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INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT
ON A
PROPOSED CREDIT

IN THE AMOUNT OF SDR 87.6 MILLION
(US$121 MILLION EQUIVALENT)

TO THE

DEMOCRATIC REPUBLIC OF TIMOR-LESTE

FOR A

DILI WATER SUPPLY PROJECT

May 3, 2022

Water Global Practice
East Asia And Pacific Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective March 31, 2022)

Currency Unit =	United States Dollar
US$1.3824 =	SDR 1

FISCAL YEAR
January 1 - December 31

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ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
ADN	National Development Agency
ANAS	National Authority for Water and Sanitation
ANLA	National Environmental Management Agency
ARAP	Abbreviated Resettlement Action Plan
BTL	Bee Timor-Leste
CAFI	Council for the Administration of Infrastructure Fund
CDM	Community Dialogue Manual
CGAP	Country Gender Action Plan
CMD	Cubic meter per day
CPF	Country Partnership Framework
CRI	Corporate Results Indicator
CTT	Technical Tariff Committee
DED	Detailed Engineering Design
DFAT	Department of Foreign Affairs and Trade
DGAS	Department General of Water and Sanitation
DiMA	Dili Metropolitan Area
DMA	District Metering Area
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ESA	Environmental and Social Assessment
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards
FMC	Financial Management Consultant
GAP	Gender Action Plan
GBV	Gender-Based Violence
GHG	Green House Gases
GNI	Gross National Income
GRID	Green, Resilient, and Inclusive Development
GM	Grievances Mechanism
HR	Human Resources
IA	Implementing Agency
IDA	International Development Association
INDC	Intended Nationally Determined Contributions
JICA	Japan International Cooperation Agency
LMP	Labor Management Procedures
MCC	Millennium Challenge Corporation
MCM	Million cubic meter
MIS	Management Information System
MoCIE	Ministry of Commerce, Industry and Environment
MoF	Ministry of Finance
MoPW	Ministry of Public Works
MoSA	Ministry of State Administration
NGO	Non-governmental organization
NPC	National Procurement Commission
NRW	non-revenue water
O&M	operation and maintenance
PDO	Project Development Objective
PF	Petroleum Fund
PMC	Management Consultant
PMU	Project Management Unit
POM	Project Operations Manual
PPSD	Project Procurement Strategy for Development Project
RMS	Results Measurement System
SCADA	Supervisory control and data acquisition
SDG	Sustainable Development Goals
SEA	Sexual Exploitation and Abuse
SEP	Stakeholder Engagement Plan
SESIS	Simplified Environmental and Social Impact Statement
SH	Sexual Harassment
SIP	Sector Investment Plan
SORT	Systematic Operations Risk-Rating Tool
TDS	Total Dissolved Solids
UNFCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund
UoF	Utility of the Future
WB	World Bank
WHO	World Health Organization
WSS	Water Supply and Sanitation
WTP	Water Treatment Plant

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DATASHEET

BASIC INFORMATION

Country(ies)	Project Name	
Timor-Leste	Dili Water Supply Project	
Project ID	**Financing Instrument**	**Environmental and Social Risk Classification**
P176687	Investment Project Financing	Substantial

Financing & Implementation Modalities

[ ] Multiphase Programmatic Approach (MPA)	[ ] Contingent Emergency Response Component (CERC)
[ ] Series of Projects (SOP)	[✓] Fragile State(s)
[ ] Performance-Based Conditions (PBCs)	[ ] Small State(s)
[ ] Financial Intermediaries (FI)	[ ] Fragile within a non-fragile Country
[ ] Project-Based Guarantee	[ ] Conflict
[ ] Deferred Drawdown	[ ] Responding to Natural or Man-made Disaster
[ ] Alternate Procurement Arrangements (APA)	[ ] Hands-on Enhanced Implementation Support (HEIS)

Expected Approval Date	Expected Closing Date
23-May-2022	29-Sep-2028

Bank/IFC Collaboration

No

Proposed Development Objective(s)

The Project Development Objective is to improve the coverage and the operational performance of BTL in the Project Area.

Components

Component Name	Cost (US$, millions)

Water Supply and Treatment Infrastructure Development	104.42
Institutional Strengthening	14.34
Project Management	4.85

Organizations

Borrower:	Democratic Republic of Timor-Leste
Implementing Agency:	Ministry of Public Works

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	123.61
Total Financing	123.61
of which IBRD/IDA	121.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Development Association (IDA)	121.00
IDA Credit	121.00

Non-World Bank Group Financing

Counterpart Funding	2.61
Borrower/Recipient	2.61

IDA Resources (in US$, Millions)

	Credit Amount	Grant Amount	Guarantee Amount	Total Amount
Timor-Leste	121.00	0.00	0.00	121.00
National PBA	121.00	0.00	0.00	121.00

Total	121.00	0.00	0.00	121.00

Expected Disbursements (in US$, Millions)

WB Fiscal Year	2022	2023	2024	2025	2026	2027	2028	2029
Annual	0.00	3.93	14.55	19.32	21.56	23.39	25.88	12.37
Cumulative	0.00	3.93	18.48	37.80	59.36	82.75	108.63	121.00

INSTITUTIONAL DATA

Practice Area (Lead)
Water

Contributing Practice Areas
Urban, Resilience and Land

Climate Change and Disaster Screening
This operation has been screened for short and long-term climate change and disaster risks

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	High
2. Macroeconomic	Substantial
3. Sector Strategies and Policies	Substantial
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Substantial
7. Environment and Social	Substantial
8. Stakeholders	Moderate
9. Other	
10. Overall	Substantial

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

[ ] Yes [✓] No

Does the project require any waivers of Bank policies?

[ ] Yes [✓] No

Environmental and Social Standards Relevance Given its Context at the Time of Appraisal

E & S Standards	Relevance
Assessment and Management of Environmental and Social Risks and Impacts	Relevant
Stakeholder Engagement and Information Disclosure	Relevant
Labor and Working Conditions	Relevant
Resource Efficiency and Pollution Prevention and Management	Relevant
Community Health and Safety	Relevant
Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Relevant
Biodiversity Conservation and Sustainable Management of Living Natural Resources	Relevant
Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Not Currently Relevant
Cultural Heritage	Relevant
Financial Intermediaries	Not Currently Relevant

NOTE: For further information regarding the World Bank's due diligence assessment of the Project's potential environmental and social risks and impacts, please refer to the Project's Appraisal Environmental and Social Review Summary (ESRS).

Legal Covenants

Sections and Description

1. The Recipient shall, throughout Project implementation, maintain the Conselho de Administração do Fundo das Infra-Estruturas ("CAFI") which is responsible for overall Project oversight. (Section I.A.1. of Schedule 2 to the Financing Agreement)

2. The Recipient shall, throughout Project implementation, maintain the MoPW, which is responsible for Project implementation, consisting of planning, contract administration, financial management, supervision of environmental and social management framework, and monitoring. (Section I.A.2. of Schedule 2 to the Financing Agreement)

3. The Recipient shall, throughout Project implementation, maintain the single project implementation unit (the "Project Management Unit" or "PMU") that has been established under MoPW to be responsible for implementing all donor funded water and sanitation projects in Dili, including the Project. (Section I.A.3.(a) of Schedule 2 to the Financing Agreement)

4. The Recipient shall, throughout Project implementation, ensure that the PMU is provided with adequate staff and funds for implementing the Project. (Section I.A.3.(b) of Schedule 2 to the Financing Agreement)

5. The Recipient shall, throughout Project implementation, ensure that key PMU professional staff include, inter alia, a coordinator, a water supply engineer, a water operation specialist, social and gender specialist, an environmental specialist, a financial management specialist, a procurement specialist and monitoring specialists all of whom with experience, qualifications, and terms of reference satisfactory to the Association. (Section I.A.3.(c) of Schedule 2 to the Financing Agreement)

6. The Recipient shall, throughout Project implementation, ensure that the PMU shall:

(i) assist the National Procurement Commission with the preparation of bidding documents for civil works and terms of reference for consultants' services;
(ii) examine and certify the work conducted by all consultants and contractors financed with the proceeds of the Financing, and shall submit withdrawal applications with all necessary supporting documentation to the Ministry of Finance for further processing;
(iii) give effect to and monitor compliance with the ESCP and the environmental and social instruments referred to therein;
(iv) coordinate with the Dili and other relevant municipalities on their respective Project roles and responsibilities; and
(v) monitor progress of the Project and prepare and submit to the Association quarterly progress reports and quarterly Interim Unaudited Financial Reports (IFRs) (together with the notes). (Section I.A.3.(d) of Schedule 2 to the Financing Agreement)

7. The Recipient shall ensure that the PMU shall recruit and thereafter maintain throughout Project implementation a management consultant for the Project ("Project Management Consultant") to be responsible for:

(i) providing administrative and management support to the PMU in the implementation of the Project;
(ii) construction supervision;
(iii) overseeing the implementation of the environmental and social management framework; and

(iv) collecting data on key Project performance indicators. (Section I.A.3.(e) of Schedule 2 to the Financing Agreement)

8. The Recipient shall, throughout Project implementation, ensure that the Dili and other relevant municipalities provide support to Project implementation as needed, including by (a) strengthening beneficiaries' participation and support to the Project and building consensus at community level, and (b) coordinating with the PMU. (Section I.A.4. of Schedule 2 to the Financing Agreement)

9. The Recipient shall, throughout Project implementation, maintain the Inter-Ministerial Technical Working Group and ensure that it provides overall policy guidance during Project implementation and coordinates interventions from various ministries and agencies in charge of water supply and sanitation development. (Section I.A.5. of Schedule 2 to the Financing Agreement)

10. The Recipient shall ensure that BTL will, not later than March 31, 2023, prepare a Sustainability Improvement Plan, outlining how BTL will improve its operational and financial status, including targets and necessary measures to meet the targets, in a manner acceptable to the Association. (Section IV.1.(a) of Schedule 2 to the Financing Agreement)

11. ensur e that BTL will be responsible for the operation and maintenance of the infrastructures financed under the Project after completion of the civil works. (Section IV.1.(b) of Schedule 2 to the Financing Agreement)

12. commencing on March 31, 2024, by December 31 of each year, in accordance with terms of reference acceptable to the Association, furnish to the Association for review and comments the draft updated Sustainability Improvement Plan. (Section IV.1.(c) of Schedule 2 to the Financing Agreement)

13. take all necessary actions to ensure that the Sustainability Improvement Plan, as updated, is carried out according to its terms. (Section IV.1.(d) of Schedule 2 to the Financing Agreement)

14. The Recipient shall, throughout Project implementation, maintain BTL as the national water supply utility established under, and with roles, powers and responsibilities as stipulated by, the Decree Law No.41/2020. (Section IV.2. of Schedule 2 to the Financing Agreement)

15. The Recipient shall cover all of BTL's operating costs for the infrastructures financed under the Project not covered by tariffs. (Section IV.3. of Schedule 2 to the Financing Agreement)

16. The Recipient shall ensure that, not later than March 31, 2023, ANAS will, in consultation with stakeholders, including BTL, the Consumers' Association, Ministry of Finance, Ministry of State Administration (MoSA), the NGO Forum for Timor-Leste (Fongtil) and academia, prepare a tariff road map establishing proposed annual increases in the water supply tariff in Timor Leste to progressively achieve financial viability of BTL. (Section IV.4. of Schedule 2 to the Financing Agreement)

Conditions

Type	Financing source	Description
Effectiveness	IBRD/IDA	The Recipient having prepared and adopted the Project Operations Manual in form and substance acceptable to the Association. (Section 4.01 of the Financing Agreement)
Type	Financing source	Description
Disbursement	IBRD/IDA	For expenditures under Category (2), unless and until all of the following conditions have been met in respect of said expenditures: (i) the SEIS has been finalized in form and substance acceptable to the Association and approved by ANLA; and (ii) the EMP has been finalized in form and substance acceptable to the Association. (Section III.B.1.(b) of Schedule 2 to the Financing Agreement)

I. STRATEGIC CONTEXT

A. Country Context

1. **Timor-Leste has made important strides toward securing lasting peace and stability since its independence.** At the time it became a new sovereign state in May 2002, extreme poverty and hunger were high; public infrastructure (including schools, hospitals, roads, and water and sanitation systems) was inadequate, destroyed, or severely dilapidated; institutions were weak; and conflict and violence were ongoing threats. Shortages of human capital were equally severe, with few Timorese having the necessary skills and formal education for civil service or private sector jobs. While there remain political, economic, and social challenges, Timor-Leste is a more peaceful and democratic nation today, having gone through several peaceful parliamentary and presidential elections since its independence.

2. **Timor-Leste is classified as a lower-middle-income country, with a gross national income (GNI) per capita (Atlas method) of US$ 1,830 in 2020.** Timor-Leste is a resource-rich country that has saved much of its petroleum-related proceeds in a Petroleum Fund (PF). However, the petroleum revenues are declining, owing to the depletion of existing reserves. Growth in the non-oil sector is mainly driven by public spending. Non-oil gross domestic product growth has been decelerating since 2008, averaging less than four percent in 2013–2016, and even contracting in 2017, 2018 and 2020. The construction sector (dependent on public infrastructure investments), public services, commerce, and agriculture account for nearly 80 percent of the non-oil economy. Declining petroleum production has contributed to a fall in GNI from a peak of US$ 4.1 billion (in current prices) in 2011 to US$ 2.4 billion in 2020.

3. **According to 2021 IMF – World Bank Debt Sustainability Analysis (DSA), Timor-Leste debt-carrying capacity is assessed to be "weak", a downgrade from the previous DSA where Timor-Leste was classified as "medium"**, The demotion is largely driven by lower 10-year average of real GDP growth and the world economic growth. Under the baseline scenario, two of Timor-Leste's external debt indicators breach their respective DSA thresholds. This debt dynamics reflect (i) the increase in debt service payments as grace periods on existing loans come to an end; and (ii) government's strategy of increasing public external borrowing via concessional loans to reduce the need of tapping the PF from the projected expansion of public investment. Timor-Leste's high vulnerability to shocks is a reflection of its very small exports and revenue bases, and, therefore, its exposure to high debt services payment risks if its positive PF assets position is not taken into account. While, historically, the government has typically not resorted to debt financing, and instead relied on excess withdrawals from the PF, further use of the PF to meet Timor-Leste's debt servicing needs would hasten PF depletion.

4. **Nevertheless, Timor-Leste's net public asset position is currently strong due to savings accumulated in PF assets and low levels of public debt.** The PF balance at end-2021 stood at more than USD 19.0 billion (about 19 times 2021 non-oil GDP). On the other hand, outstanding public external debt has steadily increased to USD 218 million (14.9 percent of non-oil GDP) in 2020 from USD 145 million (9.3 percent of non-oil GDP) in 2018. All external loans signed since 2012 to mid-2020 are concessional ones from the Asian Development Bank, the World Bank Group, and the Japan International Cooperation Agency to finance mainly infrastructure projects.

5. **The World Bank and the Government of Timor-Leste are working together under the Performance and Policy Actions (PPAs) program to support the authorities in making continuous improvements towards a sustainable borrowing path.** Additionally, the Minister of Finance has recently requested the support of the World

Bank and IMF to advance the Public Finance Management reforms with focus on enhancing domestic resource mobilization and strengthening fiscal policies.

6. **Despite adopting strong fiscal measures to address the impact of COVID-19, Timor-Leste's economy contracted by 8.6 percent in 2020**, the largest output contraction since independence in 2002. The contraction was driven through various main channels, including public health measures and consumer choices, political uncertainty, and international travel restrictions. In addition, the country had a challenging year during 2021 as the economy was negatively impacted by a surge of COVID-19 cases since March 2021 and the historic flooding caused by Tropical Cyclone Seroja in April 2021.

7. **Poverty levels remain very high, with 41.8 percent[1] of the population lacking the minimum resources needed to satisfy basic needs.** In 2015, the total population was 1.1 million and growing at 2.4 percent per year, with an estimated 25 percent living in urban areas. Based on the latest Survey of Living Standards (2014/15), 42 percent of the population live below the national poverty line, while 22 percent live below the international poverty line of US$ 1.90 a day. According to the official numbers, close to 317,000 people live in Dili.[2] There are also high inequalities in access to water and sanitation service provision countrywide. Only 55 percent of people in the poorest quintile have access to water supply compared to 90 percent in the richest quintile. On sanitation, only 10 percent of people in the poorest quintile have access compared to 95 percent in the richest quintile.[3]

8. **Political stability is a fundamental precondition to ensure sustained economic growth.** Timor-Leste has had eight different Governments since independence. Political instability has been responsible for large falls in investment and fiscal revenue. The decline in public investment was particularly sharp in the 2019 and 2020 as the budgets were not approved in time. In addition, private investment has been low and stagnant for decades, reflecting the endemic uncertainty that entrepreneurs face.

9. **Malnutrition and poor health are widespread and continue to hamper people's efforts to improve their livelihoods.** At present, nearly half of the under-five children in Timor-Leste are stunted, among the highest in the world. The three-year average of the prevalence of undernourishment in 2016 was 26.9 percent.[4] About 40 percent of the children under five, 27 percent of women, and 25 percent of men ages 15–49 are underweight.

