.** The project will incorporate the following lessons learned from similar WB supported projects both in India and in other countries:

- (i) Global and pan-India experiences have shown that wholesale improvements in the urban service delivery environment require long-term and programmatic engagements combining policy, institutional, financial and technical support with investments. The Government of India (GOI)-financed national programs such as the AMRUT<sup>1</sup> have aimed at incentivizing states and Urban Local Bodies (ULBs) to combine incremental governance and finance reforms with capacity building and investments. The proposed project is built along these lines combining reforms, Technical Assistance (TA) and investments.
- (ii) Effective WSS management requires an autonomous and accountable institution. Several large cities in India operate their WSS services in a municipal department structure under outdated rules and procedures and without operational autonomy. Municipalities are often unable to hire qualified staff as the municipal structure does not attract talent. Lack of commercial orientation affects WSS management, leading to poor cost recovery and ad hoc subsidies. This project addresses these issues by supporting the Government of Punjab (GoP) for enabling an institutional structure that promotes autonomy as well as for institutional measures that promote accountability, transparency, delegation of powers, independent human resources policy and commercial orientation.

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<sup>1</sup> Atal Mission for Rejuvenation and Urban Transformation (AMRUT) is a national program of the Ministry of Housing and Urban Affairs, Government of India for providing basic services (e.g. water supply, sewerage, urban transport) to households and build amenities in cities which will improve the quality of life for all. Besides creating infrastructure for basic amenities, the program also focuses on reforms and capacity building of the ULBs. The reforms aim at improving delivery of citizen services, bringing down the cost of delivery, improving financial health, augmenting resources and enhancing transparency. The Mission sets aside 10% of annual budgetary allocation to be given away as incentive to States for accomplishing the reforms within specified timelines.



## C. Components

9. The project will consist of the following four components.

10. **Component 1: Strengthening urban service delivery systems.** This component will provide financing for TA, training, equipment, and studies to support Amritsar's and Ludhiana's transition into more financially sustainable, administratively efficient, focused on gender and workplace diversity, technically capable and institutionally accountable MCs. It will also finance establishing and operationalizing WSS utilities in the two cities.

- (i) Sub-component 1a - Strengthening urban governance and finance systems. This subcomponent will strengthen the systems and capacities of AMC and LMC in several priority areas that enhance their capabilities in urban management and service delivery. This will include e-governance and administrative improvements such as digitalization of WSS charges, right skilling and strengthening staff capacity, developing and operationalizing CIP and Asset Management System (AMS)
- (ii) Sub-component 1b - Strengthening water service management. The project will support the institutional development of the two WSS utilities in the two MCs, support it in tariff planning, billing and collection systems, demand management etc.

11. **Component 2: Improving water supply infrastructure.** The component will finance water supply infrastructure - raw water intake structures, water treatment plants (WTP, 440 Million Liters per Day (MLD) in Amritsar and 580 MLD in Ludhiana), clear water pumping systems, transmission lines and overhead storage reservoirs (OHSRs) in both cities. Raw water drawn from the Upper Bari Doab Canal (UBDC) in Amritsar and Sirhind Canal in Ludhiana, diverted from the rivers Ravi and Sutlej respectively, will be pumped to WTPs for treatment. The component will support the urgent need to shift from contaminated and depleting groundwater sources to more reliable surface water supply. Both MCs depend on groundwater-based tube wells that face major quality concerns, for their entire bulk water supply. A switch to surface water supply ensures security of supply and potable water quality. Further, the project will also support several facets of service delivery improvement. It will strengthen transmission and storage infrastructure that is necessary for 24/7 supply in the future. Targeted service improvements under the project include improved quality of water, increased quantity of clean water, adequate supply conditions created to enable future delivery of 24/7 water at desired pressure, reduced Non-Revenue Water (NRW) and responsive Supervisory Control and Data Acquisition (SCADA).

12. **Component 3: COVID-19 crisis response.** This component will provide funds to the PMIDC, which will be rolled out as block grants to the thirteen MCs based on objective criteria, to finance short- to medium-term non-medical interventions to address the COVID-19 crisis. A positive list of eligible expenditures will be listed in the POM. This may include, among others, upgrading or rehabilitating vital health/community

infrastructure or amenities, provision and/or coordination of local infrastructure and social services that cater to COVID-19 response especially targeting poor and vulnerable households and communities, strengthening local-level disaster response systems and developing disaster response plans, including those covering natural disasters, communication campaigns and awareness building programs, and capacity building of local public officials and civic entities.

13. **Component 4: Project management.** This component will support various project management activities, including but not limited to: (i) Incremental operating costs of the Project Management Unit (PMU) in the PMDC and the project Implementation Units (PIUs) in the two MCs; (ii) Social and environmental safeguards management and fiduciary management in the two MCs; (iii) Monitoring and evaluation activities; and (iv) Technical and other studies relevant to urban governance and water supply.

#### D. Cost and Financing Plan

14. To achieve its objectives, the project will support four components, financed by AIIB, WB and GoP. A breakdown of costs and sources of funds by components are presented in the table below. A Co-lenders' Agreement will be signed by AIIB and WB in accordance with the 2016 Co-Financing Framework Agreement between the two banks (as amended in 2018). AIIB and WB will jointly co-finance all components in equal shares.

**Table 1. Project Cost and Financing Plan**

Item	Project Cost (USD m)	Financing (USD m and %)		
		AIIB	IBRD	GoP
Component 1	17.80	6.5	6.5	4.8
Component 2	247.00	90.15	90.15	66.7
Component 3	10.0	5.0	5.0	-
Component 4	8.5	3.1	3.1	2.3
Front-end fee	0.5	0.25	0.25	-
Land Acquisition and Rehabilitation & Resettlement	16.20	-	-	16.20
<b>Grand Total</b>	300.0	105.0 (35.0%)	105.0 (35.0%)	90 (30%)

#### E. Implementation Arrangements

15. **Implementation period.** The project will be implemented from April 2021 to March 2026.

16. **Implementation Management.** The Department of Local Government (DLG) is responsible for urban and local government affairs in GoP. The PMIDC, under the DLG, is the state level institution that supports urban reforms and investment programs. Consistent with this role, it will act as the nodal implementing agency for the project. The PMIDC will establish a PMU that will be responsible for day-to-day project management, coordination across agencies and the two MCs, progress monitoring and reporting, fiduciary and safeguards oversight, communications, State level grievance redress, etc. The PMU will be led by the CEO of PMIDC as the Project Director for faster decision-making and to ensure that the project activities are mainstreamed within the overall Government apparatus. The PMU will be responsible for providing grants to the thirteen MCs under the Component 3.

17. In line with the GoP's decision to devolve implementation of city-level projects to the large ULBs, the Amritsar and Ludhiana MCs will be responsible for implementing institutional and investment activities in their respective municipalities. Each MC will establish a PIU, led by the Additional Commissioner as the Project Manager, to manage project implementation at the city level. Each PIU will be overseen by the Municipal Commissioner at the city level and the PMU Director at the State level. The PIUs will work through relevant municipal departments such as engineering, O&M, health and sanitation, finance, as well as with other allied agencies in carrying out the project activities. Key tasks of the PIUs will be two-fold: (i) implementation coordination and management of city-specific activities under Components 1 and 2, including procurement, safeguards management, grievance redress, financial management, communications, reporting to the PMU; and (ii) establishing the newly constituted WSS utility.

18. Water supply investments will be initially managed by the PIU in each MC. After the establishment of each WSS utility, the appointment of key staff and the establishment of core systems, WSS operations and management responsibility will be legally transferred to the utility. Staff experienced in large water supply operations will be deputed to the utility from the MC and the Punjab Water Supply & Sewerage Board (PWSSB). Additional skills, as required, will be procured from the market. Each WSS utilities will develop an organizational structure consistent with the transition from an engineering-oriented department to a service-oriented company. It would include functions such as customer service, financial management, business planning, IT, NRW management, etc. Initial structure, staffing and costing are being developed for each utility. This will be finalized based on further discussions. Each utility is expected to be fully operational by year four of the project. A private operator will be responsible for three-year construction and ten-year O&M through a Design, Build, Operate and Transfer (DBOT) contract. After each utility is operational, it will take over the operator's contract from the MC.

19. Both PMU and PIU have already been constituted by the PMIDC, while the city Mayors have already endorsed the establishment of the city-based WSS utilities.

20. **Procurement.** The World Bank's Procurement Regulations for IPF Borrowers (November 2020) will apply to this project. They are materially consistent with the AIIB's

Articles of Agreement and the Core Procurement Principles and Standards of the AIIB's Procurement Policy. The project will be subject to the World Bank's Anti-Corruption Guidelines (October 2016, as revised January 2011 and July 2016). As lead co-financier, the WB will be responsible for overseeing the procurement process, applying its own procurement rules, internal review and clearance procedures, and determining whether the procurement has been conducted in accordance with the agreed implementation arrangements.

21. PMIDC has prepared a Project Procurement Strategy for Development (PPSD) document and a Procurement Plan which sets the procurement methods and approaches for the first 18 months. The Procurement Plan reflects the procurement arrangements between the World Bank and the Borrower and will be updated at least annually or as required according to the actual project implementation needs and improvements in institutional capacity.

22. **Financial Management.** The Bank will release funds to GOI, which will, in turn, release funds to the GoP based on standard arrangements between the GOI and the States. Project funds will be transferred from the GoP to the MCs as grants. Budgetary grants for the project will be allotted by GoP to PMIDC under the budget of the Department of Local Government (DLG). The PMIDC will release funds to project specific bank accounts of the two MCs. The PMIDC will prepare its annual budgets for its own activities under the project and consolidate it with project annual budgets of the AMC and LMC. PMIDC and each PIU will open a separate bank account to ensure traceability of project transactions. All three entities will follow double entry cash-based accounting system for project accounting. Both MCs will submit quarterly financial reports to the PMIDC. PMIDC will submit quarterly consolidated Interim Unaudited Financial Report (IUFRRs)<sup>2</sup> to AIIB and the WB.

23. The Bank will disburse funds on the basis of eligible project expenditures pre-financed by the GoP and reported in the quarterly IUFRRs submitted by the PMIDC in pre-agreed formats. The applicable disbursement method will be reimbursement. The WB and the AIIB will finance 70 percent of the total project cost while the GoP will finance the balance 30 percent, which will include land acquisition and rehabilitation and resettlement (R&R) costs of project affected people.

24. Annual external audit of Project Financial Statements of the PMIDC and the MCs will be done by private Chartered Accountant firms based on TORs agreed with the WB and AIIB. The audited Project Financial Statements for each financial year will be submitted to the Bank within nine months from the end of the financial year.

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<sup>2</sup> Consolidated IUFRRs will comprise Project financial reports of PMIDC, AMC and LMC and other MCs drawing funds under Component 3.

25. The threshold for retroactive financing is 20 percent of the total loan amount and covers payments made for project activities no more than 12 months prior to the expected signing date of the Loan Agreement.

26. **Monitoring and Evaluation.** The MCs/PIUs will designate staff to monitor implementation progress. The PIUs will be supported and overseen by the PMU, which will have M&E specialists. Quarterly progress reports will be prepared by the PIUs and the PMU. Semi-annual progress reports will be submitted by the PMU to the DLG and WB/AIIB. Annual progress reports will provide comprehensive information on project implementation progress.

27. Both MCs have several e-governance initiatives that would be utilized for monitoring and evaluation of the project. Digital services currently operational in LMC and AMC include water and sewerage, property tax, public grievance redressal, trade licenses, human resources and finance. Urban governance and finance indicators will be mainstreamed into the MCs performance standards, monitored through upgraded e-governance systems and technical audits. The Component 1 will aim to strengthen the overall monitoring and evaluation systems and capacities of the MCs and each water utility.

28. **AIIB's Implementation Support.** AIIB team will: (i) provide technical and operational inputs to support the client's implementation of the project; (ii) periodically join the WB's supervision missions (virtually or otherwise) as necessary; and (iii) confirm that its Loan proceeds are used appropriately. The WB/AIIB teams may carry out more frequent implementation support missions and supervision of the design, construction, and environmental and social management activities in the early stages of the project implementation. AIIB will consider hiring a local consultant to help monitor implementation progress. This will be complemented by remote monitoring using available technologies. The WB will provide AIIB with copies of all relevant documents, reports, recommendations, no-objections and communications (whether external or internal) received or sent by the WB in connection with any project activity.

