



Lebanon Sustainable Low-emission Transport Systems

Part I: Project Information

GEF ID

10358

Project Type

FSP

Type of Trust Fund

GET

CBIT/NGI

CBIT **No**

NGI **No**

Project Title

Lebanon Sustainable Low-emission Transport Systems

Countries

Lebanon

Agency(ies)

UNDP

Other Executing Partner(s)

UNDP Country Office in Lebanon

Executing Partner Type

GEF Agency

GEF Focal Area

Climate Change

Taxonomy

United Nations Framework Convention on Climate Change, Climate Change, Focal Areas, Climate Change Mitigation, Renewable Energy, Sustainable Urban Systems and Transport, Energy Efficiency, Technology

Transfer, Paris Agreement, Sustainable Development Goals, Influencing models, Convene multi-stakeholder alliances, Transform policy and regulatory environments, Strengthen institutional capacity and decision-making, Demonstrate innovative approaches, Stakeholders, Private Sector, Large corporations, SMEs, Communications, Behavior change, Awareness Raising, Public Campaigns, Education, Beneficiaries, Type of Engagement, Information Dissemination, Consultation, Partnership, Participation, Civil Society, Non-Governmental Organization, Academia, Gender Equality, Gender Mainstreaming, Sex-disaggregated indicators, Gender-sensitive indicators, Gender results areas, Knowledge Generation and Exchange, Capacity Development, Participation and leadership, Capacity, Knowledge and Research, Innovation, Knowledge Generation

Rio Markers**Climate Change Mitigation**

Climate Change Mitigation 2

Climate Change Adaptation

Climate Change Adaptation 0

Submission Date

6/19/2021

Expected Implementation Start

1/1/2022

Expected Completion Date

12/31/2026

Duration

60In Months

Agency Fee(\$)

337,532.00

A. FOCAL/NON-FOCAL AREA ELEMENTS

Objectives/Programs	Focal Area Outcomes	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
CCM-1-2	Promote innovation and technology transfer for sustainable energy breakthroughs for electric drive technology and electric mobility	GET	3,552,968.00	112,412,182.00
Total Project Cost(\$)			3,552,968.00	112,412,182.00

B. Project description summary

Project Objective

Promote sustainable transport in Lebanon through electric mobility and improved quality of service

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
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Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
Component 1: Institutional and policy support for the promotion of sustainable transport systems and e-mobility	Technical Assistance	Outcome 1: The institutional framework empowers key stakeholders to facilitate sustainable door-to-door mobility practices and to adopt e-mobility	Output 1.1: Guidelines on low-cost sustainable mobility measures, including local improvements and voluntary agreements with bus operators and corporate fleets	GET	610,510.00	927,252.00
			Output 1.2: National sustainable e-mobility strategy prepared with government and key stakeholders			
			Output 1.3: Roadmap on end-of-life vehicle management, including electric vehicles and their batteries endorsed by government and key stakeholders			

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
Component 2: Short-term barrier removal through e-mobility and other low-carbon demonstrations	Investment	Outcome 2: Demonstrations provide evidence of technical, financial and environmental sustainability to plan for scale-up of low-carbon electric mobility	Output 2.1: Self-certified green public transport services (GPTS) concept developed and implemented in at least one regular bus line in the northern corridor	GET	2,012,860.00	109,009,590.00
			Output 2.2: Green fleet management (GFM) concept (including EVs) implemented in one governmental fleet			
			Output 2.3: Non-motorized accessibility (including electric micromobility) to public transport improved in at least one municipality			
			Output 2.4. The viability of electric buses in certified green public transport services is demonstrated			

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
Component 3: Knowledge management, capacity development and awareness raising	Technical Assistance	Outcome 3: Sustainable low emissions transport programs widely supported	<p>Output 3.1: Networking mechanism established among agencies and stakeholders involved in sustainable low emissions transport systems to accelerate the implementation of the e-mobility strategy and the adoption of GPTS and GFM by corporations and public bodies</p> <p>Output 3.2: Coordination with the "Global Programme to Support Countries with the Shift to Electric Mobility? (participation at thematic working groups and at the Support and Investment Platform)</p> <p>Output 3.3: Sustainable mobility communication and public awareness campaigns implemented, based on</p>	GET	580,559.00	1,282,840.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
Component 4: Monitoring & Evaluation	Technical Assistance	Outcome 4: The project monitoring and evaluation plan is implemented	Output 4.1: The project monitoring and evaluation plan and knowledge-management strategy are designed and implemented	GET	179,850.00	
Sub Total (\$)					3,383,779.00	111,219,682.00
Project Management Cost (PMC)						
GET			169,189.00		1,192,500.00	
Sub Total(\$)			169,189.00		1,192,500.00	
Total Project Cost(\$)			3,552,968.00		112,412,182.00	

C. Sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
Recipient Country Government	Ministry of Interior and Municipalities	In-kind	Recurrent expenditures	663,300.00
Recipient Country Government	Ministry of Energy and Water	In-kind	Recurrent expenditures	250,000.00
Beneficiaries	Municipality of Jbeil	In-kind	Recurrent expenditures	331,700.00
Other	World Bank	Loans	Investment mobilized	110,625,000.00
GEF Agency	UNDP	Grant	Investment mobilized	200,000.00
GEF Agency	UNDP	Equity	Investment mobilized	342,182.00
Total Co-Financing(\$)				112,412,182.00

Describe how any "Investment Mobilized" was identified

In order to identify the investment mobilized, a general presentation was made during the validation workshop to clarify the concept of cofinancing and to identify the interested stakeholders in the public and private sectors, and bilateral meetings were held with governmental agencies, beneficiaries and those that expressed their willingness to participate. The amounts presented in the table above correspond to the following activities, envisaged to be undertaken by the participants during the project timeline: ? Ministry of Interior and Municipalities (MoIM): Recurrent expenditure covering the operation, maintenance and improvements of the project-related ISF fleet,; support to municipal actions in mobility and public space policies. ? erio del Ambiente: Activities to further implement e-mobility policies in Peru, particularly in what refers to the institutional and regulatory framework. ? Ministry of Energy and Water: Recurrent expenditure for the follow-up of the SODEL project, improving energy efficiency in the transport sector, promotion of renewables and electricity supply resilience. ? Municipality of Jbeil. Undetermined contribution (due to difficulties to estimate precise budgets for the next year due to the Lebanese crisis) for the preparation, approval and implementation of the Urban Master Plan; walking and cycling improvement plans and capacity building. ? World Bank: Detailed design and implementation of the GBPTP infrastructure. Design and implementation of new bus lines and bus fleet renewal. ? UNDP: Investment in the implementation of one project on the analysis and design of policies on e-waste recycling, management

and disposal in Lebanon (until end 2022). Grant coming from TRAC dedicated to partially cover the costs of project safeguards officer (all components) and project management costs.

D. Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)
UNDP	GET	Lebanon	Climate Change	CC STAR Allocation	3,552,968	337,532
Total Grant Resources(\$)					3,552,968.00	337,532.00

E. Non Grant Instrument

NON-GRANT INSTRUMENT at CEO Endorsement

Includes Non grant instruments? **No**

Includes reflow to GEF? **No**

F. Project Preparation Grant (PPG)
PPG Required **false**

PPG Amount (\$)
100,000

PPG Agency Fee (\$)
9,500

Agency	Trust Fund	Country	Focal Area	Programmin g of Funds	Amount(\$)	Fee(\$)
UNDP	GET	Lebanon	Climat e Change	CC STAR Allocation	100,000	9,500
Total Project Costs(\$)					100,000.00	9,500.00

Core Indicators

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)	24618	39069	0	0
Expected metric tons of CO ₂ e (indirect)	49236.14	78137	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)				
Expected metric tons of CO ₂ e (indirect)				
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)	24,618	39,069		
Expected metric tons of CO ₂ e (indirect)	49,236.14	78,137		
Anticipated start year of accounting		2024		
Duration of accounting		15		

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)				

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)
Solar Photovoltaic	0.20			
select				

Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	700,000	704,000		
Male	700,000	713,000		
Total	1400000	1417000	0	0

Part II. Project Justification

1a. Project Description

Changes in alignment with the project design with the original PIF

The following changes have been made to the project design as contained in this document compared to the PIF:

? The project objective has been slightly rephrased, in order to capture the relevance of electrification in the transition towards sustainable mobility.

