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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
PROJECT APPRAISAL DOCUMENT
ON A
PROPOSED LOAN
IN THE AMOUNT OF US\$295 MILLION
(INCLUDING SUPPORT FROM THE GLOBAL CONCESSIONAL FINANCING FACILITY)
TO THE
LEBANESE REPUBLIC
FOR A
GREATER BEIRUT PUBLIC TRANSPORT PROJECT
February 22, 2018

Transport and ICT Global Practice
Middle East and North Africa Region

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CURRENCY EQUIVALENTS
(Exchange Rate Effective February 16, 2018)

Currency Unit = Lebanese Pounds (LBP)
LBP 1507.5 = US\$1

FISCAL YEAR
January 1 – December 31

Regional Vice President: Hafez Ghanem

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ABBREVIATIONS AND ACRONYMS

ADSCR	Average Debt Service Cover Ratio
BDL	<i>Banque du Liban</i>
BRT	Bus Rapid Transit
CCTV	Closed Circuit Television
CDR	Council of Development and Reconstruction
CFF	Concessional Financing Facility
CNG	Compressed Natural Gas
CPF	Country Partnership Framework
CQS	Selection Based on the Consultants' Qualifications
DA	Designated Account
DGLMT	Directorate General of Land and Maritime and Transport
EIRR	Economic Internal Rate of Return
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
EU	European Union
FBS	Selection under a Fixed Budget
FM	Financial Management
FO	Financial Officer
GBA	Greater Beirut Area
GCF	Global Climate Fund
GCFF	Global Concessional Financing Facility
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GoL	Government of Lebanon
GPS	Global Positioning System
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service
ICR	Implementation Completion and Results Report
ILO	International Labour Organization
IPF	Investment Project Financing
IPSAS	International Public Sector Accounting Standards
IRR	Internal Rate of Return
ISDB	Islamic Development Bank
IT	Information Technology
ITS	Intelligent Transport Systems
LLCR	Loan Life Cover Ratio
MFD	Maximizing Financing for Development
MOF	Ministry of Finance
MPWT	Ministry of Public Works and Transport
NMT	Nonmotorized Transport
NPV	Net Present Value
OPEX	Operational Expenditure

OPRC	Operational Procurement Review Committee
PAD	Project Appraisal Document
PDO	Project Development Objective
PFS	Project Financial Statement(s)
PIU	Project Implementation Unit
PLM	Person with Limited Mobility
PIM	Project Implementation Manual
PPP	Public-Private Partnership
PPSD	Project Procurement Strategy Development
QCBS	Quality- and Cost-Based Selection
RAP	Resettlement Action Plan
ROW	Right-of-Way
RPA	Regional Procurement Adviser
RPTA	Railways and Public Transport Authority
SOE	Statement of Expenditure
SPS	Stated Preference Survey(s)
STEP	Systematic Tracking of Exchanges in Procurement
UIFR	Unaudited Interim Financial Report
UN	United Nations
UTDP	Urban Transport Development Project
VAT	Value Added Tax
WA	Withdrawal Application

**BASIC INFORMATION**

Is this a regionally tagged project?

No

Country(ies)

Financing Instrument

Investment Project Financing

☐ Situations of Urgent Need of Assistance or Capacity Constraints☐ Financial Intermediaries☐ Series of Projects

Approval Date

15-Mar-2018

Closing Date

31-Dec-2023

Environmental Assessment Category

A - Full Assessment

Bank/IFC Collaboration

Yes

Joint Level

Complementary or Interdependent project requiring active coordination

Proposed Development Objective(s)

The Project Development Objective (PDO) is to improve the speed, quality and accessibility of public transport for passengers in Greater Beirut and at the city of Beirut's northern entrance.

Components**Component Name****Cost (US\$, millions)**

BRT infrastructure, fleet and systems

230.00

Feeder and regular bus services and integration in urban environment

105.00

Capacity building and project management

10.00

Organizations

Borrower :

Lebanese Republic

Implementing Agency :

Council for Development and Reconstruction



PROJECT FINANCING DATA (US\$, Millions)

<input type="checkbox"/> Counterpart Funding	<input checked="" type="checkbox"/> IBRD	<input type="checkbox"/> IDA Credit	<input type="checkbox"/> IDA Grant	<input checked="" type="checkbox"/> Trust Funds	<input checked="" type="checkbox"/> Parallel Financing
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Total Project Cost:
345.00

Total Financing:
345.00
Of Which Bank Financing (IBRD/IDA):
225.20

Financing Gap:
0.00

Financing (in US\$, millions)

Financing Source	Amount
Concessional Financing Facility	69.80
IBRD-88380	225.20
Foreign Private Commercial Sources (unidentified)	50.00
Total	345.00

Expected Disbursements (in US\$, millions)

Fiscal Year	2018	2019	2020	2021	2022	2023	2024
Annual	2.11	17.40	23.18	39.16	69.86	89.80	53.49
Cumulative	2.11	19.51	42.69	81.85	151.71	241.51	295.00

INSTITUTIONAL DATA

Practice Area (Lead)

Transport & Digital Development



Contributing Practice Areas

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

Gender Tag

Does the project plan to undertake any of the following?

a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF

Yes

b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment

Yes

c. Include Indicators in results framework to monitor outcomes from actions identified in (b)

Yes

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	● Substantial
5. Institutional Capacity for Implementation and Sustainability	● Substantial
6. Fiduciary	● Moderate
7. Environment and Social	● Substantial
8. Stakeholders	● High
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

Safeguard Policies Triggered by the Project**Yes****No**

Environmental Assessment OP/BP 4.01

✓

Natural Habitats OP/BP 4.04

✓

Forests OP/BP 4.36

✓

Pest Management OP 4.09

✓

Physical Cultural Resources OP/BP 4.11

✓

Indigenous Peoples OP/BP 4.10

✓

Involuntary Resettlement OP/BP 4.12

✓

Safety of Dams OP/BP 4.37

✓

Projects on International Waterways OP/BP 7.50

✓

Projects in Disputed Areas OP/BP 7.60

✓

Legal Covenants**Sections and Description**

1. CDR shall not later than 2 months after the Effective Date, establish and thereafter maintain, at all times during the implementation of the Project, the Project Implementation Unit ("PIU"). Schedule. Section I. A.1. of the Project Agreement.

Sections and Description

2. CDR shall not later than 1 month after the Effective Date prepare and adopt a project implementation manual. Schedule 2. Section I. C.1. of the Legal Agreement.

Sections and Description

3. The Borrower shall not later than 18 months after the Effective Date, cause CDR to appoint a transaction advisor satisfactory to the Bank. Schedule 2. Section I. E.1. of the Legal Agreement.

**Sections and Description**

4. The Borrower shall not later than 36 months after the Effective Date, cause CDR to sign operator's contract(s) with (a) Private-Sector Operator(s).Schedule 2. Section I. E.2.(a). of the Legal Agreement.

Conditions**Type**

Effectiveness

Description

That the Subsidiary Agreement has been executed on behalf of the Lebanese Republic and CDR. Section 9.01 (a) of the General Conditions.

PROJECT TEAM**Bank Staff**

Name	Role	Specialization	Unit
Ziad Salim EL Nakat	Team Leader(ADM Responsible)		GTD05
Lina Fares	Procurement Specialist(ADM Responsible)		GGOPM
Rima Abdul-Amir Koteiche	Financial Management Specialist		GGOMN
Aiga Stokenberga	Team Member		GTD07
Andrianirina Michel Eric Ranjeva	Team Member		WFACS
Chaogang Wang	Social Safeguards Specialist		GSU05
Christine Makori	Counsel		LEGAM
David Matthew Bull	Team Member		GTPGF
Franck Taillandier	Team Member		GTD08
Khalid Boukantar	Team Member		GTD05
Konjit Negash Gebreselassie	Team Member		GTD08
Lauren Nicole Wilson	Team Member		GTPGF
May Ibrahim	Team Member		MNC02
Mira Morad	Team Member		GTD05



Mouna Couzi	Team Member		MNCLB
Rock Jabbour	Team Member	Financial Management	GGOMN
Rola Assi	Team Member		MNCLB
Sameena Dost	Counsel		LEGAM
Wissam Harake	Team Member		GMTMN
Zeyad Abu-Hassanein	Environmental Safeguards Specialist		GEN05
Extended Team			
Name	Title	Organization	Location



LEBANON
GREATER BEIRUT PUBLIC TRANSPORT PROJECT

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I. STRATEGIC CONTEXT

A. Country Context

1. **Lebanon is a middle-income country with a population of 4.5 million people in 2015, not taking into account the approximate 1.5 million Syrian refugees and 450,000 Palestinian refugees residing in the country.** Real gross domestic product (GDP) growth for 2016 was estimated at 1.8 percent, reflecting the impact of regional turmoil and the absence of reforms. The services sector—historically a key growth driver¹—has been severely affected by the Syria conflict and has contributed significantly to Lebanon’s low growth in recent years. Tumbling growth since 2011 and the large fiscal burden associated with Syrian refugees’ access to public services and infrastructure have pushed the debt-to-GDP ratio higher again (around 140 percent as of end-2015), resulting in a marked deterioration of the country’s macroeconomic environment. Meanwhile, the growth outlook remains subdued given the ongoing conflict in Syria and other regional tensions and economic slowdown. The World Bank projects real growth between 2 percent and 2.5 percent yearly over the medium term.
2. **Lebanon’s poor infrastructure represents a key constraint to growth.** Despite being an upper-middle-income country, Lebanon’s infrastructure is in a poor condition. According to the World Economic Forum’s Competitiveness Index,² Lebanon’s infrastructure is the second main constraint to growth and its supply and quality is materially below various sets of comparator countries. This has also been highlighted in the Lebanon Systematic Country Diagnostic.³
3. **A highly urbanized and mountainous country with a small geography,⁴ Lebanon has one of the highest population densities in the world.** Lebanon’s population density is around 600 people per km². About 87 percent of the resident population lives in urban areas, with more than half in the Greater Beirut Area (GBA). Traffic congestion is undoubtedly one of Beirut’s most serious urban development problems; a study by the Ministry of Environment in 2005 put the cost of urban congestion at about 8 percent of Lebanon’s GDP at the time,⁵ when traffic volumes were lower than today. Poor transport connectivity between Beirut and the hinterland regions, largely exacerbated by traffic congestion, is one of the main reasons for regional inequalities and poverty in lagging regions due to lack of access to jobs and services.
4. **Neighboring Syria is suffering the biggest conflict and the worst humanitarian and refugee crisis of the 21st century, with large regional and global ramifications and spillover effects.** It is estimated that about 60 percent of Syria’s population is displaced (refugees and internally displaced), representing a massive humanitarian crisis. While some of the refugees in neighboring countries live in camps, the majority of refugees generally live in difficult conditions within various urban and rural host communities, putting excessive strain on existing infrastructure and services within these communities. The incapacity of neighboring countries to deal with such a large influx of refugees, in addition to the refugees’ search

¹ Between 1997 and 2011—latest utilized final national accounts—the services sector accounted for an average of 74 percent of real GDP.

² World Economic Forum. Global Competitiveness Index 2014/2015.

³ World Bank. 2016. *Lebanon, Promoting Poverty Reduction and Shared Prosperity, Systematic Country Diagnostic*, 103201.

⁴ Lebanon land surface is 10,452 km².

⁵ Ministry of Environment. 2011. Lebanon’s second national communication to the UNFCCC.



for safety and better livelihood, has been driving a large number of refugees to migrate formally and informally to global destinations, particularly in Europe. The United Nations High Commission for Refugees estimates the number of Syrians seeking asylum in 2016 at about 1 million. The Syrian crisis has therefore become a major regional and global challenge requiring concerted global efforts to seek political, developmental, and humanitarian solutions.

5. **The Syrian refugee crisis has resulted in unprecedented social and economic challenges to Lebanon, putting further strain on its decaying infrastructure.** Lebanon is the country with the highest number of refugees per capita in the world at an estimated one-third of the country's population. This dramatic surge in population is putting a strain on the country's resources, public services, and infrastructure. The fiscal costs related to the Syria crisis have also been considerable, amounting to an estimated US\$2.6 billion over 2012–2014 alone.⁶ This situation poses the risk of further destabilizing the country's fragile political, social, and economic situation. The capacity of the existing and decaying infrastructure is no longer sufficient to meet the excess demand, and urgent public investments are needed, imposing further and potentially substantial burdens on Lebanon's already stretched public finances. It is estimated that the influx of 1.5 million Syrian refugees has resulted in sudden traffic increases in the GBA in the range of 15 percent to 25 percent, worsening traffic congestion and resulting in significant negative economic and environmental externalities. As the economic cost of traffic congestion in Lebanon is estimated by various studies as between 5 percent and 10 percent of national GDP, an increase in traffic levels in the range of 15 percent to 25 percent translates into the influx of refugees contributing in the range of US\$500 million to US\$1 billion yearly to the economic cost of traffic congestion in Lebanon.

6. **To weather the crisis, Lebanon is adopting a two-pronged approach aimed at programs to stimulate the economy and create jobs while meeting Lebanon's longer-term development needs, particularly in the infrastructure sectors.** Lebanon needs investments to stimulate its economy and create jobs while also developing its much-needed infrastructure. The Government of Lebanon (GoL) is therefore putting in place a priority multibillion Capital Investment Plan primarily focused on the infrastructure sectors, particularly transport. This program has been the focus of high-level discussions between the Lebanese Government and its global partners in various bilateral and multilateral meetings. The Government Program will also unlock the potential of private finance to infrastructure projects, thereby benefitting from Lebanon's strong private banking sector and its high-level liquidity and significantly leveraging capital financing capacity.

B. Sectoral and Institutional Context

7. **Traffic congestion is undoubtedly one of Lebanon's most serious development problems as high population density, increased income levels, and increased motorization have all resulted in a rapid increase in traffic volumes, particularly in the GBA.** While significant traffic demand is generated within Beirut, the larger part of traffic demand is generated from the outskirts and travel to Beirut on three main axes, namely, the Northern, Southern, and Eastern Highways. Daily traffic on critical highway sections is estimated at 300,000 vehicles on the Northern Highway, 200,000 vehicles per day on the southern highway, and about 150,000 vehicles per day on the eastern highway. Peak-hour speeds range between 30 km per hour on main highways and arterials to less than 10 km per hour on local streets. There are

⁶ World Bank. 2013. *Lebanon Economic and Social Impact Assessment of the Syrian Conflict*.



currently about 1.6 million vehicles in Lebanon, of which over 60 percent are in the GBA. Most users rely on private vehicles to meet their transportation needs and private cars account for over 80 percent of vehicles circulating in the GBA. Average vehicle occupancy rate, at about 1.3, is also very low.⁷

8. **Transport in Lebanon is costly, with no reliable alternatives to private vehicles.** Import dues on vehicles in Lebanon can exceed 50 percent of a vehicle's value while gasoline is taxed unlike most countries in the region. Parking space is scarce in Beirut and costly. All these factors make owning and operating a vehicle particularly expensive, and in the absence of a reliable public transport system, there are no viable transport alternatives for the population. Surveys show that transport costs account for about 15 percent of total household expenditures, among the highest of all categories and only surpassed by housing and health expenditures. Meanwhile, the high housing cost in the GBA is largely affected by unreliable and costly transportation as people leave their hometowns (on average only about 40 km away) and move to Beirut where employment is concentrated, hence further driving housing prices up. High transport costs also contribute to businesses' preference to remain in Beirut despite high real estate costs.

9. **Poor transport connectivity exacerbates inequitable growth between Beirut and hinterland regions and hinders access to employment and services for the poor and other vulnerable groups.** High transportation costs and poor transport connectivity contribute to the concentration of economic activity around Beirut and the increased migration from hinterland regions to Beirut for employment and services. This results in increased economic distances between important parts of the country and the development of major poverty pockets within its various regions. Improving transport connectivity will put most of the country within less than two hours travel distance from Beirut. This will result in almost the whole of Lebanon effectively becoming one economic market, with smoother daily flows of goods and labor between its various parts, which will facilitate major productivity gains.

10. **However, the supply of transport solutions remains limited.** The lack of a proper and reliable public transport system significantly limits the capacity of the transport network in accommodating the rapidly increasing demand. Lebanon's high-density and difficult terrain makes the provision of additional road space capacity very costly due to high land value and costly infrastructure works. There are an estimated 2,200 buses as well as about 4,000 legal and 10,000 illegal minibuses and vans in Lebanon.⁸ In addition, there are about 33,000 legal and 20,000 illegal private taxis in Lebanon that operate on a chartered or shared basis ('service').⁹ While they are informally organized, buses and minibuses generally operate on specific routes. All taxis, vans, and buses can be hailed from the street and do not pick up or drop off passengers at specific locations. While a public transport license, generally issued by vehicle, allows service providers to operate across the whole country (not route specific), most of them choose to operate within the GBA where the revenue potential is higher. While there has been recently an observed increase in the number of buses, the supply remains very low and of poor quality. Reducing traffic congestion requires a substantial modal shift from private vehicles. In a high-middle-income country such as Lebanon, this requires the supply of a quality system that achieves substantial travel time savings

⁷ Various surveys undertaken by the Council of Development and Reconstruction (CDR) and Ministry of Public Works and Transport (MPWT)/Directorate General of Land and Maritime and Transport (DGLMT).

⁸ DGLMT.

⁹ DGLMT.



compared to use of private vehicles, hence the importance of modern systems with dedicated lanes in attracting ridership.