### 3. Project Assessment

#### A. Technical

29. **Project Design.** The project will shift the current water supply system in the two cities relying on groundwater sources to a new system that uses surface water sources. Water abstraction currently occurs mostly through borewells that are largely informal and spread unevenly across the cities. Existing water distribution lines connect borewells to water users. In most cases, water is supplied without treatment, which poses health risks. Shift to treated surface water will alleviate these risks.

30. The project will finance construction of WTPs in each city to meet the 30-year demand forecast. The system design, raw water collection and conveyance, WTP, clear water pumping and conveyance and OHSRs will follow standard guidelines issued by the GOI. From the OHSRs, water will be supplied to households using the existing water distribution network. Network enhancements recently implemented by the MCs under

AMRUT/SCM programs can take advantage of the surface water and deliver better quality of water and improved services. The WTP will be technology neutral and the bidders will be encouraged to use best proven technology that responds to demand variations and monitors various system parameters. The project is expected to lead to significant energy savings by reducing per capita water consumption and by using energy efficient equipment in the new system.

31. As part of project preparation, several prior State and city level policy reform actions have been passed: (i) a Government Order (GO) on Drinking Water Tariff and Metering Policy for MC, dated March 30, 2020; and (ii) a GO on developing and operationalizing CIP and AMS in MCs, dated March 31, 2020. Per the new Drinking Water Tariff policy, the MCs are encouraged to shift to volumetric tariffs taking into account projected incomes and expenditures of service delivery, reduce exemptions substantially, fix the level of subsidies to a defined share of the Inter-Governmental Fiscal Transfers (IGFTs), institute automatic annual tariff revisions based on O&M costs, develop a timebound plan to bring all consumers under meters within five years where surface water is provided, and publish an income and expenditure statement for WSS department or the utility, so that the true cost of services and the source of subsidies are disclosed to the public. The CIP and AMS policy complements the shift to accrual-based accounting in ULBs and requires the State Government and the MCs to legislate a state-level Asset Management Policy, institutionalize CIP and lifecycle asset management in MCs, prioritize preventive maintenance of urban infrastructure, develop options for climate resilient infrastructure development, establish an Asset Management Standing Committee and team in the MCs, and develop CIP and AMS over a five-year period. Both the AMC and the LMC are securing the ownership of their respective Municipal Councils to roll out the tariff and metering policy<sup>3</sup> and to establish autonomous city-based WSS utilities<sup>4</sup>. While the tariff and metering policy have been adopted by the Councils, the resolutions on WSS utilities have been pending due to COVID-19-related constraints. Therefore, as an interim measure, the Mayors of the MCs have given written undertakings to establish city-based WSS utilities. The GoP is now expected to authorize the MCs to set up utilities, under the Companies Act. In line with the CIP and AMS policy, the MCs are required to roll out proper planning and management systems for their capital assets through CIPs and AMSs.

32. **Operational sustainability.** Shifting from depleting groundwater to more secure surface water will ensure sustainable and climate resilient supply of potable water and ensure conservation and recharge of precious groundwater resources. The establishment of city-based WSS utilities with operational autonomy, ringfenced

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<sup>3</sup> “Resolution on Implementation of the New Water Tariff and Metering approved by the AMC Council on 02/25/2020 and LMC Council on 03/18/2020.

<sup>4</sup> “Resolution for formation of water utility” was submitted to the Council by the AMC Municipal Commissioner on April 6, 2020 and the LMC Municipal Commissioner on March 18, 2020.

finances and clear accountability framework is expected to strengthen institutional sustainability of WSS services. Over the course of the project, the capacity of the utility will be built to manage services and contracts, monitor private sector, engage customers, ensure social and environmental due diligence, etc. Financial sustainability of the MCs will be supported through Component 1a, which is aimed at strengthening ability to plan capital investments, maintain infrastructure and other assets adequately and enhance OSRs. With respect to financial sustainability of WSS services, the newly approved State-level policy on tariff and metering have been adopted by both MC Councils. Increased recovery of O&M costs in WSS will improve general finances of the MCs, too. The design of the DBOT contract factors in lessons learned from similar contracts in India. The DBOT contract design has a balanced risk sharing with the operator taking responsibility for sustainability of O&M. It encourages bidders to use best proven and most cost-efficient technology that responds to demand variations and monitors various system parameters. It ensures adequate resources for sustainable operations, specifies performance standards for a broad range of measures, provides incentives for performance and holds the operator accountable through clear legal and institutional mechanisms. These measures will ensure greater sustainability of the contract and the WSS operations.

## **B. Economic and Financial Analysis**

33. **Economic Analysis.** As a lead co-financier, WB has undertaken economic and financial analysis of the project. It focuses on Component 2 of project (*strengthening the water supply infrastructure in the two project cities of Amritsar and Ludhiana*) which accounts for a significant majority of the investments made. The economic analysis assessed the economic viability of project in terms of Economic Internal Rate of Return (EIRR) and Economic Net Present Value (ENPV). Since the alternative of not implementing the project for providing safe water was rejected, as several borewells are already at their limits in providing quality standards for drinking water, a cost effectiveness approach to economic analysis was adopted. Alternatives with different combinations of project design options were analyzed to determine the best solution with the lowest capital investment and operational costs, including alternative supply solutions, water sources, location of WTPs, layout of pumping solutions, and optimized sizing of the transmission network. The considered costs include economic cost of initial construction costs and economic O&M costs. The expected project benefits include improved health of water users and reduced coping costs of households and businesses who install costly point source treatment facility.

34. EIRR was estimated at 16 percent and ENPV at USD9,590 million based on a six percent discount rate. Sensitivity analysis has been carried out with respect to a 20 percent increase in capex, a 20 percent decrease in opex savings, 20 percent reduced benefits and to delayed benefits by one year. The EIRR remains above 13 percent for all the scenarios. The economic viability of the project will increase further if unquantifiable benefits such as environmental improvements are included in the analysis. The approach and detailed results are presented in Annex 3.

35. **Financial Analysis.** Financial analysis was conducted to estimate cost recovery

from tariffs; demonstrate tariff affordability; and to ascertain State's and MCs' financial resources to meet their financial obligation.

- (i) **Cost recovery:** Due to the absence of metering, current water tariffs are based on a flat monthly fee of INR100/month to INR140/month dependent on the residential plot size. Tariffs have not been revised for more than 10 years. Moreover, tariff-exempted households are about 50-70 percent of total connections, while collection rates are low. As a result, cost recovery from tariffs is low, and the fees collected are enough to recover only 21 percent of O&M costs in the AMC and 22 percent in the LMC. Cost recovery will improve with the implementation of volumetric tariffs, 24x7 service and universal metering. The Government Order on Drinking Water Tariff and Metering Policy has been passed and the respective MCs have also passed resolution for implementation of the tariffs. As per the new volumetric tariffs, the number of tariff exempted households has significantly been reduced and there would be moderate to significant increase in monthly bills for most users (primarily commercial users) depending on the usage as the tariff is progressive. Full cost recovery from WSS services is expected by the year 2024.
- (ii) **Tariff affordability:** Water charges are structured in a manner that are both equitable and ensures that the burden on consumers is in line with current levels of expenditure (on account of storage costs and point of source filtration), while ensuring that consumers receive potable water on demand. Currently, to compensate for the reduced service level, households bear the costs of owning and operating water tanks and filters. It is assessed that all households have water tanks to cope with irregular supply and more than 50 percent of households have point of source filters for treatment of water. The full cost of operating water tanks and filters is around four times the current average water supply tariff. As such, residents are willing to pay for improved service and cleaner water. The water bill is estimated to be below two percent of household income for households in the lowest income quintile.
- (iii) **State's financial resources:** The AMC and LMC are responsible for O&M of WSS systems within the urban areas of their respective cities. Capital expenditures are financed by the State and Central Governments (through programs like the AMRUT and the Smart City). A large part of the MC spending in WSS is on O&M of services. The MCs pay O&M costs through revenues raised from property tax, business license fees, user fees for WSS services, fee on electricity, duties on liquor, development fees, etc. The project will only increase the cost of operation marginally compared to the current operation of the tubewells. Power costs are a big share of the opex of water services. Power consumption with surface water is expected to be considerably lower than the current pumping from the tubewells. The current groundwater supply was audited for its energy footprint and the average efficiency of the existing pumps was estimated in the range of



about 31 percent, indicating high wastage of energy. The proposed surface water system will have an average efficiency of 80 percent. Overall, the electricity consumption is expected to be reduced by at least 30 percent compared to no-project scenario. GoP will provide counterpart funding and be the end borrower of the AIIB and WB loans. GoP has sufficient financial resources to contribute the required counterpart funds and service the debt incurred under the project. Counterpart funds of 30 percent of the total funding constitute less than one percent of the State's total budget revenues. Total project investment accounts for less than one percent of the State's total capital expenditures. The project is found to be fully manageable for the GoP.

### C. Fiduciary and Governance

36. **Procurement.** A Co-Lenders Agreement will be signed between AIIB and the World Bank for this project. As lead co-financier, the World Bank takes a lead role in procurement and provides services in accordance with the provisions of the Co-Financing Framework Agreement signed between AIIB and the World Bank in 2016 and updated in 2018.

37. Major capital investments under the project are through DBOT contracts for WTPs and associated transmission networks for the cities of Amritsar and Ludhiana. Component 3 will finance short to medium-term non-pharmaceutical interventions to address COVID crisis, including upgrading or rehabilitating health/communities' infrastructure or amenities, clean-up of city spaces/community amenities, provision and/or coordination of essential local infrastructure and social services. Apart from this, procurement shall include works, goods, non-consultancy and consultancy services. The procurement methods and arrangements are deemed fit-for-purpose, suitable to achieve value for money and in line with the Core Procurement Principles and Procurement Standards of AIIB's Procurement Policy.

38. PMIDC has no prior experience of implementing an externally aided project as a procurement entity. It has in the past provided guidance to various ULBs on tendering similar packages under government financing but has not acted as the tendering authority. PMIDC will recruit two procurement specialists in the PMU, who will be trained on World Bank Procurement Regulations to address the need for capacity building. Additional measures recommended by the WB are the establishment of a procurement-related complaint handling system and timely disclosure of procurement-related information. At the MC level, contract management practices are weak. Procurement and contract management staff at the PIU and the PMU should get trained on good practices in contract management. The contract management staff at the PIUs will get absorbed in the utilities after they are established to ensure smooth transition of contract management role from the MC to the utility.

39. Advance contracting is being used for some procurement activities, in line with the relevant WB procurement guidelines and safeguards rules.

40. **Financial Management.** The project Financial Management (FM) assessment has been conducted through the desk-review and based on the information provided in the WB's project document. MCs do not have adequate manpower and prior experience of handling contracts of size that they will be managing under the project and their FM capacity is limited. To mitigate this risk, the following measures have been undertaken: (i) a PIU has been created in each MC on September 18, 2020. The PIUs will hire a finance personnel. The Finance personnel will assist the Deputy Controller Finance of each MC, who will be in charge of the project finance functions. Similarly, a PMU has been created in PMIDC on September 18, 2020, to have an oversight role; (ii) project-specific bank accounts of PMIDC and MCs will ensure traceability of project transactions. Each of these bank accounts will be registered with the PFMS<sup>5</sup> to ensure transparency in the funds flow system; (iii) a system of periodic internal audits and annual external audits has been built into the project design to strengthen internal controls and accountability framework of the MCs. With these mitigation measures in place, the FM system of the project will be adequate to account for and report the sources and uses of project funds. The PMIDC will prepare a consolidated Annual Work Plan and Annual Budget. Project funds will be allotted by the DLG as budgetary grants to the PMIDC. The PMIDC will release the grants to project-specific bank accounts of the AMC and the LMC on a quarterly basis. All three entities use accounting software. The project will put in place a system of quarterly internal audit by a private firm of chartered accountants appointed by the PMIDC based on TOR agreed with the WB. The MCs will submit financial reports to the PMIDC in agreed formats. The PMIDC will submit to the Bank consolidated<sup>6</sup> quarterly IUFRRs in pre-agreed formats based on which the Bank will reimburse project expenditures to the GoI. The Comptroller and Auditor General of India (C&AG) will appoint a private firm of Chartered Accountants to audit the PMIDC. The statutory audit of the MCs is conducted by the Directorate of Local Fund Audit (DLFA) but due to backlogs in audit by DLFA, the Project Financial Statements of the MCs receiving project funds will be audited by the same firm of chartered accountants as PMIDC based on TOR agreed with the WB and AIIB.