? The scope of the component 1 is more focused and better adapted to the events in Lebanon after the approval of the PIF. It now includes the co-design of bottom-up concepts on sustainable mobility with private stakeholders, and the structuring of the government action through a Sustainable and Electrified Mobility Subcommittee and a national e-mobility strategy. The titles of component 1 and outcome 1 have been slightly modified to reflect the role expected from e-mobility

? The contents of the demonstrations in component 2 have changed, to adapt to the current financial difficulties in the country, which prevent Wego (the partner identified in the PIF for the pilot on e-buses) and any other potential player in Lebanon from undertaking the necessary investments. The project now finances the pilots of 2 e-buses and 4 e-cars, to be tested respectively by the interested bus operators and by ISF (national police), while requesting from these partners the implementation of operational improvements to decrease their carbon footprint and, in the case of bus operators, to provide higher quality service. While keeping e-mobility center stage, it also implements pilots on local soft mobility conditions, in alignment with the World Bank's concerns about the facilitation of access with soft modes (walking, cycling and electric micromobility) to the future BRT for which the WB has approved a loan.

? Regarding component 3, the scope of the coordination mechanism on low-emission transport has been clarified. Whereas the Sustainable and Electrified Mobility Subcommittee envisaged in component 1 is of an governmental nature, the network supported by component 3 is open to all stakeholders, with a flexible structure and aiming at facilitating the interaction among the participants to become increasingly influential in the public debate in favor of sustainable mobility and electrification. This builds upon the actions of some already active NGOs and private actors.

? The new component 4 addresses all the monitoring and evaluation activities, that were previously distributed across the other project components.

? The GEF contribution to the project budget has been redistributed in accordance with the revised scope of the project outputs, resulting in a 20.8% decrease in component 1 and a 18.3% decrease in component 3; this is consistent with the more focused approach of these components, compared to the PIF stage. There is a small increase in the budget dedicated to component 2 (5.8%), justified by the

changes in the pilot contents and the ambition to undertake pilots in 3 areas (e-buses, e-cars and soft modes). The budget dedicated to component 4 corresponds to 5% of the GEF contribution.

? The expected GHG emissions mitigated (direct and indirect) and beneficiaries disaggregated by gender have been estimated with more detail, based on the final scope of the demonstration and other project activities. The result is a slight increase in the estimated direct and indirect GHG emission savings compared to the PIF, due to the widened scope of the pilots. In accordance with current global trends, and the expectations for a recovery of the country crisis in the mid-term (by the end of the project), it is expected that, once bus operators and fleet managers feel in a position to undertake fleet renewal, they will be interested in choosing electric options thanks to the results provided by the project activities, and with local and national governments able to undertake investments, they will be interested in including walking and cycling facilitation within their transport projects.

? Total project co-financing has significantly increased, from USD 82,488,000 to USD 112,412,182. This is mainly due to the expected implementation of at least some parts of the WB's Greater Beirut Bus Rapid Transit project within the project duration. Out of the total BRT investment in the northern corridor (USD 295 million), it is estimated that at least USD 110,625,000 could be invested between 2024 and the end of the project. There are also additional co-financing sources from MoIM-ISF and MoEW. However, other sources of co-financing identified in the PIF are no longer certain: the investment of WeGo in e-buses (which has led to changes in component 2, mentioned above), the contributions of MPWT and its agency RPTA (which also affects the contribution from UNDP linked to its cooperation with RPTA, which has been terminated due to the financial constraints of the government), and the co-financing from EIB, as its project in Tripoli has been put on hold until the Lebanese situation improves.

Components at PIF	Components at CEO Endorsement	Comments / Rationale for changes
<p>C1 : Institutional and policy support for the promotion of sustainable low-emission transport systems. PIF budget: USD 770,750</p> <p>PIF co-financing: USD 1,088,000</p>	<p>C. 1: Institutional and policy support for the promotion of sustainable transport systems and e-mobility. Proposed budget: USD 610,510 (-20.8%)</p> <p>Co-financing: USD 927,252</p>	<p>Output 1.1: The scope of the legal, regulatory and financial framework in output 1.1 was too broad in the PIF; it now covers three specific areas: municipal interventions, voluntary service quality agreements of bus operators, and voluntary fleet management commitments of corporations.</p> <p>Output 1.2: The scope of the sustainable transport roadmap in output 1.2 was too broad in the PIF; it now focuses on e-mobility, and provides a national strategy. It also covers the guidelines and standards developed in output 1.3 at PIF (except for ELV management).</p> <p>Output 1.3: It focuses now on ELV management, with a focus on the management of used batteries.</p>