10. **Gender equality has been a fundamental principle in the country's developmental efforts and remains key to achieving sustainable development into the future.** Based on the 2015 Census, there is no significant disadvantage for female-headed households, compared to male-headed households, in having access to improved sanitation facilities and safe drinking water. However, women, girls and people with disabilities are often excluded from governance systems and decision-making on water, sanitation and hygiene (WASH) at all levels.[5] Significant gender inequalities remain—including high rates of violence against women and barriers to reproductive health care. Domestic violence is pervasive;[6] maternal mortality remains high;[7] barriers to reproductive health care are

[1] Government of Timor-Leste. 2014. *Poverty in Timor-Leste*. http://www.statistics.gov.tl/wp-content/uploads/2018/02/Poverty-Report-2014-final.pdf.
[2] Unofficial estimates put this number at close to 500,000. A census is being done in 2022 that will confirm the number of people.
[3] Timor-Leste: Timor-Leste Poverty Monitoring and Analysis (P165123).
[4] Food and Agriculture Organization of the United Nations Aquastat Database 2017.
[5] Huggett, Chelsea et.al.2022. Beyond inclusion: practical lessons on striving for gender and disability transformational changes in WASH systems in Cambodia and Timor-Leste. *H2Open Journal* Vol 5 No 1, 26 doi: 10.2166/h2oj.2022.039
[6] 33% of women (age 15 to 49) reporting that they have experienced physical violence since age 15 and 29% within the last 12 months.
[7] 142 per 100,000 in 2017, which far exceeds the 2030 SDG target of less than 70 per 100,000 live births.

concerning; and significant gender gaps remain in women's access to paid employment,[8] wage parity, finance, and political participation. The COVID-19 pandemic has further pushed women into poverty because their capacity to absorb economic shocks is minimal and their survival via the informal sector, their primary means of earning income, has been halted by governmental measures for school closures and social distancing. Government packages to support workers economic losses exclude informal sector workers.[9]

11. **Timor-Leste is vulnerable to natural disasters due to high risk of earthquakes, tsunamis, cyclones, droughts, and heavy rainfall, and climate change will likely increase the variability of water availability and the exposure to water-related disasters.** Because of climate change, the country's population faces increasing temperatures, droughts, increasingly erratic rainfall, and rising sea levels that threaten to exacerbate the storm, landslide, and flood risks. Climate Projections[10] for the mid-century suggest (i) increased temperature of 1.25–1.75°C by 2050, (ii) increased duration of heatwaves, (iii) increased rainfall of 4–10 percent by 2050 with an increase of up to 100–120 mm in coastal areas and 260–300 mm in the mountains, (iv) increased intensity of heavy rainfall events but decreased frequency, (v) increased sea surface temperatures of 0.6–0.8°C by 2030, (vi) rise in sea level by 150–340 mm by 2050, and (vii) increased cyclone intensity (higher wind speeds) but decreased frequency. The energy sector is responsible for 84 percent of national Green House Gas (GHG) emissions, importantly due to electricity generation being based almost entirely on imported diesel oil.[11] Thus, efforts to reduce emissions focus mainly on improving energy efficiency and expanding capacity for renewable energy generation.[12]

12. **The overall risk in Timor-Leste also depends on how climate change will influence the El Niño Southern Oscillation.** El Niño has a significant impact on rainfall and thus water availability. El Niño events can cause greatly reduced rainfall in some areas, increased rainfall in others, and a drop in sea level (up to 200 mm) which can affect the start of the wet season. Drought conditions affect many parts of the country, especially during El Niño. Timor-Leste experiences agricultural and hydrological droughts once every four years. The country's hillsides are regularly hit with droughts due to unreliable rains during the wet season from November to May. This condition is exacerbated by deforestation and wildfires. Maize production fell by 40 percent and rice production by 57 percent during the 2016 El Niño, one of the worst cycles on record. Higher temperatures also decrease yields by limiting germination rates; recent estimates suggest that yields will fall by as much as 10 percent for every 1°C increase in minimum temperature during the growing season. With 80 percent of crop production dependent solely on rainfall, most farmers are restricted to only one planting season, leaving them vulnerable to any increase in rainfall variability.[13] Conversely, La Niña events induce a general increase in rainfall, an increase in sea level (100–200 mm), and an increase in wave height which can again affect the timing of the wet season.[14]

13. **The Projected climate change impacts pose significant risks to water supply in Timor-Leste.** Key risks include (i) more frequent and longer droughts, leading to a higher reliance on groundwater, a lower water table and reduced water supply; (ii) decline in water quality due to contamination of wells by storm surges and flooding

[8] Labor force participation for females is 62% and males is 73% (ages 15-64). 26% of young women and 16% of young men are NEET (not in employment, education, or training).
[9] Montiero, Carmeneza Dos Santos. 2021.The Impact of Covid-19 on Women in Timor L'Est. Heinrich Boll Stifftung.
[10] United States Agency for International Development. 2017. Climate Risk in Timor-Leste: Country Profile.
[11] Second National Communication (SNC) to the UNFCCC, 2020.
[12] Nationally Determined Contribution (NDC), 2016.
[13] https://climateknowledgeportal.worldbank.org/country/timor-leste
[14] Wallace, Luke, Baskaran Sundaram, Ross S. Brodie, Sarah Marshall, Samantha Dawson, John Jaycock, Gerard Stewart, and Lindsay Furness. 2012. *Vulnerability Assessment of Climate Change Impacts on Groundwater Resources in Timor-Leste Summary Report*. Australian Government Department of Climate Change and Energy Efficiency.

of surface fittings; and (iii) flash floods. Climate change thus places the delivery and management of water supply services at risk. To achieve the Sustainable Development Goals (SDG) 2030, adaptation measures will be required,[15] including climate-proof designs for infrastructure development, more efficient pumps in response to a higher reliance on groundwater pumping, revision of regulations and standards to enhance climate change resilience of critical infrastructure, and enhanced water distribution systems and management systems at all levels to avoid shortages.

14. **The impacts of climate change are already apparent.** Floods are the most recurrent natural disaster in Timor-Leste, with the urban flood hazard for the country classified as high. This means that damaging and potentially life-threatening urban floods are expected to occur at least once every 10 years[6,16]. Tropical Cyclone Seroja caused heavy rains across the country from 29 March to 4 April 2021, resulting in flash floods and landslides that affected all 13 municipalities to varying degrees, with the capital Dili and the surrounding low-lying areas worst affected. 45 fatalities were reported (including 10 missing). According to official figures from the UN Resident Coordinator's Office, 25,709 households across the country have been affected; of those, 11,558 households are in Dili municipality. 4,546 houses across all municipalities have been destroyed or damaged.[17] Beyond achieving the SDG 2030 target of increased adaptation, Timor-Leste will have to urgently develop disaster risk management and contingency plans to deal with climate change that are already apparent and will only be exacerbated.

B. Sectoral and Institutional Context

15. **Timor-Leste has made progress in increasing access to water supply, but more needs to be done to improve infrastructure, service quality and sustainability.** Access to water in all municipal capitals of the country is constrained by aging infrastructure, highly intermittent supplies and low pressures, inadequate operation and maintenance (O&M), leakage estimated at 62 percent of supply, and a high number of illegal connections resulting in high non-revenue water (NRW).[18,19] By improving service quality and reducing NRW, energy required (and subsequent GHG emissions) to supply the same amount of water will be reduced. In addition, water quality monitoring has only started in January 2022, and has so far not been implemented systematically, limited or no regular water treatment is taking place, and inadequate billing and collection systems are in place. Investing in water supply will have a significant positive impact on the health and well-being of the people, will improve the local environment and will contribute to economic growth. Groundwater resources in East Dili are reaching the ceiling for sustainability and the Government intends to undertake an assessment of alternative sources to ensure long-term access to water.

16. **Access to clean water is particularly challenging**. Efforts are ongoing to rebuild the country's infrastructure, but water supply infrastructure for domestic, commercial, and industrial end users remains underdeveloped and requires substantial investment. In 2017, although 93 percent[20] of the urban population had

[15] 2016 Timor-Leste's Intended Nationally Determined Contributions *of the United Nation Framework Convention on Climate Change.*
[16] https://thinkhazard.org/en/report/242-timor-leste
[17] UN Resident Coordinator's Office (RCO) *Situation Report No. 5* (15 April 2021) Timor-Leste: Floods
[18] NRW is defined as the percentage of water produced that is not ultimately billed to consumers. Water not billed to consumers results from water losses (physical and commercial losses) as well as unauthorized consumption that is not billed.
[19] WaterAid. 2010. WaterAid in Timor-Leste Country Strategy 2010–2015. Dili, Timor-Leste: WaterAid.
[20] World Health Organization (WHO)-United Nations Children's Fund (UNICEF) Joint Monitoring Programme (JMP) 2017.

access to improved water supply,[21] only 30-35 percent had individual piped connections in their premises. The reasons for the low access to piped connections include: (i) poor condition of much of the piped network, (ii) insufficient revenues, (iii) frequent modifications to the system without following the overall system design, (iv) insufficient budget allocated, (v) lack of documentation for many small upgrades and repairs, creating a complicated and inefficient distribution system, and (vi) lack of archiving and record keeping practice. Hence much of the distribution network's locations are not known, making leak detection and repair very challenging and ultimately undermining improved access to clean water.

Fig. 1: Access to Water in Selected Municipalities

Municipality	Urban Population	Population Served (%)
Dili	317,000	30-35
Baucau	22,461	49
Los Palos	13,435	39
Same	16,732	70
Viqueque	10,005	86

17. **Performance levels of urban water supply services in Dili are facing constraints.** The water supply system in Dili is performing below standard with high NRW and without proper operation and maintenance planning. The water supply system is constrained by low pressure in the distribution system, inadequate maintenance of main pipes, high leakage and a high number of illegal connections, resulting in high NRW.[22] At the same time, groundwater withdrawal is reaching the maximum for sustainability and surface water cannot be expanded further because of dry season shortages. It is critical to more accurately monitor NRW and reduce it in the network as a matter of first priority before implementing further upgrades or reforms. Curbing NRW will help provide citizens with a more reliable access to water during droughts and heat waves.

18. **Natural and climate-related hazards in Timor-Leste have direct impacts on water supply service provision.** These include tropical cyclones, floods, droughts, earthquakes, increased temperature, and rising sea level risks. The damage caused by Cyclone Seroja has highlighted the urgent need to have in place a robust incident and disaster risk management system, and the need for infrastructure resilience[23] towards climatic risks. Cyclones, floods, and earthquakes could damage the infrastructure, disrupt water supply services, and impact the quality of surface water and ground water in multiple ways. The high levels of rainfall and runoff can increase loading of pollutants, contaminants and sediment in surface water and groundwater. The drought conditions can also lead to water scarcity and reduced water supply. The reduced groundwater tables and surface water flows could lead to the increase of pollutants and potentially the use of saline and unsafe water sources, as well as increased energy needs and GHG emissions for pumping. Lower water availability for washing, cooking and hygiene will increase exposure to waterborne contamination.

[21] Access to an improved water source refers to the percentage of the population with reasonable access to an adequate amount of water from an improved source, such as a household connection, public standpipe, borehole, protected well or spring, and rainwater collection.

[22] World Bank. 2018. "Timor-Leste Water Sector Assessment and Roadmap." World Bank, Washington, DC. https://documents1.worldbank.org/curated/en/433121521173685667/pdf/124329-WP-P163648-PUBLIC-Timor-Leste.pdf

[23] Resilience is defined as "the capacity of an entity to prepare for disruption, to recover from shocks and stresses, and to adapt and grow from a disruptive event. Water utilities must adopt a proactive approach to potential disruption that combines preparedness, emergency response, efficient operations, and long-term capital investments" (*Resilient Water Infrastructure Design Brief, World Bank, 2020)*

19. **The main source used for water supply in Dili is groundwater from the Comoro basin.** The total annual groundwater recharge in Dili is estimated at 2.9 million cubic meters (MCM). Twenty-six public boreholes have been installed, 17 of which are located in East Dili. These 17 boreholes withdraw a total of 0.7 MCM per month from deep aquifers, using electrical pumps. Further increases in groundwater withdrawal would exceed recharge and undermine sustainability. In addition, private boreholes have been installed that withdraw water from shallow aquifers, mainly using electricity. It is estimated that, of the 60 percent of the people that are not connected to the network, 16 percent use a private borehole.

20. **Water supply infrastructure development has been identified as a priority in the Timor-Leste Strategic Development Plan 2011–2030, the VIII Constitutional Government Program 2018–2023, and the National Adaptation Programme of Action to Climate Change.** By 2030, the Government aims at providing 100 percent of the urban population with 24/7 access to water supply and 100 percent of the rural villages with access to a functioning water supply system. In addition, Timor-Leste in its Intended Nationally Determined Contributions (INDC) 2016 as part of the United Nations Framework Convention on Climate Change (UNFCCC) has put forward adaptation goals to enhance Government and community strategies to respond to drought exacerbated by climate change, and create and enhance water harvesting models, water distribution and management systems at all levels to avoid water shortages due to climate change.[24] In 2017, Timor-Leste developed its National Climate Change Policy (NCCP). The goal of the NCCP is to provide a vision, policy guidance and climate resilient development pathways to Government and non-Government actors working on different aspects of climate change inter alia, adaptation, mitigation, climate change finance, and loss and damage to contribute towards building a climate resilient Timor-Leste (Ministry of Commerce, Industry and Environment (MoCIE), 2017). Related to the climate change mitigation, the NCCP is directed towards energy efficient, low carbon options and less polluting development strategies, without compromising national economic development potential.

21. **Under the 8th Constitutional Government Decree Law No. 14/2018, the Ministry of Public Works, (MoPW) is responsible for the management of water resources, public water supply, sanitation, and drainage.** The MoPW has prepared a Sector Investment Plan (SIP)[25] of US$ 1.323 billion to accelerate water and sanitation infrastructure development. As part of this planning exercise, MoPW has prepared a series of master plans including the Water and Sanitation Master Plan for the capital city of Dili. The Dili Water Supply and Sanitation Master Plan is designed to provide all the residents[26] of the Dili Metropolitan Area (DiMA) with safe, reliable, 24-hour supply by 2036, with a focus on the development of reduced carbon, increased resilience of sustainable water production, and treatment capacity and expansion of the distribution network. The Government requested the World Bank to support the implementation of the SIP by financing water supply infrastructure in East Dili.

22. **The ongoing Detailed Engineering Design (DED) study has identified investments in the rehabilitation, expansion and upgrading of the DiMA Water Supply system.** According to the DED, up to 2030, 80 percent of the Dili Metropolitan customers will still rely on groundwater. The expected number of residents in Dili in 2030 is 386,000 with an estimated demand for water of 59,000 CMD. Because of the less favorable groundwater situation in East Dili, no additional groundwater will be extracted above the present withdrawal of 0.7 MCM. These investments will improve the water services available in Dili. In addition, they will ensure the future water security of Dili's residents, especially in light of the climate threats of more severe droughts and impacts of floods on infrastructure, by increasing water source availability and reliability. Where possible, gravity-based systems will

[24] https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Timor-Leste%20First/Timor-Leste%20First%20NDC.pdf
[25] The SIP 2018–2030 for Water Supply and Sanitation in Timor-Leste was approved on January 25, 2018.
[26] 428,570, including Tibar and Hera, [Y]2036

be utilized to reduce pumping (and energy) requirements. Where gravity-based systems are untenable, fossil-based systems may be used, but energy efficient systems will be prioritized.

23. **In addition to the infrastructure, the Master Plan recommends carrying out several studies** including: (i) monitoring of surface and ground water; (ii) hydrogeological/hydrological study in Tibar and Hera areas; and (iii) a surface water resources development study for Railaco and Gleno Dam. The Master Plan also proposes the evaluation of long-term alternatives to increase the sustainable water production, including the development of surface water resources from the Railaco and Gleno rivers. The feasibility study of the proposed Railaco and Gleno dam is currently at the final stage. If feasible, it will take two years to finalize the DED and 60 months to construct the Railaco dam. Under the current study, Railaco will contribute 47,500 CMD which will help reduce the share of ground water utilization below 35 percent of the total customers consumption. These water source developments will ensure adequate water availability, making water supply more reliable into the future, while taking climate change impacts into account.

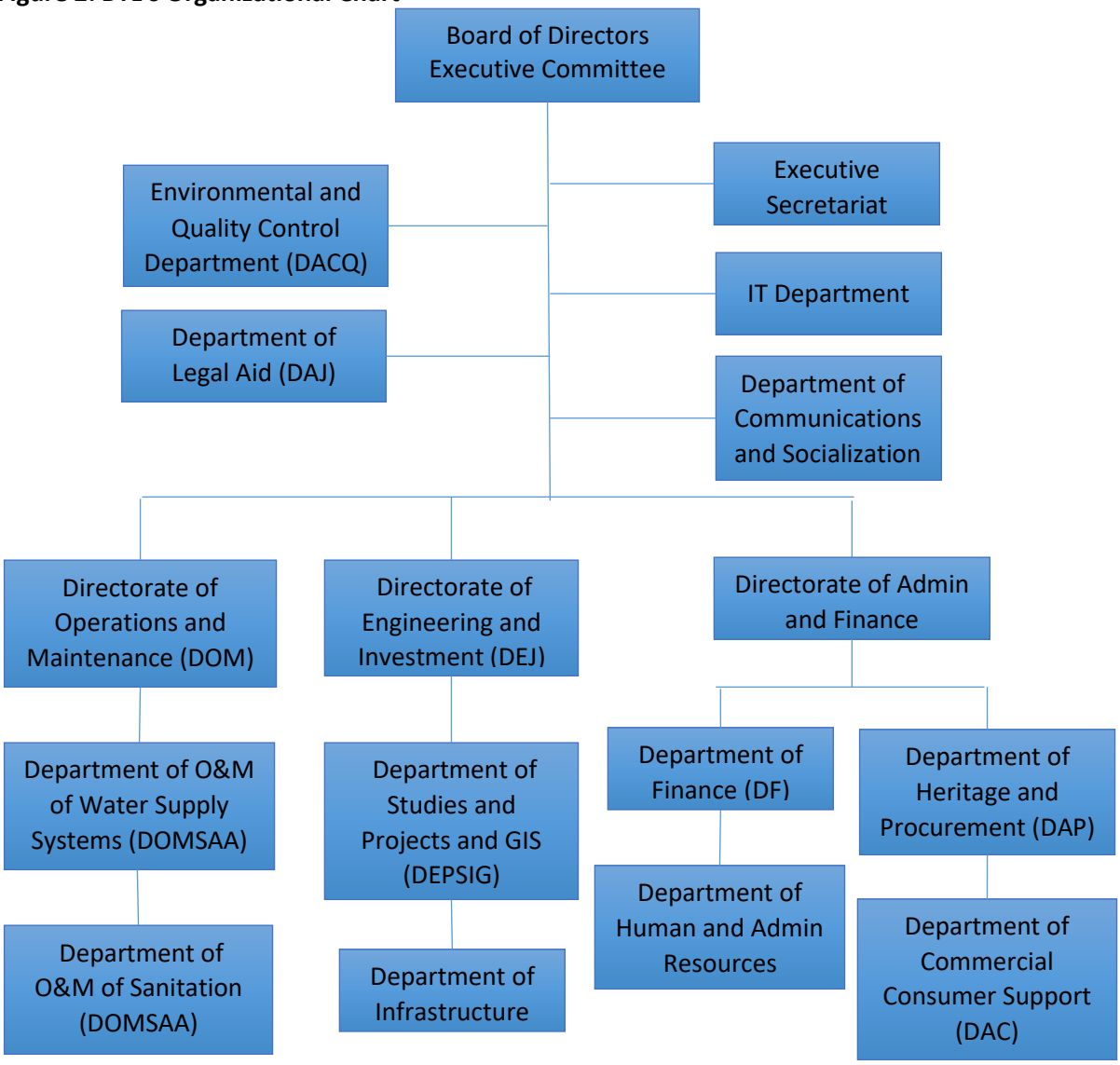
24. **The Government has recently embarked on a water sector institutional reform program that aims at clearly separating the service provision, regulation and policy making functions.** This institutional arrangement is consistent with international best practice and intends to introduce incentives by strengthening accountability. This sector reform includes, first, the establishment of Bee Timor-Leste Empresa Publica (BTL) a national public water supply and sanitation (WSS) service utility to be responsible for infrastructure development, operation and maintenance (O&M) and commercial activities in all 13 municipal capitals of the country, including Dili. The reform also includes the establishment of a regulator for WSS (ANAS) in charge of regulation, setting and monitoring tariffs and standards, collection of data on financial and operational performance, monitoring and control of the water distribution system and handling of consumer complaints. ANAS is governed by a Board of Directors, an Executive Director, a Fiscal Council and the Technical and Tariff Council. The members of the Board of Directors are appointed by the Council of Ministers. The Executive Director is appointed by the Minister responsible for the water and sanitation sector. MoPW remains responsible for formulating policies and strategies for the sector. Such reform will allow the national WSS service utility to utilize energy efficiency measures to improve operational and financial performance while reducing GHG emissions across its service area.

25. **The creation of the national water supply utility BTL was enacted by the Decree Law No.41/2020 on September 25, 2020 to replace the Department General of Water and Sanitation (DGAS) of MoPW.** BTL aims at providing universal and equitable access to safe drinking water and sanitation services to all urban population in the country within the next 10 years; maintain regular, continuous, efficient water supply and sanitation services; promote affordable water and sanitation services; contribute to economic development, social, environment and technological progress; improve public health; and promote industrial, commercial and research development. BTL has ambitions to become a 'Utility of the Future' (UoF) in 10 years in five areas of technical operations, commercial operations, financial management, human resources management, and organization and strategy.

26. **Decree 41/2020 establishes BTL as a public company**, with administrative autonomy and the responsibility to provide access to water and sanitation services to citizens. It is governed by a Board of Directors, an Executive Committee and a Fiscal Council. Its five Board members and three Executive Committee members are appointed for a period of four years. BTL currently employs 290 staff across Timor-Leste (excluding Oecussi), and intends to recruit 55 more employees in the next two years. Most of these positions are for technical staff. As a young utility, BTL is facing significant capacity challenges. The Government and BTL are aware of the

shortcomings and plan to address them. The project will also strengthen BTL's institutional capacity as described below.