11. **Lebanon's traffic congestion problem is primarily the result of a constrained supply of quality and reliable transportation solutions.** A World Bank study¹⁰ assessed multiple scenarios of transport supply and demand policy and investment measures and their impact on reducing traffic congestion in Greater Beirut. The study clearly shows that demand-side measures alone (such as pricing, tolls, parking charges) will have little effect on reducing congestion given the inexistence of reliable alternative modes of transportation to private vehicles. Supply measures such as providing mass transit solutions such as bus rapid transit (BRT) systems, bus network, and increased road capacity clearly have a larger effect on reducing traffic congestion. Of all supply measures, transit solutions (BRT with feeder buses) have the highest effect on reducing traffic congestion and are the most cost-effective. Transit and mass transit solutions, coupled with some simple pricing instruments such as increased parking charges, will yield the highest benefits and will have substantial effects in reducing traffic congestion and associated externalities by up to 50 percent. Optimal transport policy for Beirut would therefore involve increasing the supply of public transport and nonmotorized transport (NMT) (pedestrian space, biking) systems while gradually increasing the cost of private transportation, be it through tolls and charges (parking charges, gasoline, vehicle taxes) or by making the availability of space for private cars in Beirut more scarce. Introducing proper pricing policies will also be important to ensure the long-term financial sustainability of public transportation systems while properly considering the impact of such policies on vulnerable groups.

12. **Weak and fragmented institutions, lack of a clear champion, lack of regulation, and insufficient funding are the main reasons for the lack of adequate transport systems in Lebanon.** The planning and regulation of public transport is undertaken by the Ministry of Public Works and Transport (MPWT), licensing of companies, fare setting, and planning)) and the Ministry of Interior (licensing of vehicles and drivers, vehicle inspection). The Ministry of Interior, through the Internal Security Forces, is also responsible for the enforcement of the traffic law, including on public transport. The MPWT, through the Directorate General of Roads, oversees the construction and maintenance of the national highways and road networks. The Railways and Public Transport authority (RPTA), a state-owned enterprise under the guardianship of the MPWT, is the public operator who had a monopoly on operating railways and public transport in Lebanon and Beirut although its role has largely eroded due to the disappearance of the railways, the old tramway, and most of its bus operations (only about 35 small buses remain). The Municipal Law also assigned some public transport competences to municipalities. Finally, the CDR has competencies in national planning, including transport planning, and the execution of large infrastructure projects through project-specific mandates by the Council of Ministers. Given that Lebanon is a small territory with almost continuous urbanization (representing almost a city state from an urban development point of view), the planning, execution, and operation of public transport need to be handled nationally, and the MPWT, through its various departments and agencies, should increasingly play the leading role in the transport sector, especially in setting the overall strategy and policy and championing the development of the sector. The development of public transport, particularly mass transit systems, requires substantial funds and especially public-sector financing as it is universally a heavily subsidized sector given its important social and economic role. The high Government debt and

¹⁰ World Bank. 2017 "Reducing Traffic Congestion in Beirut: An Empirical Analysis of Selected Policy Options."



weak capital expenditures, technical and political complexity of the sector, and lack of a clear and high-level champion have all contributed to the neglect of the sector development.

13. **Realizing the critical importance of public transport to tackle the major traffic congestion problems, the GoL, with the support of the World Bank, is pursuing a comprehensive public transport program that will focus on a network of bus and BRT solutions for the medium term.** The MPWT, which supported the World Bank - financed Urban Transport Development Project (UTDP) , produced the 'transport plan for Greater Beirut' that identified 20 regular bus routes, bus stops, and frequencies, supported by a telematic¹¹ system. The World Bank, in discussion with various stakeholders, built on this study by introducing a BRT network as a backbone to the transport program and to complement the feeder/regular lines, given the importance of dedicated lanes to achieve the desired frequency and quality of service. The choice of the BRT as the adequate mass transit solution was the result of a study of alternatives that showed the cost-effectiveness of such a system for the medium term. The program has been endorsed by the Council of Ministers and the Parliamentary Committee for Transport and Public Works as one of the country's strategic economic priority projects. The proposed project requested by the GoL represents a first phase in this comprehensive public transport program and other donors, encouraged by the World Bank's involvement and design of the program, have already agreed in principle to finance the second phase of the program that will look into extending the BRT lines to the southern and eastern suburbs of Beirut. This ambitious project will be the first mass transit and regular transport system in Lebanon in over 50 years, in a complex political-economy context in the country and the sector (alignment, informal operators, behavioral change, institutional). It is a vital project in tackling traffic congestion, contributing to growth and connectivity between various Lebanese regions, and in providing affordable and reliable transport.

14. **The proposed project will provide clean, affordable, and reliable transportation to middle- and low-income Lebanese and Syrians.** Currently, only the very poor Lebanese and Syrians use the existing public transport system due to lack of alternatives. The planned system is designed to attract middle- and low-income Lebanese and Syrians by substantially upgrading the quality of services to achieve modal shift while keeping prices affordable. Traffic surveys have shown that Syrians also rely significantly on public transportation to meet their transportation needs and already represent between 30 percent and 40 percent of users of the existing public transport system and are expected to significantly benefit from the new improved services. The planned BRT project with its associated feeder network will cover about half of the country and will reach over 50 percent of all Lebanese and Syrians in Lebanon.

15. **In addition, the project will create short-term jobs in the construction sector that has historically been a major employer for the low-skilled Lebanese and Syrians in Lebanon.** Before the Syria conflict, the construction sector employed more than 100,000 workers (approximately 10 percent of the labor force). The construction sector is also the second largest employer of Syrian refugees in Lebanon (24.1 percent), after household work (26.5 percent). The employment of Syrians in the construction sector does not displace the Lebanese labor force since over the past decade, the skilled labor force in construction has been Lebanese while the unskilled labor force has generally been Syrian. In poorer areas of Lebanon, the unskilled labor force in the construction sector includes a broader mix of Lebanese and Syrians. It is important to note that substantial supply chain jobs are also created in supporting industries and services

¹¹ Transport telematics refer to an intelligent transportation system that allows real-time communication between the vehicle, control center, and stops/stations.



(quarries, cement, trucking), which employ low-skilled Lebanese and Syrians. Road investments also generate broader socioeconomic benefits in terms of improved access to markets and services for the host and refugee communities. Lebanese regulations allow Syrians to work in the construction sector in Lebanon. In light of the large influx of Syrians following the crisis, the Ministry of Labor has issued a decision¹² to define and restrict the jobs that can only be occupied by Lebanese. Article 2 of this decision explicitly exempts Syrians working in construction, cleaning, and agriculture from these restrictions, thereby allowing Syrians to work in these three sectors. A subsequent Ministry of Labor decision has limited the labor ratio of Lebanese to Syrians in construction projects by 1:1.

16. **The project is expected to create 2 million labor-days for low-income Lebanese and Syrians.** A World Bank study estimates that for every US\$1 billion invested in road and bridge construction in different countries in the Middle East and North Africa Region, between 100,000 and 650,000 direct, indirect, and induced jobs are created. The study also shows that for a similar level of US\$1 billion investment per sector, road and bridge investments create the highest number of jobs among all infrastructure sectors (table 1).¹³ A study by the International Labour Organization (ILO) also shows that road, bridges, and civil works have a significant labor content, in the 15–30 percent range.¹⁴ Overall, civil works activities covered by this project have relatively high labor content. The labor content of infrastructure activities covered by this project is estimated in the 20–30 percent range, even higher than regular roadworks, as the project activities include the construction of pedestrian bridges, physical separation on the highway, the installation of bus stops and shelters, and the improvement of sidewalks and access to stations, all of which require substantial labor efforts.

Table 1. Number of Direct, Indirect, and Induced Jobs Generated per US\$1 Billion of Spending in Various Infrastructure Sectors

Construction							
	Electricity	Building	Roads and Bridges	Water and Sewage	Electricity Stations	Others	Transport and Communications
Djibouti	86,000	105,000	654,000	254,000	122,000	120,000	59,000
Egypt	46,000	56,000	350,000	136,000	65,000	64,000	31,000
Jordan	25,000	30,000	189,000	73,000	35,000	34,000	17,000
Lebanon	13,000	16,000	97,000	38,000	18,000	18,000	9,000
Morocco	37,000	73,900	283,000	109,000	52,000	52,000	25,000
Tunisia	28,000	34,000	210,000	81,000	39,000	38,000	19,000

C. Higher Level Objectives to which the Project Contributes

17. **This project is designed to meet Lebanon’s developmental needs in the transport sector while also stimulating the economy and creating jobs.** The project design follows a ‘win-win’ rationale to help

¹² Ministry of Labor Decision reference 197/1 of December 2014.

¹³ World Bank. 2013. “Infrastructure and Employment Creation in the Middle East and North Africa.”

¹⁴ ILO (International Labor Organization). 2015. “Employment Impact of European Investment Bank Infrastructure Investments in the Mediterranean Partner Countries, Executive Summary.”



Lebanon meet its important needs in the infrastructure sectors, reduce the large economic externalities of traffic congestion, improve transport services and reduce costs for the middle- and low-income Lebanese and Syrians, and create jobs for Lebanese and Syrians, thereby easing the economic and social pressures from the Syrian refugee crisis. This project also highlights Lebanon's continuous efforts to weather the Syrian refugee crisis and the country's increasing needs for assistance from the international community to support it in providing a global public good. This project is among the priorities in the list of national projects agreed by the Lebanese Government as high-priority development projects to mitigate the impact of the refugee crisis and to potentially benefit from the Global Concessional Financing Facility (GCFF).

18. The project contributes to the World Bank Group's strategic goals of eliminating extreme poverty and boosting shared prosperity in a sustainable manner, as well as to the Mobilizing Financing for Development (MFD) principles. The project will primarily benefit low- and middle-income Lebanese and Syrians in the GBA and provide them with reliable, safe, clean, and affordable transportation. The project will primarily create short-term jobs for low-skilled and poor Lebanese and Syrians working in Lebanon, thereby providing them with better income. By reducing travel times, the project will also improve the connectivity between the center (Greater Beirut) and lagging regions, thereby also improving the rural poor's access to better markets and services. In addition, the project is mobilizing substantial commercial financing for the purchase of the bus fleet by private operators in accordance with the MFD principles. Finally, the project has large impacts on transforming the transportation sector in Lebanon and achieving a modal shift from private vehicles to efficient public transport systems with significant climate change benefits.

19. The project also contributes to the Lebanon Country Partnership Framework (CPF) by meeting its objectives regarding expanding access to and quality of service delivery (Focus Area 1 of the CPF). The CPF for Lebanon for FY17-FY22 (Report No. 94768-LB, discussed by the Board of the Executive Directors on July 14, 2016) aims at building resilience and fostering opportunities for all that reflects a holistic approach to addressing the impact of the refugee crisis while meeting Lebanon's development needs. The CPF has two focus areas to (a) expand access to and quality of service delivery and (b) expand economic opportunities and increase human capital. This project will particularly help in meeting Objective 1.c of the CPF regarding "improved access to and quality of infrastructure" and will contribute to the overarching principles of the CPF to improve service delivery, meet the medium- and long-term development needs of Lebanon, and assist Lebanon in dealing with the impact of the Syria crisis. This project will also contribute to the inclusion agenda and the development of lagging regions by providing reliable and low-cost access to markets, jobs, and services for the poor, women, youth, and persons with limited mobility (PLMs).

20. The project contributes to implementation of the World Bank Group's Middle East and North Africa strategy. This project contributes directly to the pillar on resilience to refugee shocks by helping Lebanon deal with the impact of the Syrian refugee crisis and by creating short-term jobs for Lebanese host communities and for Syrian refugees. It also contributes to the pillar on renewing the social contract through improved services to vulnerable groups and the development of Lebanon's lagging regions. Finally, the project will also reinforce the construction skills of Syrian refugees, which will be needed later for Syria's reconstruction.



II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

21. The Project Development Objective (PDO) is to improve the speed, quality, and accessibility of public transport for passengers in Greater Beirut and at the city of Beirut's northern entrance.

B. Project Beneficiaries

22. The project beneficiaries consist of the following:

- (a) **Lebanese and Syrians in Lebanon.** Low- and middle-income Lebanese and Syrians living in the GBA will directly benefit from the project by using the system to meet their transportation needs. Other residents in the GBA will also benefit from it through reduced traffic congestion, improved air quality, and improved mobility and quality of life induced by the new system. Residents outside the GBA and in the regions, particularly the North, will benefit from better connectivity to Beirut and reduced travel times.
- (b) **Lebanese and Syrian low-skilled labor force participants.** The project is expected to create about 2 million labor-days of direct short-term jobs in the construction industry, most of it for low-skilled Lebanese and Syrians. Substantial additional jobs will also be created in the supply chain industries as well as the engineering and consultancy services in Lebanon. In addition, the project will create more permanent employment for low-income Lebanese in the transportation industry and services (bus drivers, maintenance of depots). The new private bus operators will set modern bus operations with the formal employment of staff, proper training, and access to social security. While some informal operators could initially lose from the new system (the ongoing social studies will look into ways to mitigate this), the project will have positive long-term benefits on employment in transport services as it will contribute to substantially broadening the market share of public transport (currently at only about 15 percent of travel compared to 80 percent in private vehicles), thereby creating substantial new opportunities in the sector. In addition, the project will include incentives and mitigation measures for the affected local operators as explained in section VI.E of the Project Appraisal Document (PAD).
- (c) **Vulnerable groups such as the poor, PLMs, women, and the youth.** Currently, there does not exist an affordable, reliable, safe, and accessible public transport system in Lebanon with adequate quality. The new system will offer social fares in line with the universal practice in public transport. The BRT system will be almost fully accessible to PLMs with low-floor buses, accessible stations with elevators, and other accessible features. The system has the potential to significantly increase women's ridership on public transport, which is currently significantly challenged by safety and other concerns; the new system, with modern buses, well-lit stations, professional bus drivers, security cameras in buses and stations, security guards at stations and select buses, and improved sidewalks and access to stations will contribute to women's empowerment by providing affordable and independent mean of transportation to women. The system will attract a significant number of school and



university students as well as the young labor force who commute daily from surrounding regions to Beirut for jobs and who cannot yet afford the purchase of a private vehicle. Finally, the project will improve traffic safety with the introduction of about 25 pedestrian bridges along the Northern Highway for pedestrian crossing and access to stations substantially improving safe traffic and pedestrian flows on the Northern Highway.

- (d) **Local industries and economies.** The project will also benefit contractors, investors, and local industries supporting the construction sector (quarries, transportation, and cement). Local economies will also benefit from improved connectivity and increased demand for local goods and services. The project will increase the demand for transport-related services and increase its market share creating further economic activity in this sector. Finally, businesses along the BRT routes on the Northern corridor and in Beirut will significantly benefit from improved accessibility and a large increase in passenger volumes and commerce.
- (e) **Lebanese Government agencies active in the transport sector.** In the absence of a proper and regular public transport system, the role of sector institutions (Ministry of Public Works and Transport, Railways and Public Transport Authority) has been marginalized and responsibilities blurred. The project will contribute to the strengthening of these institutions, reforming their roles and responsibilities, and modernizing sector policies. The introduction of professional private sector operators will also help modernize the public transport industry and the gradual buildup of efficient private sector participation in the sector.

C. PDO-Level Results Indicators

23. The achievement of the PDO will be monitored through the following proposed key results indicators:

- (a) Number of passengers per weekday using the formal public bus (BRT and regular buses) as a measure of the direct beneficiaries of the project; **sub-indicator:** Percentage of female ridership in the formal public bus system (BRT and regular buses) per weekday
- (b) Percentage of population residing in the GBA¹⁵ with access to Beirut city center ('La place des martyrs') within 60 minutes commuting period using public transport
- (c) Average travel time by public transport from Tabarja station to Charles Helou terminal at morning peak hours
- (d) Satisfaction rating by passengers of the formal public bus system; **sub-indicator:** Satisfaction rating by female passengers of the formal public bus system

¹⁵ The GBA here refers to administrative Beirut and Mount Lebanon.



III. PROJECT DESCRIPTION

A. Project Components

24. **The proposed project is the first phase of a comprehensive national public transport program.** The comprehensive public transport program will consist of a BRT network of three trunk BRT lines in the center of the highway on the Northern, Southern, and Eastern approaches to Beirut, with BRT lines extending within Beirut to connect the three trunk lines and to improve connectivity between Beirut and the regions as well as within Beirut. The BRT network will also be complemented by about 20 lines of a regular and feeder bus network as well as investments to improve access (bus stops, sidewalks, park and ride facilities). The required bus fleet for the whole program is over 1,000 buses. The program will be executed in three phases/stages with phase one being a BRT on the Northern Highway and on the outer ring road of Beirut with complementary feeder lines/buses (the proposed project); phase two being a BRT on the southern highway and two major arterials in Beirut connecting south, with complementary feeder lines/buses; and phase three being a BRT on the eastern highway and additional arterial within Beirut with its feeder lines/buses.

25. **The proposed project's overall geographic coverage will benefit over 50 percent of Lebanese and Syrians living in Lebanon and will accelerate the implementation of the national program.** The proposed project will benefit the Lebanese and Syrians living in Beirut, Mount Lebanon, and Northern Lebanon, which represent between 50 percent to 70 percent of all Lebanese and Syrians in Lebanon. The subsequent implementation of the remainder of the program, also expected to start soon toward South Lebanon and the Bekaa, will deliver reliable and affordable public transport services and jobs for most of the Lebanese and Syrian population in Lebanon. Counterparts are looking to accelerate the execution of the national program by starting the various phases within a short time from each other. Encouraged by the World Bank's involvement and leadership in the sector, multiple donors are interested in the program, and the Islamic Development Bank (ISDB) has already expressed interest in financing the second phase.