Components at PIF	Components at CEO Endorsement	Comments / Rationale for changes
<p>C2: Improved environment for deployment in sustainable low-emission transport systems and support services.</p> <p>PIF budget: USD: 1,902,629</p> <p>PIF co-financing: USD 80,000,000</p>	<p>C. 2: Short-term barrier removal through e-mobility and other low-carbon demonstrations.</p> <p>Proposed budget: USD 2,012,860 (+5.8%)</p> <p>Co-financing: USD 109,009,590</p>	<p>All the outputs have changed to adapt to the new demonstrations, as the ones identified in PIF were no longer feasible:</p> <p>Output 2.1: This output is new, and develops and implements (with the participating partners) the Green Public Transport Service (GPTS) self-certification concept.</p> <p>Output 2.2: This output is new, and develops and implements (in ISF) the Green Fleet Management concept.</p> <p>Output 2.3: New output, to design and implement the local pilot in Jbeil (improving non-motorized accessibility to public transport: walking, cycling and electric micromobility).</p> <p>Output 2.4: Partially covers PIF former outputs 2.2 and 2.3, with a focus on e-buses and their chargers.</p> <p>Output 2.5: Partially covers PIF former outputs 2.2 and 2.3, with a focus on e-cars and their chargers.</p>
<p>C3: Knowledge management, capacity development and awareness raising.</p> <p>PIF budget: USD 710,400</p> <p>PIF co-financing: USD 1,000,000</p>	<p>C. 3: Knowledge management, capacity development and awareness raising.</p> <p>Proposed budget: USD 580,559 (-18.3%)</p> <p>Co-financing: USD 1,282,840</p>	<p>Output 3.1: Similar to former PIF output 3.1, while implementing a more flexible approach (networking) and focusing on the private sector and civil society, as coordination of governmental institutions is addressed in Component 1 (Sustainable and Electrified Mobility Subcommittee).</p> <p>Output 3.2: No relevant changes compared to PIF.</p> <p>Output 3.3: No relevant changes compared to PIF.</p> <p>Output 3.4: No relevant changes compared to PIF.</p>
<p>M&E activities embedded in other components</p>	<p>C. 4: Long-term environmental sustainability of low-carbon electric mobility</p> <p>Proposed budget: USD 179,850</p>	<p>Following GEF/UNDP requirement to gather M&E activities in one component. A new outcome 4 is associated to this component, with one output.</p>
<p>PMC</p> <p>PIF GEF budget: USD 169,189</p> <p>PIF co-financing: USD 400,000</p>	<p>PMC</p> <p>PIF GEF budget: USD 169,189</p> <p>PIF co-financing: USD 1,192,500</p>	<p>No relevant changes compared to PIF</p>
<p>GHG emissions (direct): 24,618 t CO_{2e}</p>	<p>GHG emissions (direct): 39,069 t CO_{2e} (5,209 tons at end of project)</p>	<p>Increase due to additional pilots</p>
<p>GHG emissions (cons.): 49,236 t CO_{2e}</p>	<p>GHG emissions (conseq.): 78,137 t CO_{2e}</p>	<p>Increase due to additional pilots</p>
<p>PIF co-financing: USD 82,488,000</p>	<p>Co-financing: USD 112,412,182</p>	<p>Increase mainly due to the scope of the WB's GBTP.</p>

Table 1: Changes in Alignment at Project Design with the PIF

1a. Project Description

1) Global environmental problems, root causes and barriers that need to be addressed (systems description)

A global transition to low- and zero- emission mobility is essential to meet international climate commitments, including the Paris Climate Agreement. The transport sector is currently responsible for approximately one quarter of energy-related carbon dioxide emissions ; this is expected to grow by 2050. In addition, the transport sector is a leading contributor to short-lived climate pollution, including NOx and PM.

In the particular context of Lebanon, the development challenge can be described as follows: Passenger mobility in Lebanon follows an increasingly unsustainable path, with a variety of effects: environmental (growing GHG emissions and deteriorating air quality), economic (decreasing productivity and growing mobility costs in terms of time and money), social (long travel times and poor quality conditions, particularly for vulnerable social groups), basic human rights (e.g. women's personal security) and spatial (cars claiming an ever growing share of public spaces, making streets unsafe for pedestrians and residents and blighting the urban ecosystem and landscape).