41. **Disbursement.** The Bank will disburse funds to the Borrower (GOI) on the basis of eligible project expenditures pre-financed by GoP through budgetary grants and reported by consolidated quarterly IUFRRs submitted by the PMIDC. The applicable disbursement method will be Reimbursement.

42. **Governance and Anti-corruption.** AIIB is committed to preventing fraud and corruption in the projects it finances and may exercise its remedies under the Loan Agreement if the Loan proceeds involve any Prohibited Practice, as defined under the

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<sup>5</sup> PFMS is a standard system of fund flow and primary book-keeping designed for Centrally Sponsored & Central Sector Schemes

<sup>6</sup> This will include financial reports of the PMIDC, the AMC, the LMC and other MCs implementing the COVID-19 Crisis Response Component

Bank's Policy on Prohibited Practices or PPP (2016). AIIB will monitor the work related to tender document preparation and tender/proposal evaluation and award under its financing. Implementation will also be monitored regularly by AIIB's staff. AIIB reserves the right to investigate, directly or indirectly through its agents, any alleged Prohibited Practices relating to the project and to require the borrower to take necessary measures to address any issues in a timely manner, as appropriate. To the extent that the prohibited practices covered under WB's Anti-Corruption Guidelines are similar to those under AIIB's PPP, WB's Anti-Corruption Guidelines will apply to the project activities financed under the proposed AIIB and WB Loans. Detailed requirements will be specified in the Loan Agreement and the Project Co-lender Agreement.

#### **D. Environmental and Social**

43. **Environmental and Social Policy (including Standards).** This project will be co-financed with the WB as lead co-financier and to ensure a harmonized approach in addressing the environmental and social (ES) risks and impacts of the project, and as permitted under AIIB's Environmental and Social Policy (ESP), WB's Environmental and Social Framework (ESF) will apply to the project in lieu of AIIB's ESP. AIIB has reviewed WB's ESF and is satisfied that: (a) it is consistent with AIIB's Articles of Agreement and materially consistent with the provisions of AIIB's ESP, including the ES Exclusion List and the relevant ES Standards; and (b) the monitoring procedures that are in place are appropriate for the project.

44. **Categorization and ES Instruments.** The WB has categorized this project as "High Risk", which is equivalent to AIIB's Category A (if AIIB's ESP were applicable). An Environmental and Social Management Framework (ESMF) and a Resettlement Policy Framework (RPF) have been prepared and subsequently disclosed by the Borrower<sup>7</sup>, WB<sup>8</sup>, and AIIB<sup>9</sup>. A draft Environmental and Social Impact Assessment (ESIA), including an Environmental and Social Management Plan (ESMP) for subprojects that will be financed in the first year of implementation in Amritsar have been prepared and will be disclosed upon finalization. An ESIA for Ludhiana will also be prepared. The activities in Amritsar were covered by a draft Resettlement Action Plan (RAP), which was not finalized due to COVID-19 restrictions to collecting primary data. Thus, RAPs for both Amritsar and Ludhiana are to be prepared in line with the RPF. These draft and final instruments and their summaries in local language, Gurmukhi, will also be disclosed on AIIB's project webpage.

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<sup>7</sup> <https://pmidc.punjab.gov.in/projects/world-bank/> and <http://mcludhiana.gov.in/IMPUpd.aspx>

<sup>8</sup> <https://projects.worldbank.org/en/projects-operations/document-detail/P170811>

<sup>9</sup> <https://www.aiib.org/en/projects/details/2020/proposed/India-Punjab-Municipal-Services-Improvement-Project.html>

45. **Environmental Aspects.** The proposed project will bring significant benefits to the local population in Ludhiana and Amritsar by shifting water supply from heavily arsenic contaminated ground water to treated, safe surface water. The environmental risk of the project is classified as “substantial” because of the risks and impacts related to: (i) construction of water intakes from canals; (ii) construction of water treatment plants; (iii) laying of clean water transmission lines between WTPs and OHSRs; and (iv) construction of OHSRs and repairs of existing OHSRs; (v) sludge from the WTPs during operation phase; (vi) emission of dust, noise, debris, waste products during construction; and (vii) health and safety of workers and traffic disruption during construction of WTPs and OHSRs. Laboratory tests of the canal water showed that the water does not have harmful materials and can be potable after treating with a conventional water treatment technology. Sludge generated after water treatment is safe and can be used as fertilizer after appropriate laboratory tests. Sludge that is not suitable for use will be disposed following guidelines for safe disposal. The activities would be confined within the city area of Ludhiana and Amritsar. There are limited environmental risk under component 1, 3 and 4. The specific sites, scale and designs of the two WTPs and several OHSRs are not fully known at this stage. These risks will be mitigated through the preparation of Environmental and Social Impact Assessments (ESIAs) and ESMPs once the detailed designs of the subprojects are finalized.

46. **Climate Change.** This project has been screened for short and long-term climate change and disaster risks using Acclimatise Aware as well as in detail review during project preparation. The project is exposed to high overall climate risk, in particular the impacts of climate change on precipitation, flood, and water availability as detailed in Annex 4. The project aims to support Punjab State Action Plan on climate change mitigation and adaptation and build climate resilience through the adaptive measures in component 1, 2 and 3. As described in Annex 4 these measures aim to reduce vulnerability to the impacts of climate change through the conservation and better management of water resources, improve water use efficiency, control water pollution and minimize wastage, as well as strengthening local disaster response systems and developing disaster response plans to build disaster risk resilience, including those induced by climate change. Following the joint MDB method for adaptation finance tracking, AIIB’s financing for some portions of these components (17.72% of AIIB’s total financing of USD105 million) can be considered as climate adaptation finance.

47. **Social Aspects.** The proposed project will bring significant benefits to the local population in Ludhiana and Amritsar by shifting water supply from heavily arsenic contaminated ground water to treated, safe surface water. The likely social risks and impacts arise from: (i) acquisition of large private land parcels (40 and 50 acres of farm land respectively in Amritsar and Ludhiana) for construction of WTPs with potential land and livelihood related impacts; (ii) temporary economic displacement of street vendors, hawkers, roadside establishments with loss of income due to civil works including for laying the transmission lines through the congested urban localities (119 km in Amritsar and 165 km in Ludhiana); (iii) adverse impacts on squatters and encroachers who occupy stretches of public land/RoW; (iv) impacts due to labor influx and migrant laborers, including Gender-Based Violence (GBV) and Sexual Exploitation and Abuse

(SEA); (v) exclusion of vulnerable communities from project benefits and lack of meaningful engagement with communities, particularly vulnerable groups such as single women, female-headed households, people with disabilities, the elderly, minorities, the urban and migrant poor, people living in low-income settlements and slums, etc.; and (vi) COVID-19 related restrictions for stakeholder engagement.

48. The adverse temporary and permanent livelihood impacts will be mitigated according to the RPF through site-specific RAPs. A standalone Stakeholder Engagement Plan (SEP) covering both cities has been prepared and disclosed in consultations with relevant stakeholders, including women and vulnerable groups. A SEA/SH Action plan which will cover the whole project is under preparation. The Project's Grievance Redress Mechanism (GRM) will include specific protocols to address the SEA/SH related complaints, emphasizing the sensitivity and confidentiality of such complaints and security of the complainants.

49. The ESIAAs, ESMPs and site-specific RAPs will be updated/prepared as detailed designs of the subprojects are finalized. The project's Environmental and Social Commitment Plan (ESCP) will specify the requirement for the Borrower to implement the ESMF, as subprojects are selected and designed throughout implementation. All ES documents will be disclosed in a timely manner.

50. **Associated Facilities.** The project will screen planned activities under other ongoing projects (e.g., AMRUT and SCM projects in both cities) which may be considered as associated facilities. It will screen all water supply projects in the two MCs for possible associated facilities. Any associated facilities that will be identified and meet the requirements of WB's ESSs will adhere to the E&S risk identification and mitigation process spelled out in the project's ESMF and RPF, to the extent that the PMIDC has control or influence over such Associated Facilities. Where the requirements of the WB's ESSs cannot be followed in associated facilities, PMIDC will provide the WB details of the relevant legal, regulatory, and institutional factors to demonstrate the extent to which it cannot exercise control or influence over the Associated Facilities. AIIB will rely on WB's assessment on the ESSs on Associated Facilities.

51. **Capacities of PMIDC and the MCs.** The capacities of the PMIDC and the MCs in implementing the project's environmental and social mitigation measure are limited. An Environmental and Social Management Unit (ESMU) will be established in the PMU with specialists having relevant skills, experience, and competence to oversee implementation of E&S plans and instruments. The PIUs in the two MCs will have E&S experts for day-to-day implementation of the ESMP. A Project Management Consultant (PMC) will also be recruited to work under the PMU and will have qualified E&S specialists to monitor the implementation of the E&S management plans by the DBOT contractors.

52. **Occupational Health and Safety, Labor and Employment Conditions.** The ESMP will be used to ensure that all required mitigation and management measures falling under contractors and their subcontractors' responsibilities are appropriately included in bid and contract documents. Additional measures may be undertaken in line

with the prevailing restrictions related to COVID-19 and related GOI regulations at the time. As a category A project with high level risk, a quarterly monitoring report at least on the implementation of ESMP for the project and ESMPs for each subproject under the component 2 needs to be prepared by PIU and be shared with AIIB.

53. **Stakeholder Engagement, Consultation and Information Disclosure.** Two rounds of consultations took place in the periods of August-October 2019 and January-February 2020. Diverse and inclusive methods to enhance meaningful stakeholder engagement were used. 174 stakeholders in both cities were covered during the first round, while the second engaged 129. This included meetings with project-affected people (PAPs), ward councilors, mayors, non-governmental organizations, resident welfare associations, street vendors and vulnerable PAPs. The project is perceived well by PAPs, while their concerns are/will be taken into consideration during the finalization of the E&S instruments. As the specific sites, scale and designs of the two WTPs and several OHSRs under the component 2 of the project are not fully known at this stage, additional meaningful consultation with PAPs will be carried out during the preparation of Environmental and Social Impact Assessments (ESIAs) and ESMPs once the detailed designs of the subprojects are finalized. Future stakeholder engagement will take place in strict compliance with the measures to control the spread of COVID-19.

54. **Project Grievance Redress Mechanism.** A three-tiered GRM for all stakeholders has been designed. Each city will have a dedicated Grievance Redress Committee (GRC) which will include civil society and PAPs representatives, along with a community leader. Communities and individuals who believe that they are adversely affected by the project will be able to submit their concerns and/or complaints to the GRCs as the project level GRMs for their resolution. The GRCs will also provide an opportunity for remote submission and documentation of grievances to reduce potential impacts of COVID-19. Information about GRCs and the Project-Affected People's Mechanism (PPM) of AIIB will be disclosed by the PIUs and AIIB in English and local language in a timely manner.

55. **Applicable Independent Accountability Mechanism.** Pursuant to AIIB's agreement with WB, the WB's ESF will apply to this project instead of AIIB's ESP. The WB's corporate Grievance Redress Service (GRS) and its Independent Accountability Mechanism, the Inspection Panel, which reviews the WB's compliance with its policies and procedures, will handle complaints relating to ES issues that may arise under the project. In accordance with AIIB's Policy on the Project affected People's Mechanism (PPM), submissions to the PPM under this project will not be eligible for consideration by the PPM. Information on WB's corporate GRS is available at <http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service>. Information on WB's Inspection Panel is available at <http://www.inspectionpanel.org>.

## **E. Operational Policy on International Relations**

56. The proposed project interventions will be located on the canals drawing water from Sutlej and Ravi rivers in the state of Punjab, which are part of the Eastern rivers in

the Indus River system. The Indus Waters Treaty between India and Pakistan provides the Eastern Rivers (including the rivers Ravi and Sutlej) are available for the unrestricted use of India, with a few specific exceptions. The source of the surface water supply in Ludhiana will be the Sirhind Canal which offtakes from Ropar Headworks on the Sutlej River. The canal has an authorized capacity of 12,620 cusecs and length of 59.44km (at the tapping point) with a cultivable command area of 1.359 million hectares. Expected abstraction of raw water allocation is 300 cusecs. The source of the surface water supply in Amritsar will be the Upper Bari Doab Canal (UBDC), which has an authorized discharge of 9,000 cusecs and a cultivable command area of 0.573 million hectares. The expected abstraction of raw water allocation is 200 cusecs.