Figure 2: BTL's Organizational Chart



27. **The financial viability of BTL is important to provide sustainable access to water to the population of Timor-Leste.** It is currently undermined by low tariffs, a lack of an efficient billing and collection system and a lack of adequate incentives. Water tariffs for Timor-Leste were jointly established in 2004 by the MoPW and the Ministry of Finance (MoF) (Ministerial Diploma 1/2004) and never revised. For households, the tariff is US$ 0.2 per m^3 from 0 to 14 m^3 (per month) and US$ 0.4 per m^3 over 14 m^3; for public taps, the tariff is US$ 0.1 per m^3 and for public institutions (schools, hospitals, etc.), the tariff is US$ 0.15 per m^3; and for industry, restaurants and other commercial businesses, the tariff is US$ 0.6 per m^3. Water tariffs were suspended in 2006 after the civil unrest and only reinstated in July 2013. Water tariffs currently apply only to the urban areas of Dili and only to metered customers. Some municipalities (e.g., Maliana and Manatuto) have adopted a fixed unmetered tariff. In 2021,

about 28 percent of the 6,500 connections received a bill. About 10 percent of these bills were paid. In 2021, revenue from tariffs covered about 10 percent of operating costs because of high non-technical losses and collections losses, partly as carbon-intensive energy use drives up operational costs.[27] In addition, although there are penalties for customers who do not pay their bills, these are not enforced and corrective actions to address illegal water connections are not taken.

28. **In order to increase revenues, several steps were taken, notably in 2019, increasing the number of payment points in Dili to allow for cash payment instead of bank transfer.** But much more remains to be done to ensure the sustainable provision of access to potable water of BTL. Improving the tariff levels and collection system will also improve water efficiency by customers by sending incentives to prevent profligate use and raise awareness of customer-side leaks as the unusually high bills will be a strong motivation for customers to seek investigation and repairs. Such water efficiency impacts will further reduce energy consumption, reduce GHG emissions and help mitigate climate change impacts.

29. **Supporting BTL to improve its coverage of water supply and increase its revenues will be critical to ensure the sustainability of the reforms.** This will require important institutional development, providing incentives and strengthening capacity of BTL's systems, and procedures to manage, operate, and maintain the new water supply system in a technically and financially sustainable way. It will also require the implementation of a volumetric water tariff at a reasonable price for all, especially the poor and disadvantaged, as the access to water improves as a result of the infrastructure development. This is consistent with the Water Supply for Public Consumption Decree Law 4/2004 providing the legal framework for providing access to water in a sustainable manner, including recovery of costs from customers.

30. **The Government is well aware of these challenges.** ANAS has established in October 2021 a Technical Tariff Committee (Conselhu Teknika Tarifaria, CTT) with membership from BTL, ANAS, the Consumers' Association, MoF, Ministry of State Administration (MoSA), the NGO Forum for Timor-Leste (Fongtil) and academia to review and propose a new tariff structure and develop guidelines for the establishment of water tariffs. The CTT is expected to submit the tariff guidelines and propose a new tariff structure in May 2022. While a significant increase in the tariff is unlikely to be agreed at the current juncture, the establishment of the CTT is an important step forward and confirms the resolve to improve the sustainability of water service delivery.

31. **The Decree 31/2020 on Water Quality Control for Human Consumption defines the microbiological, physical and chemical water standards for human consumption**, the monitoring frequency, the water quality control program, reporting, sample collection and analytical methods. BTL has only recently started systematic water quality monitoring and has started preparing a quarterly and annual report of water quality control for human consumption that is submitted to ANAS. In accordance with the Decree, routine water quality tests of four parameters (pH, electro-conductivity, turbidity and free Cl2) are conducted three times per day at each WTP. More comprehensive tests of 24 parameters are conducted once per month by the National Laboratory. Quarterly reports of routine testing results are disclosed. The Project will help BTL meet the provisions of the Decree and make sure that daily routine testing of four water quality parameters and monthly full testing of all 24 parameters are done in compliance with the Decree. Under component 2, the Project will strengthen BTL's capacities to undertake systematic water quality monitoring and reporting. Since no baseline of systematically monitored water

[27] Based on October 2014 estimates. ADB, "TA 8750 TIM Preparing the Urban Services Improvement Sector Project Draft Final Report", October 2015

quality parameters is available, the baseline for the percentage of water samples passing tests that have been conducted in accordance with accepted practice is set at 0, and the target value is 90.

32. **The COVID-19 pandemic has placed additional constraints for the provision of water supply service.** Enhancing and expanding access to water during the emergency phase of this crisis has been a huge challenge. The additional pressure stemmed from lower revenues, increased costs (particularly on labor and inputs like chemicals), and the need to ramp up access to water across the country. The suspension of water billing has been part of the Government response to the crisis.

33. **Along with the World Bank, other development partners are concurrently working with the Government to improve access to water.** The Asian Development Bank (ADB) is preparing an investment operation that would cover water supply in West Dili and that will be implemented in close coordination with the proposed Project. ADB is also providing technical assistance on information management, water regulation and financing advice, along with Human Resources (HR) consulting. The Japan International Cooperation Agency (JICA) is currently working with BTL on water distribution management, benchmarking and performance assessment, HR and customer management issues. It is also conducting a flood assessment in the Comoro river, and an options assessment to improve the water supply to the Bemos WTP. The Millennium Challenge Corporation (MCC) is undertaking a feasibility study for sewerage and wastewater treatment in Dili, and MoPW is funding a water supply and sanitation master plan.

C. Relevance to Higher Level Objectives

34. **Improving the coverage and the operational performance of BTL will help Timor-Leste meet its SDG targets and the objectives of its Strategic Development Plan 2011-2030.** The Project will contribute to multiple benefits on health, productivity and income, mortality rates, educational attainment, climate change mitigation and adaptation, and time and opportunity costs—particularly for women, small children, and vulnerable populations—as well as on reducing stunting. People will save time from not having to queue at public water points, being ill, or having to take care of someone sick due to water-borne diseases, thereby increasing the time spent at school or on productive activities. The Project will also contribute to increased economic outputs as well as job creation in sectors dependent on clean water supply (industry, small-scale business, tourism, and recreational activities). Finally, the Project will help long-term sustainability of supply beyond 2030 by undertaking an assessment of alternative water supply options for Dili.

35. **The Project will contribute to the World Bank Group's twin goals of ending extreme poverty and promoting shared prosperity by improving access to water in Dili**. The Project is fully aligned with the World Bank Group's Country Partnership Framework (CPF) for Timor-Leste, FY2020–2024 (Report No. P134792 – TP) and with the Government's SIP and its National Adaptation Programme of Action to Climate Change, low-carbon and climate-resilient measures found in the Second National Communication to the UNFCCC, the National Climate Change Policy and the Nationally Determined Contribution. The CPF focuses on reducing poverty and promoting shared prosperity organized around three focus areas: (i) strengthening the foundations for private sector-led growth and economic stability; (ii) investing in human capital, public services, and social protection; and (iii) raising productivity through investment and connectivity. The Project is aligned with Focus Area 2 (Invest in Human Capital and Service Delivery) of the CPF. In particular, the CPF includes provisions for a Water Supply Project to increase access to clean water, thus contributing to improved health and nutrition outcomes, while increasing

resilience to climate risks and reducing GHG emissions – also in line with the INDC. The Project would help strengthen and modernize sector institutions to improve governance and scale-up the quality of service delivery.

36. **The Project aligns with the World Bank Group's Green, Resilient, and Inclusive Development (GRID) approach and Climate Change Action Plan** by addressing sustainability, resilience, and inclusiveness simultaneously and systematically. The Bank's GRID approach promotes economic growth that goes hand in hand with environmental goals and inclusion. GRID aims to emphasize the cross-sectoral nature of development policies, focusing on the interrelationships of poverty, inequality and, environmental externalities such as climate change. The Climate Change Action Plan builds on the GRID framework mentioned above. It aims to advance the climate change aspects of the Bank's GRID approach by aiming for measurable improvements in adaptation and resilience and measurable reductions in GHG emissions with climate co-benefits.

37. **The proposed Project is also part of a coordinated World Bank effort to support the Human Capital development agenda**. Along with the Human Capital Programmatic ASA (P172706), the Timor-Leste Public Expenditure Review including Health, Education and Stunting (FY19); the Basic Education Strengthening and Transformation Project (P166744); and the Timor-Leste Water Supply and Sanitation Project (P167901), the Project is part of the World Bank's support to the Government to improve access to basic services.

II. PROJECT DESCRIPTION

38. **The Project will support the implementation of the Government's SIP** comprising major infrastructure development and institutional strengthening. The Project aims to (i) address the infrastructure gaps to improve the coverage and the operational performance of BTL in East Dili; (ii) strengthen the climate-resilience of the investments to address floods and droughts, and to reduce NRW and improve water efficiency, (iii) strengthen the capacity of the newly established national public water utility BTL to improve service delivery and long-term sustainability of the infrastructure in collaboration with other technical and financing partners, and (iv) help BTL strengthen its financial viability by increasing its revenues through higher tariffs, improved billing and better collection and by reducing its operating costs. At the request of the Government, the Project will not invest in sanitation infrastructure that will be financed by the MCC. To achieve the Project Development Objective (PDO), the proposed Project will have the following three components: Component 1: Water Supply and Treatment Infrastructure Development; Component 2: Institutional Strengthening; and Component 3: Project Management.

A. Project Development Objective

PDO Statement

The Project Development Objective is to improve the coverage and the operational performance of BTL in the Project Area.

PDO Level Indicators

39. PDO indicators for the proposed Project include:
    a. People provided with access to improved water sources (number);
    b. Reduction of the water losses in the distribution system in the Project Area (Percentage);

c. Increase in collection ratio of bills in the Project Area (percentage); and
d. Percentage samples that pass the water quality test (Percentage).

B. Project Components

40. **BTL's operational performance is defined as** the improvement in water quality[28], reduction of non-revenue water, improvement in billing and collection, and increased citizen engagement in improving the quality of services. **The Project Area** is East Dili as indicated on the map in Annex 4.

41. **The Project will finance investments to improve the quality of water service delivery and provide 24/7 service in the Eastern part of DiMA**. The Project will expand the coverage of the network from 6,500 at present to 12,482 connections in 2028 at Project closing. The infrastructure (reservoir and distribution network) that will be developed will be able to accommodate further expansion of the network to 22,400 connections in East Dili serving 123,300 people in 2050. The Project will consist of the following components (see Annex 2 for details).

Component 1: Water Supply and Treatment Infrastructure Development (Cost: US$ 104.42 million)

42. **This Component will finance the development, upgrading and expansion of the existing water supply system in the Project area** through inter alia:

- Upgrading of four water intakes;
- Development and upgrading of pipe networks and installation of new rising and transmission mains;
- Construction of 12,482 new piped and metered connections;
- Increase in the capacity of four existing reservoirs and the development of two new reservoirs totaling 16,700 m^3;
- Construction of new booster pump stations and the replacement of old, inefficient groundwater and booster pumps by new, more efficient ones;
- Installation of groundwater monitoring wells and establishment of a surface and groundwater monitoring and SCADA system;
- Construction, expansion and relocation of two WTPs and installation of disinfection facilities;
- Undertaking of five additional DED studies in Aileu, Gleno, Liquica, Ainaro, Suai and Maliana; and
- Supervision, through the Project Management Consultant (PMC), of the civil works.

Component 2: Institutional Strengthening (Cost: US$ 14.34 million)

43. **Component 2 will strengthen institutional capacities** and provide incentives to improve the sustainability and resilience of water supply infrastructure financed under Component 1 and the financial viability of BTL through technical assistance, capacity building, training, and goods, including inter alia:

- Undertaking, by the PMC, of an assessment of the need and substantive coverage of performance-based contracts for the outsourcing of key operational responsibilities;
- Depending on the assessment conducted by the PMC, outsourcing of key operational responsibilities on a performance-basis;

[28] Water quality services includes coverage, continuity of services, access, biological and chemical water quality for human consumption.

- Provision of operational and commercial advisory services to BTL, strengthening of BTL's capacities, systems, and procedures to manage, operate, and maintain the new water supply system in a sound technically and financially sustainable way;
- Provision of support and strengthening of MoPW's capacities in overall water sector governance, and the design, implementation and evaluation of water sector reforms;
- Provision of support to BTL for the design and implementation of a geo-referenced asset management plan;
- Provision of technical assistance to BTL in the preparation of the Sustainability Improvement Plan including improvements in billing and collection to ensure the technical and financial sustainability of the infrastructure financed under the Project;
- Preparation and implementation of a disaster management and resilience program to strengthen BTL's capacity to manage disaster and climate-related risks and mainstream disaster risk management (DRM) and climate change adaptation (CCA) consideration into strategic, operational and investment plans;
- Capacity building, education, and public awareness campaigns to conserve water and manage adversity such as climate related disasters;
- Provision of technical assistance to BTL to implement its Business Plan and conduct a biannual evaluation and update of the implementation of BTL's Business Plan;
- Conducting a program to increase the capacity of ANAS and BTL in determining tariffs and improving water efficiency, including tariff policy, price setting and structures, metering, affordability and enforcement frameworks;
- Preparation by ANAS of a tariff road map that establishes the increases in the water supply tariffs that are required to progressively achieve financial viability of BTL and that will be submitted to the Council of Ministers for approval;
- Provision of support for the preparation of a community engagement plan, a customer relations management system, the design and implementation of annual customer satisfaction surveys, improvement of a corporate website, and strengthening capacities of BTL in customer engagement, behavior change and demand management measures;
- Provision of technical assistance to BTL to strengthen water quality monitoring capacities and ensure compliance with Decree 31/2020, including the installation of a laboratory and purchase of goods and services;
- Preparation of a rolling 5-year gender and diversity improvement plan, implementation of a systematic outreach activities on gender awareness, outreach to universities and relevant academic institutes to identify female employees, and training for BTL staff; and
- Undertaking of a water resources assessment that will identify and evaluate long-term supply alternatives in the Comoro basin to BTL's traditional water sources including groundwater, artificial recharge and seasonal storage, and alternative non-groundwater sources of water to meet demand in a changing climate beyond 2030.

Component 3: Project Management (Cost: US$ 4.85 million, including US$2.24 million from IDA and US$ 2.61 million from the Government)

44. **This component aims** at supporting Project management and implementation, including the operational costs for inter alia:

- technical, environmental, and social supervision of contract implementation, and Project management support to the Project Management Unit (PMU);
- Project audits and monitoring and evaluation (M&E) activities under the Project, including the recruitment of a PMC, an M&E consultant, a financial management and procurement consultant and the establishment of a Management Information System (MIS), including preparation of a baseline;
- Provision of administrative and operational support to the Project Management Unit, including equipment for its operations (fast internet, IT equipment and video-conferencing facilities); and
- Establishment of a Grievance Mechanism (GM).

45. **The prospective inflation**, COVID-19 pandemic, the military conflict in Ukraine, the FCV status of the Recipient, fluctuations in costs and supply chain constraints and delays in the South East Asia region are driving up costs and have led to significant uncertainties regarding the actual costs to fully implement the Project. In addition, the DED studies are still being reviewed and subject to verification of the estimated costs. In view of this, the Government wishes to maintain, as a contingency, a separate "unallocated" disbursement category in the amount of SDR 7.1 million (US$9.8 million equivalent, 8 percent of the credit amount) from which amounts can be easily reallocated if the need arises.

C. Project Beneficiaries

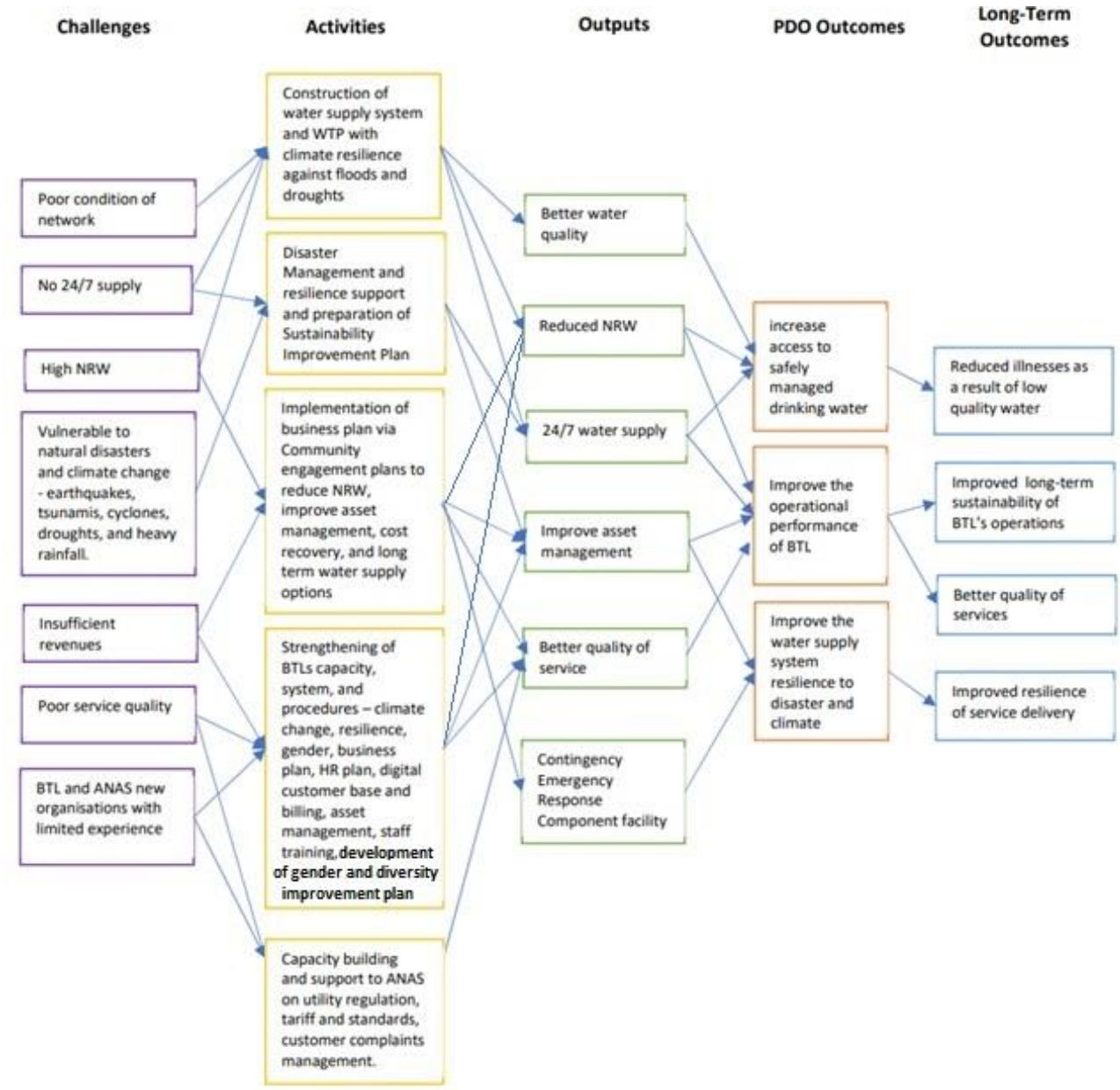
46. **The beneficiaries of the Project are primarily the urban population of East Dili that will be served by the Project by closing, estimated at 82,300 people**. The infrastructure that will be developed by the Project will allow progressive expansion of the connections across East Dili from 6,000 in 2020 to 22,200 connections serving 123,300 people in 2050. Potential benefits include savings for households who currently pay high prices to satisfy their water needs, reduction in water borne diseases, savings as a result of a more efficient use of energy, reduced flood and drought damage to WS assets, and overall health and environmental benefits for all direct beneficiaries.

D. Results Chain

47. **The main challenges that the Project will address are the lack of adequate water supply, the inadequate quality of water supply services, the unsustainability of the investments and BTL's financial viability**. both from a financial and climate change perspective. The theory of change is presented in figure 3. The construction and upgrading of the water supply system will provide access to continuous 24/7 metered water supply to all the households in the Project area with a quality that meets the Government's health standards. The construction of a WTP will ensure safe management and treatment of water in the area it serves. These proposed investments in water supply infrastructure will improve coverage and the operational performance of BTL in East Dili.