This development challenge is raised in a context of extremely reduced capacity for governmental action, as a consequence of the deep economic, political and social crisis in Lebanon. The economic growth period (2000-2015) was coupled with chronic fiscal deficits and increasing difficulties for the government to undertake much needed public infrastructure improvements in the water, electricity and transport sectors. Since the summer of 2019, political unrest, severe economic slowdown and fiscal deficit led to currency exchange volatility, capital control and a severe economic crisis, further aggravated by the COVID-19 pandemic lockdown and by the devastating explosion on August 4th, 2020 at the port of Beirut, which led to the resignation of the government. The political crisis is illustrated not only by the inability to put together a new government, but also by the chronic lack of resources to put in place adequate public policies. The population has increased by nearly 500,000 between 2006 and 2016 in addition to an influx of displaced Syrians since 2011, and is increasingly concentrated in the Greater Beirut Area (GBA), reaching 2.2 million inhabitants in 2016. Jobs remain located in cities, and particularly in Beirut, but the high cost of living in cities force many to live in overcrowded suburbs. Therefore, transportation in the three main radial access to Beirut (northern, east and southern corridors) becomes vital for the living conditions of the growing Lebanese population.

Poor transport conditions are particularly harming for women and other vulnerable groups , which cannot always afford the most convenient transport means. Additionally, women are also more exposed to street harassment and harassment in public transport, hindering their mobility freedom and their access to social and economic opportunities. Air quality is a critical public health problem in cities and it can be improved as an associated benefit by GHG mitigation measures in urban transport. The mitigation potential in urban mobility is higher than in other transport subsectors, and so is the potential to attain favorable gender, social and environmental impacts.

Even in the current Lebanese context of reduced capacity for action of the national government, the experience in many countries shows that there is room for a transition towards low-carbon passenger mobility, based on the growing worldwide interest among the public on sustainability mobility, the ever-growing availability of technological and non-technological innovations and the action of many organizations within the civil society. However, there are three main causes hampering such trends in Lebanon: a governmental structure/bureaucracy poorly suited to foster sustainable mobility practices (institutional barrier), a limited knowledge and accessibility of the transport sector to sustainable mobility solutions (technical barrier), and a cultural barrier reluctant to changes and favoring private car use and road expansion. The problem tree is presented in the figure below.