57. The Sutlej and Ravi Rivers are International Waterways within the meaning of AIIB's Operational Policy on International Relations (OP on IR). The WB has applied its own similar Operational Policy regarding Projects on International Waterways (OP 7.50). Under OP 7.50, notifications were sent to China and Pakistan by the WB on April 1, 2020, with a request to respond with any comments by May 1, 2020. China responded to the WB on April 15, 2020 with no objection to the Project. Pakistan did not respond. Given the nature and location of the proposed Project activities, WB determined that these proposed investments would not adversely affect the quality or quantity of water flows of the Ravi and Sutlej rivers to other riparians or adversely affect other riparians' possible water use. AIIB has reviewed and is satisfied with WB's assessment on the project's impact on these rivers. Consequently, in accordance with the OP on IR, AIIB may rely on the WB's assessment. AIIB is also satisfied with the notification process that has been followed for the project.

#### F. Risks and Mitigation Measures

58. The Bank assigns a Medium overall risk rating to the proposed project, as summarized in the table below.

**Table 2: Summary of Risks and Mitigating Measures**

<b>Risk Description</b>	<b>Assessment Ratings (H/M/L)</b>	<b>Mitigation Measures</b>
<b>Technical design.</b> The project's technical design becomes too complicated.	Medium	Project design of investing in water treatment plants, overhead reservoirs and transmission lines are not overly complicated.
<b>Institutional capacity.</b> PMIDC and two MCs lack experience in implementing the WB supported projects. Other potential challenges include inter-agency	High	The project will provide the required TA and training to strengthen institutional capacity of implementing agencies. A performance-based private sector contract for water investments is

coordination between the PMIDC and the two MCs.		also expected to mitigate the institutional risk.
<b>Institutional reform.</b> Delays in establishing utilities could negatively affect project implementation and operations of water investments.	Medium	Both Mayors confirmed establishment of utilities, and a resolution was submitted to the municipal councils. The project will provide the necessary TA to help establish the utilities and support the transition.
<b>Stakeholder.</b> Limited political buy-in for implementing volumetric tariffs in the cities, which could affect revenue generation of the MCs and the WSS utilities.	Medium	Key policy reforms on water tariff and metering have already been passed at the State level. The MC Councils have adopted tariff reforms and establishment of city-based WSS utility.
<b>Environmental and Social.</b> Limited institutional capacity for implementing project related ESMPs at state and city level. WTP land acquisition in Ludhiana and COVID-19 restrictions could delay implementation.	High	An Environmental and Social Management Unit (ESMU) will be established in the PMU and will be assisted by qualified Project Management Consultant (PMC). The design of the TA and capacity support under Component 1 will help for capacity building and strengthening implementation of the project. PMU will be assisted by qualified PMC E&S specialists who will monitor overall project implementation and land acquisition.
<b>Overall</b>	Medium	



### Annex 1: Results Monitoring Framework

<b>Project Objective:</b>	To support strengthening of urban governance, finances, and delivery of sustainable water services in the cities of Amritsar and Ludhiana.								
Indicator Name	Unit	Base-line Data 2020	Cumulative Target Values				End Target	Frequency	Responsibility
			Year 1	Year 2	Year 3	Year 4			
<b>Project Objective Indicators:</b>									
People provided with access to safely managed water supply	Number (million)	0	0	0	0	3.0	3.0	Yearly	PMU/PIUs
Improved AMC operational efficiency as measured by enhancement in e-governance	Y/N	No	No	No	Yes	Yes	Yes	Yearly	PIU
Improved LMC operational efficiency as measured by enhancement in e-governance	Y/N	No	No	No	Yes	Yes	Yes	Yearly	PIU
Water utility established in Amritsar	Y/N	No	Establishment of autonomous	Core staff positions in the	Transfer of all material	Yes	Utility established and	Close project of	PIU

			utility (i. legal incorporation, ii. appointment of BoD, including at least 30% women, iii. delegation of financial and operational powers to BoD and iv. rule based subsidy from MC)	company filled with full time staff with minimum tenure	assets and contracts from the MC to the utility on sale or lease		operationa l		
Water utility established in Ludhiana	Y/N	No	Establishment of autonomous utility (i. legal incorporation, ii. appointment of BoD, including at	Core staff positions in the company filled with full time staff with minimum tenure	Transfer of all material assets and contracts from the MC to the utility on	Yes	Utility established and operationa l	By Term Review Mid	PMU/PIU

			least 30% women, iii. delegation of financial and operational powers to BoD and iv. rule based subsidy from MC)		sale or lease				
<b>Intermediate Results Indicators:</b>									
Share of professional MC staff receiving training in technical and professional development disaggregated by gender	Percentage	0.00	20.00	20.00	30.00	40.00	50.00	Yearly	PIU/PMU
Percentage of Board Directors in Amritsar water utility who are female	Percentage	0.00	0.00	0.00	0.00	0.00	30.00	At close of project	PIU
Percentage of Board Directors in Ludhiana water utility who are female	Percentage	0.00	0.00	0.00	0.00	0.00	30.00	At close of project	PIU

Number of water treatment plants built and operational	Number	0.00	0.00	0.00	2.00	2.00	2.00	Once during project lifetime	PIU
Number of storage facilities built/rehabilitated in Amritsar	Number	0.00	10.00	20.00	40.00	60.00	90.00	Once during project lifetime	PIU
Number of storage facilities built/rehabilitated in Ludhiana	Number	20.00	40.00	50.00	70.00	90.00	110.00	Once during project lifetime	PIU
Reduced energy consumption of the operated water supply system in Amritsar (as a result of rehabilitation)	Megawatt hour	0.03	0.03	0.03	0.02	0.02	0.02	Yearly	PMIDC/PIU
Reduced energy consumption of the operated water supply system in Ludhiana (as a result of rehabilitation)	Megawatt hour	0.08	0.08	0.08	0.03	0.03	0.03	Yearly	PMIDC/PIU
Number of MC receiving support under Component 3	Number	0.00	5	12	12	12	12.00	Yearly	PMU/PIU



## Annex 2: Detailed Project Description

1. Amritsar and Ludhiana MCs currently supply ground water using a combination of deep and shallow tube wells (800 in Amritsar and 1140 in Ludhiana) unevenly spread across the city. The tube wells are in the middle of urban habitations, some close to drains and informal solid waste dumps and are not protected. The water supply system in the two cities comprises decentralized micro-systems with distribution lines connecting individual tube wells directly to nearby households, commercial establishments and other bulk water users. A fixed tariff for water is charged. However, a large share of households is exempted. The current system is inefficient and allows for a lot of water loss and wastage. As a result, the cities of Amritsar and Ludhiana are experiencing over-exploitation of scarce ground water resources, low financial sustainability, and excessive water supply resulting in higher power charges and high volumes of wastewater.

2. Water quality is a serious concern as 72 percent of water samples tested in Amritsar are contaminated with Arsenic, 27 percent of which have more than double the permissible limit. In Ludhiana, 30 percent of samples are contaminated with arsenic, 14 percent with selenium and 22 percent with nitrate.

3. The GoP has taken a decision to make major MCs, starting with AMC and LMC, responsible for future asset creation and shared capital expenditure. To improve the quality of water service delivery, cities need large capital investments and significant change in service delivery practices. Key institutional actions to achieve this in the water sector are (i) full delegation of service delivery functions to the MCs and enhanced commitment of the MC to improving WSS service; (ii) modern governance structure for WSS operations; and (iii) increased financial sustainability, especially focusing on full O&M cost recovery.

4. The project is aimed at improving service delivery in the AMC and the LMC by strengthening municipal governance and finance, service delivery systems and capacities, and through investments in bulk water production. The project has four components:

5. **Component 1 - Strengthening Urban Service Delivery Systems.** This component will support two interventions: (i) strengthening the systems and capacities of AMC and LMC in a select number of priority areas that enhance their service delivery capabilities, and (ii) strengthening water service management by supporting the establishment and operationalization of a city-based WSS utility in each city.

6. **Sub-Component 1a - Strengthening urban governance and finance systems.**

- **Enhancing efficiency of MC operations through e-governance and administrative improvements.** The PMDC has taken up an ambitious task to drive e-governance (*m-Seva*) across ULBs in the State. There are 167 ULBs in the State of Punjab offering digital services, ranging from ULB dashboards, WSS billing and collections, new service applications, public grievance redressal, trade licenses, human resource management, etc. The development and deployment of *m-Seva* applications is progressing swiftly across all the ULBs. However, adoption has been slow in large corporations such as

Amritsar and Ludhiana, where the ULBs had already started with their own version of e-governance modules. The project will support the following governance-enhancing actions: (i) migration of data to the common *m-Seva* platform; (ii) reducing time and processes to issue building permits and make contractor payments; (iii) customization of processes for efficient property tax administration and WSS bill collection through the *m-Sewa* modules and establishing a GIS unit; and (v) streamlining trade license and advertising tax.

- **Right skilling and strengthening MC staff capacity.** ULBs face the challenge of the availability of trained staff to handle their day-to-day citizen service demands. Though there are initiatives for increasing revenue collections, lack of dedicated staff is a big constraint. As both MCs move into *m-Sewa* domain, effective capacity building will be a critical factor contributing to successful implementation. The project will finance TA, training and studies to introduce or strengthen competencies in areas such as project management, GIS, PFM, environmental and social management, and IT in the MCs, including supporting organizational changes, where needed, as well as strengthening professional development opportunities for the staff.
- **Developing and operationalizing a CIP and an AMS.** Amritsar and Ludhiana MCs lack established Asset Management (AM) policies, strategies or plans as well as dedicated teams for strategic AM. Demand management is sporadic and intermittent or nonexistent. The MCs have no experiences or knowledge on the concept and procedures of lifecycle AM or CIP. Neither MC has a CIP or a strategic infrastructure development plan presently. Lack of detailed asset records and complete and reliable asset registers hamper effective AM and CIP. The GoP has recently passed a State-level CIP and AMS Policy for MCs that would help establish the regulatory framework to ensure MCs adopt and implement good AM and CIP practices, starting with the AMC and the LMC. The project aims at incremental improvements in this area, building on the State-level Policy. The project will provide financial and technical support to help the two MCs move away from current reactive AM practices to preventive AM and further towards climate safe and disaster resilient infrastructure development modalities by institutionalizing CIP processes, and developing reliable asset registers and lifecycle approach on asset management. The project will support the following: (i) establishing a Standing Committee and hiring a firm to develop the AMS and CIP; (ii) verifying and inventorying major assets of the MCs, such as buildings, land, plants, networks, equipment, etc.; (iii) populating the asset register with detailed technical data, value, amortization, etc.; (iv) developing and adopting repair and maintenance plans with budgets for major assets; (v) establishing policies, priorities and project selection criteria and undertaking baseline surveys for the CIP; (vi) preparing a five-year CIPs and associated budget documents, to be adopted by the MCs.
- **Enhancing OSRs through strengthening property tax administration.** The performance of Punjab on property tax collection is poor compared to other Indian states. Ludhiana collects about INR 375 per capita and Amritsar INR 166 per capita compared to Ahmedabad at INR 804 or Pune at INR 2676 per capita. Punjab's current flat-rate system of valuation does not provide for linkage between tax rates and the prevailing market values of properties rendering the tax system non-buoyant and inequitable. Punjab's flat

rates were prescribed in 2014, since then there has been no revision in the rates. While reform in this area requires intervention at the State-level, including changes to legislation, such as the Punjab Municipal Corporation Act 1976, there are several other areas of property tax administration that require complementary strengthening to improve the yield even from the existing tax base. The project will finance TA, training, equipment and studies to support (i) strengthening property tax administration systems in the AMC and the LMC by improving ongoing exercises to complete GIS property mapping, (ii) linking the property database to the property tax register and other utilities; (iii) strengthening billing, collection and enforcement systems.

- **Strengthening social accountability, citizen outreach and grievance redress systems.** Through the project, multiple channels of grievance redress that operate presently will be streamlined, simplified and made more effective in terms of follow ups and resolutions. The project will finance TA, training, equipment and studies for establishing norms and standards for citizen outreach and grievance redress, IT enhancements to the citizen outreach and grievance redress platforms and addressing skilling and capacity constraints. In addition, the project will pilot discreet social accountability tools to improve responsiveness and effectiveness of service delivery. The project will finance TA to carry out social audits and citizen scorecards to track institutional and infrastructure improvements to responsiveness. The TA will also address skill gaps and capacity constraints within the MCs to undertake social accountability initiatives on a sustained basis.