48. **To improve the quality of service delivery**, BTL aims to implement the Business Plan that it has developed during Project preparation. The Business Plan focuses on a reduction of leakage and recovery of NRW, improved maintenance and asset management, improved cost recovery and strengthened capacities. The Project will help BTL implement its Business Plan through (i) the implementation of a Stakeholder Engagement Plan (SEP) to secure community buy-in and increase users' willingness to pay for services; and (ii) strengthening of BTL's capacity, systems and procedures to operate and maintain the WS infrastructure. The Project will also help BTL undertake a biannual evaluation of the implementation of the Business Plan and a biannual update of the Business Plan as part of BTL's strategy for citizen engagement.

Figure 3: Theory of Change



49. **To ensure the sustainability of the infrastructure**, the Project will support BTL through the preparation of a Sustainability Improvement Plan to ensure long-term technical and financial sustainability. Support will be also provided to the MoPW to improve the implementation of its institutional sector reforms which will contribute to long-term sustainability of the sector investments across the country. Changes in the level and the structure of the water tariff will help finance the costs for operating and maintaining the system, and will help sustain the investments in the long run. Specifically, an assessment will be conducted to outsource some of BTL's operational activities to a third party on a performance-basis, and ANAS will prepare a tariff road map that establishes the

annual increases in the water supply tariffs that are required to progressively achieve financial viability of BTL and that will be submitted to the Council of Ministers for approval.

50. **To improve the climate resilience of the investments against floods and droughts**, the investments have been identified and designed incorporating climate change as a key design variable. For example, investments will focus on efficiency of water use and pumping, a reduction of NRW, new and increased capacity of storage reservoirs and the appropriate sizing of investments will accommodate greater variability in the supply. The Project will also identify long-term options for sustainable supply augmentation beyond 2030.

51. **To improve gender and inclusion, the Project will develop a rolling gender and diversity improvement plan** as part of the HR performance management system with the aim of achieving 30 percent representation in BTL by end of year 5. The 5-year plan will include systematic outreach activities to universities and relevant academic institutes to identify female talent; capacity building and training activities with MoPW, BTL and the PMU on gender awareness for staff and special topics identified by employees i.e. leadership and public speaking; and ensure 40 percent representation of women during Business Plan Reviews and Customer Satisfaction Surveys.

E. Rationale for Bank Involvement and Role of Partners

52. **Design and implementation of sector institutional reforms with the associated regulatory, planning, monitoring and evaluation mechanisms is a public sector responsibility.** For the development of water and sanitation services, the use of public sector financing is justified given the public good nature of the investments. Until there is an improvement in the institutional and regulatory framework that can capture the economic benefits into a revenue stream, public funding will remain the main source of financing for water supply. The Project has identified least cost investment options to minimize the need for public financing and a gradual transition will be initiated towards cost recovery of WS service delivery. The establishment by the Government of the CTT to review the water tariff is a first and important step.

53. **Support to Timor-Leste to meet the gap in delivery of water service with quality and continuity is critical** for the development of its cities. The residents are in very poor economic conditions and the lack of water service has impeded the growth of economic activity and the wellbeing of the population. Public funds are needed to pay for investment and probably for some portion of the operation and maintenance costs.

54. **The World Bank brings value added** in: (i) strengthening capacities to operate and maintain the infrastructures that will be developed under the Project as presented in Component 2, (ii) applying its global knowledge to the water and sanitation sector in Timor-Leste; and (iii) providing technical support in the implementation of activities leading to capacity building and infrastructure development.

55. **The Project will work closely with the ADB** that is financing the investments in the development and rehabilitation of water supply infrastructure in West Dili. The PMU that has been established is responsible for the implementation of both Projects (as well as the Timor-Leste Water Supply and Sanitation Project, P167901).[29] The PMU will recruit a PMC to provide technical assistance for the implementation of the Project. A separate PMC will be recruited by ADB. The feasibility study and DED in East and West Dili, as well as the environmental and social safeguards instruments have been prepared by a single consultancy firm, ensuring consistency in the application

[29] the project was approved on April 22, 2020, is focused exclusively on Baucau (TL's second city) and is in the start-up phase.

of design standards and safeguards. The institutional support to BTL provided under Component 2, including the GAP, capacity strengthening and citizen engagement that the Bank has been leading, has been discussed and agreed among the financing partners, MoPW and BTL to avoid duplication and ensure a consistent approach towards improving the quality of BTL's services across Dili. Procurement and financial management (FM) arrangements are similar for each Project. Joint supervision visits (including the MTR) will be organized. Other donors, including JICA, DFAT, UNICEF, and MCC are also collaborating closely to support the MoPW and BTL technically and financially to develop and implement the sector institutional reforms. The Project will also ensure consistency and avoid duplication with activities financed by the Timor-Leste Water Supply and Sanitation Project, e.g., the preparation of the rolling five-year Sustainability Improvement Plan, asset management and GM.

F. Lessons Learned and Reflected in the Project Design

56. **Lessons from recent World Bank Project and studies**[30] on improving water supply service delivery have been considered and are included in the design of the proposed Project. These include:

57. **Addressing policy, institutional, regulatory issues and the political economy is critical.** Despite large investments in the WSS sector by Governments and their development partners over the last 10—15 years, the sustainable delivery of WSS services in developing and emerging economies has not significantly improved. A holistic approach to the complex issues affecting the sector is needed. Governments and their development partners must tackle the sector's institutional and governance shortcomings, while also addressing the utilities' operational performance issues. Moreover, the approach needs to be grounded in countries' contextual realities, drawing lessons from approaches that were successful or failed to achieve specific objectives.[31] The Project will support the Government's water sector institutional reforms, clearly separating the service provision, regulation and policy making functions.

58. **Strengthening management capacity is important to improve a utility's performance and overall level of operating efficiency.** Given the nature of the WS sector, improving its performance is neither quick nor easy and there is no one-size-fits-all solution. Improving performance requires developing virtuous cycles that stop downward spirals and create credibility, accountability and autonomy, and that provide incentives to achieve results. Recent studies[32] show that the actions taken by countries and utilities that did manage to improve their performance tended to implement the same key actions in roughly the same order. These actions include embedding positive incentives into policy, institutional, and regulatory structures to ensure sustainability; aligning policy, institutional, and regulatory interventions to ensure sustainability, as misalignment leads to distortion of incentives and changes in institutional arrangements. The regulatory framework needs to be supported by laws and policies to be effective and sustainable. In most cases, utilities established a baseline in the early stages of the turnaround as a key input for their Business Plan. Utilities under severe financial distress tended to focus first on

[30] These studies refer to (i) Introducing Commercial Financing into the Water Sector in Developing Countries (Bender 2017); (ii) Financing Options for the 2030 Water Agenda (Kolker et al. 2016); (iii) Crowding-In Commercial Finance in World Bank Water and Sanitation Operations – A How-To Guide for World Bank Task Teams (World Bank 2017); and (iv) Aligning Institutions and Incentives for Sustainable Water Supply and Sanitation Services (Mumssen, Saltiel, and Kingdom 2018).
[31] Aligning Institutions and Incentives for Sustainable Water Supply and Sanitation Services (Mumssen, Saltiel, and Kingdom 2018)
[32] These studies refer to (i) Introducing Commercial Financing into the Water Sector in Developing Countries (Bender 2017); (ii) Financing Options for the 2030 Water Agenda (Kolker et al. 2016); (iii) Crowding-In Commercial Finance in World Bank Water and Sanitation Operations – A How-To Guide for World Bank Task Teams (World Bank 2017); and (iv) Aligning Institutions and Incentives for Sustainable Water Supply and Sanitation Services (Mumssen, Saltiel, and Kingdom 2018).

achieving financial sustainability by either increasing revenues or reducing costs. Next, they set objectives through multiyear targets incorporated into sustainable Business Plans. In almost all cases, the first actions in their Business Plan involved improving human resource and MIS. In most cases, performance contracts were signed with the Government at some point and performance-based management was introduced to incentivize achieving results. These agreements helped define the utility's expected performance and the support to be provided by the Government to achieve it. Therefore, Component 2 has been designed to provide support to BTL to strengthen its capacity, systems and procedures to manage, operate, and maintain the new water supply system in a technically sound and resilient way.

59. **Lessons learned from the preparation of the Timor-Leste Water Supply and Sanitation Project (P167901) have been incorporated**, including the need to strengthen capacities and to closely monitor project implementation. The Project was declared effective on October 21, 2021. Delays in the effectiveness were caused by the changes in the implementation arrangements that had to be made as a result of the establishment of BTL. The implementation arrangements of the Project are consistent to those of the Timor-Leste Project.

III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and Implementation Arrangements

60. **The MoPW will be the Implementing Agency (IA)**. The MoPW has established a PMU that will be responsible for implementation of the Projects in East and West Dili and Baucau, including planning, contract administration, financial management, supervision of environmental and social safeguards and monitoring, all to the satisfaction of the Bank and in accordance with the provisions of the Project Operations Manual (POM).

61. **The Council for the Administration of Infrastructure Fund (Conselho de Administração do Fundo das Infra-Estruturas, CAFI)** will provide the counterpart funds to implement the Project. To that end, BTL prepares its annual program and submits it, through the PMU and MoPW, to CAFI to ensure that adequate counterpart funds will be made available. Counterpart funds are paid directly by CAFI. Permanent members of CAFI include the Minister of Planning and Strategic Investment, the Minister of Public Works, Minister of Transport and the Minister of Finance. Other Ministers and Secretaries of State are requested to attend meetings of CAFI as and when the agenda for the meeting is of relevance to the responsibilities and activities of their agencies.

62. **The National Development Agency (Agência de Desenvolvimento Nacional, ADN)** verifies and approves all tender documents, including the DED and the cost estimate. ADN also checks invoices and certifies the amount of work actually done and the quality of materials used before payment to contractors and consultants, and monitors the implementation and execution of Projects through a quality certification system. It ensures the rational use of the available financial resources. Implementing agencies require clearance from ADN before releasing the payments to contractors or consultants.

63. **The existing Inter-ministerial Technical Working Group**, co-chaired by the MoPW and MoF that includes the MoSA, Ministry of Health, Ministry of Education, Ministry of Planning and Strategic Investments, and Secretary of State for Environment to coordinate WSS development interventions, will provide overall policy guidance during Project implementation.

64. **MoSA represents the local Municipal Administration in the Project** and plays, through the President of the Municipal Administration, an important role in ensuring the smooth implementation of the Project, *inter alia* that road closures are notified and enforced, that the exact location of infrastructure and the alignment of pipes is approved, and that affected people receive their compensation. MoSA and MoPW have agreed on the roles and responsibilities of the Dili municipality in the implementation of the Project. Details will be specified in the POM.

65. **MoPW approves the PMU's annual work plan and budget**, and submits it, as part of its annual consolidated workplan for the Ministry, to MOF for approval. The MoPW will ensure that the PMU will be adequately staffed and funded throughout the implementation of the Project. Key PMU professional staff will include, among others, a Project coordinator, a water supply engineer, a water operation specialist, a social and gender specialist, an environmental specialist, a financial management specialist, a procurement specialist, and monitoring specialists all of whom with experience, qualifications, and terms of reference satisfactory to the Bank. The PMU will recruit a PMC that will be responsible for providing administrative and management support to the PMU in the implementation of the Project in East Dili. The PMC will also be responsible for construction supervision, for overseeing the implementation of the environmental and social safeguards, preparing quarterly progress reports, and, through the M&E consultant, for monitoring of key performance indicators. BTL will be responsible for O&M of the investments after completion of the civil works but has otherwise no implementation roles under the Project and will be providing limited technical assistance with respect to Project implementation.

66. **The National Procurement Commission (NPC)** reports to the MOF and is responsible for tendering and bid evaluation. The PMU will prepare the tender documents for all recruitment and procurement under the project and will submit these to the NPC who will then be responsible for the tender process, bid evaluation and award of contract.

67. **During Project preparation, the procurement and FM capacity of the implementing agency has been assessed**. The objective of the assessment was to determine whether the MoPW's FM systems can produce timely, relevant and reliable financial information on Project activities. The assessment also aimed to determine if the accounting systems for Project expenditures and underlying internal controls are adequate to meet fiduciary objectives, allow the Bank to monitor compliance with agreed implementation procedures, and appraise progress towards meeting the Project objectives.

68. **A Procurement needs and risks assessment** has been described in the analysis of the Project Procurement Strategy for Development (PPSD) which has been prepared by the PMU and the NPC under the MoF.

B. Results Monitoring and Evaluation Arrangements

69. **To ensure effective monitoring and evaluation, several measures will be taken**. The PMU will be responsible for data collection and reporting. The PMU will issue quarterly progress reports that will be due within 30 days after the last day of March, June, September and December each year. A midterm review will be prepared towards the end of 2025, and an Implementation Completion and Results Report will be completed within six months of the end of the Project implementation. In addition, the PMU will support BTL in developing its monitoring system, which will be later also used to report on the technical, financial, and commercial management of the utility.

70. **The PMU will recruit during the first year of Project implementation an M&E consultant who will report on the indicators identified in the Results Framework, as well as indicators that monitor the performance of BTL in its operational and commercial service delivery**. The M&E consultant will establish an MIS that will be managed by BTL and will monitor BTL's operational and commercial data. During the first year of Project implementation, the M&E consultant will also develop a baseline for the PDO and intermediate indicators of the Results Framework, and will set up the Project's GM. The M&E consultant will visit the Project annually to collect field data and prepare annual progress updates. Quarterly reports will be prepared by the PMC.

C. Sustainability

71. **The borrower's commitment to sustaining the infrastructures and the service provision is ensured by the strong alignment between the Project's investments, the SIP, and the institutional reforms that have led to the establishment of BTL to improve service delivery and sector governance across the country**. Overall, the Project's financial sustainability will be strengthened through the implementation of critical measures, including (i) the design of Project infrastructure in a climate-resilient manner considering the long-term impacts of climate change on water resources and demand; (ii) strengthening of BTL's operational efficiency to minimize operating costs and increase its capacity to collect revenues, building on Component 2 activities; (iii) the expansion of services to new customers to increase the revenue base of BTL; (iv) the promotion of a water tariff allowing to progressively sustain the recovery of O&M costs and building on the tariff-setting activities undertaken under the national reform road map; (v) the implementation of an SEP to encourage users' willingness to pay for improved services and acceptance of metered billing and tariff payment; and (vi) the achievement of further progress on the planned sector reform that would set the basis for long-term service provision by establishing a professional nationwide national utility and regulation arrangements. After Project completion in September 2028, BTL, with support from the national and municipal authorities, is expected to build on this strengthened capacity and operate the systems with progressively declining external support.

72. **In addition to the activities listed above**, BTL will (i) prepare, by March 31, 2023, a rolling five-year Sustainability Improvement Plan, outlining how BTL will improve its operational and financial status, including targets and necessary measures to meet the targets; (ii) update, by December 31 of each year commencing 2023, in accordance with the terms of reference acceptable to the Bank and furnish to the Bank for review and comments, its draft updated Sustainability Improvement Plan; (iii) take all necessary actions to carry out its Sustainability Improvement Plan as prepared or updated; and (iv) undertake a bi-annual review and update of the Business Plan. The Government will cover all operating costs for BTL in Dili which are not covered by tariffs.

73. **The recently established CTT is expected to submit the tariff guidelines and new tariff structure** in May 2022. According to the draft Decree, tariffs for households will increase from \$0.20 to \$0.48 per m^3. Vulnerable people will pay half of that. The revised tariff will serve as the basis for completing the draft Business Plan that BTL has prepared. While a significant increase in the tariff is unlikely to be agreed at the current juncture, the establishment of the CTT is an important step forward and confirms the resolve of the Government to improve the sustainability of water service delivery.

IV. PROJECT APPRAISAL SUMMARY

A. Technical, Economic and Financial Analysis

74. **The design of the Project is based on the Dili Metropolitan Area Water Supply Master Plan 2016-2030**, a Feasibility Study and DED that have been undertaken by the Government. The feasibility study for the water supply of DiMA was conducted with a goal of 100 percent of the population connected to the public water supply system in 2030. Per capita daily water consumption for households that are connected to the network is 120 liter. Domestic demand is expected to increase by 30 percent; non-domestic demand is expected to increase by 35 percent. The increased demand will be met by efficiency improvements and further development of groundwater in West Dili. The Bank has reviewed these documents and finds them of adequate quality for the preparation of the Project.

75. **An economic and financial analysis was undertaken during Project preparation**. The economic analysis examines the economic rationale of the Project, testing if its expected benefits surpass the expected costs. The financial analysis examines if the works financed under the Project will be sustainable, testing the financial capacity of the water utility.

76. **The economic evaluation** was conducted using cost-benefit analysis. Expected benefits were measured using the Avoided Cost Approach that measures savings for households when the water service improves. Currently, BTL provides poor services, lacking quality and quantity. Consequently, families must find different sources of water to satisfy their needs, such as: private vendors, private boreholes, bottled water, etc. Each of these alternatives have an associated price that families must pay. When the water service improves, families will rely mostly in BTL and the other sources will significantly reduce, bringing along savings to the households.

77. **The economic costs consist of investment plus operation and maintenance costs**. The Project will expand the service to give full coverage to 12,482 households with piped and metered connections. It will fulfill the water demand increasing the volume of water produced (25,998 CMD) and applying efficiency gains in the operation. Investment costs include all the costs associated with the Project. Operation and maintenance costs were Projected according to the infrastructure to implement, expected efficiencies, water demand and capacity of production. For the economic evaluation, financial prices were transformed to economic prices to eliminate market distortions caused by taxes and subsidies among other factors.

78. **The benefits of the Project that have been considered** include the difference between prices that beneficiaries are paying to face current deficiencies of the service (including prices paid to private vendors, private borehole owners, water utility, containers to store water, bottled water, etc.), minus prices that they will be paying once the works are implemented. Benefits that have not been considered include health impacts, boost of the local economy, and appreciation of properties in the Project area.

79. **Net economic benefit was estimated as the difference between the incremental flow of benefits minus the incremental flow of costs** under two scenarios: with and without Project. The with-Project situation was built by forecasting the water situation as expected once the Project is implemented, i.e., achieving rehabilitations and expansion targets. The without Project situation assumes that the current situation during the entire Projection period will remain, even though the situation may deteriorate along the years if nothing is done. The discount rate used was 6 percent, and 30-year period for the lifetime of the works was applied.

80. **Basic information for this evaluation was taken from the Dili Water Supply Master Plan 2016-2030**[33], as well as from the feasibility and design studies. The DiMA Master Plan covered four subdistricts (out of six in the DiMA), namely Dom Aleixo, Vera Cruz, Nain Feto, and Cristo Rei. It did not include Atauro (Island) nor Metinaro. The Project focusses on East Dili, which consists of the districts of Cristo Rei and Nain Feto. During elaboration of the Master Plan, a socio-economic survey was conducted to determine the households' water consumption, source of water used, and associated economic costs.

81. **The survey showed that the water price paid by households varies according to its source**. Water from the public network corresponds to the tariff charged by BTL (US$ 0.25/cubic meter on average), which has not changed since February 2004. Water from private vendors has a price of US$ 5/cubic meter. Water from private boreholes has a price of US$ 1.29/cubic meter. Bottled water is bought by those connected and non-connected to the public network at a price of about US$ 9 per household per month. All households buy containers to store water. Once the Project is implemented, households will pay mostly to BTL. The economic price paid by household under both situations with and without Project was projected along the lifetime of the Project. The difference between both situations correspond to the benefit of the Project. Currently, households are paying an economic price between US$ 45 to US$ 60 per month. Once the Project is implemented the economic price will reduce to about US$ 15. The difference between the economic price paid in the without and with Project situation will be the benefits (savings) that households will have.