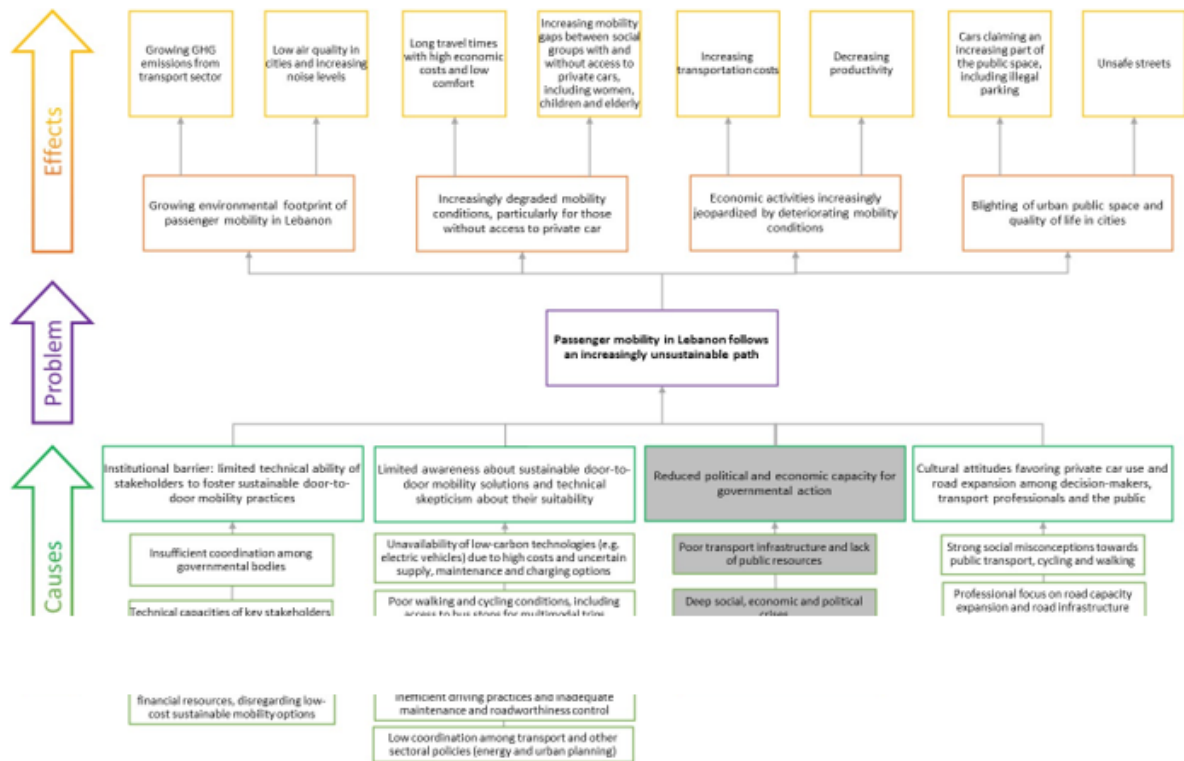


Figure 1: The problem tree

(i) Institutional barrier: Limited technical ability of the government to foster sustainable door-to-door mobility practices. The roots of this institutional barrier include insufficient coordination among governmental bodies, and a planning practice focusing on costly infrastructure projects, in spite of the lack of financial resources to undertake them, disregarding low-cost sustainable mobility options. Changes in this approach are hampered by technical silos within the governmental structures, lacking the multidisciplinary capacities necessary to develop sustainable mobility alternatives. This is illustrated by last national land transport strategy[1]¹ presented by the Government to the Parliament on 11 February 2020: it covers infrastructure investment in all transport means, with a strong focus on

road network upgrading and overhauling of the mass transit system (BRT and rail); the plan is not considering any soft measures (such as the necessary improvement of walking access conditions to the mass transit system or the transition to low-carbon technologies) or social dimensions, such as women's and other vulnerable groups' mobility needs or the low share of women in decision-making positions in the transport sector, including not only public institutions but also private companies.

Among the transport infrastructure projects designed in the last years, it is worth highlighting the Greater Beirut Public Transport Project, consisting of BRT systems serving each of the three road corridors providing access to Beirut, starting by the north corridor. This project is financed through an already-approved World Bank's loan, and includes infrastructure works and the involvement of private operators that would undertake the system operation and maintenance of the buses, stations, ITS and fare collection. Additionally, RPTA and Ministry of Public Works and Transport (MPWT) initiated the detailed design of Tripoli bus network and its terminals with the support of European Investment Bank (EIB), as well as an integrated tariff and ticketing system with reform of concessionary fares and subsidy system and the creation of a new Tripoli Transport Authority (TTA) under RPTA. Ironically, these ambitious projects are preventing stakeholders from undertaking immediate action to stop the deterioration of public transport services or to protect pedestrians and cyclists, even if these measures would path the way to achieve the results intended by those ambitious investments. This is one critical gap than needs to be addressed.

The same lack of action occurs in other areas. The Intended Nationally Determined Contribution (INDC) report of Lebanon, submitted to the UNFCCC in September 2015, summarizes Lebanon's intended targets related to voluntary GHG emission reductions. It mostly relies in infrastructure development and fleet renewal, making it strongly dependent on the availability of substantial financial resources[2]². The implementation of the INDC is supported by projects and programmes to build capacities within the government, such as the NDC Support Project (NDCSP) at the Ministry of Environment (MoE), and the transport NAMA; the latter was approved in 2017, but has been put on hold due to lack of resources[3]³.

(ii) Limited awareness about sustainable door-to-door mobility solutions and technical skepticism about their suitability. Beyond the national government structures, other key stakeholders in the transport sector, such as public transport operators, fleet managers and municipalities, have limited awareness about the options they have to move towards sustainable mobility, and the benefits they can seize. Furthermore, the challenging economic situation in the country and the almost impossibility to get financing for any investments discourage them to explore these options. For example, the government's provision of fiscal incentives to electrification[4]⁴ has not influenced consumers' demand yet due to the difficult economic situation. This is isolating the Lebanon transport sector from on-going low-carbon innovations, not only concerning e-mobility, but also areas such as fleet management, the provision of high-quality bus services, the renaissance of walking and cycling or the facilitation of smooth intermodal access to the public transport systems. Lastly, there is limited

awareness about the strengthened coordination needs required by electrification between transport policies and other sectoral policies, mainly energy (deployment of renewables) and urban planning (charging infrastructure and land use patterns).