7. **Sub-Component 1b: Strengthening Water Service Management.** This subcomponent will improve WSS institutional arrangements. At present, WSS engineering services are managed by a municipal department. Financial issues are dealt with by the central budgetary system. WSS functions lack operational and financial autonomy, have poor service delivery orientation and are unable to attract competent staff. There is an excessive reliance on ad hoc and non-transparent subsidies. Based on Indian and global experience, the MCs and the GoP have decided to house WSS functions in a MC-owned company incorporated under the Companies Act. The WSS Company will be governed by a Board of Directors (BoD) and will follow corporate governance norms under the Companies Act. The MCs will delegate operational and financial powers to the BoD. The Company will be responsible for service delivery and sustainability in operations. It is expected that, while the utilities will be legally established and a Board of Directors appointed in year one, making them fully operational and functional will require continued support and is expected by year four. Once staff and systems are in place, WSS operations will be taken over by utilities. A transition plan is being prepared for each MC. Necessary TA will be in place to guide the transition. This subcomponent will support the following activities:

- **Establishment of WSS utilities in Amritsar and Ludhiana MCs.** The project scope will include setting up professionally managed WSS utilities and strengthening their capacities with respect to staffing, accountability, engineering, contract management, M&E, citizen outreach, billing and collection. Under the project, the following will be implemented to strengthen WSS services:



- (i) **Organizational structure and staffing:** The project will finance TA, training and equipment that will support the development of systems and standard operating procedures for WSS management. It will develop professional practices in the WSS utilities, including customer orientation, service level benchmarks, accounting, budgeting, auditing and financial management procedures. The project will provide TA for executing a PPP in water supply management. The WSS utility will enter into performance-based contracts with private operators for upgrading service levels and O&M. The WSS utility will have responsibilities for (i) contract and performance management; (ii) long term planning of water and supply and sewage services; (iii) financial planning of WSS operations; (iv) customer feedback and interface; and (v) interface with statutory bodies like the Pollution Control Board. The utility company will develop an organization chart, staffing structure and HR policy. The MCs may second staff to the utility to meet part of the requirements. The utility will have the freedom to recruit/contract a multi-disciplinary staff (technical, financial, IT, customer service and safeguards) as per the approved organization chart, as compared to the current practice where the department is only staffed with engineers. The project will create an action plan so that at least 30 percent of the members of the Board of the utilities are women. The action plan will also include assessment of capacity and training needs of women professionals and provision of training and skilling opportunities linked to career advancement. The project will also undertake small-scale outreach activities in local engineering colleges/training institutes and organize recruitment drives to encourage job applications from young women professionals in water and wastewater utilities.
- (ii) **Accountability and transparency:** The Board of Directors will develop a performance evaluation framework for the company based on the WSS performance standards. The MCs may also link the subsidy provided to the company to performance standards. The company will develop a disclosure plan. The company will customize and maintain the existing online e-governance platform available in the MC for customer grievance redressal and report status of citizen complaints to the MC regularly. The company will conduct annual customer satisfaction surveys and publish findings on the MC website to promote social accountability. The company will publish daily, weekly and monthly operational reports with operational data such as quantum of water/wastewater produced/supplied/collected/treated, water quality, disruptions, complaint redressal, etc. The company will also prepare monthly, quarterly and annual performance reports, such as on coverage, quality of service, billing and collection, financial performance and customer feedback, as well as publish audited annual reports. The project will finance communications initiatives to enhance citizen engagement and support water conservation, demand management, benefits of surface water, cost recovery and other behavior changes associated with WSS services.

- (iii) **Revenue model and financial sustainability:** As both MCs currently manage WSS operations, water revenues are credited into the municipal budget. Currently, a significant share of surpluses from the MCs' general budget is used to subsidize WSS operations. Improvement in WSS cost recovery will reduce the subsidies provided by the MC. The company will have two sources of revenue: (i) user charges (tariff) and (ii) subsidy from the MCs.

The revision and setting of tariffs is supported by a corresponding Statewide water tariff and metering policy passed by the GoP recently. The MCs would be able to operationalize this in their jurisdiction through fixing and revising their own water tariff rates. Following this, the Municipal Councils of Amritsar and Ludhiana have adopted resolutions to implement volumetric tariffs and universal metering for WSS services, as well as to establish a city-based utility to manage WSS services. The MCs authorized incremental block volumetric tariff for WSS which will include concessions for urban poor. This will mark a significant improvement in cost recovery when compared to the current practice of a flat monthly tariff with exemptions for more than 50 percent of the customers. Under the proposed arrangement, tariff fixation will continue to be the responsibility of the MC, based on recommendations of the Board of Directors of the company. Several consultations were carried out with the Municipal Council members and Mayors regarding tariff and metering policy. The State-level water supply tariff and metering policy has recommended automatic yearly tariff increases. Financial modelling was carried out and O&M cost recovery of water is envisaged over time, with modest volumetric tariffs and improved collection. As MCs will no longer subsidize water at the current level of 80percent of O&M, MC finances, with property tax improvements, are expected to improve considerably.

The Project will support transition activities, one-time resolution of pending customer disputes on billing, arrears and connections and opening financial statements for WSS utilities. It will provide TA for business planning, cost recovery, tariff planning and modern billing and collection systems.

- **Communication campaigns.** The project will finance communications initiatives to enhance citizen engagement and support water conservation, demand management, benefits of surface water, cost recovery and other behavior changes associated with WSS services. The project will also support outreach activities in local engineering institutes to encourage job applications from young women professionals in WSS utilities.

8. **Activities under Component 1 aim at grounding and reinforcing State level urban policy and institutional reforms initiated or already underway at the MC level.** To ensure that these are owned, implemented and sustained at the city level, a Memorandum of Understanding (MoU) will be signed between the PMIDC and the two MCs. The MoU will be based on a Performance Framework setting out key institutional reform areas, targets and outcomes for each MC. The key results areas will focus on: (i) enhancing institutional sustainability of WSS, as demonstrated through establishment and operationalization of water utilities and more effective

financing of WSS services; (ii) enhancing financial sustainability of MCs, as demonstrated through development of an asset management registry and CIP and strengthening of property tax collection; and (iii) strengthening municipal systems and capacities, as demonstrated through strengthening MC functional and organizational structures.

9. **Component 2: Improving Water Supply Infrastructure.** The project will invest in raw water systems, a water treatment plant and core infrastructure (main clear water sump/tanks, transmission lines and OHSRs in both Amritsar and Ludhiana). This will support the urgent need to shift from contaminated and depleting groundwater sources to reliable surface water supply. Both MCs depend on groundwater-based tube wells that face major quality concerns, for their entire bulk water supply. A switch to surface water supply ensures security of supply and potable water quality. Further, the project will also support several facets of service delivery improvement. It will strengthen transmission and storage infrastructure that is necessary for 24/7 supply in the future.

10. **Overall Design and Scope:** The strategy for improving the water services in Amritsar and Ludhiana is to switch to surface water and primarily draw from the UBDC and Sirhind canals passing through the cities. These canals have off-take points from regulators established on the rivers Ravi and Sutlej located upstream respectively. The raw water drawn from these canals will be pumped to WTPs constructed under the project. The treated water will be collected in clear water tanks within WTP premises and supplied through pumping to different neighbourhoods in the city to deliver water at the local service reservoirs connected via newly built bulk transmission networks. The design of WTPs' capacity will take into account the current usage levels of 200-300 liters per capita per day (lpcd), which is expected to reduce over time to 150 lpcd (national standard for large cities in India). The system would be constructed to deliver high per capita supply (over 150 lpcd) initially and can remain supplying at a service level of 150 lpcd even for higher population growth rates up to the year 2055. This approach will eliminate further investments till the year 2055. The strategy is also to reduce consumer demand over time through appropriate tariffs to discourage wastage, implement good communication campaigns to change behaviour, and engage citizens on appropriate water use.

Investments proposed under the project include raw water systems, water treatment, new service reservoirs and transmission of treated water to local reservoirs (new and old). The proposed systems will eliminate the use of poor-quality ground water. A fraction of the existing tube wells will be retained to supply minimum water requirements during any temporary canal closures. The treated bulk water will be supplied via the existing water distribution network, which is old but in usable condition. Replacement of the piped network is not proposed under the project. The cities will use various sources of funding to replace old leaking pipes over time, starting from high density old city areas to low density recently developed areas. The new distribution network, to be developed by the cities, will also have provisions to provide water meters and district metered areas (DMAs) to manage 24/7 supply with minimum NRW.

- (i) **Ludhiana City:** The topography of Ludhiana city and its surrounding areas is typically representative of an alluvial plain. The city is centrally located in the plain region which is marked for its flatness and featurelessness. The elevation of the city

with reference to Mean Sea Level (MSL) ranges between 248 meters in the East to 244 meters in the West in a gentle slope.

**Water Demand:** Although the city has experienced high population growth due to rapid industrialisation in the past, evidence indicates that this growth has been stable in the last 3-5 years and a good proportion of youth are said to be migrating out of Punjab. The water demand based on historic population projections are listed below:

**Table 2: Ludhiana historical assumptions**

Average consumption	150 LPCD
Water treatment losses	5 percent
Transmission and distribution losses	15 percent
Industrial workers	2 percent
Service level for Industrial workers	60 LPCD
Floating population	1 percent
Service level for floating population	20 LPCD
Non-domestic demand	5 percent

**Table 3: Estimated future population and water demand**

Parameter	Unit	Ludhiana
Population 2019	Millions	1.896
Population Base Year 2025	Millions	2.076
Population Intermediate Year 2040	Millions	2.514
Population Ultimate Year 2055	Millions	2.935
Raw Water Demand		
Base Year 2025	MLD	408
Intermediate Year 2040	MLD	495
Ultimate Year 2055	MLD	578
Treated Water Demand		
Base Year 2025	MLD	388
Intermediate Year 2040	MLD	470
Ultimate Year 2055	MLD	549

**Source:** The source of the surface water supply will be the Sirhind Canal, which offtakes from Ropar Headworks on the Sutlej River. Ropar wetland is fed by the Sutlej River which is regulated from Bhakra-Nangal dams (Govindsagar Dam Project) further upstream located at the border of Himachal Pradesh. Sirhind flow release and regulation is from Ropar head regulator which is further controlled from Bhakra-Nangal Dams. Sutlej originates on the northern slopes of the Himalayas in the Tibetan Plateau, in China, initially flowing north-west then turns southwards entering Himachal Pradesh and flows into Punjab and Pakistan. The Sutlej waters are shared by China, India and Pakistan and their use is regulated between Pakistan and India based on the Indus Waters Treaty. The source is from Ropar

Head Regulator-Bhakra-Nangal Dams. The canal has an authorized capacity of 12620 cusecs and length of 59.44 Km with a cultivable command area of 1.359 million hectares. Expected abstraction of water allocation being requested is 300 cusecs. As such, the new water system will draw water from the Sirhind Canal (at the tail point). Sirhind is the main feeding canal to Sidwan canal close to the canal junction point where it splits into three branches located close to Rampur village.

**Investments Proposed:** A conventional WTP with the capacity of 580 MLD (ultimate calculated demand in year 2055) is proposed on 50 acres of land close to the canal. The raw water tapping point is planned to be close to the WTP, which is designed to be a conventional treatment system comprising of aeration, coagulation, flocculation, sedimentation, rapid gravity filtration and chlorination for disinfection including necessary controls for plant operations connected to a SCADA system. However, since the operator will design, build and operate, it is likely that the system will use the latest technologies. A total capacity of about 8,200 KW pumping system is proposed for raw water and treated water with electronic controls to enable remote operations.

The hydraulic design of the scheme is planned by dividing Ludhiana city into North and South zones separated by the railway line. The service reservoirs will be fed by separate transmission pipeline networks of about 165 Km length of varying diameters covering both North and South zones. Mild Steel (MS) pipes with internal and external lining against corrosion are proposed for sizes 1,000 mm to 1,600 mm and Ductile Iron Pipes of K9 Class are proposed for sizes 900 mm and below. The transmission system will deliver the treated water into service reservoirs of 1 ML to 2 ML capacities with 20 m – 25 m staging height. The North zone comprises of 58 service reservoirs and the South, 74 reservoirs. Necessary flow and pressure monitoring instrumentation including remote operations of reservoir inlets and outlets connected to a centralised SCADA system are also proposed.

- (ii) **Amritsar City:** The City has an area of 210 Sq Km and is fairly flat, gently sloping from north to east with an elevation of 233 m MSL to about 226 m MSL in the south-west.