26. **The project will have the following three components:**

Component 1: BRT infrastructure, fleet, and systems (estimated cost: US\$230 million, of which US\$180 million IBRD and GCFF financing)

27. This component will finance goods, works, and consulting services for detailed design, construction, and supervision of the BRT infrastructure on the Northern Highway and outer ring road of Beirut including stations, terminals, depots, park and ride facilities, intersections, pedestrian crossings and pedestrian bridges, corridor traffic management system, and so on. This component will also finance necessary land acquisition for the widening of a few sections along the highway, as well as land needed for select park and ride facilities and the terminal in Tabarja. Land acquisition requirements are expected to be up to US\$25 million.

28. This component will also finance the potential government contribution to goods and services for the provision of 120 BRT modern low-floor left-door articulated buses with a capacity of around 150 passengers each. Different bus technologies (compressed natural gas [CNG]; hybrid; Euro IV, V, or VI diesel) are being assessed to find the best environmentally friendly technology adapted to the context of



Lebanon and its regulations. The BRT buses will be financed under this component and the extent and modalities of private sector contribution to the financing of the BRT vehicle fleet is currently being assessed with the expectation that the private sector finances part of the buses, in the range of 80 percent to 100 percent of the BRT bus fleet, as further explained in section III.B. Public-private partnership (PPP) structuring is currently undertaken by an international consulting firm with the support of the Global Infrastructure Facility and International Finance Corporation Advisory Services, which will further detail the exact contribution of the private sector to the purchase of buses. The total cost for the fleet of BRT buses should amount to about US\$63 million for articulated BRT buses. Private operators will be in charge of operating and maintaining the system.

29. This component will also finance the government contribution for the provision of goods and services for an Intelligent Transport Systems (ITS) and a fare collection system. Fare collection based on smart card technology and operations control with automatic vehicle location based on global positioning system (GPS) technology will enable centralized control of bus operations and fare management. The system will include closed circuit television (CCTV) surveillance (among others, to make it more gender friendly). The total cost for ITS amounts to about US\$7 million.

Component 2: Feeder and regular bus services and integration in urban environment (estimated cost: US\$104.4 million, of which US\$104.4 million IBRD and GCFF financing)

30. This component will finance goods, works, and services for bus stops and shelters, street furniture, and roadworks as needed along the bus roads. The total estimated bus fleet required for operating the 20 regular and feeder lines with a high level of service is about 750 buses. However, the Government's plan is to start with 250 buses and gradually build the fleet size as demand increases through incorporating existing operators into the scheme or the later purchase of additional buses. Feeder and regular bus system specifications include 10.5 m long buses with GPS and fare collection equipment (about US\$40 million for the whole fleet). This component will also finance additional investments for the control center and associated telematic system in buses and bus stops and potentially two additional bus depots. This component will also finance technical assistances for better integration of BRT in the urban environment: an NMT plan, fares integration, parking management, road safety, public transport network restructuring, Master Plan, professionalization of local operators, and license issuance reforms, among others.

31. As discussed, the Government contribution to the purchase of the bus fleet, which will be totally made available from the World Bank loan proceeds, is expected to be in the value of 250 buses. The modality of bus purchasing and financing and the mechanism for the loan financing of the Government contribution are being assessed under the ongoing PPP studies (direct purchasing of 250 buses, capital grant from the Government to operators, availability payment to operators for the value of the 250 buses). Private operators will be in charge of operating and maintaining the regular bus and feeder system.

Component 3: Capacity building and project management (estimated cost: US\$10 million, of which US\$10 million IBRD and GCFF financing)

32. This component will finance consulting services, firms, or experts, for institutional strengthening for the supervision of BRT/feeder operations at RPTA and other relevant agencies. This will comprise technical assistance related to the supervision of operation of the BRT and its feeder network including



the administrative and financial management aspects. It will also finance a Project Implementation Unit (PIU) within the CDR and other technical assistance and operational support for management of project implementation. This component will also finance necessary studies and technical assistance to further advance transport policies and regulations and to strengthen the sector agencies' operational and administrative skills as well as institutional structure, notably RPTA.

33. This component will also finance a communication campaign to promote public transport in Lebanon as well as measures to assist existing operators in better integrating into the new system such as studies to reorganize the network in consultation with existing operators, improved regulation and management of permits and licensing, study of alternative enforcement measures, training to operators and drivers, and better users' information systems.

34. Finally, this component will also finance additional studies to improve the planning and implementation of public transport in Lebanon and to further assess the potential and opportunities for private sector investments in the transportation sector.

B. Project Cost and Financing

35. **The total project cost to develop phase one of the BRT network and the associated Government plan of 20 regular lines is estimated at US\$345 million.** The cost of developing the BRT infrastructure and associated land acquisition is estimated at US\$160 million with an additional US\$70 million for buses and ITS. The cost of implementing the regular and feeder network of about 20 lines and 250 buses is estimated at US\$100 million, while about US\$15 million is allocated for necessary capacity building and studies. All the proposed costs include price contingency of about 15 percent.

36. **The project financing from IBRD and the GCFF will be US\$295 million, and the financing instrument is an Investment Project Financing (IPF).** The financing will be supported by an IBRD loan in the amount of US\$225.2 million and the GCFF will extend US\$69.8 million on concessional terms approved by the GCFF Steering Committee on January 10, 2018. This concessional portion of the loan shall be made on a grant basis. The amount of US\$225.2 million will be a non-concessional IBRD loan provided on the financial terms chosen by the Government: 31.5 year maturity, including 8 years of grace period, fixed-spread reference rate, commitment linked with a level repayment. The Front-end Fee equal one-quarter of 1 percent (0.25 percent) of the non-concessional portion of the loan amount, which will amount to about US\$ 0.6 million, and will be financed out of the non-concessional loan proceeds. The remaining US\$50 million will be financed by the private sector as described in paragraph 37 below.

Box 1. Global Concessional Financing Facility

The Global Concessional Financing Facility is a partnership sponsored by the World Bank, the United Nations (UN), and the ISDB Group to mobilize the international community to address the financing needs of middle-income countries hosting large numbers of refugees. By combining donor contributions with multilateral development bank loans, the GCFF enables eligible middle-income countries that are facing refugee crises to borrow at concessional rates for providing a global public good. The GCFF represents a coordinated response by the international community to the Syrian refugee crisis, bridging the gap between humanitarian and development assistance and enhancing the coordination between the UN, donors, multilateral development banks, and benefitting (hosting) countries. The GCFF is currently supported by Canada, Denmark, the European Commission, Germany, Japan, Netherlands, Norway, Sweden, the United Kingdom, and the United States.



37. **Private sector financing is expected in the range of US\$50 million.** About 80 percent of the BRT bus fleet is expected to be financed by the private sector. The cost of the BRT buses, in addition to accrued private sector interest, will amount to between US\$50 million and US\$80 million. The financial analysis shows that the regular and feeder network is not commercially bankable, and little to no private sector financing is expected for it. It is important to mention that the operation and maintenance of the system will be undertaken by the private sector and that the farebox revenues are expected to cover most of these costs, thereby reducing the long-term fiscal liability of the project. A minimum revenue guarantee might be needed for proper PPP structuring and risk allocation and will be further assessed at detailed transaction advisory during project implementation. Private sector financing of this project is in line with the cascade and will represent one of the first projects in Lebanon's infrastructure to mobilize such important private investments in a challenging sector.

38. **The project could be put forward as a priority for financing by the Green Climate Fund (GCF) given its transformative nature in shaping the transport sector in Lebanon and its high greenhouse gas (GHG) reduction potential.** Given that it would be the first quality mass transit system in Lebanon, and in light of the existing high traffic congestion and travel delays, the project is expected to achieve a high modal shift from private vehicles and from existing inefficient public transport operators. The modal shift potential of the project, and hence its large impact on GHG reduction, is high in comparison to most public transport and BRT systems around the world that generally seek to gradually improve existing systems while the proposed project is inducing a transformative change¹⁶.

39. The project costs are as summarized in table 2.

Table 2. Indicative Costs and Financing (US\$, millions)

Project Components	Indicative Costs (US\$, millions)	IBRD and GCFF Financing	Private Sector Financing	IBRD and GCFF from Total Cost (%)
Component 1: BRT infrastructure, fleet, and systems	230	180	50	78
• BRT infrastructure (including land acquisition)	160	160	0	100
• BRT fleet	63	13	50	20
• ITS	7	7	0	100
Component 2: Feeder buses and integration in urban environment	104.4	104.4	0	100
• Street furniture, ITS/telematic, and roadworks	59.4	59.4	0	100
• Feeder bus fleet	40	40	0	100
• Technical assistances	5	5	0	100
Component 3: Capacity building and project management	10	10	0	100
• Capacity building and implementation support	5	5	0	100
• Awareness campaign and sector reforms	5	5	0	100

¹⁶ An application is being prepared to the Green Climate Fund (GCF) in support of this project and may be considered to support later phases of the program as required.



Project Components	Indicative Costs (US\$, millions)	IBRD and GCFF Financing	Private Sector Financing	IBRD and GCFF from Total Cost (%)
Front end fee	0.6	0.6		
Total	345	295	50	85.5

C. Lessons Learned and Reflected in the Project Design

40. **Strong political ownership is key to the success of mass transit public transport projects.** This project benefits from high-level political commitment. It was advanced as one of the 14 priority projects for donor funding by the Council of Ministers and has been endorsed on several occasions by the Parliamentary Committee for transport, which includes parliamentarians from various political groups. It is also part of the multibillion dollar Government investment program in infrastructure. Several municipalities were also consulted as part of preparation and support the project while awaiting implementation details. This project is also among the Government priorities in its global commitments to contribute to climate change mitigation.

41. **Project design should focus on comprehensive multimodal integration with a strong emphasis on accessibility and integration in the urban environment.** The system is designed as part of a comprehensive public transport system with the BRT as its backbone and complemented by a large regular and feeder bus network. The operation of the BRT and its direct feeders will be closely joined to foster better integration. The design of the BRT infrastructure and stations puts a strong emphasis on accessibility by pedestrians, safety, and inter-exchange with other transport modes through two passenger terminals, park and rides facilities and well-integrated feeder routes. The project also includes fare integration between the BRT and the bus network and the proper insertion of the BRT within the urban environment in Beirut through the remodeling of pedestrian circulation, sidewalks, and medians.

42. **Structuring a good operational model in collaboration with local operators is very important to organize the market and have adequate services.** The project will involve three to five large operators/concessionaires for the BRT, feeder, and regular networks. These operators are expected to be primarily selected from existing local operators who will be encouraged to collaborate with international operators to improve some of their management practices. The project is also considering introducing bidding requirements for the new concessionaires to buy or lease a number of existing bus licenses, the recruitment and training of existing drivers, and incentives to have small operators join as partners or shareholders. Meanwhile, the project is gradually introducing the regular network, with 250 buses provided, thereby allowing existing operators to continue operations along certain lines provided they meet certain technical requirements. Finally, it is important to note that the project will significantly contribute to increasing the overall demand for public transportation in Lebanon from the current 15 percent to about 30 percent, thereby creating new markets and attracting new passengers. In fact, not all trips will be covered by the new system, and many passengers will still need an additional public transportation mode to bring them closer to their destination.

43. **Effective and timely implementation requires intensive and sustained World Bank support.** Project implementation is generally slow in Lebanon across all sectors. Experience from other public transport projects globally, which are complex by nature, emphasizes the importance of sustained



implementation support from the World Bank. In Lebanon, the World Bank's existing working relationship with the Government agencies and CDR is expected to permit the necessary sustained technical and fiduciary implementation support. In addition, the World Bank expects to provide intensive and frequent implementation support throughout the project drawing primarily on staff based in the Lebanon country office.

44. It is important to define clear roles and responsibilities in the implementation of mass transit projects that are inherently complex. Mass transit and public transport systems require the collaboration between various Government agencies and in different jurisdictions, be it the collaboration between various national Government agencies, between national and local authorities, or between Government agencies and operators. The multitude of players in the sector generally poses an implementation challenge. Global experience demonstrates the importance to streamline roles and responsibilities and rely on fewer key agencies to drive the implementation of these complex projects. Given Lebanon's small geographic size and high density, it represents a quasi-city-state from an urban transport point of view. Public transport policies and implementation therefore become a national imperative to be undertaken by national agencies, which largely reduces the challenge of having multiple municipalities, and local authorities, with different political agenda, agree on a common transport project that crosses multiple local jurisdictions.

45. The project design reflects best international practices from the most successful BRT projects in the world. The alignment is a fully segregated median lane on most of the sections of the BRT infrastructure, with central stations, off-board fare collection, and platform-level boarding and alighting like the Transmilenio in Bogota, Metrobus in Istanbul, and Curitiba's system in Brazil. The project design includes all BRT basics of most successful Latin American and Asian BRTs and in line with international BRT standards and with careful attention paid to universal access and integration with public transport network. The project will include incentives for local existing operators to be integrated as operators in the final system like the successful examples of Transmilenio, Mexico, or Lagos, where local existing small operators were transformed in bus cooperatives to run the system. International experience for successful BRTs shows varying arrangements for BRT operators, from a single publicly owned operator such as in Istanbul to multiple private operators who purchase and maintain the bus fleet such as in Bogota's Transmilenio. The infrastructure construction of the BRT system is publicly financed in nearly all international examples of BRT projects.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

46. The project implementation agency will be the CDR. The CDR has been for many years the main Government agency in charge of the implementation of large donor-funded projects, particularly in the infrastructure sector. The CDR obtains its mandate to execute a specific project by a decision of the Council of Ministers. It has long experience in implementing World Bank-funded projects, including in urban transport with the successful implementation of the UTDP, which closed in December 2015.

47. The CDR will be responsible for executing all project components financed by the World Bank loan. While it is directly responsible for the project, the CDR will coordinate project preparation and



implementation with the MPWT, RPTA as well as other agencies where needed. The CDR will be responsible for executing all project-related infrastructure. In addition, the Government contribution to the operators, which will be financed from the World Bank loan, will be channeled to operators through the CDR to initiate consistency of financial statements. The CDR will involve the MPWT and RPTA in the preparation and review of the technical specifications and contract conditions for operators and will be responsible for contract negotiations with the operators. The CDR will undertake all project-related procurements as further discussed under the Procurement and Financial Management sections of the PAD.

48. **The system operation and maintenance will be undertaken by private operators, under the supervision of the RPTA.** Private operators will be responsible for the operation and maintenance of the buses, stations, ITS, and fare collection systems. In addition, they will be responsible for the maintenance of the BRT infrastructure and dedicated lanes. The RPTA will have the mandate for the supervision and oversight of the private operators in accordance with the contracts/concession. The RPTA will certify that operators are fulfilling their contractual obligations and will recommend payments and penalties based on the contract clauses and conditions.

B. Results Monitoring and Evaluation

49. **Project monitoring and evaluation will be undertaken by the CDR,** which will be ultimately responsible for all project data collection, including the compilation from other entities (bus operators and the RPTA, contractors) as well as the overall project monitoring and evaluation. Project progress reports will be prepared by the CDR on a semiannual basis and submitted to the World Bank for review and comments within 45 days from the end of the reporting period. These reports shall include, among others, (a) an update on the results achieved based on the indicators and target values established in the Results Framework, (b) the activities carried out throughout the reporting period under each component, (c) key issues/constraints or risks affecting project implementation that require attention with corresponding proposed measures to address them, (d) disbursement calendar for the next six months, and (e) progress achieved in the implementation of the environmental and social safeguards instruments (Environmental and Social Management Plan [ESMP], Resettlement Action Plan [RAP]). In addition, an in-depth project implementation progress assessment will be carried out at the midterm review; the CDR will prepare a report and make a formal presentation of the progress made during the project life up to that point. The CDR has been the implementing agency for all recent projects financed by the World Bank and has the required skills.

50. **The monitoring of results during implementation will include disaggregation of select indicators by region, type of works, gender, and nationality.** The Results Framework includes key project indicators to monitor project implementation success. It is designed to guarantee effectiveness in the measurement of key project outcomes and outputs based on simple and measurable indicators. Nevertheless, the monitoring of the project during implementation will be through the implementing agency's reports and the World Bank Implementation Status and Results Reports, further information and disaggregation of some indicators by nationality and gender, and the extent and type of works, among others. All workers will be identified either through a form of identification or through their work permit numbers. Their work will be monitored using standard monitoring tools (daily time sheets that are filled, aggregated, and logged into a system every week by an onsite project supervisor, which will then be reviewed by the contractor's main offsite office). Public transport surveys will also provide disaggregated information on



the system user by gender, age, profession, and nationality. The implementing agency will ensure the overall quality control and monitoring through dedicated PIU staff supported by the project supervision consulting firm that will visit project sites regularly and will ensure that reporting requirements (monthly technical and financial reports) are met by the contractor. A grievance redress mechanism (GRM) will be developed for the project, to ensure that any complaint is identified and handled properly and to address possible tensions and feelings of exclusion.

51. **The World Bank will ensure continuous implementation support.** The key World Bank specialists are based in Beirut and will have regular interaction with the CDR and undertake frequent field visits. This will allow the World Bank to provide continuous monitoring and verification support in addition to the, at least, semiannual implementation support missions required.