82. **Results from the economic evaluation show a net present value of US$ 91 million**. Results are reassuring given that expected benefits are 80 percent higher than the expected costs. The internal rate of return is 11 percent, which is higher than the 6 percent used as discount rate, allowing ample margin for uncertainties. Results are on the conservative side given that additional benefits that the project will generate were not quantified, such as health impacts, boost to the local economy, and appreciation of properties in the Project area. The GHG analysis shows that the Project will generate net GHG emissions of 134,010 tCO_2-eq over the life of the Project (4,467 tCO_2-eq annually). The economic value of the GHG emission was estimated using the shadow price of carbon and included in the economic evaluation. Results show that the impact is small, expected benefits are estimated between US$ 86 and US$ 89 million.

83. **Financial Evaluation**. BTL's financial sustainability is currently compromised by (i) low tariffs that have not been adjusted since 2004, (ii) low billing and collection, (iii) poor quality of water supply service delivery, (iv) low levels of citizen engagement, and (v) poor state of the network and high technical losses. In view of the low performance baseline of water supply services in Dili and the legacy of inadequate tariffs and high technical and commercial losses, it will not be realistic for the Project to expect BTL to become fully financially viable by Project closing. Rather, guided by international experience, the Project will help BTL take the first steps and help it develop and implement a strategy towards financial viability in the longer-term. Only through sustained support during and after Project completion will BTL be able to achieve full cost recovery.

84. **A set of measures is needed to improve BTL's financial performance**, such as (i) improve the quality of water supply services, (ii) tariffs increase, (iii) improve billing and collection, (iv) strengthen BTL's capacity to reach out its customers, (v) reduce water losses. A systematic, synergetic and step-wise approach is required to improve BTL's performance and viability, and a sustained effort is required to continue implementing these measures to ensure BTL's financial viability.

[33] ADB, Government of Timor-Leste, Seureca-Veolia. *Urban Services Improvement Sector*

B. Fiduciary

Financial Management

85. **Arrangements**: The Project will hire a Financial Management Consultant (FMC) to assist the PMU in meeting the World Bank's financial management requirements, including timely quarterly reporting to the World Bank, managing the replenishment process, and following up on audits. The FMC will support the PMU to prepare Interim Unaudited Financial reports (IFRs) and ensure the completeness of payment remittances. The Project will prepare quarterly IFRs that should be submitted not later than forty-five (45) days after the end of each calendar quarter, and prepare unaudited annual financial reports completed with the Notes to Financial Statements. The Project will be audited by an external audit firm acceptable to the World Bank. The audit report should be made available to the World Bank no later than six (6) months after the end of each fiscal year of the borrower.

86. **Budgeting**: The Project budgeting system follows the Government budgeting system. The Project budget is included in the annual Government budget (budget book). After Parliament approval and signing by the President, the budget becomes effective. There is budget availability risk, due to delays in budget approval. The approved budget will be forwarded to the PMU, who will monitor budget execution.

87. **FM Risks**: The Project has two major risks: first, limited FM staff capacity; and second, unreliability of the accounting and reporting system. These risks will be mitigated by (i) providing technical assistance (FMC) to assist the financial unit at the PMU at an early stage and possibly recruit an additional staff when the Project is implemented; and (ii) ensuring the PMU will maintain subsidiary records in Excel at the beginning of Project implementation. During the first supervision mission, the progress toward adapting the Government country system of Free-Balance will be reviewed. If there is a need, a separate accounting software may be recommended. Overall, the Project FM risks are assessed as Substantial and the proposed FM arrangements will satisfy the World Bank's minimum requirements under the World Bank Directive/World Bank Policy for Investment Project Financing (IPF) effective on October 1, 2018.

88. **Disbursement arrangements**: The applicable disbursement methods will be (i) "Advance", (ii) "Direct payment", and (iii) "Reimbursement". Special Commitment is not anticipated under the Project. A designated Account (DA) denominated in US dollar at a commercial bank will be opened by the PMU, subject to MoF approval. The DA will be used solely to finance eligible expenditures. The ceiling of the advance to the DA will be US$ 200,000. Applications for advances to the DA shall be submitted together with the reporting on use of the DA, which will consist of Statement of Expenditures.

89. **The PMU will be responsible for reconciling the DA** and preparing withdrawal applications duly approved by the DG Treasury before their submission World Bank.

90. **All documentation for expenditures submitted for disbursement will be retained by the implementing unit** and will be made available to the auditors for the annual audit and to the World Bank and its representatives, if requested. The World Bank's financing of the Project is inclusive of taxes, at financing percentage indicated in Table 1. No retroactive financing is expected under the Project; counterpart funds of about US$2.6 million are expected to cover resettlement costs and operating costs of the Project, and if the Project so chooses, these counterpart funds may also cover operating costs associated with vehicles under the Project.

Table 1. Allocation of Credit Proceeds

Category Description	Amount		% of Expenditures to Be Financed (inclusive of taxes)
	in US$	in SDR	
1. Goods, Consultants/Non-Consultant's Services, Training/Workshops and Operating Costs	20,060,000	14,500,000	100%
2. Civil Works	91,125,000	66,000,000	100%
3. Unallocated	9,815,000	7,100,000	100%
TOTAL	121,000,000	87,600,000	

Procurement

91. Procurement for the Project will be conducted in accordance with the World Bank Procurement Regulations for IPF borrowers (Procurement Regulations), dated November 2020, as well as the provisions stipulated in the Financing Agreement and procurement plan updated in the Systematic Tracking of Exchanges in Procurement (STEP). For national procurement, the procedures shall be consistent with the Bank's Core Procurement Principles and subject to Bank's Anti-Corruption Guidelines dated October 15, 2006, revised in January 2011, and July 1, 2016.

92. **Procurement plan**. The detailed procurement plan for the first 18 months is prepared based on the analysis of the PPSD. The plan will be updated as necessary, but at least annually. Detailed procurement arrangements are presented in Annex 1.

C. Legal Operational Policies

	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Areas OP 7.60	No

D. Environmental and Social

93. **The Environmental and Social Risk Rating for the Project is substantial**. The substantial rating primarily considers the risks related to potential adverse impacts on the supply and quality of groundwater resources in the longer term, land acquisition, management of local employment and expectations, lack of meaningful engagement and potential exclusion of vulnerable groups from Project benefits, potential lack of willingness to pay and affordability of water consumers, and the limited experience and capacity of the PMU.

94. **Environmental and Social Standards (ESSs) which are relevant for the Project are**: ESS1 - Assessment and Management of Environmental and Social Risks and Impacts; ESS2 - Labor and Working Conditions; ESS3 - Resource Efficiency and Pollution Prevention and Management; ESS4 - Community Health and Safety; ESS5 - Land Acquisition, Restrictions of Land Use and Involuntary Resettlement; ESS6 - Biodiversity Conservation and

Sustainable Management of Living Natural Resources; ESS7 - Indigenous Peoples; ESS8 - Cultural Heritage; and ESS10 - Stakeholder Engagement and Information Disclosure.

95. **Environmental and Social Instruments**. Based on the relevant ESSs and on the "substantial" environmental social and risk rating, the proposed Project has prepared environmental and social documents, including: (i) a stand-alone Simplified Environmental Impact Assessment (SEIS) and Environmental Management Plan (EMP)[34] for each of the three procurement packages of the proposed Project and (ii) an Environmental and Social Commitment plan (ESCP) jointly for the three packages. In addition, the following documents have been prepared: (i) Stakeholder Engagement Plan (SEP) including a GM; (ii) Labor Management Procedures (LMP); (iii) Abbreviated Resettlement Plan (ARAP); and (iv) Action Plan on Gender-Based Violence (GBV) and Sexual Exploitation and Abuse (SEA)/Sexual Harassment (SH). These documents were prepared by BTL with the assistance of the DED consultant hired by the Government. The LMP, ARAP and SEIS were disclosed on the Bank's website on March 27, 2022. The SEP and ESCP were disclosed on the Bank's website on March 29, 2022.

96. **Anticipated Environmental and Social Risks and Impacts**. The unconfirmed reliability of the groundwater supply from the existing boreholes in East Dili perceived at concept stage may lead to potential adverse and irreversible impacts on the groundwater resources in the long term (i.e., beyond 2030) which may include the risk of saltwater intrusion as result of a decrease in groundwater levels. This risk is mitigated through the Project design which incorporates the recommendation of the groundwater study conducted in 2021 as part of the DED to maintain the water extraction from existing boreholes in the eastern part of Dili at the current rate during Project operation. The SEIS and EMP have been prepared and include the risks, impacts and mitigation measures, including the environmental and social impacts of construction and/or rehabilitation of the water infrastructure. No presence of associated facilities in the Western part of Dili, subject to ADB investment, have been identified.

97. **Social risks and potential adverse impacts emanate on four fronts**: one, land acquisition; two, construction-related activities – labor-management (including labor influx), community health and safety, GBV and SEA/SH; three, lack of meaningful engagement and consultation with communities; and four, social exclusion of vulnerable groups (women, elderly, minorities, poor) from Project benefits.

98. **ESS5 is considered relevant due to the potential investments under Component 1**. The Project is expected to require land for construction of the new water infrastructure, as well as improvement and expansion of the water reservoir capacities and extension of distribution pipelines. In addition, there are also potential impacts during construction such as temporary access restriction, economic displacement of temporary disclosure of businesses, etc. To mitigate these impacts an ARAP has been prepared by BTL with help of a consultant firm. The ARAP will be implemented during Project implementation. The document has been reviewed and cleared by the Bank. Construction activities will commence only after the full implementation of the ARAP.

99. **BTL has prepared a SEP** that maps out the various Project stakeholders and develops a strategy on how to engage with them, share Project information, potential social impacts, risks and benefits, and solicit feedback on the Project. The SEP has been consulted and disclosed by BTL. The SEP summarizes the stakeholder engagement conducted during preparation, inputs received and how they have been incorporated in the Project design and how they will guide the Project's engagement with key stakeholders during Project implementation. The SEP outlines (i) who the potential key stakeholders are; (ii) how they are to be engaged; (iii) how often the

[34] The SEIS and EMP have been prepared as two separate documents, harmonizing the requirements of the Government Regulation No. 5/2011 and the requirements of the World Bank's Environmental and Social Framework.

engagement will occur and how disclosure will take place throughout Project implementation; (iv) how grievances and feedback will be solicited, recorded, and monitored by the Project; (v) responsible parties for this engagement; (vi) timeline and cost.

100. **Capacity building of PMU and BTL will be provided to improve the management of environmental and social risks during Project implementation**. The Project is supporting the establishment of BTL as the responsible entity for delivering water supply services in Timor-Leste, which include recruitment of talented, capable, and well-trained staff and capacity building on technical and environmental and social aspects. BTL has assigned two ES focal points to manage the environmental and social risks, who have been exposed to the ESF through virtual training. These focal points will be supported by environmental and social consultants under the PMC consultancy firm. An institutional capacity assessment will be undertaken during the first year of Project implementation to identify specific gaps and agree on the capacity enhancement measures on environmental and social risk management. The capacity building program for BTL will be developed throughout the Project cycle and implemented as part of the Project components.

Gender and Citizen Engagement

Gender

101. **Gender gaps in Timor-Leste's labor force participation are significant**: 56 percent of men are classified as being in the labor force (or economically active) compared with only 27 percent of women. Progress in increasing women's share of jobs in the public sector has also been slow over the last 12 years. Women held 26 percent of civil service positions in 2001, and this proportion increased to only 29 percent in 2013, despite public sector jobs having tripled during this period. Finally, women's share of managerial jobs across both the public and private sectors is low. Only 16 percent of Timor-Leste's public service directors and chiefs are women (2013), while in the private sector, 29 percent of chief executives and directors are women. Women are not targeted in job placement programs or other school-to-work transitions.

102. **Gender equality in the workplace is particularly relevant in the water sector**, where there is evidence that water and sanitation services are generally more effective if women take an active role in delivering them. A World Bank evaluation of 122 water Projects found that the effectiveness of a Project was six to seven times higher when women were involved than when they were not.[35] Female water users have invaluable insights about the design, operation, and maintenance of water systems, which reflect their needs and preferences as the sector's primary customers.[36] A 2017 McKinsey study of more than 1,000 companies around the world found that those who ranked in the top quartile for gender diversity on their executive teams were 21 percent more likely to experience "above average profitability" than companies in the bottom quartile.[37] Gender diversity in utilities also stimulates more vigorous discussion on policy discussions and operational approaches, resulting in smarter business decisions. Companies that are able to effectively tap into the growing female workforce by offering gender-friendly policies in the workplace and gender-sensitive products or services to external customers, are more profitable, competitive, sustainable and have a more dedicated and loyal workforce than their competitors who do not provide such policies or services. Thus, creating an environment with equal opportunities for men and women at all levels of responsibility should be an integral part of every utility's modernization process.

[35] Narayan (1995) The contribution of people's participation: evidence from 121 rural water supply projects.
[36] Catarina de Albuquerque, CEO, Sanitation and Water for All. "Water Sanitation and Hygiene – A Woman's Business". March 2021
[37] https://www.mckinsey.com/business-functions/organization /our-insights/delivering-through-diversity

103. **BTL envisions to be a UoF** - defined as "a future-focused utility, which provides reliable, safe, inclusive, transparent, and responsive WSS services through best-fit practices that allow it to operate in an efficient, resilient, innovative and sustainable manner." However, currently female representation stands at 17.8 percent or 50 female staff out of a total of 331. As part of its strategic effort to improve and consolidate its human resource capacity as a young utility established in 2020, BTL aims to recruit 55 more employees in the next two years, and up to 250 people in a span of five years. Job adverts are already "encouraging women to apply" and there is a gender focal point designated in the Dili office. However, no training on the topic of gender is conducted and there is very little representation of women in management. There are only two female board members and zero female managers in the regional management teams. For BTL, already having taken some steps towards promoting gender sensitivity, the development of a gender policy and capacity building activities is an opportunity to consolidate and formalize the steps they have taken and think strategically about the future in light of their efforts towards becoming a UoF.

104. **The Dili Water Supply Project will support closing of the gender gap** in (i) access to economic opportunities and in (ii) voice and agency. The Dili Project activities are also aligned directly with the CGAP which recognizes "empowering women in the workplace through appropriate education and labor market policies and removing barriers to productivity for women" as priority areas of work. The Project will conduct the following activities towards these goals:

(i) Develop a rolling five year gender and diversity improvement plan with a target of hiring female staff in BTL to increase the percentage female staff to 30 percent by year five (from a baseline of 17 percent currently), include improvements in the employment environment for women at BTL, conduct annual employee perception surveys, embed the diversity improvement plan within the "Business Plan Strategic Area 1" and HR performance management system, and hire a gender focal point in the PMU to work with the current gender focal point in BTL;
(ii) Ensure that the biannual review of the Business Plan involves adequate representation of women and ensure consultation and engagement activities are carried out with the participation of gender CSOs and around specific sub-areas (for example, in reducing gender-based violence, ensuring adequate inclusion of women in participatory community engagement activities);
(iii) Implement a systematic outreach activity to universities and relevant academic institutes to identify female employees. Identify the topmost hiring platforms for women candidates; Create communication material for universities and appropriate hiring platforms, targeting women for encouragement to apply to BTL; conduct career talks with the University of Timor-Leste and the Institute of Technology targeting qualified female candidates; and promote internship opportunities among female networks through social media, and academic channels;
(iv) Conduct capacity building and training activities with BTL and PMU on GAP implementation and gender awareness. Training will include - Training on GAP implementation.; Gender sensitization training to all staff that includes prevention of violence against women in the workplace and at home, and thematic training for female staff with topics to be identified, starting with leadership and public speaking; and
(v) Increase consultation with female consumers during Customer Satisfaction Surveys.

105. **The associated indicators for strategies proposed under the GAP include** ensuring that (i) at least 30 percent of staff of BTL in Dili are women, and (ii) women represent 40 percent of participants in all Project consultations and focus group discussions during customer satisfaction surveys. The Project will provide adequate resources to implement the GAP, with the recruited social and gender development specialist of the PMU, with

support from the PMC, being directly responsible for its implementation and monitoring and contract terms of reference and specifications drafted to reflect these plans and commitments wherever applicable. For meaningful outcomes from these efforts, unstinted support from the highest levels of Project management is essential.

Citizen Engagement

106. **The Project will actively engage the community** and will seek their feedback through mechanisms such as community consultations, focus groups, and household discussions. As part of this activity, female participation will be promoted explicitly through targets, in community consultations on the design and implementation of water supply improvements. Citizen report cards will enable users to be part of the planning and quality control of the Project. As part of this effort, the Project will also promote the use of available tools on promoting dialogue such as the SEP, a guide for facilitators to integrate gender awareness and dialogue sessions within the WASH planning processes that aims to facilitate dialogue between women and men, to build a shared understanding of the current gender roles and relations and how this can be changed to be fairer. The Government officially endorsed the Community Dialogue Manual (CDM) in 2017 authored by Water Aid and other partners.

107. **The Project will strengthen the capacities of BTL in customer relations** and help design and implement a customer relations management system to ensure meaningful engagement with its customers. The Project will support BTL in the design and implementation of annual user satisfaction surveys, and in using these surveys to improve the quality of service delivery. BTL's operational reports will be disclosed as much as possible, including in particular BTL's Business Plan, it's mission, goals and targets; guidelines on the design of its digital customer database and its digital billing and collection system (including data protection guidelines); the outcomes of BTL's operational performance monitoring system, including reports on key performance indicators such as the number, duration and location of outages, NRW, payment of service fees and cost recovery, annual maintenance plans and their implementation and its climate change action plan; and the SEP. The Project will help develop a smart phone app that will present these indicators and will also provide an opportunity for customers to provide feedback. The Project will help BTL engage with its customers in the preparation of its operational plans, including the rolling five-year Sustainability Improvement Plan, its program to manage disaster and climate-related risks and climate change adaptation, and the possible role of the private sector in water supply service delivery.

108. **The Project will help BTL improve its corporate website** that will present the information above and that will also host a user feedback forum as well as a GM to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances about the Project's performance, including those concerning environmental and social issues. BTL's GM will include standards for responding and privacy management, and will ensure that (i) the basic rights and interests of every affected person are protected and (ii) their concerns arising from Project performance during the phases of design, construction, and operation activities are effectively and timely addressed. The GM will need to ensure that any concerns are addressed quickly and transparently and without retribution to the affected parties. The grievance process will ensure that no costs are imposed on those raising the grievances, concerns arising from Project implementation are adequately addressed on time, and participation in the grievance process does not preclude pursuit of legal remedies. Specific means of redress are available in disputes over land ownership or compensation, or for grievances related to Project construction impacts which are detailed in the ESF instruments. The PMU's environmental and social manager will be responsible for monitoring and managing the GM, with the support of the social and gender development specialist.

109. **During Project implementation, regular customers satisfaction surveys will be conducted to report on an annual basis on the public perception of the quality of services provided by BTL.** The surveys will be

undertaken annually on 10 percent of BTL's customers and will include questions about the number and duration of service outages, the reliability of supply, the responsiveness of BTL to questions and complaints, and the ease of paying invoices. The following results indicator will monitor this action: Public Perception of Services (percentage satisfied). This indicator will monitor the percentage of customers who are satisfied with the quality of service provided by BTL, as measured by the surveys.

V. GRIEVANCE REDRESS SERVICES

110. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported Project may submit complaints to existing Project-level grievance redress mechanisms or the WB's Grievance Mechanism (GM). The GM ensures that complaints received are promptly reviewed in order to address Project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate GM, please visit http://www.worldbank.org/en/Projects-operations/products-and-services/grievance-redress-service. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

VI. KEY RISKS

111. **The overall risk rating for the Project is assessed as Substantial.** The key risks to achieving the PDO and associated risk management measures are:

112. **Political and Governance.** The political and governance risk is assessed as High. Difficulties to pass the 2020 budget demonstrate that there are high risks associated with the allocation of adequate funds to the project. In addition, the country is considered fragile, especially with relation to capacity of BTL to provide key public water supplies. The mitigation measures include outreach to and briefing of the new Government of the key benefits of the Project and its importance for socio-economic development. The Project will provide extensive support to project implementation and the Project will also strengthen capacities of MoPW in overall water sector governance, and the design, implementation and evaluation of water sector reforms. Global knowledge and experience will be leveraged and exchange visits and study tours organized.