**Water Demand:** The City's historic population has been used to estimate the future population and the following assumptions on service levels are considered in estimating the water demand.

**Table 4: Amritsar historical assumptions**

Average consumption	150 LPCD
Transmission and distribution losses	20 percent
Daily tourist population	200,000
Tourists staying overnight	30 percent
Demand for day visit tourists	40 LPCD
Demand for overnight staying tourists	200 LPCD

Non-domestic demand	5 percent
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**Table 5: Amritsar estimated future population and water demand**

Parameter	Unit	Amritsar
Population 2019	Millions	1.315
Population Base Year 2025	Millions	1.451
Population Intermediate Year 2040	Millions	1.815
Population Ultimate Year 2055	Millions	2.211
Raw Water Demand		
Base Year 2025	MLD	304
Intermediate Year 2040	MLD	375
Ultimate Year 2055	MLD	454
Treated Water Demand		
Base Year 2025	MLD	289
Intermediate Year 2040	MLD	356
Ultimate Year 2055	MLD	431

**Source:** UBDC which has a cultivable command area of 0.573 million hectares is proposed as the source of water supply. The irrigation department has provided a no-objection to abstract a continuous supply of 200 cusecs of raw water from the UBDC canal near Vallah village within the city limits for this project. The UBDC system was remodelled during 2001-2005 to ensure full utilization of stored waters of river Ravi, as a result of commissioning of Ranjit Sagar Dam in the year 2000. Madhopur barrage is constructed for water diversion to four main canals which branch off from it. Main water abstraction in the system below Madhopur barrage water is diverted into 2 main canals, UBDC and Hydrel canal, former having capacity of 11,200 cusecs and latter 6,900 cusecs. UBDC is further bifurcated into (i) Ravi - Beas-Link Canal and (ii) Main line. The UBDC presently, has an authorized discharge of 9,000 cusecs. Seven main branch canals off take from UBDC with 247 distributaries and minor branch canals.

**Investments Proposed:** A WTP of 431 MLD is proposed on a 40-acre land identified by the city and close to the UBDC canal. The plant is proposed using a conventional treatment system comprising of aeration, coagulation, flocculation, sedimentation, rapid gravity filtration and chlorination for disinfection including necessary PLC controls for plant operations connected to a SCADA system. An operator will design, build and operate, and is likely that the system will use the latest technology as in Ludhiana. A total capacity of about 6,000 KW pumping system is proposed for raw water and treated water designed with electronic controls to enable remote operations.

The hydraulic design of the treated water transmission scheme is planned by dividing the city into North and South zones separated by the railway line. The service reservoirs will be fed by separate transmission pipeline networks of about

119 Km length of varying diameters. Mild Steel (MS) pipes with internal and external lining against corrosion are proposed for sizes 1,000 mm to 1,600 mm and Ductile Iron Pipes of K9 Class are proposed for sizes 900 mm and below. The transmission system will deliver the treated water into service reservoirs of 1-2ML capacity with 20-25m staging height. The North zone has 57 service reservoirs and the South zone has 60. Necessary flow and pressure monitoring instrumentation including remote operations of reservoir inlets and outlets connected to a centralised SCADA system are also proposed.

**Table 6: Component 2 Investment Costs**

Particulars		Costs (USD million)		
		Amritsar	Ludhiana	Total
Water Production (Raw water and Treatment)	Raw Water Drawl – to be paid to Canal authorities	3.29	3.95	7.24
	Raw Water Storage	1.36	1.48	2.84
	Raw Water Collection Tank	0.41	0.03	0.44
	Raw Water Pumping Station	0.26	0.39	0.65
	Raw Water Pumping Machinery	1.92	2.34	4.26
	Water Treatment Plant (440 MLD in AMC; 580 MLD in LMC)	23.16	30.53	53.69
	Total	30.40	38.72	69.12
Clear Water Storage and Transmission Systems	Treated Water Collection tank	0.91	1.14	2.05
	Treated Water Pumping Station – North & South	0.28	0.40	0.68
	Treated water pumping machinery – North & South	3.45	4.46	7.91
	Transmission pipeline – North and South	29.41	61.17	90.58
	Service storage – North and South	28.81	27.41	56.22
	Existing OHSRs – demolition and rehabilitation	0.86	1.09	1.95
	Total	63.70	95.61	159.31
	Total Investment cost	94.12	134.39	228.51
	Contingencies 5%	4.71	6.72	11.43
	Provision for price escalation /variations	2.82	4.24	7.06
	<b>Grand Total of Investment costs</b>	<b>101.65</b>	<b>145.35</b>	<b>247.00</b>
	<b>Land acquisition and R&amp;R Costs</b>	<b>7.35</b>	<b>8.85</b>	<b>16.20</b>

11. **Component 3: COVID-19 Crisis Response.** This component aims to support municipal corporations in Punjab respond to urgent and critical needs arising at the city level from the COVID-19 crisis. The component will be coordinated at the state level by the PMIDIC and will roll out in the form of a block grant to eligible municipal corporations in the State. It will finance short to medium term non-medical/non-pharmaceutical interventions to address the crisis. To receive the block grants, the MCs will be required to put in place dedicated institutional and financial

arrangements, including project specific bank account, and provide this information to the PMU. The MCs can use the resources in a flexible manner to finance short- to medium-term priorities from a positive list of eligible expenditures that will be listed in the POM. These may include, among others, upgrading or rehabilitating vital health/community infrastructure or amenities, clean-up of city spaces/community amenities, provision and/or coordination of local services — both infrastructure and social services — that cater to COVID-19 response especially targeting poor and vulnerable households and communities, strengthening local level disaster response systems and developing crisis/disaster response plans, communication campaigns and awareness building programs, and capacity building of local public officials and civic entities. The MCs will be provided on-the-ground technical support, as needed, to carry out activities under this Component.

12. **Component 4: Project Management.** This component will support various project management activities, including but not limited to:

- the PIUs in the two MCs, including project management, civil works supervision and monitoring, safeguards and fiduciary implementation, M&E, communications and outreach, capacity building, TA for project implementation, including hiring of third-party Project Management Consultants for bulk water infrastructure development;
- Communications strategy and outreach activities covering key stakeholders in both MCs and at the state level;
- TA to strengthen social and environmental management and fiduciary management in both MCs; and
- Technical and other studies.



### Annex 3: Economic and Financial Analysis

#### A. Economic Analysis

1. **Methodology and approach.** The quantitative part of the economic and financial analysis of the project. It focuses on Component 2 of project (*strengthening the water supply infrastructure in the two project cities of Amritsar and Ludhiana*) which accounts for a significant majority of the investments made. The economic analysis assessed the economic viability of project in terms of economic internal rate of return (EIRR) and economic net present value (ENPV). Since the alternative of not implementing the project for providing safe water was rejected, as several borewells are already at their limits in providing quality standards for drinking water, a cost effectiveness approach to economic analysis was adopted. Alternatives with different combinations of project design options were analyzed to determine the best solution with the lowest capital investment and operational costs, including alternative supply solutions, water sources, location of WTPs, layout of pumping solutions, and optimized sizing of the transmission network

2. **Demand analysis.** The project's main investments of switching water source in the two cities of Ludhiana and Amritsar, is implemented to reduce risk to public health from the chemical contaminated ground water source. An alternative of not implementing the project is not considered, as the current situation is expected to further deteriorate over time. Population in the two cities are aware of the low quality of piped water, and most households have installed Point of Source Treatment filters (PST) or are purchasing package delivered water in 20-liter containers. Both solutions for mitigating the low quality of the piped water are cost wise in multiples of the current low fee for the centralized water supply service.

3. **Cost Effectiveness Analysis.** Cost effectiveness analysis was prepared for Component 2 only, and by using least cost methodology among alternative design options. The following table presents the comparison among the main options considered in the Project.

#### Comparison of alternative technical design solutions – selected options

Option	Advantage	Disadvantage	Solution Cost* (USD million)
<b>I. Main source of safe water supply</b>			
Alternative solutions to the proposed centrally treated water at the water supply plant, include households' own treatment of water for human consumptions at 2 lpcd, or delivery of packages water to households in 20 litres containers at 2 lpcd.			
A. Centrally treated water (Least cost option)	All water is treated for safe consumption, no risks of residents drinking chemical	First phase of project might still provide water with some bacterial	Capex: 285 Opex: 421** Total Cost: 706

	contaminated water	contamination – as today	
B. Households' own point of source treatment - PST	Households are in control of own treatment of water for human consumption	Only 2 lpcd is provided – process has to be in control - other water still contaminated	Capex: 750 Opex: 987 Total Cost:1,737
C. Package water delivered - PDW	The package water is checked for quality - as Option A. Provide an instant supply.	Only 2 lpcd is provided – low level of practicality - other water still contaminated	Capex: 0 Opex:1,825 Total Cost:1,825
<b>II. Location of water treatment plant</b>			
The city authorities based on response from local landowners have considered two options for locating the water treatment works. The relative merits and risk in terms of operational advantage and cost economics were taken into account in choosing the most appropriate and cost-effective land for locating the water treatment works.			
A. WTP located between source canal and City ( <i>Least cost option</i> )	The location provides the lowest length of piping.	Cost of plant location is high	Capex: 244 Opex: 421 Total Cost: 665
B. WTP located outside source canal	Cost of plant location is low	The location provides the longest length of piping with additional cost of O&M	Capex: 244 Opex: 422 Total Cost: 666
<b>III. Pumping solution for water transfer to distribution system</b>			
The initial feasibility report considered a method of treated water pumping in two stages – that is first stage pumping from water treatment plant to underground zonal balancing reservoirs in the city and second stage pumping from zonal reservoirs to elevated service reservoirs in the neighbourhoods. The current Project report considers one stage pumping that is from water treatment plant to service reservoirs in the neighbourhoods to minimize wastage of residual energy.			
A. Two phased pumping layout	Operational Flexibility during system redundancy	Higher capital and O&M cost and social costs for large land required within the developed city boundary	Capex: 141 Opex: 428 Total Cost: 569

B. One phased pumping layout ( <i>Least cost option</i> )	Lower capital cost and minimize wastage of residual energy less number of staff in operations	Operational flexibility during system redundancy risk is less	Capex: 131 Opex: 421 Total Cost: 552
* Data for Amritsar - capex annualized - financial costs in 2020 prices converted to economic prices with a standard conversion factor of 1.0 ** Is to a large extent also held by option B and C - for the supply other than for drinking and cooking			

4. **Economic costs.** Economic cost comprises investment cost (civil works; machinery and equipment, land acquisition and resettlement, environmental protection, survey and design, consulting services and training, and recurrent costs (maintenance and repair, electricity, labor, chemicals and others).

5. **Incremental benefits.** The project provides incremental benefits of adding to the water source and caters for an increased demand. Moreover, it paves the way for creating trust in water supply and reducing coping costs of households as well as sets the stage for metered connections with revised tariff regimes reducing water consumption and wastewater collection and treatment.

- a. **Economic health benefits from reducing contaminating in the water supply.** Shifting the water source and introduction of water treatment with chlorination will reduce the chemical and bacteriological contamination of water supply the two cities. For Amritsar, arsenic will be reduced and for Ludhiana selenium and nitrate. Chemical contamination has safety concerns and its removal will add significant short- and long-term health benefits. Today households are investing in own PSTs to try to cope with the situation. Using the coping costs of the PST solution as a proxy for a low valuation of the health benefits, the household benefits are not lower than around INR600 a month. Current tariffs, at a level of INR100-140 per month, are significantly lower.
- b. **Economic benefits from incremental supply of water to meet increased demand and demand from not currently served population.** The project will expand the capacity of the water production for supply to not currently supplied areas and for meeting increasing demand in the two cities. In the absence of valuation of consumer benefits, as tariff have not been revised for many years, the benefit is valued against the households coping cost from households PST solution of around INR600 monthly.
- c. **Cost abatement from electricity savings.** The project will improve efficiency of the electricity consumption. The current ground water supply was audited for its energy footprint by Energy Efficiency Services Limited (EESL), who estimated the average efficiency of the existing pumps in the range of about 31 percent indicating high wastage of energy. The proposed system from surface water considers an average efficiency of 80 percent. Overall, electricity consumption is expected to be reduced by at least 30 percent compared to no-

project scenario. Future investments in rehabilitation of distribution system and introduction of volume-based tariffs will further reduce electricity consumption.