C. Sustainability

52. **The PPP arrangements will ensure the sustainability of quality operations by private operators.** Skilled operators will be recruited through open and transparent bidding procedures through which their technical and financial capacity to co-finance and operate BRT and feeder services throughout the time of the contract will be assessed. Routes packages to be bundled in the procurement of operators will be designed to minimize operating subsidies where possible. Commercial revenues from fares are expected to be sufficient to allow the payment of operating expenses and part of the depreciation of the fleet, thus ensuring long-term sustainability of operations for private sector. Finally, several operators will be recruited to run the services on the whole system avoiding a monopoly situation. In case one of the operators steps down, other operators would be eligible to take over these bus operations.

53. **Capacity building will strengthen institutional capacity and the planning and supervision of operations over the long term.** The hiring of BRT experts to reinforce the RPTA and the activities financed under Component 3 in addition to regular World Bank support will build capacity in GoL agencies. The integration of these experts within existing institutions will allow daily learning on the job from the various staff in the RPTA and other agencies, allowing the gradual transfer of competences and expertise. Component 3 will also finance necessary studies and technical assistance to further advance transport policies and regulations and to strengthen the sector agencies' operational and administrative skills. This will help build institutional capacity for the long-term management, supervision, and maintenance of the new public mass transit system and its planned follow-up expansions.

54. **The project will have large sustainable social and environmental impacts.** The project will meet the transportation needs of various vulnerable groups. It will also gradually change mobility within Beirut with increased reliance on public and NMT, reducing car dependency and providing more space for leisure and commerce. It will also result in significant reduction of pollutants, thus contributing to cleaner air and the reduction of the occasional smog above Beirut.

55. **The project has substantial climate change mitigation and adaptation impact.** The BRT project is an important step toward a sustainable mobility strategy. BRT and feeder routes will indeed lead to a major modal shift from cars to public transportation. Improved access to stations and a specific emphasis on improved and safer pedestrian environment and accessibility will further favor NMT modes. The BRT project is thus a breakthrough toward a low-emission transport strategy, with a massive potential for GHG savings to which all the project financing contributes. The project has also some climate change



adaptation co-benefits, as this BRT project will contribute to address flooding and wind vulnerabilities. The drainage system, shelters, and covered stations and bridges are an integral part of the BRT infrastructure (particularly under Component 1) and will be carefully designed in accordance with standards and norms. The BRT infrastructure will be resilient to flooding and will help in making the project area less flood prone.

D. Role of Partners

56. **The project is drawing significant interest in public transport from various partners.** Encouraged by the renewed World Bank engagement in public transport and the Government's desire to find solutions to traffic congestion, the European Union (EU) provided a small grant to support the DGLMT between 2015 and 2017 to elaborate a land transport strategy, while the European Investment Bank provided a grant in 2015 for studying rail solutions in Lebanon. Meanwhile, the ISDB has also recently expressed interest in financing the second phase of the BRT program. Through several consultations, local banks, operators, and investors have also shown interest in supporting the execution of this project and the operation of the system. The project is looking to mobilize substantial private financing primarily from local sources.

V. KEY RISKS

A. Overall Risk Rating and Explanation of Key Risks

Table 3. Key Risk Rating

Risk Category	Rating
Political and Governance	High
Macroeconomic	Substantial
Sector Strategies and Policies	Substantial
Technical Design of Project	Substantial
Institutional Capacity for Implementation and Sustainability	Substantial
Fiduciary	Moderate
Environment and Social	Substantial
Stakeholders	High
Overall Risk	Substantial

57. **The overall risk rating is Substantial, given the country risks, the institutional and stakeholders risks, and the generally slow implementation of World Bank-funded projects in Lebanon.**

58. **Political and governance risks** include (a) possible delays in Parliament approval of the proposed loan, which may significantly delay its effectiveness; (b) political differences regarding implementation details; and (c) security risks. Risk mitigation measures: Government institutions have resumed proper functioning since the election of the President and the appointment of the new government. The Council of Ministers and Parliament now meet regularly and have been following up more closely on economic policies and donor-funded projects. The project has a national impact and is a high Government priority and has been endorsed at the highest levels as well as by the Council of Ministers and Parliamentary Committee for Transport, which has been regularly asking for updates on the progress of preparation and



implementation. With regard to security risks, Lebanon remains one of the most stable countries in the region despite sporadic security incidents. The project is being implemented and operated in areas that have been free of security incidents or social unrest.

59. **Macroeconomic risk.** Lebanon's debt-to-GDP ratio has been rapidly increasing in the past few years. Risk mitigation measures: The project will contribute to stimulating growth, particularly in construction and related supply chain sectors and in the transportation industry and services. It will also have large macroeconomic benefits through reducing the economic externalities of traffic congestion, estimated to range between 5 percent and 10 percent of GDP. Given its large positive macroeconomic impacts, the project has been identified as one of the ten key reform actions recommended by the World Bank for the Government to improve its macroeconomic performance.¹⁷ The project will also be financed through a combination of an IBRD loan and funds from the GCFF, thereby substantially increasing the concessional terms of the loan. Finally, the project is among the first projects in Lebanon to mobilize private financing, thereby reducing fiscal liabilities and introducing new and improved PPP practices.

60. **Sector strategies and policies.** There is no clear overall sector strategy for the sector. Mitigation measure: While Lebanon still does not have a transport sector strategy, the DGLMT has been developing a strategy for the land transport sector, which includes the BRT network and regular and feeder bus lines as short- to medium-term objectives. The project's execution, as a first mass transit and regular network in over 50 years in Lebanon, is expected to give renewed interest and focus to Government policies regarding the sector as there will be an actual system in place that will require complementary policies and high-level decisions.

61. **Technical design** risks include (a) lack of technical capacity to execute the first BRT project in Lebanon and (b) delays of the highway widening project in Jounieh. Risk mitigation measures: The first risk will be mitigated through the hiring of well-qualified BRT experts and international firms to support design and implementation studies. In addition, the implementing agency, with support from the World Bank, has already started a number of activities required during project implementation, such as the preparation of the safeguards documents, the preliminary engineering design, and the procurement strategy. With regard to the second risk, if there are delays or complications to the widening project, an alternative or contingency plan would be to elevate the BRT for about 6 km in that section.

62. **The institutional capacity for implementation and sustainability** risks relate to the lack of capacity or financial resources for the management, supervision, and maintenance of the new public mass transit system as it will be the first mass transit system in Lebanon. Risk mitigation measures: The RPTA and CDR will benefit from substantial technical assistance during the project implementation. The ongoing PPP study will further detail the institutional arrangements and Component 3 will indeed support the RPTA through technical assistance and training in addition to supporting the GoL in developing a comprehensive public transport policy to cover regulatory, operational, and administrative aspects. The use of a competitive PPP procedure will also ensure that professionally qualified and skilled BRT operators will be recruited. The careful design of the PPP scheme and the involvement of private investors and operators in the financing of the operation and maintenance of the system will ensure stronger financial and technical sustainability for the project.

¹⁷ Priority Reforms for the Government of Lebanon. World Bank Policy Paper, 2017.



63. **Fiduciary**

- **Procurement.** A procurement capacity assessment of the CDR and RPTA was conducted to identify the overall procurement implementation capacity. The following Moderate risks are identified at the CDR: (a) delay in procurement processing and implementation; (b) delay in decisions toward contract packaging; (c) coordination and inclusiveness of other concerned stakeholders, ministries, and so on; (d) bidding document and technical specifications development; and (e) contract management. The following measures are proposed to mitigate the risks: (a) mapping of procurement processing to meet reasonable efficiency, (b) readiness of contracts packaging by Loan Agreement signing, (c) development of first bidding documents by effectiveness, and (d) assigning of field supervision consultants to monitor contracts. The RPTA capabilities are not yet proven and risks are inherent to managing PPP contracts. Mitigations are proposed to provide intensive technical support through Component 3, upgrade human resources, and administer pertinent training.
- **Financial management.** A financial management (FM) assessment was also undertaken and there were no significant risks identified given the CDR's extensive and generally satisfactory FM ratings and experience in implementing World Bank-funded projects. Nevertheless, the key FM risk for this project to be implemented by the CDR are (a) the lack of proper registry of asset lists, (b) delays in submission of timely audit reports, and (c) a complex project where many other agencies are involved such as the RPTA and MPWT and that entails PPP and operators' contributions. These risks will be mitigated by (a) having a well-qualified FM staff within the PIU to support such activities and assume coordination among the different stakeholders, (b) operationalizing the assets module of CDR accounting software, (c) CDR recruiting an acceptable external auditor in the early stages of the project to enable constant audit compliance, and (d) FM chapter of the PIM to reflect the relationships among agencies, as well as the PPP mechanisms and arrangements.

64. **Environmental and social.** The negative environmental impacts anticipated for the project activities are minor and of temporary nature and mainly during the construction phase. This is associated with noise and dust during construction, in addition to construction waste and debris. Ongoing works and the transporting of material during construction will create significant delays and additional noise and emissions that require a proper traffic plan during construction. In addition, the environment management plan employs measures to minimize dust and noise originating from the site during the construction phase, safety measures to safeguard pedestrians and vehicular traffic, in addition to a detailed chance-find protocol if earth works might encounter any significant archeological finds. Social risks are primarily related to potential resistance of existing bus/public transportation operators and potential public dissatisfaction from reduced space for car lanes and street parking, which are detailed in the following paragraph. Additional social risks are related to the land acquisition under the project, and this is being mitigated by financing land acquisition from the loan.

65. **Stakeholders risks** include the potential resistance of existing bus/public transportation operators and potential public dissatisfaction from reduced space for car lanes and street parking. Risk mitigation measure: The first risk is common to public transport projects and reforms in most countries around the world. Operators might perceive the project as a competition for the short term, yet they will end up benefiting from it whether from the increased market share of public transportation or their gradual



integration into the new system. The ongoing studies, including the PPP studies, are looking into mechanisms and incentives to integrate the local operators into the new system be it through the hiring of drivers, the absorption of existing operators by the new operators (lease or purchase of license, partnering arrangements), or the complementarity of services between existing and new operators where possible. Regarding the second risk, similar projects in most cities have demonstrated substantial benefits to citizens, commerce, and urban life. To raise public awareness, the project will finance communication campaigns to explain the high importance of the project, market the project benefits and attractiveness to encourage modal shift, and ensure proper communication and citizen engagement activities during the various project stages.

VI. APPRAISAL SUMMARY

A. Economic and Financial (if applicable) Analysis

Economic Analysis

66. **A standard cost-benefit analysis for public transport was used to assess the economic impact of the project.** The economic evaluation accounted for the project capital investments as well as operation and maintenance costs while calculating the economic benefits primarily in term of savings in travel time and reductions in vehicle operating costs. Substantial economic benefits, such as term of improved air quality, safety, real estate value, and increased productivity were not calculated. The calculated economic benefits are therefore very conservative. To simulate costs and benefits, passenger demand forecast was carried out based on travel demand data collected through a series of field surveys (frequency and visual occupancy, boarding and alighting, traffic counts) to estimate origin/destination figures using the EMME traffic simulation tool. The model assignment results were obtained using a generalized impedance, or cost function, which considers all times associated with the commute (in-vehicle, waiting, access to the network, and transfer) and fares paid. The proposed tariffs are aligned with the existing fares in the GBA, benchmarked against ongoing stated preference surveys (SPS), and willingness to pay, and assumed fare structure is distance based.

67. **The results of the analysis show strong net economic benefits under various scenarios that are robust to variations in project costs and benefits.** The following results are conservative estimations based on the prefeasibility and are being updated with the recently received feasibility study calculations that show higher traffic demand and modal shift. Based on the conservative prefeasibility analysis, about 132,000 passengers are expected to board the BRT per day with 12,400 at morning peak hours. The BRT demand is estimated to grow by 4 percent per year. Over a project lifetime of 20 years, the project is expected to deliver an economic internal rate of return (EIRR) of 39 percent, which is above the discount rate threshold of 8 percent. The net present value (NPV) is estimated at US\$919 million at a rate of 8 percent. The results are robust against different assumptions with sensitivity tests conducted against cost rising by 25 percent, benefit decreasing by 25 percent, and both combined. As the proposed project provides important GHG emissions' savings, the economic benefits are further improved when accounting for the social cost of carbon, with low or high shadow prices of carbon values.



Table 4. Economic Analyses and Sensitivity Tests

	Without Shadow Price of Carbon		With Low Shadow Price of Carbon values		With High Shadow Price of Carbon values	
	EIRR	NPV (US\$, millions)	EIRR	NPV (US\$, millions)	EIRR	NPV (US\$, millions)
Results	38.7%	919	39.4%	944	40.1%	968
Sensitivity: cost +25%	29.2%	762	29.8%	787	30.4%	811
Sensitivity: benefits -25%	34.9%	597	35.9%	621	36.9%	645
Sensitivity: cost +25%, benefits -25%	19.2%	376	19.8%	400	20.5%	424

68. **In addition, various studies assessing the macroeconomic impacts and externalities put the economic cost of traffic congestion in the GBA between 5 percent and 10 percent of Lebanon's GDP.** An economic study by the Ministry of Environment in 2005¹⁸ had put the cost of urban congestion in Lebanon at around 8–10 percent of Lebanon's GDP at the time. A study¹⁹ was recently undertaken by the World Bank to assess the economic externality of traffic congestion in the Greater Beirut Area (GBA), looking primarily at the value of time and real estate economic costs. Important externalities such as air quality, reliability of travel, and firm/labor productivity gains were not considered in this study. Based on these assumptions, the World Bank study assessed the economic cost of traffic congestion in the GBA at about 1–2 percent of GDP. When extrapolating economic costs to account for additional externalities (poor air quality, accidents, lower productivity) in line with similar analysis done for other cities notably Cairo,²⁰ the resulting cost of traffic congestion in the GBA will be around 5 percent of Lebanon GDP.

69. **Macroeconomic simulations of various transport policy measures show that traffic congestion in Beirut is primarily the result of a constrained supply, with public transport measures yielding the highest economic benefits.** In addition to simulating externality costs, the study has, more importantly, tested the broader macroeconomic impacts of combined demand-side and supply-side instruments; demand-side instruments included various pricing mechanisms such as tolls, increased fuel prices, and increased parking prices, while supply-side instruments included the expansion of the road network and the introduction of a public transport network. When simulated, demand-side instruments alone had little effect on reducing traffic congestion. Supply-side instruments, however, showed much more important gains, with the public transport system showing the highest gains; the study shows that the proposed project (BRT with feeder services) would reduce traffic congestion by 16 percent in the GBA, resulting in reduced negative externalities between 0.5 percent and 1 percent of national GDP. Public transport also showed that it would enable users to save 24 minutes per trip on average and would substantially increase individual social welfare

¹⁸ Ministry of Environment. 2011. Lebanon's second national communication to the UNFCCC.

¹⁹ World Bank. 2017. "Reducing Traffic Congestion in Beirut: An Empirical Analysis of Selected Policy Options." World Bank Policy Research Working Paper 8158.

²⁰ World Bank. 2014. "Cairo Traffic Congestion Study."



GHG Accounting

70. **The transport sector's current contribution to Lebanon's overall GHG emissions is high, with private vehicles accounting for the lion's share.** Lebanon has a high motorization rate of about 400 vehicles per 1,000 inhabitants and the modal share of passenger cars in the GBA is estimated at 70–80 percent.²¹ GHG emissions from transport account for 23.6 percent of the total national GHG emissions and have increased by a factor of 3.7 since 1994, with private cars contributing 58 percent of this figure.

71. **The proposed project yields unparalleled GHG emissions' savings compared to similar projects globally given its high modal shift potential from private vehicles.** Being the first and only public transport project and mass transit system in Lebanon, the expected impact of the project on modal shift and its attractiveness of private vehicles' users is relatively very high. The proposed project will therefore be an essential step toward a low emission national strategy for Lebanon, with a very large potential for GHG savings. Modelling estimates that 16 percent of car users will shift to the new system, particularly the BRT, reducing mixed traffic by more than 45,000 cars per day. BRT will capture a modal share of 23 percent of overall motorized trips while the cars' modal share will drop from 84 percent to 70 percent at morning peak hours on the Northern Highway. CO₂ emissions are estimated based on aggregated composition of traffic, existing travel conditions, and the estimated impacts from the project interventions. GHG emissions savings are estimated from (a) GHG savings related to emissions of public transport vehicles switched to BRT and (b) GHG savings related to modal switch from cars. Total savings amount to 1,200,000 tCO₂ over the 20 years of the project lifetime with Euro V diesel buses (60,000 tCO₂ on average per year). This result is likely conservative as the computation does not account for the GHG savings related to improved congestion on general traffic lanes (improved speed).

Table 5. Preliminary GHG Estimation per BRT Bus Technology

Type of Bus	Total GHG Emission Savings (tCO ₂ eq)	Average per Year (tCO ₂ eq)
Diesel articulated bus	1,211,808	60,590
Hybrid articulated bus	1,438,045	71,902
CNG articulated bus	1,438,045	71,902

Financial Analysis

72. **A financial analysis of the project operation phase has been undertaken to assess the PPP potential and various business models for private sector participation as per the MFD principles.** The preliminary financial analysis was conducted using the prefeasibility study estimations for costs and revenues. The analysis was based on the high-level structuring assumption that one (or more) private sector entities could act as a franchised 'owner-operator' of the BRT system whereby the private operator(s) would acquire, own, and operate the bus vehicles in the system under a long-term (for

²¹ UNDP (United Nations Development Programme). 2016. *Road Transport Sector and Air Pollution Case of Lebanon*. IPT Energy Center, Republic of Lebanon.



example, 10-year) performance-linked contract granted and managed by the Government.²² Under such an approach, there is potential to attract significant flows of private sector capital because the project's cash flows indicate a strong probability for cost recovery by the private operator(s). The analysis assumed distance-based and social fares, which are in line with existing fares on existing buses/minibus. The fares on the planned regular and feeder bus network are similar to fares on existing operators, while the fares for the BRT are only about 20–30 percent higher than existing fare.