113. **Macroeconomic risk.** The macroeconomic risk is rated Substantial. Macroeconomic shocks occur with relative frequency in Timor-Leste given its dependence on oil and the external pressures brought about by such dependence. This may affect the allocation of adequate public resources to BTL and undermine its capacity to achieve the PDO. Furthermore, there are a variety of other potential shocks that can impact the coverage and delivery by BTL of water supply services, including natural disasters, changes in the external environment, commodity price shocks, and/or reductions in external assistance. In addition, recent global turmoil (the Covid-19 pandemic, the military conflict in Ukraine) has led to significant inflation and uncertainty, which may affect the quality of water supply service delivery that is highly dependent on steady or increasing oil prices and dependence on development assistance. Each of these shocks pose risks to the allocation and collection of adequate financial resources to ensure increased coverage and improved quality of services. The Government is well aware of these

shocks and their impact on BTL's performance. The oil fund, a sovereign wealth fund, has the potential to help act as a buffer to downturns in the external environment and thus supports fiscal resilience. The Project has also allocated some of the proceeds in an unallocated category as a contingency to accommodate future price shocks.

114. **Sector Strategies and Policies.** The sector risk is assessed as Substantial. The Project design is strongly aligned with the Government's 2011-2030 strategic development plan priorities and the 2018-2030 SIP aiming at providing the urban population with universal access to safely managed water supply and sanitation services and Government decision to implement the sector's institutional reforms. Improving utility performance in developing countries has proven possible, but difficult. Improving utility performance and ensuring its financial viability is a complex and lengthy undertaking and politically sensitive, in which many elements must fall into place in the right way and at the right time to achieve success. To mitigate the risks, the World Bank, in close collaboration with other partners, will provide comprehensive, high level and continued expertise to support BTL in the design and implementation of the short- and medium-term action plan. The Bank realizes that ensuring the financial viability of BTL requires time and cannot be achieved overnight. The Project will therefore adopt a long-term strategy to helping BTL become financially viable, including a gradual increase in tariffs accompanied by an improvement in the quality of water supply services. The Project will undertake an assessment of the need and coverage of performance-based outsourcing of service delivery. Based on this assessment, BTL may outsource some of its operational responsibilities to a private operator to achieve visible improvements in service delivery fast.

115. **Institutional Capacity for implementation and sustainability.** This risk is assessed as Substantial, as the proposed Project will be implemented by the MoPW through a PMU that has still limited institutional capacity and little experience in implementing World Bank-financed Projects. This risk will be mitigated by providing intensive technical, fiduciary and safeguards implementation support and training to strengthen PMU's capacity to prepare and implement the proposed Project. A communication strategy will be designed and implemented, and a sequenced long-term tariff plan will be prepared to mitigate the political, social, economic, technical, and commercial risks. Capacities of ANAS and BTL in determining tariffs and improving water efficiency, including tariff policy, price setting and structures, metering, affordability and enforcement frameworks will be undertaken.

116. **Fiduciary.** This risk is assessed as Substantial. The main *Financial Management risks* include the limited FM capacity in the PMU and the reliability of accounting and reporting system. In addition, anticipated fiduciary risks also include delays due to poor procurement planning and monitoring, inadequate technical inputs, poor contract management skills, and the possibility of frequent staff rotation, leading to Project objectives not being met on a timely basis. Mitigation measures will include the recruitment of an FM and procurement consultant, and the use of the NPC, which is part of the Ministry of Planning and Investment, to ensure the procurement of higher value contracts, scrutiny of the use of funds and technical and financial audits by external auditor, and capacity strengthening and implementation support by the World Bank fiduciary and safeguards matters.

117. The *procurement risk* identified during the preparation stage is Substantial. The key procurement risks include (i) non-compliance with applicable procurement procedures and/or processing delays due to lack of experience in the World Bank's Procurement Regulations; (ii) inadequate maintenance of procurement records and data; and (iii) weak contract management resulting in multiple contract variation orders and delayed completion. The mitigation measures include: (i) a qualified and experienced procurement consultant to strengthen the existing PMU capacity on the World Bank's Procurement Regulations; (ii) improving procurement record keeping systems, maintaining and publishing up-to-date data, and regular monitoring and reporting of procurement performance; (iii) Training in Procurement Regulations and on prevention and detection of red flags

in procurement including due diligence for verification of bidders' qualification information and securities before award of contract; and (iv) the POM to clearly set out the detailed procurement management arrangements including division of work, roles, responsibilities and accountabilities of the NPC and BTL-PMU.

118. **Environmental and Social.** This risk is assessed as Substantial. The substantial rating primarily considers the risks related to potential adverse impacts on the supply and quality of groundwater resources in the longer term, land acquisition, management of local employment and expectations, lack of meaningful engagement and potential exclusion of vulnerable groups from Project benefits, potential lack of willingness to pay and affordability of water consumers, and the limited experience and capacity of the PMU. These risks will be addressed by implementation of the ESF instruments outlined in paragraph 94.

VII. RESULTS FRAMEWORK AND MONITORING

Results Framework
COUNTRY: Timor-Leste
Dili Water Supply Project

Project Development Objectives(s)

The Project Development Objective is to improve the coverage and the operational performance of BTL in the Project Area.

Project Development Objective Indicators

Indicator Name	PBC	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
to improve coverage of water supply								
People provided with access to improved water sources (CRI, Number)		0.00	0.00	0.00	50,000.00	70,000.00	80,000.00	82,300.00
Improve the operational performance of the water utility in the project area.								
Reduction of the water losses in the distribution system in the Project Area (Percentage)		65.00	65.00	60.00	55.00	50.00	45.00	40.00
Increase in collection ratio of bills in the Project Area (Percentage)		20.00	20.00	25.00	30.00	35.00	40.00	45.00
Percentage samples that pass the water quality test (Percentage)		0.00	0.00	20.00	40.00	60.00	70.00	90.00

Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline	Intermediate Targets					End Target
			1	2	3	4	5	
Component 1: Water Supply and Treatment Infrastructure Development								
Water supply system coverage in project area (Percentage)		52.00	60.00	65.00	70.00	80.00	85.00	90.00
Number of meters installed, including new and existing connections (Number)		0.00	0.00	2,000.00	4,000.00	7,000.00	9,000.00	12,482.00
Component 2: Institutional Strengthening								
Percentage female staff at BTL (Percentage)		15.00	20.00	22.00	24.00	26.00	28.00	30.00
Public Perception of Services (Surveys) (Percentage)		0.00	0.00	20.00	30.00	40.00	50.00	60.00
of which are female (Percentage)		0.00						60.00
Preparation of Tariff Roadmap and submission for approval to the Council of Ministers (Yes/No)		No	Yes					Yes
Preparation and adoption of a disaster management and resilience program (Yes/No)		No	No	Yes	Yes	Yes	Yes	Yes
Component 3: Project Management								
Project Implementation Progress reports prepared (Number)		0.00	4.00	4.00	4.00	4.00	4.00	4.00

Monitoring & Evaluation Plan: PDO Indicators					
Indicator Name	**Definition/Description**	**Frequency**	**Datasource**	**Methodology for Data Collection**	**Responsibility for Data Collection**
People provided with access to improved water sources	This indicator measures the cumulative number of people who benefited from improved water supply services that have been constructed through operations supported by the World Bank.	Annually	Data collected by the PMC	Project progress reports	Project Management Unit
Reduction of the water losses in the distribution system in the Project Area	This indicator measures the reduction of water leakages in the distribution system in East Dili. These leakages are accurately monitored by BTL and provide a reliable baseline.	Annually	BTL's operational data	Measurement of leakages in the reservoirs	Project management unit
Increase in collection ratio of bills in the Project Area	This indicator measures the collection ratio in the Project Area, i.e., the amount of money collected in a year divided by the amount of money billed in a year.	Annually	BTL's operational data	The collected bills as a percentage of the bills issued over a year	Project Management Unit
Percentage samples that pass the water quality test	This indicator measures the percentage of water	The four water quality	BTL's records	Field inspection and water sampling,	Project Management

	samples meeting the water quality standards over a year, measured in accordance with Decree Law 31/2020. "Passing" means that the sample meets the requirements for four parameters that are tested on a daily basis: free residual Cl, conductivity, pH and turbidity. Systematic monitoring of water quality has only started recently and there is no good baseline available. During implementation, the project will strengthen the water quality monitoring capacity to ensure that the monitoring regime is in compliance with national regulation for water quality monitoring (Decree Law 31/2020).	indicators are measured on a daily basis. This indicator measures the percentage of samples that pass the quality standards for the four parameters on an annual basis.		laboratory testing and analysis.	Unit

Monitoring & Evaluation Plan: Intermediate Results Indicators					
Indicator Name	**Definition/Description**	**Frequency**	**Datasource**	**Methodology for Data Collection**	**Responsibility for Data Collection**
Water supply system coverage in project area	This indicator measures the progress in the	Once a year	Reports from the PMC	Review of construction data	Project Management Unit

	implementation of the civil works as a percentage of the total connections.				
Number of meters installed, including new and existing connections	This indicator measures the number of meters that have been installed, including for new connections and already existing connections.	Annually	Progress report prepared by the PMU	Review of progress reports	PMU
Percentage female staff at BTL	This indicator measures the percentage of female staff working at BTL	Annually	BTL human resources employment records	BTL HR records	Project Management Unit
Public Perception of Services (Surveys)	This indicators describes the percentage of customers that are satisfied with the quality of service provided by BTL, as measured by the public perception surveys.	Annually	PMU	Surveys redress reporting	Project Management Unit
of which are female	This indicator measures the percentage of female customers that are satisfied with the quality of service provided by BTL, as measured by the public perception surveys. The percentage of female customers should be at least 40%.	Annually	PMU	Reporting of the annual Public Perception of Services Survey	Project Management Unit

Preparation of Tariff Roadmap and submission for approval to the Council of Ministers	This indicator monitors if a tariff roadmap has been prepared and submitted for approval to the Council of Ministers.	Annually	BTL Annual report	Financial report	Project Management Unit
Preparation and adoption of a disaster management and resilience program	This indicator measures whether BTL has prepared and adopted a disaster management and resilience program. "Adoption" means formal adoption by BTL's executive Board.	Annually	Regular project progress reporting	Based on reporting by BTL	M&E consultant
Project Implementation Progress reports prepared	This indicator monitors the preparation of four quarterly project implementation progress reports per year	Annually	Project Implementation Progress Report	Progress reports prepared by Project Management Unit	Project Management Unit

ANNEX 1: Implementation Arrangements and Support Plan

COUNTRY: Timor-Leste
Dili Water Supply Project

Strategy and Approach

1. The implementation support strategy includes technical, fiduciary and safeguards support to ensure due diligence over the course of Project implementation. The approach will include (i) continuous and regular monitoring of Project activities to assess progress and identify potential bottlenecks, (ii) timely advice and guidance, and (iii) ensuring that financial and progress reports are submitted on time.

Implementation Support Plan

2. The Implementation Support Plan includes several review mechanisms to assess progress towards achievement of the PDO, progress of Project activities, and effective responses to issues as they arise. Review mechanisms include (i) semiannual Implementation Support Missions, (ii) thematic support for specific implementation issues, and (iii) a midterm review that will assess progress, revisit Project design issues and identify areas where adjustments might be needed. Additional visits will be scheduled as and when the need arises.

3. The World Bank Implementation Support Plan will include visits to Project sites to physically verify Project-financed work. These site visits will also incorporate interaction with Project beneficiaries. Sites to be visited will be selected randomly from a list of Project sites, in addition to sites identified by the complaint handling system, or are associated with safeguards issues.

4. World Bank implementation support will (i) monitor Project progress and evaluate results on the ground, (ii) address the principal technical, fiduciary, environmental, and social risks, and (iii) provide technical advice as needed on water supply service delivery and civil works. Implementation Support Missions will be at least semiannual and more frequent as warranted. These will be complemented by visits by individual task team members to follow up on specific issues.

5. The World Bank will provide any required technical support through sector specialists. In addition to the Implementation Support Missions, there will be a continuous exchange of information between the World Bank team and Project staff. Support will also address areas where residual risk is higher, as in FM and procurement, as well as safeguards and monitoring and impact evaluation.

6. The Implementation Support Plan (Tables C.1 and C.2) specifies focus areas and skill needs required to provide support at different points in the Project. It will be reviewed regularly and updated as required.

Procurement

7. Procurement under the Project shall be conducted in accordance with the Procurement Regulations and the provisions stipulated in the Financing Agreement, approved Procurement Plan, and POM. According to the

requirements of the Regulations, a PPSD has been developed, based on which the Procurement Plan has been prepared and finalized. The Procurement Plan sets out the selection methods to be followed by the borrower during Project implementation in the procurement of goods, works, non-consulting, and consulting services financed by the World Bank. The Procurement Plan will be updated at least annually or as required to reflect the actual Project implementation needs.

8. The expected procurement packages under the Project include civil works contracts for the construction of the water supply system and treatment plants in East Dili, which will be procured mostly through open International Competitive Bidding method; and consultant services for supervision consultant, which will be selected through open competitive selections following the procedures as agreed in the procurement plan. It is expected that under the Project management component, the Project will hire technical assistance - consultant firm through a competitive selection process. The responsibility and accountability for carrying out most of the procurement of high-value/complex contract packages under the Project will be delegated to NPC in accordance with the Decree Law 15/2011. The PMU will be responsible for the planning, monitoring, and consolidated reporting of the overall procurement under the Project.

9. **Civil Works.** Civil works are anticipated mainly for the implementation of component 1 including the construction of the water supply system and water treatment plants. The estimated contract value for the construction of the water supply infrastructure includes: US$15 million, the package for Becusi, US$19 million for the construction water system at Benamauk and Culau, and US$40 million for the construction of water supply system for Cristal, Lahane and Nahaek locations. These contracts are expected to be procured through the Request for Bids under the National and International Open Competitive method, as specified for each procurement package in the Procurement Plan.

10. **Selection of consultants.** Consultant services under the Project are expected to require the hiring of a consultant firm for both construction supervision and capacity building for O&M, and community engagement activities under Component 2 and consultants for the reform support and strengthen the PMU. The consulting firm contract for supervision and embedded technical assistance and capacity building is expected to be US$5.4 million and is expected to be selected through Quality- and Cost-Based Selection by approaching the international market. The applicable procurement method and the World Bank's prior review for each procurement package will be specified in the Procurement Plan, which will be uploaded into STEP.

11. **Procurement risks and mitigation measures. The procurement risk is categorized as 'Substantial'.** The key procurement risks expected to include (i) non-compliance with applicable procurement procedures and/or processing delays due to PMU's lack of experience in the World Bank's Procurement Regulations; (ii) inadequate maintenance of procurement records and data; and (iii) weak contract management resulting in multiple contract variation orders and delayed completion. The mitigation measures include: (i) a qualified and experienced procurement consultant to strengthen the existing PMU capacity on the World Bank's Procurement Regulations; (ii) improving procurement record keeping systems, maintaining and publishing up-to-date data, and regular monitoring and reporting of procurement performance; (iii) training in Procurement Regulations and on prevention and detection of red flags in procurement including due diligence for verification of bidders' qualification information and securities before award of contract; and (iv) the POM to clearly set out the detailed procurement management arrangements including division of work, roles, responsibilities and accountabilities of the NPC, MoPW, BTL and PMU.

12. **Frequency of procurement supervision.** In addition to the prior review to be carried out by the World Bank, all contracts not covered under prior review by the World Bank will be subject to post review during implementation support missions and/or special post review missions, including missions by consultants hired by the World Bank.

Table 1.1. World Bank Support to Project Implementation

Time	Focus	Skills Needed
First 12 months (Year 1)	• Implementation arrangements, including procurement and financial management • Validation of the POM for year 1 • Preparation of bidding documents • Quality control processes • Environmental and social safeguards • M&E system	• Water Supply Specialist • Environmental and Social Safeguards • Fiduciary Specialists • M&E Specialist
Year 2	• Technical support for activities by component and sub-Component • Routine FM and procurement reviews • Management of safeguards and monitoring of progress on safeguards-related measures • M&E • Development of TOR for O&M consultant	• Water Supply specialist • Utility and service delivery specialist • Construction Supervision Specialist • Environmental and Social Safeguards • Gender/CE Specialist • Fiduciary Specialists • M&E Specialist • O&M specialist • Utility/service delivery specialist
Year 3	• Technical support for activities • Routine FM and procurement reviews • Management of safeguards and monitoring of progress on safeguards-related measures • M&E • Midterm review	• Water Supply Specialist • Utility and service delivery specialist • Environmental and Social Safeguards • Gender/CE Specialist • Fiduciary Specialists • M&E Specialist
Years 4–6	• Adjustment to the POM • FM and procurement reviews • Management of safeguards and monitoring of progress on safeguards-related measures • M&E	• Water Supply Specialist • Utility and service delivery specialist • Gender/CE Specialist • Construction Supervision Specialist • Environmental and Social Safeguards • Fiduciary Specialists • M&E Specialist

Table 1.2. Skills Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Task Team Leader	10	2	Based in Jakarta
Water Supply Specialist	10	2	Based in Dili
Utility and service delivery specialist	6	2	Consultant
FM Specialist	4	2	Based in Dili

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Procurement Specialist	4	2	Based in Dili
Construction Supervision Specialist	4	2	Consultant
Gender and CE Specialist	4	2	Based in Jakarta
Environmental Safeguards Specialist	4	2	Based in Jakarta
Social Specialist	2	2	Based in Jakarta
M&E Specialist	4	2	Based in Jakarta
Lawyer	2	1	Based in Jakarta
Program Assistant	10	—	Based in Dili

ANNEX 2: Detailed Project Description

COUNTRY: Timor-Leste
Dili Water Supply Project

1. **The main source used for water supply in Dili is groundwater from the Comoro basin.** The total annual groundwater recharge in Dili is estimated at 2.9 MCM. Twenty-six public boreholes have been installed, 17 of which are located in East Dili. These 17 boreholes withdraw a total of 0.7 MCM per month from deep aquifers, using electrical pumps. In addition, private boreholes have been installed that withdraw water from shallow aquifers, mainly using electricity. It is estimated that 10 percent of the people in Dili use a private borehole. To meet water demand in the future, BTL will mainly target a higher efficiency and a reduction of technical losses. In addition, investments in supply augmentation need to be made.

2. **East Dili's potable water is mainly sourced from groundwater**, with surface water accounting for about 15 percent of the total supply. The safe groundwater yield in East Dili has been assessed by the feasibility study. The hydrogeology of East Dili is mainly composed of colluvium sediments, comprising silt, sand, clay, rock fragments and boulders, commonly found near the foothills of mountains. These aquifers are not able to contain water as well as those in West Dili. The safe yield in East Dili has been assessed as 5.6 MCM/month in the wet season and 1.9 MCM/month in the dry season. Considering a worst-case scenario, 0.96 MCM/month (50 percent of the dry season safe yield) is used as the maximum sustainable groundwater yield. When compared to the present total extraction rate of wells in East Dili of about 0.7 MCM/month, the study recommends that the present production rate in East Dili should not be increased. The Project will therefore not invest in additional borehole development in East Dili.

3. **In West Dili, the safe groundwater yield is** 7.4 MCM/month for the wet season and 3.4 MCM/month for the dry season. Considering a worst-case scenario, 1.71 MCM/month (50 percent of the dry season safe yield) is used as the maximum sustainable yield. As the present total discharged rate of wells in Comoro Area is about 0.5 MCM/month, more water can be extracted from this area by installing two more wells, up to a total of 1.71 MCM/month. The ADB-financed support for West-Dili will increase groundwater withdrawal to 1.2 MCM/month.

4. **Surface water withdrawal is constrained by the dry season runoff in the Bemos river, which is a tributary to the Comoro basin**. The Project will increase the surface water withdrawal from the Bemos river, but further increases will require a higher dry season runoff through storage development in the Comoro basin. A pre- and post-Project water balance is presented in table 2.1.