- d. **Environmental benefits from GHG and other pollutants emission reduction.** As electricity consumption will be reduced by around 30 percent, the project will generate environmental benefits. Benefits from CO<sub>2</sub> abatement values at the 2016 global social cost of USD36.3 per ton of CO<sub>2</sub>, adjusted to today price levels, and increased annually by 2 percent to reflect the potential increase in marginal social costs of global warming over time (based on the Intergovernmental Panel on Climate Change). Environmental benefits from other pollutant emissions abatement of SO<sub>2</sub>, NO<sub>x</sub>, and PM from coal fired power plants related to premature mortality effects associated with the pollutant emissions. Current mix of power sources in Punjab is 70 percent from coal fired thermal power plants and 30 percent from hydropower. With the power mix, the CO<sub>2</sub> abatement will be at 0.70 ton per MWH of electricity savings.
- e. **Economic benefits from eliminating households' coping costs.** Households in the two cities have installed water tanks to cope with intermitten supply. Water tanks typically holds 1,000 liters and can supply a family with water for one day. A household's total cost of owning and operating the water tanks is estimated to monthly around INR500, which is significantly above the monthly water tariff at around INR100. With additional investments to rehabilitate the distribution system and shifting into a 24x7 water supply, the cost of operation of the water tanks can be abated.
- f. **Abated costs from overconsumption of water.** The current supply system with flat tariff and a non-metered supply has an embedded over-consumption of water. It is estimated that the overconsumption is around 100 percent - with current consumption at 300 lpcd and a natural consumption of 150 lpcd. The over-consumption of water has effect on not only water supply capacity installed but also on wastewater treatment capacity. Providing a metered consumption with volume-based tariffs will have a positive effect on cost of operation and the cities' capex plans.

6. **Economic cost-benefit results.** All financial prices were converted to economic prices based on a standard conversion factor of 1.0. A social discount rate of 6 percent was introduced for the cost benefit analysis. The infrastructure subprojects in Amritsar under Component 2 yields a positive EIRR of 16 percent and the ENPV is at INR9,590 million.

7. **Sensitivity analysis.** Sensitivity analysis has been carried out for the subproject in Amritsar with respect to a 20 percent increase in capex, a 20 percent decrease in opex savings, 20 percent reduced benefits and to delayed benefits by on year. The EIRR remains above 13 percent for all the scenarios.

### **Results and subprojects sensitivities to economic scenarios**

Subproject			EIRR	Capex +20%	Opex -20%	Benefit -20%	Benefit Delay <sup>1</sup>
Amritsar	Centralized Treatment	Water	16%	13%	16%	13%	14%

*EIRR = economic internal rate of return, ENPV = economic net present value*

<sup>1</sup> Benefit generation delayed by 1 year.

## B. Financial Analysis

1. Financial analysis was conducted to estimate cost recovery from tariffs; demonstrate tariff affordability; and to ascertain State's and ULB's financial resources to meet their financial obligation.
  - (i) **Cost recovery:** Due to the absence of metering, current water tariffs are based on a flat monthly fee of INR100/month to INR140/month dependent on the residential plot size. Tariffs have not been revised for more than 10 years. Moreover, tariff-exempted households are about 50-70 percent of total connections, while collection rates are low. As a result, cost recovery from tariffs is low, and the fees collected are enough to recover only 21 percent of O&M costs in the AMC and 22 percent in the LMC. Cost recovery will improve with the implementation of volumetric tariffs, 24x7 service and universal metering. These measures are expected to reduce water consumption from 250-300 lpcd currently to 150 lpcd eventually. Such reduction in supply will have positive effect capex and opex costs for both water supply and wastewater services. The GO on Drinking Water Tariff and Metering Policy has been passed and the respective MCs have also passed resolution for implementation of the tariffs. As per the new volumetric tariffs, tariff exempted households have significantly reduced and there would be moderate to significant increase in monthly bills for most users (primarily commercial users) depending on the usage as the tariff is progressive. Full cost recovery from WSS services is expected by the year 2024.
  - (ii) **Tariff affordability:** Water charges are structured in a manner that are both equitable and ensure that the burden on consumers is in line with current levels of spend (on account of storage costs and point of source filtration), while ensuring that consumers receive potable water on demand. Currently, to compensate for the reduced service level, households bear the costs of owning and operating water tanks and filters. It is assessed that all households have water tanks to cope with irregular supply and more than 50 percent of households have point of source filters for treatment of water. The full cost of operating water tanks and filters is around INR1000/month. The alternative to PST is package delivered water, which has typical cost of INR40 for a 20 liter can, and lasting typically two days for a family. As such, residents are willing to pay for improved service and cleaner water. The water bill is below 2 percent of household income for households in the lowest income quintile.

- (iii) **State's financial resources:** The AMC and LMC are responsible for O&M of WSS systems within the urban areas of their respective cities. Capital expenditures are financed by the State and Central Governments (through programs like the AMRUT and the Smart City). A large part of the MC spending in WSS is on O&M of services. The MCs pay O&M costs through revenues raised from property tax, business license fees, user fees for WSS services, fee on electricity, duties on liquor, development fees, etc. The Projects will only increase the cost of operation marginally compared to the current operation of the tubewells. Power costs are a big share of the opex of water services. Power consumption with surface water is expected to be considerably lower than the current pumping from the tubewells. The current groundwater supply was audited for its energy footprint and the average efficiency of the existing pumps was estimated in the range of about 31 percent, indicating high wastage of energy. The proposed surface water system will have an average efficiency of 80 percent. Overall, the electricity consumption is expected to be reduced by at least 30 percent compared to no-project scenario. Punjab state will provide counterpart funding and be the end borrower of the WB loan. Punjab State has sufficient financial resources to contribute the required counterpart funds and service the debt incurred under the project. Counterpart funds of 30 percent of the total funding constitute for under 1 percent of the State's total budget revenues. Total project investment accounts for less than 1 percent of the State's total capital expenditures, assuming implementation over three years. The project is found to be fully manageable for the GoP.

### Annex 4: Climate Finance

The following are the climate resilient interventions proposed in the project.

Activities	Adaptation Actions	Mitigation Actions
<b>Component 1</b>		
<b>Sub-component 1a: Strengthening urban governance and finance systems</b>		
<p>a) Enhancing efficiency of MC operations through e-governance and administrative improvements.</p> <p>b) Right skilling and strengthening MC staff capacity.</p> <p>c) Developing and operationalizing a CIP and an AMS.</p> <p>d) Enhancing own source revenues through strengthening property tax administration.</p> <p>e) Strengthening social accountability, citizen outreach and grievance redress systems.</p>	<p><i>Vulnerability context:</i> More irregular and intense rainfall patterns due to climate change are altering groundwater recharge potential, further increasing its vulnerability. Over-extraction of groundwater could affect the State's food security and accessibility to safe drinking water.</p> <p><i>Intent to address identified vulnerabilities:</i> Climate risk of assets will be built into the development of CIPs and AMPs, and allocation of resources for O&amp;M of infrastructure. The project will finance TA, training and studies to introduce or strengthen competencies in climate change and disaster risk management, including supporting organizational changes, where needed, as well as strengthening professional development opportunities for staff. The project will support the two MCs to adopt preventive AM and shift towards climate safe and disaster resilient infrastructure development modalities by institutionalizing CIP processes, and developing reliable asset registers and lifecycle approach in asset management.</p> <p><i>Explicit link between identified climate change risks and specific project activities:</i> The specified activities will build the implementing agency's technical and managerial capacity,</p>	

Activities	Adaptation Actions	Mitigation Actions
	including its capacity to handle current and future climate risks.  Adaptation finance: 5%	
<b>Sub-component 1b: Strengthening water service management</b>		
(a) Establishment of water and wastewater utilities <sup>1</sup> in Amritsar and Ludhiana MCs  (b) Communication campaigns	<p><i>Vulnerability context:</i> The AMC and LMC are dependent on groundwater for water supply. Groundwater levels are decreasing throughout the State due to climate change. Therefore, it may not be a sustainable and dependable resource in the long run. These tube wells are prone to pollution, as they are located close to drains and informal solid waste dumps and are not protected. The current system allows for a lot of water loss and wastage, resulting in higher power charges and high volumes of wastewater. Over-extraction of groundwater could affect the State’s food security and accessibility of safe drinking water.</p> <p><i>Intent to address identified vulnerabilities:</i> The project will finance establishing and operationalizing WSS utilities in the two MCs. Long term planning of WSS services will integrate current and projected climate risk and develop strategies to adapt/mitigate them. The project will finance communications initiatives to support water conservation, demand</p>	<p>The water and wastewater utilities will adopt energy efficiency measures through the installation of energy efficient lighting (LEDs), appliances or other equipment.</p> <p>Implementation of volumetric tariffs and universal metering for WSS services, as well as establishment of a city-based utilities to manage WSS services will improve water use efficiency. This means substantial reduction in supply of water and further reduction in power consumption.</p> <p>An intermediate level climate indicator captures the reduced energy consumption of the operated water supply system in</p>

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<sup>1</sup> While the utility will be set up as an integrated water and sanitation company as per best practice, this project only addresses water supply services. Existing wastewater services in the MC will be transferred to the utility as per the transition plan.



Activities	Adaptation Actions	Mitigation Actions
	<p>management, cost recovery and other behavior changes.</p> <p><i>Explicit link between identified climate change risks and specific project activities:</i> The introduction of volumetric tariffs will encourage efficiency among consumers, while the reduction of water pumping and NRW will substantially reduce energy use. Increased recovery of O&amp;M costs the utilities will increase water availability. The project will include training, education and outreach related to water conservation and demand management.</p> <p>Adaptation finance: 5%</p>	<p>Amritsar and Ludhiana as a result of rehabilitation.</p>
<b>Component 2: Improving Water Supply Infrastructure</b>		
<p>The project will finance raw water systems, WTPs, clear water pumping systems, transmission lines and OHSRs in both cities.</p>	<p><i>Vulnerability context:</i> Groundwater is central to the water-food-energy-climate nexus. More irregular and intense rainfall patterns are altering groundwater recharge potential, further increasing the vulnerability of this critical water resource. Amritsar and Ludhiana are entirely dependent on groundwater for water supply. Groundwater levels are already decreasing throughout the State due to climate change. Therefore, it may not be a sustainable and dependable resource in the long run. These tube wells are further prone to pollution as they are located close to drains and informal solid waste dumps and are not protected. The current ground water-based system is inefficient and allows for a lot of water loss and wastage, resulting in higher power charges and high volumes of wastewater.</p>	

Activities	Adaptation Actions	Mitigation Actions
	<p><i>Intent to address identified vulnerabilities:</i> This component will build transmission and storage infrastructure that is necessary for 24/7 supply in the future. Raw water drawn from the Upper Bari Doab Canal in Amritsar and Sirhind Canal in Ludhiana that off take from the rivers Ravi and Sutlej will be pumped to WTPs for treatment. Infrastructure development and maintenance, and water operations will be undertaken through a private operator under a DBOT contract with three-year construction and ten-year O&amp;M. Key performance indicators of the operator will include reduction in water losses, quality of water, and ability to supply water based on demand. Wastewater generated from the WTPs would be recycled. The strategy is also to reduce consumer demand over time through appropriate tariffs, implement communication campaigns to change behaviour, and engage citizens on appropriate water use.</p> <p><i>Explicit link between identified climate change risks and specific project activities:</i> Construction of WTPs and bulk water infrastructure will increase water availability. Energy efficiency will be one of the parameters in evaluating bulk water contract bids. The shift from groundwater — using bore well pumps operating for ten hours non-stop, irrespective of water demand — to surface water will lead to reduction of water loss and energy savings. The DBOT contract will provide incentives to reduce wastage, including a binding clause on loss reduction. The reduction</p>	

Activities	Adaptation Actions	Mitigation Actions
	<p>of NRW will substantially enhance water and energy efficiency. The shift to treated surface water will secure water quality and lead to groundwater conservation, providing future water reserves in case of droughts. Some bore wells will be maintained to supply water if and when the canals become dry due to droughts or for maintenance.</p> <p>Adaptation finance: 20%</p>	
<p><b>Component 3: COVID-19 Crisis Response</b></p>		
<p>This component will provide funds to the PMIDC, which will be rolled out as block grants to the thirteen MCs based on objective criteria, to finance short- to medium-term non-medical interventions to address the COVID-19 crisis. A positive list of eligible expenditures will be listed in the Project Operations Manual (POM).</p>	<p><i>Vulnerability context:</i> Punjab is extremely vulnerable to floods, droughts and flash floods. The 2019 Vulnerability Atlas of India classifies the northern half of Punjab, where the project is located, as a Zone IV: High Earthquake Damage Risk Zone, which poses a threat to infrastructure and service delivery.</p> <p><i>Intent to address identified vulnerabilities:</i> The MCs will be provided technical support for upgrading or rehabilitating vital community/ health infrastructure or amenities, provision and/or coordination of local infrastructure and social services that cater to COVID-19 response, strengthening local-level disaster response systems and developing disaster response plans, communication campaigns and awareness building programs, and capacity building of local public officials and civic entities.</p> <p><i>Explicit link between identified climate change risks and specific project activities:</i> Strengthening local-level disaster response systems and developing disaster response plans will</p>	

<b>Activities</b>	<b>Adaptation Actions</b>	<b>Mitigation Actions</b>
	help build long-term resilience among vulnerable communities and effective overall management of disasters.  Adaptation finance: 5%	

## Annex 5: Member and Sector Context

1. After growing at a healthy rate of 7.4 percent between FY2014 and FY2018, the Indian economy experienced a slowdown in recent years. Growth slowed down to 4.2 percent in FY2019 due to distress in the rural economy, financial sector stress weakness in private consumption, investment, and exports, owing to rural distress, stress in the financial sector, and sluggish global demand. Growth in the first half of the FY2020 was significantly dented by COVID-19 outbreak and the associated lockdown, with economic output contracting by 15.7 percent. Growth is expected to recover during the remainder of year as social distancing measures were eased and economic activity revived.