73. **The analysis examined five ‘cascading’ options for structuring the BRT and associated feeder/regular lines** with descending levels of private investment and risk taking by the franchised operator with each option, the purpose being to show the intrinsic trade-off between bankability on the one hand and the amount of risk transferred to the private operator on the other. The options analyzed were as follows: (a) combined BRT and feeder franchise; (b) BRT-only franchise (that is, feeders delivered publicly); (c) BRT-only franchise with revenue guarantee; (d) BRT-only franchise with revenue guarantee and capital subsidy; and (e) BRT-only franchise with shadow fare (that is, Government) payment. The options were assessed under the base case revenue forecasts, as well as a downside revenue test with a 25 percent decrease in revenue.²³ Details of options (a), and (b), and (d) are presented below. The financial analysis was conducted with the following assumptions:

Table 6. Operational Assumptions

Item	Assumption
Length of operating contract	10 years
Fleet size	120 for BRT, 250 for feeder/regular lines
Fleet cost (BRT and feeders)	US\$103 million
Passenger volume	132,000 on BRT, 105,000 on regular/feeder
System revenue (BRT and feeders)	US\$108 million (2015 prices - 2023 opening year) ²⁴
Annual bus operating and maintenance costs (BRT and feeders)	US\$88 million (2015 prices - 2023 opening year)
Fare	Distance based, social fare comparable to existing public transport fares
Yearly traffic growth	4%

²² Minimum service levels and fare levels (and fare indexation) are likely to be specified and enforced under the contract

²³ The downside revenue test reflects the combined downside revenue and profitability risks that would result from patronage risks (for example, lower-than-forecast modal share and growth in passengers), regulatory risks (for example, lower fares), and foreign exchange risks (for example, potential mismatch in currency of operator debt and operator revenues)

²⁴ Based on prefeasibility analysis, the BRT generates 55 percent of the opening year revenue (US\$108 million × 55 percent = US\$59 million) while the feeder services generate 45 percent of the opening year revenue (US\$108 million × 45 percent = US\$49 million).



Table 7. Financing Assumptions

Item	Assumption
Underlying cost of commercial debt	7.0% ^a
Credit margin	3.5%
Arrangement fee	1.0%
Repayment schedule	Annuity repayment
Inflation	2.0%
Debt-equity ratio	70:30
Target Internal Rate of Return (IRR)	20%
Average debt service cover ratio (ADSCR)	1.40

Source: Based on recent sovereign EUROBOND 10-year issuance. <http://cbonds.com/news/item/887409>.

Options Test Results

74. **The full purchase of the BRT and regular buses by the private sector is not bankable.** The combined BRT and feeder franchise provides the full analysis for the project operational phase. In this option, the private sector purchases the BRT and feeder bus fleet and no public funds are used for any bus acquisition. The revenue in the base case for this option provides insufficient return to attract private investment (below the target IRR), while the downside revenue is insufficient to cover the debt repayment, as shown in table 9. This option is not financially viable and is not bankable.

Table 8. Financial Viability Analysis of BRT and Feeder/Regular Buses Franchise

Indicator	Target	Base Case Value	Downside Case Value
Equity IRR	20%	12.6%	No returns
ADSCR	1.40	1.56	-1.04
Loan life cover ratio (LLCR)	1.60	1.73	-1.41
Private capital mobilized, of which interest (US\$, millions)		129 26	129 26
Government Capital Payment (US\$, millions)		—	—

75. **The private financing of the full BRT bus fleet with public financing of the feeder/regular fleet is possible yet very risky.** The BRT-only franchise financial analysis illustrates the full private financing of the BRT buses, with full public financing of the feeder bus fleet. The revenue in the base case is sufficient to attract private investment under this option. However, the option is heavily exposed to revenue risk and the downside revenue test does not generate sufficient cash flow to repay the project's debt. As a result, this option is risky and likely unbankable, unless the Government guarantees some downward revenue risk or contributes to part of the BRT buses purchase.

Table 9. Financial Viability Analysis of BRT-Only Franchise

Indicator	Target	Base Case Value	Downside Case Value
Equity IRR	20%	45.2%	No returns
ADSCR	1.40	1.56	0.72
LLCR	1.60	1.73	0.78
Private capital mobilized, Of which interest (US\$, millions)		83 20	83 20
Government capital payment (US\$, millions)		40	40



76. **A viable business model is the private sector financing about 80 percent of the BRT fleet, with the remaining BRT and feeder/regular buses financed by the Government.** In the BRT franchise model with revenue guarantee and capital subsidy, the private sector finances 80 percent of the BRT bus acquisition and the Government finances the remaining 20 percent in addition to feeder/regular buses. The Government capital contribution reduces the private sector vulnerability to downside risks. Revenue risk can be shared between the private sector and the Government in this model through a Government revenue guarantee, resulting in more robust downside revenues that are sufficient to repay the project debt. This model may be more accessible for local operators, as the capital payment reduces the up-front financing requirement for the private sector. Downside revenue guarantee can be up to US\$90 million over the concession period of 10 years.

Table 10. Financial Viability Analysis of BRT-Only Franchise with Revenue Guarantee and Capital Subsidy

Indicator	Target	Base Case Value	Downside Case Value
Equity IRR	20%	64.8%	11.2%
ADSCR	1.40	3.38	2.04
LLCR	1.60	3.96	2.45
Private capital mobilized		66	66
<i>Of which interest</i> (US\$, millions)		16	16
Government capital payment (US\$, millions)		53	53

Financial Analysis Findings and Recommendations

77. **An owner-operator model for the BRT can be financially viable with private sector investment for purchasing 80–100 percent of BRT buses but requires careful structuring to address risks.** Based on available numbers that are relatively conservative (for both traffic and fares), the analysis shows that the BRT proper (that is, trunk line) has sufficient revenue for an owner-operator model where the private sector acquires, operates, and maintains the BRT buses, if a risk-sharing mechanism is in place. With a risk-sharing mechanism such as a revenue guarantee, the project's financing ratios are robust to downside revenue tests and transfer some revenue risk to the private sector. With a revenue guarantee in place, the model is viable and will allow approximately 80–100 percent of the BRT bus acquisition to be financed by the private sector. Further work will be needed by transaction advisers to fully assess and determine the final structure. Meanwhile, the financial viability of the regular/feeder network is less robust and little to no private sector investment is expected. The operation model for the feeder/regular network will be closer to a service contract type of model where the Government will finance the buses and revenue risks are shared. However, some of the feeder lines may still be packaged with the BRT operations given complementarity, and this will be further assessed during ongoing and future transaction advisory studies.

78. **Farebox revenues are expected to cover the operations and maintenance costs of the BRT and feeder/regular buses yet remain sensitive to downsize revenue scenarios.** Operational expenditures (OPEX) for the BRT and feeder/regular buses are substantial and range between US\$100 million and US\$150 million yearly. Under the base case scenarios, such costs can be covered by farebox revenues along with the vehicle investment costs if the PPP is properly structured and risks are well allocated. However, if revenues are 25 percent lower than expected, OPEX subsidies will be needed and it is recommended that downsize revenue risks are shared between the private sector and the Government (under a cap and collar type arrangement) where a Government downside revenue guarantee of up to



US\$90 million might be needed during the concession period while also sharing revenue once patronage and revenue reach a certain level. Additional revenues, such as advertisement and commercial revenues at stations, were not accounted for in this analysis and will be further looked at during detailed studies. Such revenues could contribute to reducing the sensitivity to downsize revenue scenarios and the required Government guarantee.

79. Without a risk-sharing mechanism in place, excessive risk is transferred to the private operator or retained by the Government. The BRT and feeder franchise and BRT-only franchise fully transfer the revenue risk to the private operator. However, the downside revenue risk for both options is high and therefore neither of these options is likely to be bankable. The BRT-only franchise with shadow fare (that is, Government) payment does not transfer any downside risk to the private sector and exposes the Government to high revenue risk in the downside scenario if farebox revenues are considerably below the service payment. Transaction advisory and other studies will look into further de-risking the project through proper business models and a combination of instruments such as incentives to operators and downside risk guarantees. Should a guarantee be needed and requested by the GoL, the World Bank would consider providing such guarantee instruments later.

80. In order to further attract private sector financing into the project, counterparts are encouraged to undertake the following actions early-on during project implementation: i) recruit qualified transaction advisors to assist in the structuring of the PPP contracts and produce investment grade traffic studies; ii) develop a detailed project implementation timeline that integrates the development of trunk infrastructure and the procurement of BRT/bus operators so as to minimize the interfaces; iii) Develop a proper plan to organize and integrate existing bus operators; and iv) determine an optimal revenue model with help from transaction advisor and potentially provide assurances/guarantees against political risks and downturn revenue risks.

81. Rationale for public financing. Public transport is universally a publicly financed and subsidized sector given its large economic and social benefits and the need to keep fares at socially acceptable prices and provide adequate transport coverage to most region and neighborhoods. In addition, this project is the first large public transport and mass transit system in over 50 years, with significant technical, institutional, and political risks that will likely hamper private investors' appetite to finance this sector. Despite all these challenges, the project design estimates that substantial private financing could be mobilized to finance this project, particularly for the purchase of parts of the bus fleet and the coverage of operation and maintenance costs.

82. The project is an important illustration of the MFD approach. The project will contribute to (a) improving the enabling framework to maximize the efficiency of the public and private resources and (b) removing some physical and system bidding constraint that will allow private investors to finance bus concessions. More importantly, the project will contribute to introducing commercial practices that can bring in the future more investments in buses covering BRT and feeders.

83. Value added of the World Bank Group. The World Bank was sought after to help the Government assess multiple feasible options to tackle traffic congestion in the GBA. Several studies and consultations were supported by the World Bank, including a study of alternatives (BRT, light rail, and heavy/freight rail); a study tour of key sector counterparts to Istanbul in 2014; and a prefeasibility study for BRTs to highlight to decision makers the benefits of such projects in Lebanon. As part of these initiatives, several



consultations were also conducted with national and local authorities during this period. As such, the World Bank acted as a primary driver to help shape the Government's vision for reforms in the sector, and its involvement and support in financing this project is drawing large interest from other donors and financiers to support the follow-up phases of the proposed national plan.

B. Technical

84. **Geometric alignment and physical design.** The BRT infrastructure design was developed after a preliminary assessment of the service plan requirements including the analysis of demand, capacity of the BRT running ways and limited right-of-way (ROW) in certain dense urban area, together with the passenger capacity of stations and terminals. BRT infrastructure comprises two corridors:

- (a) The Northern BRT corridor infrastructure is 22.7 km long and follows the Northern Highway from Tabarja to Beirut (Charles Helou terminal). The alignment is a fully segregated BRT median lane (one BRT lane per direction) with 27 central stations and an average distance of 860 m between stations. In addition to the BRT lane, and while considering the Government widening project in Jounieh, the highway will still have at least three mixed traffic lanes per direction along the whole section.
- (b) The Northern BRT corridor then continues to the center of Beirut, to bring passengers closer to destinations and to increase connectivity within Beirut, with ultimately a 20 km long outer ring road BRT following the existing center ring road. The alignment is a segregated BRT median lane (one BRT lane per direction) with 19 central stations. BRT lanes are segregated on 80 percent of the stretch and in mixed traffic on the remaining 20 percent.

85. All stations along both corridors are centrally aligned, closed, with low-level platforms for operation of low-floor articulated buses and off-site fare collection systems to control access. This enables faster boarding, alighting, and at-level access and thus improved commercial speed. The size and number of stations have been determined to meet expected demand at each location. The need for a specific left-door bus fleet will also prevent the risk of other buses populating the corridor. All 27 stations on the Northern Highway section have a width of 5 m and a length to dock two articulated 18 m buses. The layout of stations on the ring road loop, and more specifically the width, is chosen to adapt to the existing ROW.

86. Four areas have been identified for potential locations of bus depots. The depots will comprise necessary facilities for maintenance, parking places for the fleet administrative service, and facilities for drivers.

87. **Operating services and bus fleet requirements for the BRT.** Two types of trunk services will be operated taking the outer ring loop in the clockwise or counterclockwise direction. Frequencies will range from 14 to 26 BRT buses per hour. From Tabarja, there should be a bus approximately every two minutes at peak hours. Commercial speeds will reach up to 40 km per hour between Tabarja and Beirut on the Northern Highway and 25 km per hour on the outer ring road at peak hours. With the provision of 120 modern low-floor left-door articulated buses whose capacity is around 150 passengers each, the BRT corridors will meet the current forecasted demand of up to 5,000 passengers at the peak hour on the critical section in the peak direction and could accommodate up to 8,200 with articulated buses and 14,000 with biarticulated buses, thus providing a large capacity saving for a likely future demand growth.



Fare collection based on smart card technology and operations control with automatic vehicle location based on GPS technology will enable centralized control of bus operations and fare management.

88. **Public transport integration and improved access and safety.** BRT corridors and services will be integrated in a comprehensive public transport network comprising 20 bus routes. The system will have 10.5 m long buses equipped with GPS and fare collection equipment, improved control center, bus depots, bus lanes, additional street furniture; these routes will provide convenient, accessible, and safe services within or to/from the BRT corridors, enabling a smooth integration between different bus and BRT services and maximizing the benefits expected from the mass transit systems. The total fleet requirement for these lines is up to 750 buses.

89. The technical design of the BRT stations and bus stops will support measures to improve physical integration between public transport modes and their access or onward journey modes (for example, walking and cycling). All stations will offer secure and convenient pedestrian access either at-grade or through pedestrian bridges with elevators as needed. Terminals will offer intermodal connections with other modes with parking slots, safe and secure pedestrian access, and convenient connections with other bus routes. While on-street parking spaces will be eliminated along the outer loop corridor (410 places should be removed), preliminary locations for park and ride facilities to substitute (and in some cases, increase parking supply) have been identified. Additional technical assistance and studies financed under Component 2 will further improve the integration of the BRT system in the urban environment. These studies will include an NMT plan, fares integration, parking management, road safety, public transport network restructuring, Master Plan, professionalization of local operators, and license issuance reforms.

90. The new system will provide safer access to public transport, with modern buses, well-lit stations, and security surveillance in buses and stations via CCTV system and guards. Improved sidewalks, pedestrian bridges, station access, and pedestrian environment will further strengthen road safety benefits of the system.

91. **Operational arrangements, cascade, and PPP structuring.** Private operators will be in charge of operating and maintaining the system. The project will also seek to maximize private sector financing in the project and primarily in the bus fleet. The PPP assessment and the study of the business model and the private sector interest in financing is ongoing. The preferred options will be agreed with the GoL and will be consulted with the market and private sector investors ahead of the structuring of the PPP and launch of the operations tenders. The project design and existing studies confirm the overall reasonableness of project capital and operating costs, which will be further refined during downstream detailed designs and transaction advisory studies.

C. Financial Management

92. **Project FM arrangements, including accounting, reporting, and auditing functions will be centralized at the CDR.** The flow of funds process will be undertaken through a Designated Account (DA) to be opened at the Central Bank for the project and managed by the CDR. The consolidation of the project financial reports will be done by the PIU and submitted to the World Bank along with the project progress reports. The CDR will coordinate with the RPTA for the payments of consultants residing and working at the RPTA.



93. **The CDR has significant experience in implementing World Bank-financed projects, including FM aspects.** CDR FM performance on past and current projects is considered satisfactory. The CDR has a functional unit undertaking FM responsibilities, including funds flow management, accounting, reporting, and facilitating an acceptable external audit. The CDR's external auditor will conduct the audit of the World Bank-financed projects. This functional unit consists of several financial officers (FOs) who have already gained adequate experience in carrying out the FM arrangements of World Bank-financed projects and one of them will be assigned to handle this project's FM arrangements implementation.

94. **The CDR's main challenge related to FM is its lack of proper maintenance of asset lists.** The CDR will operationalize the asset module of its accounting software to ensure proper management of assets purchased under the project to mitigate FM-related risks. The CDR has the responsibility to provide the asset registry to RPTA by Project closure.

D. Procurement

95. **The implementing agency's procurement capacity is generally adequate given the CDR's extensive experience in implementing donor-funded projects.** The project will be implemented by the CDR, which was recently managing the UTDP that closed on December 31, 2015. The CDR has a solid management structure and is staffed with adequate and experienced procurement and technical specialists. Additional specialists will be recruited in the PIU, as needed, to support the CDR as well as the RPTA in the management of the PPP contracts. Diligence is also observed in record keeping and quality of evaluation. The procurement processing and contract management was rated satisfactory, and the Implementation Completion and Results Report (ICR) of the UTDP rated the performance of the implementing agency, the CDR, satisfactory. The implementing agency is familiar with World Bank's bidding documents and procedures and has been trained on the new procurement framework, and when local bidding is conducted, the standard documents will be reviewed to be acceptable to the Bank.