5. In view of the limited scope for resource augmentation in East Dili, **BTL will be able to meet the demand only until 2030**, when the population in East Dili is expected to reach 95,000 people. After 2030, additional water sources need to be developed. The Project will undertake a study into the options for sustainable resource augmentation to meet demand after 2030.

6. **Water quality was analyzed during Project preparation** as part of the feasibility study, but systematic monitoring of water quality parameters has only started recently. The analysis confirmed that some of the water sources are turbid and have high levels of total dissolved solids, iron and nitrate. Turbidity levels are higher in wells than spring sources which may be due to lack of protection of wells from surface water especially during the

monsoon. Some samples showed presence of fluoride but well within the permissible limit. Arsenic was not detected in any source. These results are consistent with a WHO study for Timor-Leste.[38]

Table 2.1. Water Production Pre- and Post-Project

	CMD	Pre-Project	Post-Project
West Dili	Surface water	9,900	11,200
	Groundwater	15,400	38,698
	Total West	25,300	49,898
East Dili	Surface water	1,600	3,000
	Groundwater	23,475	23,475
	Total East	25,075	26,475
	Total Dili	50,375	76,373

7. **The Project will finance investments to improve the quality of water service delivery and provide 24/7 service** in the Eastern part of DiMA. The Project will expand the coverage of the network from 6,500 at present to 12,482 connections in 2028 at Project closing. The infrastructure that will be developed and the available water resources will be able to accommodate further expansion of the network to 69,000 connections serving 290,000 people across Dili in 2050. The Project aims to strengthen the climate-resilience of BTL's operations by increasing efficiency and reducing losses (thereby reducing energy related GHG emissions), developing additional storage, improving service delivery and increasing resilience of critical water supply infrastructure to rising climate change vulnerabilities such as floods and droughts. The Project will contain the following components.

Component 1: Water Supply and Treatment Infrastructure Development (Cost: US$ 104.42 million)

8. **This Component will finance the development, upgrading and expansion of the existing water supply system in the Eastern part of DiMA**. Investments have been identified in the Detailed Engineering Design of the Dili Water Supply Project that have been prepared for the MoPW and finalized in 2022 and include the installation of a new pipe network and piped and metered house connections, an increase in the capacity of existing and the development of additional storage infrastructure, replacement of old, inefficient pumps by new, more efficient ones (which reduces energy usage and consequently reducing GHG emissions from a highly carbon-intensive electricity grid and avoidable costs), and the establishment of a surface and groundwater monitoring and SCADA system. Groundwater monitoring system, and the climate change relevant data that it may collect, may be used to feed into climate change relevant policies and strategies for evidence-based policy making in future.

9. **The DiMA water supply system divides Dili metropolitan into 31 DMAs of 11 pressure zones (PZs).** Five of these PZs are located in West Dili and six in East Dili. The investments in East Dili will be combined into three civil works packages and one SCADA package. The SCADA system collects the relevant data and monitors activity via a master center to manage the entire system effectively. Thus, it plays a strong role in helping reduce NRW and enhance the O&M of the system compared to current manual methods. Investments include the upgrading of water intakes; the development and upgrading of pipe networks (which will reduce system leaks and NRW) and installation of new rising and transmission mains; construction of new piped and metered connections; increase in the capacity of existing and the development of additional storage infrastructure (which will increase water

[38] WHO, 2010: Dili Water Quality Study.

availability in times of drought or disaster, increasing climate resilience); construction of new booster pump stations and the replacement of old, inefficient groundwater and booster pumps by new, more efficient ones (thereby reducing GHG emissions); establishment of a surface and groundwater monitoring system; construction, expansion and relocation of two WTPs; and the installation of a SCADA system. In total, 12,482 piped and metered connections will be established at Project closing, benefitting 82,380 people. The component will also undertake additional DED studies. The investments in East DiMA will include the six PZs below:

Pressure Zone 06 - Cristal; PZ07- Lahane and PZ08 - Nahaek;

- PZ06 - Cristal: 4,944 new metered and piped connections, upgrading and improvement of the efficiency of groundwater pumping stations, new rising mains, a new Cristal reservoir and a new pipe network;
- PZ07 - Lahane: 1,213 new metered and piped connections, upgrading and improving efficiency of ground water pumping station, new rising mains, new Lahane reservoir and new pipe network in the PZ; and
- PZ08 - Nahaek: 588 new metered and piped connections, construction of surface water intakes at Mutudare, Lakoto and Nahaek, construction of a transmission main, WTP of a capacity of 1,000 CMD relocated from Bemos WTP site, and new pipe network in the PZ.

PZ09 (PZ09) - Becusi

- Upgrading and improvement of the efficiency of groundwater pumping stations, new rising mains, increased capacity of Becusi reservoir to 5,300 m^3 that will be fed by three existing boreholes, 3,243 new metered and piped connections and new pipe network in the PZ.

PZ10 - Culau and PZ11- Benamauk

- Establishment of 1,164 and 1,330 metered and piped connections in PZ10 and PZ11, respectively; upgrading and improvement of the efficiency of the PZ10 ground water pumping station, new rising mains and new Culau reservoir of 1,500m^3; upgrading of Benamauk intake, transmission main, new Benamauk WTP and replacement of the existing Benamauk reservoir of 100m^3 by a reservoir of 1,400m^3; new pipe networks in the PZ.

10. This component will also invest in the establishment of a surface and groundwater monitoring and SCADA[39] system that will be managed and maintained by BTL. The Project will install new testing wells and procure remote automatic monitoring equipment to transfer the field data to BTL. The Project will collect baseline data on surface and groundwater use, levels and water quality and BTL will disclose this geo-tagged information on its corporate website. The Project will also install disinfection units in each of BTL's water production units.

11. Additional DED studies will be conducted in Aileu, Gleno, Liquica, Ainaro, Suai and Maliana. This will include the preparation of the associated tender documents, including the technical specifications and Bills of Quantities.

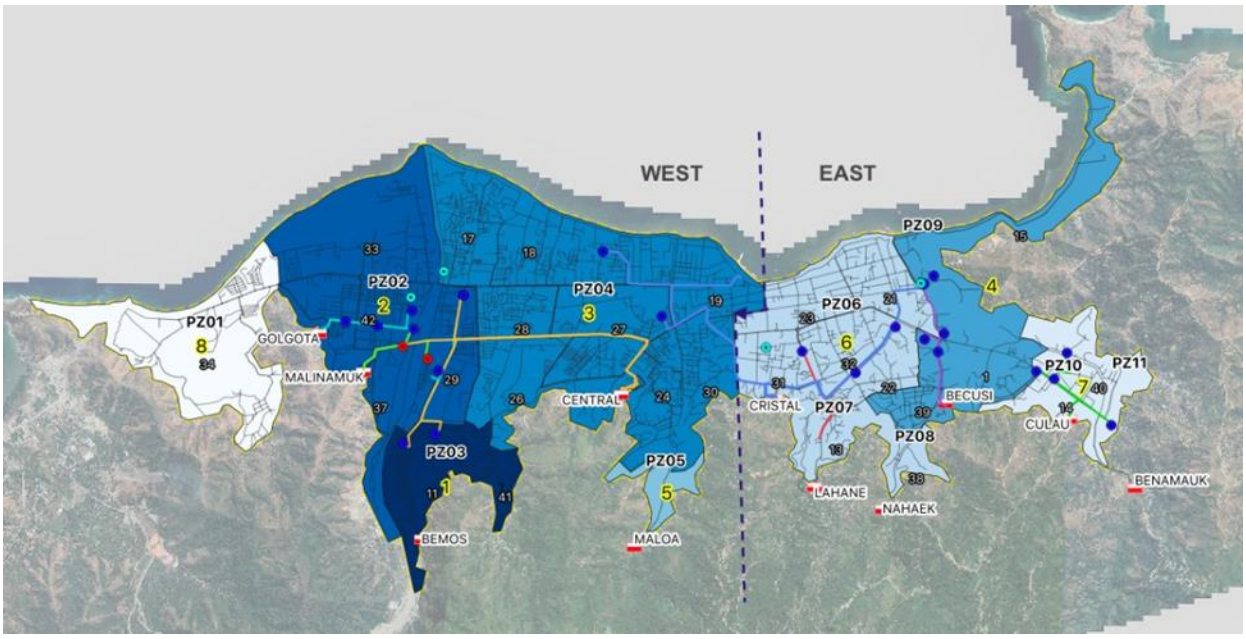
Component 2: Institutional Strengthening (Cost: US$ 14.34 million)

12. **Component 2 will strengthen institutional capacities to ensure the sustainability and resilience of water supply infrastructure financed under Component 1** through technical assistance, capacity building and training,

[39] SCADA will be installed in East and West Dili to ensure coherent design and implementation.

which include climate change considerations that are expected to contribute to enhanced resilience against increasing severe weather-related events or hydrological shocks such as droughts, heat waves and floods. The activities under this component are designed to improve the quality and reliability of BTL's water supply services, reduce NRW and improve billing by strengthening capacities, providing technical assistance, strengthening transparency, engaging with BTL's customers and adopting a more inclusive approach to staff and customers. A more reliable service delivery that is resilient against extreme heat, floods and droughts and that is based on an effective demand management strategy (including a reduction of NRW, energy efficiency, water pricing, billing and collection, water conservation, enhanced water resources monitoring and installation of SCADA, preventive maintenance and asset management) will help increase revenues to BTL and will improve sustainability. This will also contribute to reducing both the risk and impacts of service disruptions related to climate shocks.

13. This component will also help BTL implement its Business Plan that it has prepared during Project preparation with support from the UoF initiative. BTL's Business Plan was prepared after an in-depth diagnostic assessment of BTL. It sets out the 10-year strategic outlook for BTL in terms of technical operations, commercial operations, financial management, human resources management, and organization and strategy, and provides an outline of recommended actions that BTL aims to implement in order to achieve desired performance outcomes and utility maturity levels in the future. Under this component, BTL will conduct a biannual evaluation and prepare a biannual update of the Business Plan as part of its strategy for citizen engagement.



Map 1: Map of the Rehabilitation and expansion of the water supply system of the DiMA

14. More specifically, Component 2 will support:

(a) ***Performance-based outsourcing of key operational responsibilities of BTL***. The PMC will undertake an assessment of the need and substantive coverage of performance-based outsourcing of key operational responsibilities to a third party. Upon completion of the assessment, BTL will recruit a consultant that will undertake some of these operational responsibilities (e.g., reduction of NRW, billing) on a performance basis. Key

performance indicators will be defined, including the percentage of customers receiving an invoice and the reduction of NRW.

(b) ***Strengthening of BTL's capacity, systems, and procedures to improve the quality of BTL's operational and commercial services to manage, operate, and maintain the new water supply system in a sound technically and financially sustainable way***. The scope of activities will cover (i) biannual evaluation and update of BTL's business plan; (ii) preparation of a human resources management and development plan, including a target staff composition of 30 percent female staff at the end of the Project; (iii) development of a digital customer database; (iv) establishment of a digital billing and collection system (including data protection guidelines); (v) establishment of a management and operational performance monitoring system; (vi) design and implementation of a customer relations management system; (vii) establishment of an asset management system; (viii) development of planning and budgeting tools; (ix) training on water network management (including NRW reduction and energy efficiency improvement to reduce GHG emissions), water quality improvement, water sources protection, commercial management, and customer relations; and (x) preparation of a communication strategy to mitigate the political, social, economic, technical, and commercial risks of the water sector reforms. These measures are expected to reduce NRW and improve the efficiency of water and energy use, enhance the quality of service delivery and increase the available volume of water for targeted communities. This will help mitigate climate-related shocks to water supply such as droughts/water shortages and heat waves.

(c) ***MoPW is responsible for the management of water resources, overall sector policies and the preparation of sectoral investment plans.*** The Project will support MoPW in its role and strengthen its capacities in overall water sector governance, and the design, implementation and evaluation of water sector reforms. Global knowledge and experience will be leveraged and exchange visits and study tours organized.

(d) ***Provision of technical assistance to BTL in the preparation of a rolling five-year Sustainability Improvement Plan.*** Technical assistance will be provided to BTL to prepare a rolling five-year Sustainability Improvement Plan to ensure the technical and financial sustainability of the infrastructure financed under the Project. The plan will outline actions to (i) increase BTL's revenues (through efficient volumetric metering, billing, and collection and through an up-to-date customer database), (ii) reduce possible operational costs through efficiency measures (and consequently reducing GHG emissions) aiming at a gradual financial equilibrium and a steady reduction of dependency on central Government subsidies, and (iii) improve the management of BTL's assets through the preparation of a geo-referenced asset management plan.

(e) ***The preparation and implementation of a Disaster Management and Resilience program*** to strengthen capacities of BTL to manage disaster and climate-related risks and mainstream disaster risk management (DRM) and climate change adaptation (CCA) consideration into strategic, operational and investment plans. This support will be critical for BTL to raise awareness and build capacity on disaster risk mitigation, preparedness, response and recovery. This will provide BTL with the knowledge and processes to mitigate and manage climate related risks, and also recover after a disaster event. It will also assist in the development of tools and procedures to plan for and finance residual risks and provide technical inputs to achieve resilient WSS infrastructure design, service, and governance arrangements. Capacity building, education, and public awareness campaigns will help conserve water and harness customers' skillsets to manage adversity such as climate related disasters.

(f) ***Conducting a program to increase the capacity of ANAS and BTL*** **in determining tariffs and improving water efficiency** This program will include: tariff policy, price setting and price structures; metering, affordability and

enforcement frameworks; customer engagement and behavior change, and demand management measures. By reducing water demand, less water will have to be pumped, thereby reducing energy use and GHG emissions. This support will be critical in ensuring the sustainability of the water supply system by informing both ANAS and BTL in setting up a tariff system that will sustain the water supply system financially. The recently established CTT, responsible for reviewing and proposing a new tariff structure and for developing guidelines for the establishment of water tariffs, will be closely associated in the training. The proposed measures such as cost recovery, tariff policies, metering and demand side measures will promote water use (and energy) efficiency, will reduce NRW and will enhance service delivery capacity. It will provide BTL with more resources to support O&M and sustain future expansions, which would prepare them to better withstand the climate vulnerabilities in the future.

(g) **Preparation by ANAS of a tariff road map** that establishes the annual increases in the water supply tariffs that are required to progressively achieve financial viability of BTL and that will be submitted to the Council of Ministers for approval. The road map will be prepared in consultation with BTL, the Consumers' Association, MoF, Ministry of State Administration (MoSA), the NGO Forum for Timor-Leste (Fongtil) and academia and will be submitted by ANAS to the Council of Ministers.

(h) **The Project will strengthen the capacities of BTL in customer relations.** The Project will design and implement a customer relations management system, will provide support to design and implement an annual customer satisfaction surveys, and in using these surveys to improve the quality of service delivery. The Project will also provide support for the preparation and implementation of an SEP. The Project will help develop a smart phone app that will present these indicators and will also provide an option for customers to provide feedback. The Project will help BTL improve its corporate website that will disclose BTL's operational performance and will host a GM that will receive and facilitate resolution of affected peoples' concerns, complaints, and grievances about the Project's performance. Finally, the Project will help BTL design and implement public awareness raising campaigns, including on water conservation, water quality, climate change and gender awareness.

(i) **Provision of technical support, installation of laboratories and purchase of goods and services for water quality monitoring.** Systematic monitoring of water quality has recently started but requires strengthening. More regular measurements need to be taken to ensure compliance with the provisions of Decree 31/2020. The Project will provide technical assistance to help BTL develop and implement an appropriate water quality monitoring system across its network, including the installation of a laboratory and the purchase of goods and services.

(j) **To improve gender and inclusion, the Project will develop a rolling gender and diversity improvement plan** as part of the HR performance management system with the aim of achieving 30 percent representation in BTL by end of year 5. The 5-year plan will include systematic outreach activity to universities and relevant academic institutes to identify female talent; capacity building and training activities with BTL, and the PMU on gender awareness for staff and special topics identified by employees i.e. leadership and public speaking; and ensure 40% representation of women during Business Plan Reviews and Customer Satisfaction Surveys.

(k) **A water resources assessment in the Comoro basin will be undertaken** to identify and evaluate long-term supply alternatives to BTL's traditional water sources including groundwater, artificial recharge and seasonal storage, and alternative non-groundwater sources of water to meet demand in a changing climate beyond 2030. The study will identify the most promising sources for meeting demand in the future based on an economic, financial and resource availability analysis, and will undertake feasibility studies into the most promising option. The study will also identify viable and effective water resources conservation measures and policies to protect the sources for the water supply of Dili in the future.

15. **Options for private sector engagement** in the delivery of water supply services that the Project could support were discussed. It was agreed that the PMC assess the need for performance-based outsourcing of key operational responsibilities to a third party, and that some of BTL's operational responsibilities (e.g., reduction of NRW, billing) may be outsourced on a performance basis. The Government also intends to strengthen BTL's capacities and improve the quality and reliability of its services so that – over time – BTL will become an attractive partner for private sector engagement. By helping BTL implement its business plan and improve its operations, this Project will help the Government advance on this agenda. Where possible, the Project will also help establish relationships between global utility operators and BTL, e.g., through the UoF initiative.

Component 3: Project Management (Cost: US$ 4.85 million, including US$2.24 million from IDA and US$ 2.61 million from the Government)

16. This component aims at supporting Project management and implementation. This component will finance operational costs associated with (i) technical, environmental, and social supervision of contracts' implementation (including the implementation of the GAP); (ii) Project audits and M&E activities under the Project (including the recruitment of a PMC and a financial management and procurement consultant, and the establishment of an MIS, including a baseline); (iii) provision of administrative and operational support to the Project Management Unit (PMU), including equipment for its operations; and (iv) establishment of a Grievance Mechanism (GM). The Project will also finance installation of fast internet, IT equipment and modern video-conferencing facilities.

17. The climate change considerations of the Project can be summarized to include:

Mitigation Co-benefits

- Reduction in NRW to reduce pumping demand by installing new distribution network and headworks infrastructure;
- Reduction in energy use by using gravity systems where possible and implementing energy efficiency to areas that require pumping; and
- Water use efficiency programs with BTL and the community via training programs to BTL.

Adaptation Co-benefits

- Increasing storage to allow for additional water availability during times of drought or climate related disasters;
- Strengthen the climate-resiliency of the design of the investments to address floods and droughts;
- Capacity building to BTL on O&M and ways to include climate resilient considerations in the system;
- Tools developed (e.g. SCADA, ground water monitoring, etc.) to inform management and policies; and
- Capacity building, education, and public awareness campaigns can benefit in increasing the resilience of communities.

18. A climate related intermediate indicator ("Preparation and adoption of a disaster management and resilience program [YES/NO]") has been included in the Results Framework.

ANNEX 3: Economic and Financial Analysis

COUNTRY: Timor-Leste
Dili Water Supply Project

1. **This Annex consists of two analyses:** economic analysis which examines the economic rationale of the Project, testing if its expected benefits surpass the expected costs; and financial analysis, which examines if the works financed under the Project will be sustainable, testing the financial capacity of BTL.

Economic Analysis

2. **The economic evaluation was conducted using cost-benefit analysis**. Expected benefits were measured using the Avoided Cost Approach. Under this method, benefits correspond to the difference between prices that beneficiaries are paying to face current deficiencies of the service, minus prices that they will be paying once the works are implemented. Among the prices they are currently paying can be cited those paid to private vendors, private borehole owners, water utility, containers to store water, bottled water, etc. When households receive water service with continuity and quality, they will not need to search for additional sources of water and so they will save money. Savings corresponds to the benefits of the Project or the avoided cost. The discount rate used was six percent, and 30-year period for the lifetime of the works was applied.