2. India's economic growth is accompanied by an unprecedented urban transformation. The urban population and the contribution of cities to the economy are expanding steadily. McKinsey (2010) estimates that the population of India's cities will increase from 340 million in 2008 to 590 million in 2030. Urban India will create 70 percent of all new jobs and these urban jobs will be twice as productive as rural jobs. However, 38 percent of urban households do not have access to treated tap water, 18 percent do not have access to latrines within their premises, and only about 18 percent of urban waste is treated (Mathur 2018). Providing urban dwellers with public services and economic opportunities, while ensuring that urbanization is environmentally sustainable, is simultaneously one of India's greatest development opportunities and challenges. Indian cities will require infrastructure investments of USD40 billion annually for the next two decades, while available resources are only a fraction of this requirement.

3. The proposed project builds on several urban and water initiatives of the Government of India (GOI), the Government of Punjab (GoP) and the Municipal Corporations (MCs) of Amritsar and Ludhiana. The GOI has launched ambitious national-level urban mission, the Atal Mission for Rejuvenation and Urban Transformation (AMRUT), that require state and local governments to embark on urban reforms, increase investments and improve service delivery. The AMRUT mission supports projects in both cities that are prioritized based on the city-specific Service Level Improvement Plan (SLIP), and the state-specific State Annual Action Plan (SAAP). The State of Punjab's SAAP for 2017-2020 states that universal coverage in Water Supply and Sanitation (WSS) is the foremost priority and lays out plans for the same. Both Amritsar and Ludhiana have been selected as Smart Cities by the Smart Cities Mission, another GOI program which supports 100 cities across the country with transformative area-based development approaches. The two cities have ongoing initiatives to improve urban infrastructure, basic urban services, and urban management and governance systems under the AMRUT and the SCM.

4. About 37.5 percent of the State of Punjab's 27.7 million population live in urban areas (2011 Census). Its two largest cities, Ludhiana and Amritsar, host over a quarter of this urban population. Amritsar is the spiritual and cultural center of the Sikh religion and home to 1.13 million, while Ludhiana is home to 1.62 million and a prime industrial and educational center. Both cities are engines of economic growth for the State.

5. Under the Indian Constitution, WSS is a state subject. State departments set policies on quality of service and cost recovery, provide funds for capital investments and act as controllers

of the WSS services. While Urban Local Bodies (ULBs) are responsible for the provision of WSS services, in most cases a state agency constructs the infrastructure and hands it over to the ULBs, which generally lack the managerial, financial and technical capacity to manage the assets and deliver services effectively. Unclear lines of authority and accountability, weak incentives, lack of resources and poor capacity result in suboptimal WSS services. In Punjab, there is a decision at the State-level to devolve greater infrastructure development and service delivery authorities and responsibilities to large MCs. Amritsar and Ludhiana MCs operate based on ad-hoc investment plans that depend on grants from the state and central governments. Proper planning of capital investments and adequate and timely maintenance of assets are absent. Major services are often delivered by state level agencies such as the Punjab Municipal Infrastructure Development Company (PMIDC) and the Punjab Water Supply and Sewerage Board (PWSSB). ULBs have very limited authority to determine investment priorities and service levels or hold state agencies accountable, while they have to deal with maintenance and upkeep of the infrastructure and respond to public grievances on service issues.

6. WSS services are one of the most pressing needs in Punjab State, as its groundwater is now contaminated and overexploited, threatening public health and natural capital sustainability. Overexploitation of groundwater has led to a rapid decline in ground water levels (by 3 meters and 2.6 meters between 2014 and 2016 in Amritsar and Ludhiana, respectively) and resulted in deterioration of water quality. Various studies have revealed that Amritsar District's groundwater is contaminated with arsenic and Ludhiana's ground water with nitrates and other heavy metals (27 percent of samples in Amritsar were observed to have more than double the permissible limit of arsenic, while 75 percent of samples in Ludhiana were observed to have more than the acceptable limit of aluminum, and 60 percent of samples were observed to have more than the acceptable limit of magnesium).

## Annex 6: Sovereign Credit Fact Sheet

### A. Recent Economic Development

1. India is a lower-middle-income country, with a GDP per capita at USD 2,104 and a population of 1.37 billion in 2019.<sup>35</sup> It is the world's third largest economy by purchasing power parity. India's economy grew at an average annual rate of 7.4 percent between FY2014 and FY2018 but has slowed down in recent years.<sup>36</sup> Following disruptions due to the demonetization initiative in November 2016 and the rollout of goods and services tax in July 2017, growth slowed to 7.0 percent in FY2017 and 6.1 percent in FY2018.<sup>37</sup> Growth slowed down further to 4.2 percent in FY2019 due to sluggish growth in private consumption, investment and exports, owing to weak rural income growth, stress in the financial sector, and sluggish global demand. Growth in the last quarter of FY2019 (January to March 2020) and first quarter of FY2020 (April to June 2020) was significantly dented by COVID-19 outbreak and associated lockdown introduced by the government.<sup>38</sup> The Indian economy contracted by 23.9 percent in the first quarter of FY2020.

2. Low food prices helped inflation declining from 4.5 percent in FY2016 to 3.4 percent in FY2018. This allowed the central bank to reduce key policy rates by 135 basis points between February 2019 and October 2019. Inflation started inching up from mid-2019 on account of higher food prices and rise in retail oil prices. Inflation averaged 6.8 percent in the first half of FY2020 due to supply side disruptions. Despite this, the central bank reduced the repo and reverse repo rates by 115 and 155 basis points to 4.0 and 3.35 percent respectively, to stimulate aggregate demand, which had declined due to the lockdown. The central bank introduced several measures to reduce the borrowing cost, bolster liquidity, and improve credit flow to the productive sectors.

3. After rising for two years, the current account deficit shrank to 0.9 percent of GDP in FY2019. Slowdown in economic activity led to a contraction in merchandise imports while exports remained weak as global demand turned sluggish. The current account recorded a surplus of 3.9 percent of GDP in the first quarter of FY2020 due to a sharp fall in trade deficit, and stable services balance. A drop in oil prices and weak domestic demand led to merchandise imports contracting by 40 percent in the first half of FY2020 while exports declined by a smaller 21.3 percent.

4. General government fiscal deficit at 8.2 percent of GDP remained high in FY2019, reflecting tepid growth in revenue and higher recurrent expenditure. A downturn in revenue due to economic slowdown and higher spending on the stimulus package resulted in the fiscal deficit in the first half of FY2020 exceeding the annual target.

**B. Economic Indicators****Selected Macroeconomic Indicators (FY2015-FY2021)**

<b>Economic Indicators<sup>#</sup></b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019*</b>	<b>FY 2020*</b>	<b>FY 2021*</b>
Real GDP Growth	8.2	7.0	6.1	4.2	-10.3	8.8
Inflation (% change, average)	4.5	3.6	3.4	4.8	4.9	3.7
Current account balance (% of GDP)	-0.6	-1.8	-2.1	-0.9	0.3	-0.9
General government overall balance (% of GDP)	-7.1	-6.4	-6.3	-8.2	-13.1	-10.9
Nominal gross public debt (% of GDP)	68.8	69.4	69.6	72.3	89.3	89.9
Public gross financing needs (% of GDP) <sup>1</sup>	11.1	11.0	10.5	11.4	17.6	15.4
External debt (% of GDP) <sup>1</sup>	20.6	20.0	18.9	19.1	19.2	19.1
Gross external financing need (% of GDP) <sup>1</sup>	9.3	9.6	10.4	10.0	9.5	11.0
Net Foreign Direct Investment Inflow (% of GDP)	1.6	1.1	1.1	1.3	...	...
Gross reserves (USD billion) <sup>**</sup>	370.0	424.5	412.9	434.0	551.5	...
Broad money (M2, % change)	10.1	9.2	10.5	9.7	...	...
Exchange rate (Rupee/USD, EOP)	67.9	63.7	69.6	76.6	73.8	...

\*\*

Note: # Data is based on fiscal years.

\* denotes projected figures.

\*\* FX data from Financial Benchmarks India FX rate as of October 29, 2020 while Reserves data pertains to August 2020.

<sup>1</sup> For FY2020 and FY 2021, AIIB Staff Estimates based on IMF Data

Source: IMF, World Economic Outlook Database, April 2020, IMF Country Report No. 19/385, December 2019 and Reserve Bank of India, Government of India.

**C. Economic Outlook and Risks**

1. According to the World Economic Outlook, released in October 2020, the economy is expected to contract by 10.3 percent in FY2020. The imposition of a lockdown, with limitations on



mobility of people and products, to contain the outbreak, has significantly disrupted demand and supply. With the gradual easing of lockdown from June 2020, many of the high frequency indicators like purchasing managers' index, electricity generation, freight traffic e-way bills, registering interstate shipments indicate a revival of economic activity in the second quarter of FY2020. Growth is expected to pick up strongly in FY2021 as COVID-19 dissipates and stimulus measures have an impact with a lag.

2. In May 2020, Moody's downgraded India's rating to Baa3 with a negative outlook and in June, Fitch revised India's outlook to negative, due to slow reform momentum and challenging economic environment, limited fiscal space and stress in the financial sector.

3. Overall inflation is expected to increase marginally to 4.9 percent in FY2020, due to inflationary pressures from disruptions in supply chains. However, sluggish aggregate demand on account of the lockdown and lower oil prices may dampen the inflationary pressures. Stickiness in food prices and rise in oil prices could raise inflation above the expected level.

4. Recognizing that an expansionary fiscal policy is required to mitigate the economic effect of COVID-19 pandemic, the central government announced several fiscal support measures. These include (a) direct spending including cash transfers, wage support and providing food and cooking gas to low-income households (2.0 percent of GDP), (b) foregone or deferred revenue (0.3 percent of GDP) and (c) credit provision (5.2 percent of GDP). An additional 0.1 percent of GDP has been allocated for health infrastructure. In October 2020, additional measures amounting to 0.2 percent of GDP was announced to support consumption. Various states have also announced additional relief measures. The anticipated economic contraction in FY2020 will adversely impact tax collections. The general government fiscal deficit is expected to significantly increase to 13.1 percent of GDP in FY2020. Public debt is also estimated to rise sharply to 89.3 percent of GDP in FY2020, levels last witnessed in early 2000s. Despite being high, India's public debt remains sustainable given favorable debt dynamics and the projected increasing economic growth trend in the medium term. Furthermore, with public debt having a long and medium maturity, being denominated in domestic currency and primarily held by residents, the debt profile is favorable. India's external debt is expected to remain stable.

5. The current account balance is expected to record a small surplus in FY2020. Sluggish domestic economic activity and subdued oil prices will result in import bill declining significantly. Exports of goods and services are likely to contract given the decline in global demand. Remittances are also expected to decline as lower oil prices in Middle East and spread of the COVID-19 pandemic in advanced economies reduce economic activity in these countries, where most migrant Indian workers are employed.