96. **The following project procurement arrangements, which follow the World Bank's new procurement framework, will apply during project implementation.** The following guidelines and regulations shall apply (a) 'Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants', dated October 15, 2006 and revised in January 2011 and as of July 1, 2016 ("Anti-Corruption Guidelines") and (b) World Bank 'Procurement in Investment Project Financing: Goods, Works, Non-Consulting and Consulting Services', dated July 2016 and revised in November 2017. Procurement methods for works, goods, non-consulting services, and consulting services shall be defined accordingly. The Project Procurement Strategy Development (PPSD) is being prepared to cover the detailed assessment of the implementing agency capacity as well as the adequacy and preparedness for the market to respond to the foreseen risk positioning of the procurement packages. Based on the PPCSD findings, an initial Procurement Plan for the life of the project shall be developed by the Government. In accordance with paragraph 5.9 of the 'World Bank Procurement Regulations for IPF Borrowers' (July 2016 revised November 2017) ('Procurement Regulations'), the World Bank's Systematic Tracking of Exchanges in Procurement (STEP) system will be used to prepare, clear, and update Procurement Plans and conduct all procurement exchanges for the project. It will also be used as a repository of procurement documents for activities above and below the prior review thresholds. The Procurement Plan shall integrate the prior review thresholds associated with moderate contract risks.



97. **Procurement monitoring.** The efficiency indicator related to procurement processing and time for bids evaluation shall be monitored. Supervision missions shall be conducted twice yearly. Transactions above the set thresholds shall be submitted to the World Bank for review before awarding; works packages between US\$25 million and US\$155 million, goods between US\$10 million and US\$75 million, and consulting firms between US\$6 million and US\$30 million shall be subject to the regional procurement adviser (RPA). No contracts are expected to reach the Operational Procurement Review Committee (OPRC) prior review thresholds. All remaining activities shall be sampled annually and reviewed ex post.

E. Social (including Safeguards)

98. **One main adverse social impact is related to land acquisition.** The BRT will primarily be within the ROW of the existing roads and highway. The permanent land acquisition will be involved in widening of the highway in a few sections from Tabarja to Beirut, the bus depot, and terminal in Tabarja. The roadworks along the feeder roads will not involve any additional land expropriation and no encroachers/squatters have been identified in these areas. To mitigate the adverse impacts involved in land acquisition, an RAP has been prepared by following the World Bank's OP 4.12 (Involuntary Resettlement) and relevant laws and regulations in Lebanon. The resettlement impacts include permanent acquisition of 22,244 m² of land, which will affect 24 plots land owned by 10 landowners. In addition, it will also affect 5 households of encroachers and squatters, with 26 persons in total. An RAP was prepared and includes the detailed census of the affected people, an inventory of affected assets, and socioeconomic surveys and extensive consultations with the project-affected people. The RAP also provides details on resettlement policy procedures and requirements to be followed during project implementation, including compensation rates, mitigation measures to restore incomes, institutional and monitoring arrangements, and resettlement budget.

99. **The proposed project will primarily generate positive social impacts such as easing traffic flows and travel time savings, improved transportation for the poor, persons with disabilities, improved road safety conditions, and additional jobs.** These benefits have been detailed under various sections of this document, particularly when discussing project objectives and beneficiaries earlier.

100. **However, some other potential adverse social impacts and risk have been identified.** As part of the Environmental and Social Impact Assessment (ESIA), the following potential adverse social impacts and risks have been identified: (a) potential objections from exiting bus/public transportation operators, (b) the impacts on the illegal bus operators, (c) public resistance from removal of the median strip and on street parking spaces in certain sections, (d) social impacts on shared taxi drivers, and (e) changing citizens' social habit in using public transportation. The ESIA includes details of these impacts and mitigation measures. Meanwhile, extensive consultations have been carried out with different stakeholders during the process of ESIA and RAP preparation. The consultations were carried out through public meetings, focused group discussions, and individual interviews with Government officials, municipalities, potential public transportation users, local residents, bus operators, taxi drivers, and people affected by land expropriation. The detailed findings and results are summarized in the ESIA and the RAP. Considering the ESIA was prepared based on the feasibility study, CDR committed that site-specific ESMPs (additional ESMPs) will be prepared as part of the final design packages. To mitigate the impacts on livelihood of existing bus operators and drivers, a Livelihood Restoration Plan will be included in the site-specific ESMP, which will be prepared and approved by the Bank prior to the initiation of works. Overall, a majority of the stakeholders consulted are supportive of the proposed BRT but raised concerns about the



compensation of the expropriation, impacts on existing bus operators, and parking spaces. The RAP addresses, in detail, expropriation procedures and compensation, while the mitigation measures for local operators (incentives to join new system, leasing or buying existing licenses, complementarity in operations); road users (improved traffic flows, increased modal shift to public transport); and commerce (higher volume of potential customers, better access to shops) have been discussed in various sections of this document, such as in section V, stakeholders risks. The RAP has been disclosed in country on October 20, 2017 (on the CDR website) and are available as hard copies at the premises of the CDR. The final RAP report has also been disclosed on the World Bank's external website on October 24, 2017.

101. Women will benefit significantly from the clean, reliable, and safe transportation, and women's usage of public transport is expected to double. Women have participated actively in project consultations including on the ESIA and women-specific transportation concerns were raised and discussed. An SPS of travel modes (cars, buses, taxis) and destinations was conducted and included a desegregation of participants' feedback by gender, age group, income level, and nationality. The findings of the consultations and surveys showed that women currently do not have a reliable and safe alternative to private vehicles given the safety and harassment concerns in existing public transport. Lower-income women currently depend on their husbands to meet their transportation needs (usually one car per household) or are forced to use existing unsafe public transportation. Consulted women generally showed support for the project and highlighted the importance of safety, good accessibility, and quality and comfort of services. The project will address women's needs by (a) improving safety on public transportation through the training of bus drivers, creation of reliable channels of complaints, and improvement in the security system (cameras at stations and buses, well-lit stations, security guards); (b) providing quality and comfortable services with clean and modern buses, well-planned routes and schedules, and a good integration on regular, feeder, and BRT services; (c) improving accessibility of infrastructure with accessible stations (elevators), accessible sidewalks, and safe pedestrian crossings; and (d) undertaking campaigns to raise awareness against sexual harassment. The project anticipates a significant positive impact on improved transportation service for women, with the percentage of women using public transportation doubling with this new project.

102. The project will include multilevel arrangements for registering and addressing grievances and complaints from different stakeholders and project-affected people. The primary purpose of the project's GRM is to provide clear and accountable means for affected persons to raise complaints and seek remedies when they believe they have been harmed by the project. An effective and responsive GRM also facilitates project progress by reducing the risk that unaddressed complaints eventually lead to construction delays, lengthy court procedures, or adverse public attention. A designated person will be assigned in the PIU of the CDR who will be responsible for receiving and recording receipt of each complaint, whether received orally or in writing. The contact information of the persons at each level will be made available to public before project implementation.

F. Environment (including Safeguards)

103. Based on the World Bank's OP 4.01 (Environmental Assessment), the proposed project is classified as category 'A' project, requiring a full ESIA. The client carried out an ESIA in accordance with the World Bank policies by an independent third-party consultant. The ESIA studied project alternatives, quantified the environmental and social impacts during the construction and operation phases of the project, and devised an ESMP to minimize expected risks, a monitoring plan with the mitigation measures.



The ESIA was prepared based on the feasibility study, and therefore some variations in the scope of activities might occur once final designs are furnished. The CDR committed that site-specific ESMPs (additional ESMPs) will be prepared as part of the final design packages to cater for mitigation of any unwarranted impacts that might arise. In addition, the CDR committed to employing the World Bank safeguards policies (or equivalent) for the activities carried out in parallel to the BRT system, particularly the A1 highway.

104. **Two stakeholder consultations rounds were carried out during the ESIA preparation.** The first consultation was held during the scoping phase of the ESIA on January 19, 2017, and the second consultation was held once a final draft ESIA was furnished on September 7, 2017. The consultations rounds were announced publicly in the media and attended by concerned authorities including the Lebanese Ministry of Environment, academia, NGOs, and the public. The ESIA report (with executive summary in Arabic and English) have been disclosed in country on October 20, 2017 (on the CDR website) and are available as hard copies at the premises of the CDR. The final ESIA report has also been disclosed on the World Bank's external website on October 24, 2017.

105. **The ESIA indicated that the project will result in positive impacts on air quality, reduced GHG emissions, and reduced noise levels once the BRT system is fully operational.** The ESIA studied the different atmospheric emissions resulting from the operation of the transportation fleet with and without the BRT system in the project influence zone, for 2023. The study consisted of assessing the future incremental emissions due to the project while considering the anticipated change in traffic circulation and modal shares due to the operation of the BRT system. The comparison of the two scenarios resulted in the net emissions budget. Scenario S1 comprises the emissions from the whole fleet when the BRT system is in operation, which includes the new buses and induced traffic (passenger cars, taxis, and trucks). Scenario S2 comprises the emissions of the present public transport system and the induced traffic in the absence of the BRT system. The comparison is undertaken for 2023 for CO, NO_x, PM₁₀, SO₂, and GHGs. For 2023, the annual emissions reduction in the project area would be of 1,232.39 tons per year, 641.89 tons per year, 35.26 tons per year, and 35.63 tons per year for CO, NO_x, SO₂, and PM₁₀, respectively. The model also showed that no increase in the emission of any pollutant is observed in any locality that will be served by the BRT system. The model results showed that the shift in the mass transport system from the current public transport to the new system will reduce GHG emissions in 2023 to around 590 Gg/yr of CO₂eq in Lebanon, which is higher than the impact of the implementation of the BRT system on the emissions reduced from the Private cars, taxis, and trucks. When all categories are considered, a total of 713.67 Gg/yr of CO₂eq is reduced in 2023. Based on the traffic study outputs, the proposed project will reduce the number of vehicles on the streets, thus reducing traffic-related noise. The project will help in maintaining constant vehicle flow, which will reduce the stop-and-go traffic-related noise.

106. **The ESIA showed that the project is not expected to have significant negative impacts on the surface water resources, natural habitats, or physical cultural resources in the area of influence of the project.** The project site is a developed urban area in Beirut and the highway connecting northern Beirut to Tabarja. The construction of the BRT system will mainly utilize the ROW of existing roads and highways with a few expansions in a few sections. Noise, vibrations, and dust construction waste and debris are expected during the construction phase, and mitigation measures have been detailed in the environment management plan to reduce the residual impacts to a minimum level. For the abovementioned reasons, the ESIA indicated that a Traffic Management Plan to minimize traffic congestions and a Waste



Management Plan prepared by bidders as part of their technical proposal should be considered as key ingredients of the evaluation criteria. The ESIA stipulated that earth works expected during the construction of the BRT line might pose a risk of chance finds, documented consultations with the Lebanese Department of Antiquities, and outlined a detailed chance-find procedure that will be part of the bidding documents. Furthermore, the CDR committed to preparing detailed Physical Cultural Resources Management Plan in the case of a significant chance find per the World Bank's OP 4.11.

107. **The capacity of the CDR to implement the ESMP was assessed to be satisfactory in previous projects.** During the implementation of the UTDP financed by the World Bank, the CDR had employed competent staff to oversee the implementation of the ESMP of the project and adequately managed and monitored the compliance of contractors. The UTDP had mainly focused on improving traffic flow in certain congested sections in Beirut using grade separations and included construction of bridges and minor tunneling. To handle the larger scope of the current BRT system, the CDR will employ environment and social specialists dedicated to the project and their performance will be enhanced and monitored closely.

H. World Bank Grievance Redress

108. 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 Redress Service (GRS). The GRS 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 Grievance Redress Service (GRS), 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.



Results Framework
COUNTRY : Lebanon
Greater Beirut Public Transport Project

Project Development Objectives

The Project Development Objective (PDO) is to improve the speed, quality and accessibility of public transport for passengers in Greater Beirut and at the city of Beirut's northern entrance.

Project Development Objective Indicators

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Name: Number of passengers per weekday using the formal public bus (BRT and regular buses).		Number (Thousand)	0.00	300.00	Biannual	The RPTA will collect the number of passengers from bus operators and from the mirror system and provide the information to CDR	CDR/the RPTA Private operators
Percentage of female ridership in the formal public bus system (BRT and regular buses) per weekday		Percentage	0.00	40.00	Annual	Information about female PT users will be obtained through surveys by RPTA and operators.	CDR/the RPTA

Description: This indicator measures the daily average passenger ridership of the system (all BRT and regular bus services). This indicator will reflect the number of direct beneficiaries of the project, which are the public transport passengers attracted by the improved speed, quality and accessibility of the public transport. Sub-indicators:



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
percentage of female passengers and percentage of vulnerable population.							
Name: Percentage of population residing in GBA with access to Beirut city center ("La place des martyrs") within 60 minutes commuting period using public transport		Percentage	50.00	61.00	Annual	A global information system (GIS)-based spatial analysis will be conducted using the open source accessibility tool developed by the World Bank called Open Trip Planner Analyst (OTPA).	CDR The RPTA / BRT operators (for the GPS data)
Description: This indicator will measure the increase in percentage of population with access to jobs and services located at the CBD using public transport services. This indicator captures the improved accessibility objective of the project for public transport passengers.							
Name: Average travel time by public transport from Tabarja station to Charles Helou terminal at morning peak hours		Minutes	75.00	45.00	Biannual	Data to be obtained from the ITS.	CDR / the RPTA BRT operators
Description: Average rush hour in-vehicle travel time by the PT services from Tabarja station to Beirut (Charles Helou terminal) at morning peak hours between 7:00am and 9:00am. This indicator measures the improved speed objective of the project for public transport services.							
Name: Share of passengers satisfied with quality of formal bus system		Percentage	0.00	80.00	Annual	Public transport user surveys will be commissioned by the RPTA on an annual basis among the public bus users.	The RPTA BRT and bus operators



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
							Consulting firm
Share of passengers satisfied with quality of formal bus system of which female		Percentage	0.00	80.00	Annual	This sub-indicator will report responses by female passengers.	The RPTA BRT and bus operators Consulting firm
<p>Description: Through surveys, this indicator will capture the satisfaction of the quality of the formal bus system by the passengers. It will thus reflect the improved quality of public transport services.</p>							

Intermediate Results Indicators

Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Name: Number of labor days of short term jobs created for Lebanese and Syrians		Number (Thousand)	0.00	2000.00	Annual	Contractors' reports compiled by CDR & supervision consultants and verified by World Bank.	CDR



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Description: This is a measure of the jobs created under this project. This will primarily include direct jobs, but also supply chain/indirect jobs where possible to quantify.							
Name: At least one contract agreement with a private company to invest and operate in the BRT operations is signed		Yes/No	N	Y	Once	The Yes value will be reached when a contract agreement between a private operator and the GoL, the RPTA or CDR is signed.	The RPTA
Description: This indicator measures the operational effectiveness of the project with a signed contract agreement with a bus operator. This indicator will reflect the first step in putting in place a PT system operated by private operators.							
Name: Number of km of the BRT infrastructure constructed		Kilometers	0.00	42.00	Biannual	CDR will collect the information from the supervision firms of the construction.	CDR
Description: This indicator will monitor the progress of the construction of the whole BRT infrastructure towards the full 42km long infrastructure (on the Northern Highway and the outer ring road).							
Name: Number of BRT and regular bus lines		Number	0.00	20.00	Biannual	The RPTA	Data to be obtained from the RPTA.
Description: Number of BRT lines (all service plans) and regular bus lines (defined route and stops, tariff and time schedule) operating in GBA. This indicator will reflect							



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
the development of a public transport system objective by quantifying the public transport services provided.							
Name: Number of operational BRT buses		Number	0.00	120.00	Biannual	CDR will collect the information from the RPTA through the BRT operator(s) which has (ve) the number of operational buses every day.	CDR/ the RPTA BRT operators
Description: This indicator will reflect the supply level of transport services, more specifically the availability of the BRT fleet.							
Name: Number of operational regular buses		Number	0.00	250.00	Biannual	CDR will collect the information from the RPTA through the bus operators which have the number of operational buses every day.	CDR/ the RPTA Bus operators
Description: This indicator will measure the number of operational feeder buses. This is the first expected outcome of the public transport network development activities along with the BRT services.							
Name: A mirror system to monitor the fare collection system is in use at the RPTA		Yes/No	N	Y	Biannual	The value will be Yes when a reliable mirror system is fully in use at the RPTA.	CDR / the RPTA



Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source/Methodology	Responsibility for Data Collection
Description: This indicator will monitor the progress of the implementation of a mirror system at the RPTA to monitor the fare collection system and BRT/bus operations. This indicator will reflect monitoring capacity of the RPTA.							
Name: Annual net savings of GHG emission (ton CO2)		Number	0.00	60000.00	Annual	Diesel consumption of the fleet of BRT buses, number of km run by this fleet as well as number of passengers will be collected by CDR and the RPTA via the operators.	CDR / the RPTA BRT and bus operators
Description: This will measure the savings in GHG emissions thanks to the project.							