3. **The economic costs consist of investment plus operation and maintenance costs**. Investment cost includes all the costs associated with the Project. O&M costs were Projected according to the infrastructure to implement, expected efficiencies, water demand and capacity of production (table 4.1). For the economic evaluation, financial prices were transformed to economic prices to eliminate market distortions caused by taxes and subsidies among other factors. According to the Master Plan the shadow exchange rate factor of imported goods of CAPEX is 1.1, while the shadow wage rate factor is 0.75 applied to OPEX and CAPEX for unskilled labor. For this evaluation a weighted average factor of 0.97 for CAPEX and 0.94 for OPEX was applied.

4. **Net economic benefit was estimated as the difference between the incremental flow of benefits minus the incremental flow of costs** under two scenarios: with and without Project. The with-Project situation was built forecasting the water situation as expected once the Project is implemented, i.e., including rehabilitations and expansion targets. The without Project situation includes the current situation during the whole Projection period, even though the situation will deteriorate along the years if nothing is done. Therefore, the results are under the conservative side.

5. **Basic information was taken from the Dili Water Supply Master Plan 2016-2030,**[40] as well as from the feasibility and design studies. The infrastructure investments were based on the 2030 Projected population of Dili, and the impacts of climate change on water supply and demand. The DiMA Master Plan covered four (out of six) subdistricts, namely Dom Aleixo, Vera Cruz, Nain Feto, and Cristo Rei. The Master Plan did not include Atauro (Island) nor Metinaro. The Project will focus on East Dili, which consists of the districts of Cristo Rei and Nain Feto.

6. **Expected outputs from the Project.** The Project will finance investments to improve the quality of water service delivery and provide 24/7 service in the Eastern part of Dili. It will increase the surface water withdrawal,

[40] ADB, Government of Timor-Leste, Seureca-Veolia. *Urban Services Improvement Sector*

with which, BTL will be able to fulfill total demand until 2030. It will also expand the coverage of the network from 40 percent (about 6,000 connections) at present to full coverage by 2028 (about 12,500 connections). The whole population will benefit as the service will improve both in quality and quantity.

Table 4.1. Water Production with and without Project

Cubic meters per day	*Without Project*	*With Project*
Surface water	1,600	3,000
Groundwater	23,475	23,475
Total East	25,075	26,475

7. **Current water situation for population in Dili.** During preparation of the Master Plan a socio-economic survey was conducted to determine the households' current water consumption, main sources of water used, and associated economic prices paid by households for each of the sources of water. The survey consisted of 616 households, and the sources of water differentiated between households connected and non-connected to the public network. The results of the survey, which are presented in the following paragraphs, were taken as a baseline for this evaluation.

8. **Main Sources of Water used by population in Dili** according to the survey and the 2015 Census, consist of (i) public network (either indoor connection or outdoor connection), (ii) a public tap, (iii) a private boreholes/wells, (iv) bottled water, (v) other sources, such as, private vendors, neighbor, irrigation channels or a lake, river or unprotected well nearby. Main source of water does not mean the only source of water used, as all households currently need more than one source to supply their water needs.

9. **Results of the survey are presented in table 4.2 and table 4.3.** They show that about 40 percent of the East Dili households are connected to the network (17 percent connected indoors and 22 percent outdoors). The non-connected households use as a main source of water either public tap (34 percent), a private borehole (16 percent), or others (private vendors, neighbor, shared connection, irrigation channels, unprotected wells, etc.). Results from the survey present similar figures to those shown by 2015 Census in East Dili.

Table 4.2. Percentage of Households according to Main Sources of Water

	2015 Census	Survey conducted by Dili Master Plan
Connected Indoors	17%	17%
Connected outdoors	23%	22%
Not connected improved:	57%	60%
a) Public Tap	*34%*	*25%*
b) Borehole/Deep well	*16%*	*26%*
c) Other improved	*7%*	*8%*
Not connected unimproved	3%	1%
Total	100%	100%

10. **The survey also showed that no single source is enough to satisfy families' water needs**; households must rely on multiple sources. The master plan estimates that even though 65 percent of families (including

connected indoors, outdoors, and public taps) use water from the public network as the main source of water, only 33 percent of the water needed is supplied by the water utility.

11. **Regarding bottled water, the survey found that in Dili 67 percent of the households non-connected to the public network buy bottled water**, against 57 percent of the connected. Bottled water is used as other sources are not considered as the main source of water, not even for drinking.

Table 4.3. Households according to Sources of Water. East Dili. 2015

	Population	Households
Connected Indoors	16,030	2,308
Connected outdoors	21,271	3,063
Not connected improved:	57,149	8,229
a) Public Tap	*24,348*	*3,506*
b) Borehole/Deep well	*24,796*	*3,570*
c) Other improved	*8,005*	*1,153*
Not connected unimproved	1,233	178
Total	95,682	13,777

Source: Own calculation based on Dili Master Plan figures

12. **According to the Dili Master plan the population in East Dili in 2015 was 95,682 (13,777 households)** , of which 5,371 households were connected to the public network, either indoors or outdoors. The water service provided to those connected was not good. In Cristo Rei only 20 percent received water continuously and the remaining 80 percent only 8.5 hours per day. In Nain Feto just five percent received water continuously and the rest just six hours. Water quality did not comply with the requirements of potability as the water treatment plants were not in operation or malfunctioning.

Table 4.4. Percentage of Households according to Sources of Water, East Dili, 2036

	Without Project	With-Project
Connected Indoors	17%	81%
Connected outdoors	23%	19%
Not connected improved:	57%	0%
a) Public Tap	*34%*	0%
b) Borehole/Deep well	*16%*	0%
c) Other improved	*7%*	0%
Not connected unimproved	3%	0%
Total	100%	100%

Source: Own calculation based on Dili Master Plan figures

13. **Two scenarios were built to estimate the benefits of the Project.** With and without Project scenarios were forecasted during the lifetime of the works (30 years). Net benefits were estimated as the difference

between the incremental benefits and incremental costs resulting from both scenarios. The percentage of households per sources of water was kept constant for the without Project situation, while for the with-Project situation the percentage of households per source of water changed according to Project targets (see table 4.4). The annual growth rate applied for the population changed along the period as follows: (i) from 2016 to 2020, 3.98 % in average (Cristo Rei 3.31% and in Nain Feto 5.21%); (ii) from 2020 to 2205, 2.56% in average; and for 2025 and on 2.47% (Master Plan average of low and high scenario).

14. **Water consumed.** According to the Dili Master Plan (intermediate scenario), the water consumed per person per day varies from 50 lcd to 120 lcd depending on the source of water (table 4.5). Those households with indoor connection consume 120 lcd; those connected outdoor or not connected using improved water, consume 100 lcd; while those with not improved source of water consume only 50 lcd. Additionally, households who buy bottled water consume about 0.77 lcd in average.

Table 4.5. Water consumed per capita per day according to Sources of Water. East Dili.

	Lcd from a source of water	Households who buy Bottled water lcd
Connected Indoors	120	0.75
Connected outdoors	100	0.75
Not connected improved:	100	0.81
a) Public Tap	100	0.81
b) Borehole/Deep well	100	0.81
c) Other improved	100	0.81
Not connected unimproved	50	0.81
Total	103	0.77

15. **To build the without Project scenario**, table 4.6 presents the percentages of usage of different sources of water were applied using the results of the survey.

Table 4.6. Current use of Sources of Water (% of households) used for the without Project situation.

	Public Network	Private Boreholes	Private Vendors	Bottled Water
Connected Indoors	33%	67%	0%	57%
Connected outdoors	33%	67%	0%	57%
Not connected improved:				
a) Public Tap	40%	40%	20%	67%
b) Borehole/Deep well	0%	80%	20%	67%
c) Other improved	0%	70%	30%	67%
Not connected unimproved	0%	50%	50%	67%

16. **For the with-Project situation**, it was assumed that the households connected to the public network (inside or outside) will get the water from the utility. The expected coverage is 100 percent.

17. **Economic Prices Paid by Households.** Results from the survey showed that the price paid by households for water varied according to the source used. Water from the public network corresponds to the tariff charged by BTL (US$ 0.25/cubic meter in average), which has not changed since February 2004. Water from private vendors has a price of US$ 5/cubic meter. Water from private borehole has a price of US$ 1.29/cubic meter. Bottled water is bought by families either connected or non-connected to the public network at a price of about US$ 9 per household per month. Additionally, all households buy containers to store water, the price of which is estimated at about US$ 20 per household per month.

18. **The price of bottled water in Dili** varies according to the amount purchased from US$ 0.25 per half liter bottle to US$ 1 per 19-liter container (see table 4.7 and table 4.8). Most households buy higher volume as the price is lower. It is estimated that about 85 percent of bottled water is purchased in 19-liter container, while 10 percent is bought in 1.5 liters bottle and 5 percent in 0.5-liter bottle. The average price paid per liter is US$ 0.10.

19. **Once the Project is implemented households will pay mostly to BTL**. The economic price paid by households under both situations with and without Project was Projected along the lifetime of the Project. The difference between both situations (with and without Project) correspond to the benefit of the Project.

Table 4.7. Price paid by households according to water source. East Dili.

Source of Water	Unit Price (US$)
Water from Public Network	0.25 US/m3
Water from Private boreholes	1.29US/m3
Private Vendors	5.00US/m3
Bottled Water	9.33 US/hh/month
Containers to store water	20.51 US/hh/month

20. **The economic price estimated for the with and without Project** was calculated using the price per source of water, the amount of water used from each source, and the households using each source. Results showed that in the *without* Project situation, the current economic price paid by households connected to the network (indoors and outdoors) varies from US$ 45 to about US$ 60 per month per household. In the *with* Project scenario, the economic price reduces to US$ 17 for those connected indoors and US$ 14 for those connected outdoors. The savings for those connected to the network will be of about US$ 28 per month for those with indoor connections and US$ 45 per household connected outside.

21. **The benefits of the Project were estimated** as the difference between prices that beneficiaries are paying at present to face current deficiencies of the service (including prices paid to private vendors, private borehole owners, water utility, containers to store water, bottled water, etc.), minus prices that they will be paying once the works are implemented.

22. **Costs**. The costs consist of investment and operating costs. The investment costs correspond to the Project costs. The operating costs were Projected according to the infrastructure to implement, expected efficiencies, water demand and capacity of production. Costs were also Projected for with and without Project scenarios. The difference between both, or incremental costs, correspond to the costs of the Project plus incremental operation costs which is about US$ 1 million per year.

Table 4.8. Prices paid by connected household per water in East Dili (in $)

	Without Project		With Project	
	Connected indoors	Connected outdoors	Connected indoors	Connected outdoors
Water from Public Network	4.25	3.17	6.34	5.28
Water from Private boreholes	10.79	5.45	-	-
Private Vendors	-	21.12	-	-
Bottled Water	9.31	9.31	4.65	3.10
Containers to store water	20.51	20.51	6.15	6.15
Total	44.85	59.56	17.14	14.54

23. **The flows of incremental benefits and incremental costs** were discounted at 6 percent and the net present value was estimated. The difference between incremental benefits and incremental costs corresponds to the net benefit of the Project.

24. **Net benefits from the Project**. Net present value of expected benefits reached US$ 203 million, 80 percent higher than the costs (CAPEX and OPEX). Net benefit corresponds to the difference of present value of benefits minus present value of costs. Results show an expected net benefit of US$ 92 million and expected return of 11 percent (see table 4.9). Expected results are reassuring as they allow ample room for uncertainties that can surge during implementation, such as cost overrun or Project delays.

Table 4.9. Results from the Economic Evaluation East Dili

	Present value of Flows (000 US$			IRR
	Costs	Benefits	Net Benefit	
Water supply Project East Dili	111,478	203,224	91,747	11%

25. **Results are under conservative side** as important additional benefits that will come from the Project were not quantified such as positive health impact, economic growth, additional improvement of the wellbeing of the population, etc.

GHG Emissions

26. **GHG emissions are global externalities**, which can be positive or negative, depending on the net impact of the Project.[41] This section presents the methodology used to estimate the GHG emissions and their valuation using the shadow price of carbon. The complete evaluation is included in the Project files.

27. **Gross emissions are the emissions Project activities cause over its economic lifetime**. These are compared to a baseline scenario.[42] The Project's net emissions are the difference between the gross emissions

[41] If the net balance is a generation of GHG emissions, the Project is generating a negative externality. If the net balance is a reduction of GHG emissions, the Project is generating a positive externality.

[42] There are three primary approaches to defining a baseline counterfactual; the No Change Scenario assumes the status-quo maintains, the Use of Past Trends approach extrapolates data from the recent past into the near future, and the Use of Future Trends approach uses

and the baseline emissions. For each component of the Project, the GHG emissions were estimated in tCO_2eq using the World Bank's Water Global Practice's GHG Accounting Excel Tool.

28. **Assumptions.** The Source of the data: RFP-038-MOP-2019: Consulting Services for DED of Dili Urban Water Supply Project. A 30-year economic lifetime was assumed for the *new water supply* activities. *The baseline* scenario for the water supply expansion activities was built assuming that local beneficiaries would use surface water (1,600 cubic meters per day) by gravity, and groundwater (23,475 cubic meters per day) using electricity to pump it out. *The Project scenario* was built assuming that 2,000 cubic meters surface water per day and 23,475 cubic meters of groundwater per day of new production would be sourced and distributed to households using electricity and conveyed to a treatment plant or a reservoir and treated using city grid (diesel).

29. **Results of the GHG emission** showed that the Project will generate net emissions estimated given that more energy is expected to be used. The net emissions are estimated at 134,010 tCO2-eq over the life of the Project. The gross emissions from the Project scenario were estimated at 503,070 tCO2-eq, while the baseline scenario is estimated to generate 369,060 tCO_2-eq over the Project's 30-year life. On average, the Project will generate estimated net emissions of **4,467 tCO2-eq** annually.

30. **Shadow Price of Carbon**. To value the net GHG emissions generated/reduced by the Project, this evaluation used the shadow price of carbon recommended in the World Bank guidelines,[43] which lies between US$41.8 (low estimate) to US$83.7 (high estimate) per ton of CO_2e in 2022 and increases to US$50 to US$100 per ton of CO_2e by 2030. From 2030 to 2050, the guidelines recommend using the same growth rate of 2.26% per year.

31. **Results show that the Project will generate a negative externality** as it will increase the GHG emissions (see table 4.10). The economic cost of the additional generation of GHG emission is estimated at US$ 5 million when the high shadow price of carbon is used, and US$ 2.5 million when the low shadow of carbon is used.

Table 4.10. Results of the economic evaluation with and without GHG emissions

NET ECONOMIC BENEFITS	*Net Benefit (000 US$)*			*IRR (%)*		
		With GHG		without GHG Emission	With GHG	
	without GHG Emission	Low price of Carbon	High price of Carbon		Low price of Carbon	High price of Carbon
Water Project East Dili	91,747	89,218	86,690	11.3%	11.2%	11.1%

32. **Impact on the results of CBA.** The results from the valuation of GHG emissions were included in the CBA, showing a small impact on the economic benefits. Expected returns are 11 percent and net benefits of US$ 86.7 million when high shadow price of carbon is used, and US$ 89.2 when the low price is applied.

advanced modeling to make projections about the future. Elements from any combination of these approaches may be used when defining a counterfactual.

[43] World Bank. 2017 Shadow Price of Carbon Guidelines. November 2017.

Financial Analysis

33. **The financial analysis was conducted to test the sustainability of the works** to be financed under the Project, i.e., that BTL, as the water utility be able to cover the costs associated with the operation and maintenance of the works to be financed under the Project.

34. **The financial viability of BTL is currently undermined** by low tariffs and lack of an efficient billing and collecting system. Current tariffs were established in 2004 and never revised. In 2006, tariffs were suspended and reinstated in 2013. They are applied only to metered customers in the urban areas of Dili. The effectiveness of water bill collection is around 10 percent (in Dili, 60 percent of connected households are billed and only 20 percent pay). In 2015, revenue from tariffs covered about 4 percent of operating costs.

35. **The activities that will be financed under the Project** are aimed to improve the financial position and sustainability of BTL. The expansion of water services and improving of billing and collection will increase the revenue base of BTL, which will lead to financial viability if targets are achieved.

36. **BTL presented a Business Plan for the next ten years**, in which billing and collection efficiency increase to 95 percent by 2030; reduce physical losses from 62 percent to 20 percent; increase metered customers to 100 percent; and collection of connection fees to 100%. These efficiency gains will not be enough for BTL to achieve financial viability without tariffs increase. BTL includes in its business plan 20 percent increase of tariffs per year from 2022 to 2026 to compensate not only for inflation but also real increases to gradually cover operating and maintenance costs. From 2027 and on only annual increase to adjust for inflation is included.

37. **Under this scenario of efficiency gains and increase of tariffs**, BTL's financial Projections show that in 2022, 16 percent of operating expenses will be covered by revenues, increasing gradually up to full cost recovery in 2026.

38. **Until financial viability is attained, the operational deficit generated in the whole service area of BTL needs to be funded by the Government**. It is estimated that the transfer required from the Government to compensate the financial gap between revenues and operating costs from 2022 to 2026 will be about US$ 16.6 million (not including depreciation of the assets), which corresponds to an annual subsidy of US$ 3 million.

39. **The situation is expected to improve after 2027 when revenues will cover expenditures**. However, the efficiencies included in the financial Projection need a significant effort to achieve: (i) BTL currently does not regularly issue bills to customers and those billed often do not pay. The business plan assumes that by 2026 BTL will be able to collect 60 percent of the billing from all customers and 95 percent by 2030; (ii) BTL assumes that in 2022 all connection fees can be collected. For 2022 and 2023, it is assumed that 50 percent of revenue comes from connection fees; (iii) by 2026, the cumulative increase of tariffs will be 100 percent, yet the Government has not done so in the last 20 years; (iv) the percentage increase of metered customers to 73 percent in 2022, and 92 percent in 2026 may be challenging especially in the first years when the service has not improved.

40. **To bring additional tools for discussion, two additional scenarios are built**, in which expectations are lower than those in the business plan. The first one includes all efficiencies but does not include the increase of tariffs. The second one considers that only half of the efficiencies will be attained and half of the increase of tariffs will be applied. Results show that under both scenarios the required subsidy will increase (table 4.12).

Table 4.12. Government Subsidy needed to cover operations in the whole service area of BTL (2022-2026)

(000 US$)	BTL Projection	efficiency gains no increase in tariffs	half efficiencies half increase of tariffs
Without Depreciation (2022-2026):			
Total Subsidy for Operation	16,602	26,564	20,753
Average subsidy for operation per year	3,320	5,313	4,151

41. **Financial Evaluation of BTL in Dili**. 23 percent of total population in the country resides in Dili, the capital. Water coverage in Dili is 62 percent, while in the rest of Timor-Leste is just 17 percent. There are about 20,000 connections in Dili (37 percent of total connections in Timor-Leste).

Table 4.13. Income Statement Dili (BTL)

000 US$	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Revenue:	**755**	**1,130**	**1,899**	**4,044**	**7,888**
Revenue from Tariffs:	315	669	1,314	3,446	7,593
Residential Customers	125	384	884	2,832	6,941
Non-residential	190	285	430	614	652
Revenue from Tankers	39	42	45	49	44
Connection fees	368	368	464	439	136
Sanitation Services	34	50	76	109	116
O&M	**4,305**	**4,660**	**4,784**	**5,429**	**6,713**
Labor Costs	1,739	1,839	1,937	1,994	1,983
Consulting Service	408	447	444	546	710
Electricity	589	646	642	789	1,026
Chemicals	181	199	198	243	316
Fuel	116	127	126	155	201
Miscellaneous services	430	472	469	576	749
Other administrative	539	592	588	722	939
IT Expenses	302	339	380	404	789
Operating Income	**(3,550)**	**(3,531)**	**(2,884)**	**(1,385)**	**1,176**
Depreciation	2,455	2,824	2,849	4,044	5,128
Net Income	**(6,004)**	**(6,355)**	**(5,733)**	**(5,429)**	**(3,952)**

ANNEX 4: Map

COUNTRY: Timor-Leste
Dili Water Supply Project