Target Values

Project Development Objective Indicators

Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	End Target
Number of passengers per weekday using the formal public bus (BRT and regular buses).	0.00	0.00	40.00	100.00	200.00	300.00	300.00
Percentage of female ridership in the formal public bus system (BRT and regular buses) per weekday	0.00	0.00	0.00	15.00	30.00	40.00	40.00
Percentage of population residing in GBA with access to Beirut city center ("La place des martyrs") within 60 minutes commuting period using public transport	50.00	50.00	50.00	53.00	58.00	61.00	61.00
Average travel time by public transport from Tabarja station to Charles Helou terminal at morning peak hours	75.00	75.00	80.00	80.00	45.00	45.00	45.00
Share of passengers satisfied with quality of formal bus system	0.00	30.00	50.00	60.00	70.00	80.00	80.00
Share of passengers satisfied with quality of formal bus system of which female	0.00	30.00	50.00	60.00	70.00	80.00	80.00



Intermediate Results Indicators

Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	End Target
Number of labor days of short term jobs created for Lebanese and Syrians	0.00	0.00	700.00	1600.00	2000.00	2000.00	2000.00
At least one contract agreement with a private company to invest and operate in the BRT operations is signed	N	N	N	N	Y	Y	Y
Number of km of the BRT infrastructure constructed	0.00	0.00	15.00	35.00	42.00	42.00	42.00
Number of BRT and regular bus lines	0.00	0.00	5.00	17.00	20.00	20.00	20.00
Number of operational BRT buses	0.00	0.00	0.00	50.00	100.00	120.00	120.00
Number of operational regular buses	0.00	0.00	50.00	150.00	200.00	250.00	250.00
A mirror system to monitor the fare collection system is in use at the RPTA	N	N	Y	Y	Y	Y	Y
Annual net savings of GHG emission (ton CO2)	0.00	0.00	5000.00	10000.00	20000.00	40000.00	60000.00



ANNEX 1: IMPLEMENTATION ARRANGEMENTS

COUNTRY: Lebanon Greater Beirut Public Transport Project

Project Institutional and Implementation Arrangements

1. The project implementation agency will be the CDR, which has been for many years the main Government agency in charge of the implementation of large donor-funded projects, particularly in all infrastructure sectors. The CDR obtains its mandate to execute a specific project by a decision of the Council of Ministers. It has a long experience in implementing World Bank-funded projects, including in urban transport with the successful implementation of the UTDP, which closed in December 2015.
2. The CDR will be responsible for executing all project components financed by the World Bank loan. While directly responsible for the project, the CDR will coordinate project implementation with the MPWT, RPTA as well as other agencies where needed. The CDR will be responsible for executing all project-related infrastructure. In addition, the Government contribution to the operators, which will be financed from the World Bank loan, will be channeled to operators through the CDR to initiate consistency of financial statements. CDR will involve the MPWT and RPTA in the preparation and review of the technical specifications and contract conditions for operators and will be responsible for contract negotiations with the operators. The CDR will undertake all project-related procurements as further discussed under section IV.A of the PAD.
3. The system operation and maintenance will be undertaken by private operators, under the supervision of the RPTA. Private operators will be responsible for the operation and maintenance of the buses, stations, ITS, and fare collection systems. In addition, they will be responsible for the maintenance of the BRT infrastructure and dedicated lanes. The RPTA will have the mandate for the supervision and oversight of the private operators in accordance with the contracts/concession. The RPTA will certify that operators are fulfilling their contractual obligations and will recommend payments and penalties based on the contract clauses and conditions.

Financial Management

4. Project FM arrangements, including accounting, reporting, and auditing functions, will be centralized at the PIU within the CDR. The flow of funds process will be undertaken through two DAs to be opened at the Central Bank and managed by the CDR. The project financial reports will be done by the PIU and submitted to the World Bank along with the project progress reports. The CDR will coordinate with the RPTA for the payments of consultants residing and working at the RPTA.
5. The CDR has significant experience in implementing construction components for World Bank-supported projects, and its FM performance on past and current projects is considered satisfactory. More specifically, the CDR has implemented the UTDP and had an overall satisfactory rating for FM arrangements implementation. It has a functional unit undertaking FM responsibilities, including funds flow management, accounting, reporting, and facilitating an acceptable external audit. The CDR's external auditor will conduct the audit of the World Bank-financed projects. Nevertheless, the key FM risks for this



project to be implemented by the CDR are (a) the lack of proper registry of asset lists; (b) delays in submission of timely audit reports; and (c) complex project where many other agencies are involved such as the RPTA and MPWT and that entails PPP and operators' contributions. and the need to have strong FM staff within the PIU to be able to advise and support such activities and assume coordination among the different stakeholders.

6. Thus, to mitigate FM-related risks, (a) the CDR will ensure that the assets module of its accounting software is well operationalized and is able to capture the work in progress and the assets acquired under the project, (b) it will recruit an acceptable external auditor in the early stages of the project to enable constant audit compliance, and (c) additional staff will be recruited as needed to ensure that FM implementation is well supervised and followed up, in addition to the preparation of a Project Implementation Manual including an FM chapter that will detail the FM arrangements to be established for carrying out the project FM implementation and defining the roles and responsibilities. The FM chapter will include a detailed description of the process for expropriation and resettlement and the working relationship with the RPTA, the PPP modalities, and the operators' contributions mechanisms.

7. **Staffing.** The existing CDR FO has adequate experience in managing World Bank-financed projects and will thus manage the project FM arrangements. This FO will be supervised by the Head of Funding Division at the CDR and may be assisted by an additional financial staff as needed and as project activities become more complex.

8. **Project accounting software.** The CDR has in place customized accounting software that has been used for the FM implementation of the World Bank-financed projects and can be used to record the project's accounting transactions and generate the project's unaudited interim financial reports (IFRs). The FM team within the CDR PIU headed by the CDR Head of Funding Division will be responsible for accurate and complete recording of the daily transactions in the accounting system and ensuring that the required project IFRs are generated automatically from the system.

9. **Budgeting.** The loan will be issued through a law allowing the World Bank to include any risk mitigating measures into the arrangements that are deemed necessary to overcome any gaps in the Lebanese PFM system. Therefore, this project will be implemented using the World Bank's guidelines, policies, and procedures for financed projects. A set of FM arrangements will be undertaken to ensure proper project accounting, reporting, controls, and audits. As for the project budget, the project's allocation and categories of expenditures will be disclosed in the Financing Agreement to be approved by the Council of Ministers and ratified by the Parliament.

10. **Internal controls.** The CDR has adequate internal controls in place for preparation and approval of transactions and segregation of duties related to World Bank-supported projects. The CDR has significant experience in implementing construction components for World Bank-supported projects, and its FM performance on past and current projects is considered satisfactory. In addition, an FM chapter will be prepared to detail project FM arrangements implementation.

11. **Flow of funds.** Two Designated accounts (DA-A & DA-B) for the project's loan funds will be opened at the Banque du Liban (BDL) in USD. CDR will use the DA-A to pay for eligible expenditures related to all components activities financed by the World Bank except for resettlement (expropriation), as the payments for affected people from land and properties expropriation will be done from the DA-B. This



will ensure an improved monitoring over resettlement and better traceability and follow up payment status of beneficiaries. Payments from the DA-B is done upon beneficiaries show up with the official identification documents. CDR will be preparing quarterly report to list the beneficiaries paid, and those that are still pending as part of the Project Interim Un-audited financial reports (IFRs). In the case of no show up during project implementation, CDR will need to maintain these funds in a Dedicated Account and to keep on updating the list on annual basis until final settlement of all beneficiaries even after project closure.

12. In requesting disbursements into the DA-A for category 1 expenditures incurred, the CDR will make use of a Statement of Expenditure (SOE) record. In addition, DA-B used for category 2 expenditures will be documented through summarized statement of use of funds. All expenditures shall be submitted to the Bank on a pari-passu basis between the non-concessional portion and the concessional portion of the loan pre-determined in the Loan Agreement.

13. **IFRs.** The project's IFRs, prepared in accordance with International Public Sector Accounting Standards (IPSAS)—Cash Basis—and generated through the accounting system, will be sent to the World Bank no later than 45 days after the end of each quarter. The format and content of IFRs will be agreed upon with the CDR. The IFRs will be composed of (a) the statement of cash receipts and payments by category for the year then ending and cumulatively from the inception date up till the year ending including funds received from third parties; (b) accounting policies and explanatory notes including a footnote disclosure on schedules; (c) the statement of DAs reconciling period opening and end balances; (d) the statement of project commitments, showing contract amounts committed, paid, and unpaid under each project's signed contract; (e) SOEs by category for the quarter and cumulative; and (f) a comprehensive list of fixed assets and work in progress.

14. **Project Financial Statements (PFS).** The PFS, prepared in accordance with IPSAS (Cash Basis), should contain the same information as the quarterly IFRs but cover an annual period. The audited PFS will be submitted to the World Bank no later than six months after the end of each fiscal year²⁵ (see the following paragraph).

15. **External audit.** The PFS will be audited by an independent private external auditor acceptable to the World Bank. The audit will cover all project activities financed by the loan, including review of effectiveness of the internal controls system and compliance with the Financing Agreement. The audit will be carried out in accordance with International Standards on Auditing. The audit report and PFS, along with the Management Letter, will be submitted to the World Bank no later than six months after the end of each fiscal year. In addition, the project's Management Letter will contain the external auditor assessment of the internal controls, accounting system, and compliance with financial covenants in the Loan Agreement. The external auditor is expected to be engaged within six months of project effectiveness.

16. Moreover, according to the World Bank disclosure policy, the borrower, through CDR, needs to make publicly available the borrower's audited annual financial statements for all investment lending operations. Accordingly, this project's audited annual financial statements once issued and accepted by

²⁵ Project fiscal year ends December 31.



the World Bank will be made available to the public on the CDR website.

Disbursements

17. The proceeds of the loan will be disbursed in accordance with the World Bank's disbursement guidelines for projects and as outlined in the Disbursement letter. Transaction-based disbursement will be used under this project. Accordingly, requests for payments from the loan will be initiated through the use of withdrawal applications (WAs) either for advances, reimbursements, and replenishments to the DAs as well as for direct payments. All WAs will have appropriate supporting documentation including detailed SOEs for reimbursements and replenishments to the DAs. The DA-A ceiling will be set at US\$10,000,000. The ceiling for DA-B is variable, based on a 6 month-expenditure forecast.

18. **Retroactive financing.** An amount of US\$10 million of the loan will be allowed as retroactive financing for eligible expenditures under categories goods, consultant's services and training, and operating costs made on or after 12 months before the date of Loan Agreement signing. Payments for items procured must be in accordance with applicable Bank Procurement procedures.

19. **e-Disbursement.** The World Bank has introduced e-disbursement for all Lebanon-supported projects. Under e-disbursement, the project's required transactions will be reported and associated supporting documents scanned and transmitted online through the World Bank's Client Connection system. e-Disbursement will considerably speed up disbursements and facilitate project implementation.

20. The World Bank will honor eligible expenditures completed, services rendered, and goods delivered by the project closing date. A four-month grace period will be granted to allow for the payment of any eligible expenditure incurred (that is, services, goods, or works, received and accepted) before the loan closing date.

21. **Supervision Plan.** A supervision mission will be conducted at least twice a year based on the risk assessment of the project.

Procurement

22. **Procurement capacity assessment** includes the following:

(a) Legal Framework:

- (i) The CDR will be implementing the project in close collaboration with the RPTA. The MPWT will be associated and updated on implementation progress.
- (ii) Since its establishment in 1977, as a legally and financially autonomous state agency, the CDR has operated under special procurement regulations. This was formalized in 1980 through a decree covering the CDR's financial and accounting transactions assigned to it by the Minister of Finance.
- (iii) The RPTA was established by Law No. 6479 of April 14, 1961, which amended Law No. 34 of March 1959 by separating 'public transport' from the 'authority of electricity and



public transport'. The RPTA is under the custody of the MPWT and abides by decision (amendment) No. 88/4 of January 1988 pertaining to human resources and the RPTA Financial Regulation of February 1992.

- (iv) The CDR and RPTA are state-owned enterprises and abide by Decree No. 4517 of December 1972 defining SOEs. Oversight is provided by the council of civil servants, central inspection and Ministry of Finance (MOF), and post review of the Country Office Accountant.

(b) Experience in World Bank funded projects:

- (i) **The CDR has extensive experience in implementing donor funding (EU, IBRD, French Development Agency, and so on).** The CDR has proven that it is capable of handling large and complex projects. The institution has adopted a strong matrix organization by 'projectizing' project management and delegating the responsibility of each project to a team headed by an experienced manager, who would deal with all aspects of project and contract management. The CDR also has a bureau for monitoring and evaluation. The project is proposed to be implemented through the project unit that managed the UTDP and its additional financing (IBRD financing). The unit has a solid management and is staffed with procurement and technical specialists as needed by the project design. Diligence is observed in record keeping and quality of evaluation. The procurement processing, contract management, and the ICR of the UTDP rated the performance of the Government to be Satisfactory in implementation. The unit is familiar with the World Bank's bidding documents, and when local bidding is conducted, the standard documents are reviewed and found acceptable to the World Bank. The CDR has proven to keep proper records, maintain procurement plans, process procurement satisfactorily, publish notices adequately, display awarded contracts on their website, address complaints diligently, and appoint external auditors. Shortcomings are nevertheless observed in lengthy bureaucratic clearances and in contract management, resulting in delayed decision making and eventual payments, delayed handover of completed works, delayed contract amendments and extensions, and so on.
- (ii) **RPTA experience.** The RPTA's role will be primarily the supervision of the PPP contracts, while the procurement and tendering of works and services, including the PPP concessions, will be done by the CDR in collaboration with the RPTA and MPWT. The RPTA will benefit from support from the loan through the recruitment of key advisers (technical, financial, legal) to assist its management in the proper supervision of the project.
- (iii) **Staffing.** The CDR has a defined system of accountability, and the responsibilities, including procurement decision making, are very centralized. The agency, in addition to its experienced procurement staff who have been trained on international procurement, has the capacity to outsource and benefit from both Individual consultants and consulting firms to enhance its capacity whenever needed. Still, the CDR is challenged sometimes by the shortage of manpower versus the number of



projects being implemented. The complexity of dealing with several donors and their regulations also adds to the strain on its staff, increasing the possibility of mistakes. The RPTA has 240 employees, of whom 16 are administrative and technical staff and will be supported by key experts through the project to assist with the management of the project.

- (c) **Record keeping.** All the records of procurement activities are maintained at the CDR by the procurement team.
- (d) **Procurement planning.** The CDR has extensive experience with procurement planning, especially the units working on World Bank projects.
- (e) **Audit.** The institution exercises internal audit and appoints an external independent auditor who covers all implemented projects. Usually, the auditor is appointed for three years. Till date, audit opinion was clean ('unqualified') and audit reports are received on time and of satisfactory quality.
- (f) **Procurement assessment risks and mitigations.** The overall procurement implementation risk is assessed as Substantial mitigated to Moderate. Risks identified are the following: (i) delay in procurement processing and implementation; (ii) delay in decisions toward contract packaging; (iii) coordination and inclusiveness of other concerned stakeholders, ministries, and so on; (iv) bidding document and technical specifications development; and (v) contract management. The following mitigation measures are proposed: (i) mapping procurement processing to meet reasonable efficiency; (ii) readiness of contracts packaging by Loan Agreement signing; (iii) development of first bidding documents by effectiveness; and (iv) assigning technical staff, engineers, field supervision consultants, and experts to support procurement bidding documents development and to monitor contracts. RPTA capabilities are not yet proven and risks are inherent to managing PPP contracts. Mitigations are proposed to provide intensive technical support, upgrade human resources, and administer pertinent training and exposure. Other risks are identified that may affect procurement processing without being related such as other donors' timely interventions and widening of roads portions within the scope of the project, illegal buses operators' resistance to the project execution, and so on.
- (g) **Procurement risk assessment matrix.** Table 1.1 is a recapitulation of the identified risks and proposed mitigations measures.



Table 1.1. Procurement Risk Assessment Matrix

Sl. No.	Implementing Entity Procurement Risk	Risk Rating	Mitigating Measures
1	Delay in procurement processing and implementation	Substantial	<ul style="list-style-type: none"> • Include in the PIM the procurement processing mapping and internal validations associated with reasonable business time
2	Delay in decisions toward contract packaging	Substantial	<ul style="list-style-type: none"> • Readiness of contracts packaging by Loan Agreement signing • Development of first bidding documents by effectiveness
3	Coordination and inclusiveness of other concerned stakeholders, ministries, and so on	Moderate	<ul style="list-style-type: none"> • Allocate adequate technical support to the procurement capacity for managing contracts and validating deliverables.
4	Bidding document and technical specifications development	Moderate	<ul style="list-style-type: none"> • For the project implementation, the CDR will recruit technical staff, engineers, and experts in BRT or related areas to support procurement processing and contract management.
5	Contract management (CDR)	Substantial	
6	Contract management (RPTA)	Substantial	<ul style="list-style-type: none"> • The RPTA will appoint experts for proper PPP contract management.
	Overall Risk Rating	Substantial	

Note: PIM = Project Implementation Manual.

23. **Proposed procurement arrangements** are as follows:

- (a) **Project guidelines and regulations.** The following guidelines and regulations shall apply: (i) 'Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants', dated October 15, 2006, and updated in January 2011, and (b) the World Bank's 'Procurement in Investment Project Financing: Goods, Works, Non-Consulting and Consulting Services', dated July 2016 and revised in November 2017. Procurement methods for works, goods, non-consulting service, and consulting services shall be defined accordingly.
- (b) **Procurement methods for works, goods, and non-consulting services.** The project is expected to procure works; purchase goods and information technology (IT) systems; and procure non-consulting services using the following methods: (i) Request for Bids using international and national market approach, (ii) shopping, (iii) framework agreements, and (v) direct selection.
- (c) **Selection of consultants.** The project is expected to appoint consulting firms and individual consultants using (i) Quality- and Cost-Based Selection (QCBS), (ii) Selection under a Fixed Budget (FBS), (iii) Least-Cost Selection, (iv) Selection Based on the Consultants' Qualifications



(CQS), (v) Direct Selection, and (vi) Selection of Individual Consultants including Direct Selection procedures.

- (d) **PPP.** The project shall finance contracts procured under PPP arrangements for the operation and maintenance of the BRT and feeders as per Procurement Regulations' provisions (July 2016 and revised November 2017) paragraph 6.42 to 6.45 and Annex XIV. The selection will be consistent with the World Bank's Core Procurement Principles, will reflect application of the World Bank's Anti-Corruption guidelines, and will be consistent with the requirements set out in the Procurement Regulations. The CDR will lead the selections in close collaboration with the RPTA and will transfer contract management to the RPTA.

24. **Proposed project staffing.** The project will be managed at the CDR by almost the same unit that managed the UTD, which has substantial experience with World Bank procedures. Qualified staff is on board with extensive experience in implementing projects financed by the World Bank and other international donors. The RPTA will also benefit from support through Component 3 to appoint and allocate appropriate expertise to support PPP contract management.

25. **Project Implementation Manual PIM.** A project implementation manual shall be developed to define the operation implementation, covering procurement and contract management arrangements at the CDR as well as at the RPTA.

26. **Procurement Plans.** The PPSD is under preparation to cover the detailed assessment of the implementing agency capacity as well as the adequacy, behavior, and capabilities of the market to respond to the foreseen risk positioning of the procurement packages. Based on the PPSD findings, an initial Procurement Plan for the life of the project shall be developed by the ministry and will be updated and reviewed by the World Bank at least twice a year or as seen necessary. In accordance with paragraph 5.9 of the 'World Bank Procurement Regulations for IPF Borrowers' (July 2016 and revised November 2017) ('Procurement Regulations'), the World Bank's STEP system will be used to prepare, clear, and update Procurement Plans and conduct all procurement exchanges for the project. It will also be used as a repository of procurement documents for activities above and below the prior review thresholds. The Procurement Plan shall integrate the below prior review thresholds associated with moderate contract risks (Table 1.2), as well the procurement methods thresholds (Table 1.3).



Table 1.2: 'Bank Guidance, Dated July 2016 revised November 2017', on Threshold for Procurement Approaches and Methods by Country (US\$, thousands)

Country	Region	Works			Goods, It and Non-Consulting Services			Shortlist Composed Only of National Consultants	
		Open International ≥	Open National <	RFQ ≤	Open International ≥	Open National <	RFQ ≤	Consulting Services <	Engineering & Construction Supervision ≤
Lebanon	MENA	10,000	10,000	200	1,000	1,000	100	300	500

Note: RFQ = Request for Quotation.

Table 1.3. Bank Procedure in IPF, Dated July 1, 2016 revised November 2017', on Prior Review Thresholds for Moderate Contract Risk (US\$, millions)

Type of Procurement	Moderate Risk
Works (Including turnkey, supply & installation of plant and equipment and PPP)	15
Goods, information technology and non-consulting services	4
Consultants: firms	2
Consultants: individual	0.4

27. **Project main activities.** The project with a total of US\$345 million (including 15 percent contingency) is financing BRT infrastructure, street furniture, and roadworks for US\$172 million, ITS US\$25 million, bus fleet US\$103 million (of which US\$53 million from IBRD/GCFF), land acquisition US\$30 million, and TA and consultants US\$15 million. The project's infrastructure works are not expected to be challenging in terms of type of works or attractiveness of contractors (international and local). The inherent risk to works execution will be the traffic management, as well as coordination of works between the different contractors. For the PPP approach and availability of operators, it was agreed that the risk will be mitigated by approaching operators with reasonable scoping. Transaction advisory firms will look into the details of the PPP structure and business model options. Procurement methods and market approach results extracted from the initial Procurement Plan are as per Table 1.4.



Table 1.4: Recapitulation of the Procurement Plan Main Activities

Sl. No.	Type of Contract	Contract Title, Description, and Category	Estimated Cost (US\$, millions) and Risk Rating	Bank Oversight	Procurement Approach/Competition	Selection Methods	Evaluation Method	Contract Award	Contract Completion
1	Consulting	Design and supervision	10 Medium	Prior	International/Open	RFP, QCBS	Rated criteria (VfM)	February 1, 2019	June 30, 2023
2	Works	BRT - roads infrastructure and stations (including equipment)—Charles Helou - Nahr el Kalb	35 Medium	Prior	International/Open	Prequalification, RFB	Lowest evaluated cost	February 1, 2019	December 31, 2021
3	Works	BRT- roads infrastructure and stations (including equipment)—Nahr el Kalb - Jounieh - Tabarja	51 Medium	Prior	International/Open	Prequalification, RFB	Lowest evaluated cost	June 1, 2019	June 30, 2022
4	Works	Terminals Charles Helou and Bus depots: St Michel	12 Low	post	International/Open	Prequalification, RFB	Lowest evaluated cost	June 1, 2020	December 31, 2021
5	Works	Terminals Tabarja and bus depots: Tabarja, Jbeil, Tripoli (bus parking)	25 Low	Prior	International/Open	Prequalification, RFB	Lowest evaluated cost	December 1, 2020	June 30, 22
6	Works	Bus depots: network depots	15 Low	Prior	International/Open	Prequalification, RFB	Lowest evaluated cost	June 1, 2020	December 31, 2021
7	Works	Outer ring - roads infrastructure and stations (including equipment)	16 Medium	Prior	International/Open	Prequalification, RFB	Lowest evaluated cost	April 1, 2019	June 30, 2022
8	Works	Bus network 1 (minor works and equipment)	4.5 Medium	Post	National/Open	Postqualification, RFB	Lowest evaluated cost	June 1, 2019	June 30, 2020



Sl. No.	Type of Contract	Contract Title, Description, and Category	Estimated Cost (US\$, millions) and Risk Rating	Bank Oversight	Procurement Approach/Competition	Selection Methods	Evaluation Method	Contract Award	Contract Completion
9	Works	Bus network 2 (minor works and equipment)	4.5 Medium	Post	National/Open	Postqualification, RFB	Lowest evaluated cost	June 1, 2019	June 30, 2020
10	S&I	IT software and related equipment to fare management	7 High	Prior	International/Open	Postqualification, RFP	Rated criteria (VfM)	June 1, 2019	March 31, 2022
11	PPP	Operator BRT	40 per year Total = 400	Prior	International/Open	RFP	Rated criteria (VfM)	January 1, 2020	December 31, 2029
12	PPP	Fare collection operator	12.5 Total = 125	Prior	International/Open	RFP	Rated criteria (VfM)	January 1, 2020	December 31, 2029
13	PPP	Bus network operator 1	7.5 Total = 75	Prior	National/Open	RFP	Rated criteria (VfM)	June 1, 2019	December 31, 2029
14	PPP	Bus network operator 2	7.5 Total = 75	Prior	National/Open	RFP	Rated criteria (VfM)	June 1, 2019	December 31, 2029
15	PPP	Bus network operator 3	7.5 Total = 75	Prior	National/Open	RFP	Rated criteria (VfM)	June 1, 2019	December 31, 2029

Note: S&I = supply and installation; VfM = Value for Money.



28. **Procurement monitoring.** The efficiency indicators related to procurement processing (see table 1.5) and time for bid evaluation shall be monitored. Supervision missions shall be conducted twice yearly, and transactions above the set prior review thresholds shall be submitted to the World Bank before awarding; works packages between US\$25 million and US\$155 million and goods between US\$10 million and US\$75 million; and consulting firms between US\$6 million and US\$30 million shall be subject to the RPA. No contracts are expected to reach the OPRC prior review thresholds. All remaining activities shall be yearly sampled and reviewed ex post.

Table 1.5. Procurement Indicators

Indicator	Measure	Performance Metrics Being Measured	Target
Average length of procurement process	Number of days between date of invitation to bid and date of award	Timeliness, cost-effectiveness, and quality of planning	10 months for open procedure
Time for bid evaluation	Number of days between bid opening and publication of award	Timeliness, efficiency, and cost-effectiveness of process	30 days for open procedure
Processes terminated or revoked	Percentage of bid processes changed, terminated, or declared null before contract signature	Quality of planning, quality of bidding documents, and overall quality of process	Number of processes changed, terminated, or revoked/total number of all processes per year should be less than 5.
Contract variation and extensions	Percentage of contracts completed on time and with reasonable variations (up to 25%)	Quality of planning and evaluation process	Number of contracts observing variations and extensions/total number of all contracts per year should be less than 60%.

Environmental and Social (including Safeguards)

29. The CDR will be responsible for implementing the provisions of the ESMP and RAP, and all other safeguards-related instruments, and monitoring the compliance of contractors with the provisions of the projects. The CDR will hire an environmental and social specialist to support the PIU on all matters related to the mitigation of social and environmental risks. In addition, the CDR will hire an external monitoring consultant to monitor the implementation of the ESMP and RAP on a regular basis.

30. The World Bank environmental and social safeguard specialists will provide guidance to the CDR on these matters. The task team will monitor the implementation of the ESMP and RAP through regular supervision missions during which document reviews, site visits, and spot-checks will be conducted.

31. **GRS of the World Bank.** Any persons who believe that they are adversely affected by a World Bank-supported project such as this project may also submit complaints to the GRS established by the World Bank. The GRS ensures that complaints received are promptly reviewed to address project-related concerns. Project-affected communities and individuals may also submit their complaint to the World Bank's independent Inspection Panel, after having brought the complaint to the World Bank's attention



through its GRS. Information on how to submit complaints to the World Bank's GRS is available at <http://www.worldbank.org/GRS>. Information on how to submit complaints to the World Bank Inspection Panel is available at www.inspectionpanel.org.

Monitoring and Evaluation

32. Project monitoring and evaluation will be undertaken by the CDR, which will be ultimately responsible for all project data collection, including the compilation from other entities (bus operators and the RPTA, contractors) as well as the overall project monitoring and evaluation. Project progress reports will be prepared by the CDR on a semiannual basis and submitted to the World Bank for review and comments within 45 days from the end of the reporting period. These reports shall include, among others, (a) an update on the results achieved based on the indicators and target values established in the Results Framework, (b) the activities carried out throughout the reporting period under each component, (c) key issues/constraints or risks affecting project implementation that require attention with corresponding proposed measures to address them, (d) disbursement calendar for the next six months, and (e) progress achieved in the implementation of the environmental and social safeguards instruments (ESMP, RAP). In addition, an in-depth project implementation progress assessment will be carried out at the midterm review; the CDR will prepare a report and make a formal presentation of the progress made during the project life up to that point. The CDR has been the implementing agency for all recent projects financed by the World Bank and has the required skills.

33. The World Bank will ensure continuous implementation support. The key World Bank specialists are based in Beirut and will have regular interaction with the CDR and undertake frequent field visits. This will allow the World Bank to provide continuous monitoring and verification support besides the at least semiannual implementation support missions required.

Role of Partners (if applicable)

34. The ISDB and other donors have expressed interest in financing the second phase of the BRT program. Through several consultations, local banks, operators, and investors have also shown interest in supporting the execution of this project and the operation of the system. The World Bank is keeping close consultation with all interested agencies to ensure the overall consistency of these initiatives.



ANNEX 2: MAPS

COUNTRY: Lebanon

Figure 2.1. Proposed National BRT Program

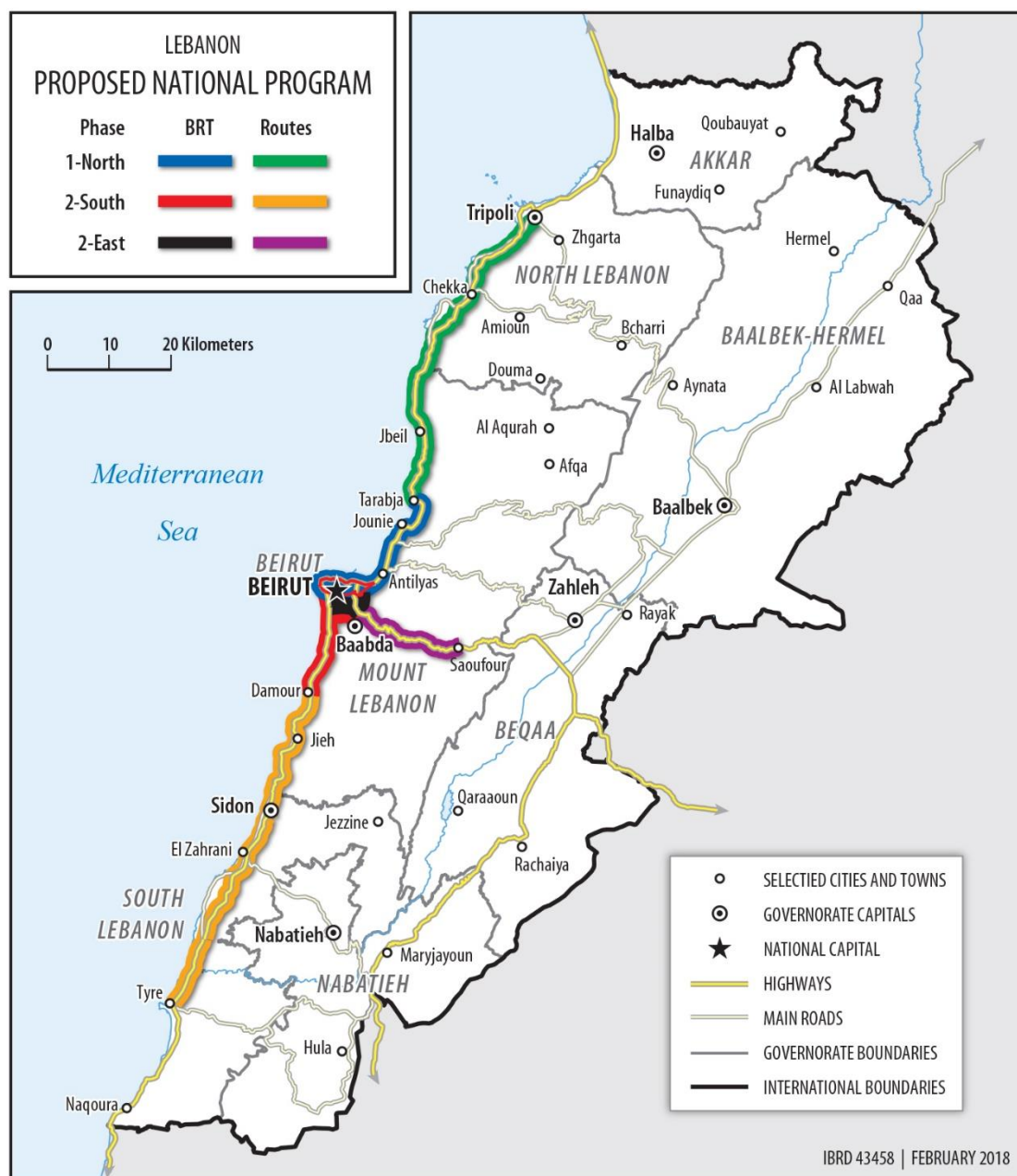


Figure 2.2. General Alignment of the BRT Corridor



Figure 2.3. General Alignment of the BRT on the Outer Ring Road



Figure 2.4. Locations of Stations along the Northern Section BRT Corridor

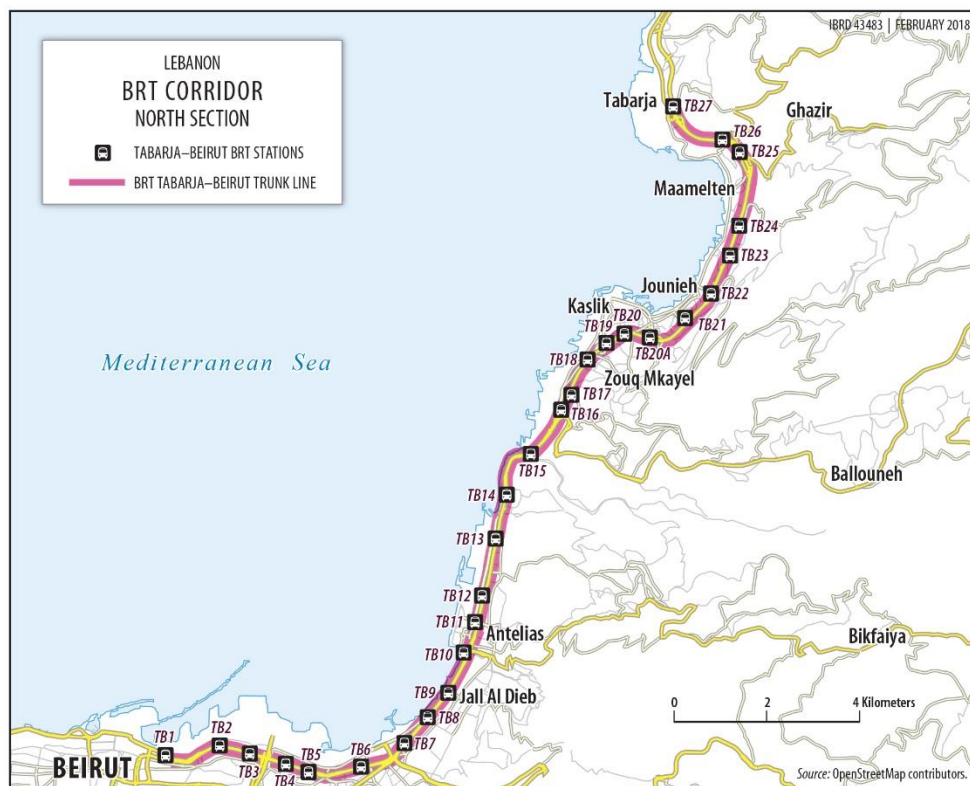


Figure 2.5. Locations of Stations along the BRT Outer Ring Road Corridor





Figure 2.6. Feeder and Regular Bus Network