(iii) Cultural attitudes favoring private car use and road expansion among decision-makers, transport professionals and the public. The roots of this social barrier include strong social misconceptions towards public transport, cycling and walking and other mobility options[5]⁵, a professional focus on road capacity expansion and road infrastructure construction, and a strong consumers' preference for large cars. A number of non-governmental organizations (NGOs) are fighting these attitudes while promoting sustainable mobility in Lebanon[6]⁶, and UN-HABITAT has recently issued a Guide for Mainstreaming Transport and Mobility in Lebanon's National Urban Policy[7]⁷. Stating the lack of human and financial resources of the Lebanese state institutions, exacerbated by the recent economic and humanitarian crisis, the UN-HABITAT report recommends the engagement and mobilization of the private sector and civil society at large as to create the enabling conditions necessary for a transition towards sustainable low-carbon mobility. Last but not least, some stakeholders (such as vehicle dealers and importers) are aware of global trends towards sustainability and electrification, and asking for a reliable roadmap for the country[8]⁸.

2) Baseline scenario and associated baseline projects

The Lebanese transport sector is the second largest consumer of energy in Lebanon. It entirely relies on gasoline and diesel, and contributes to approximately 23% of the nation's greenhouse gas (GHG) emissions[9]⁹, more than 60% of all NO_x and NMVOC emissions, 99% of all CO emissions, 5% of all SO₂ emissions and other pollutants such as particulate matter (PM₁₀ and PM_{2.5}), VOC, copper, zinc and lead[10]¹⁰. The car fleet in Lebanon is very old and fuel intensive, with around 54% of it manufactured before 2001[11]¹¹. As for the contribution of the different vehicle categories, passenger cars have the highest share of the emissions with 58.38% of the total transport GHG emissions while light-duty vehicles (LDV), heavy-duty vehicles (HDV), and motorcycles account for 17.46%, 23.81%, and 0.35% respectively[12]¹². Air quality degradation and impacts (on human health in particular) in Lebanon is estimated to be approximately 1% of gross domestic product (GDP), and a significant portion of this is attributed to the transport sector[13]¹³. It is estimated that air pollution from polluting old cars costs at least USD 200 million of economic loss per year resulting from morbidity, adult mortality, child mortality and discomfort, not including the cost from health care services[14]¹⁴. A

substantial additional impact is that of congestion. Driven by high penetration of the passenger cars, lack of reliable public transport, uncoordinated public works and urban design, congestion in the cities increase travel times, so that the burden of congestion is estimated at 8% of GDP per annum^[15].

The MPWT is responsible for planning and regulation of public transport, licensing of companies, fare setting and planning, and supervising RPTA. Public transport services in Lebanon are provided by RPTA and by authorized private bus operators. The role of RPTA has become increasingly marginal. In 2019, only 35 buses were still in operation across nine lines in Beirut and one line in the Bekaa area (outside Beirut). The number of authorized buses (with red plates) is 6,202, fully owned and operated by individuals and private entities. According with Decree-Law 118/1977, Municipal Councils and the Municipal Union are entitled to establish or manage directly or indirectly, among others, all local means of public transportation and urban infrastructure. However, no municipality currently provides direct public transportation services. The challenging political, social and economic situation in Lebanon has all but cancelled access to financing, strongly limiting the ability of the GoL and others stakeholders to act, but it also opens opportunities to implement disruptive policies, including in the transport sector.

Electricity supply is a significant challenge limiting the potential of e-mobility in Lebanon. In accordance with a UNDP/GEF project published in 2017, the Lebanon's power sector is characterized by a significant supply-demand imbalance, high generation costs and a lack of financial sustainability. The public utility EDL has an installed capacity of 1,616 MW, just above 50% of the estimated peak demand (3,000 MW), the rest being provided by a multiplicity of small (and not always legal) suppliers. Almost all the electricity is generated by fuel oil. EDL's end-user tariffs are in turn not cost-reflective, with EDL requiring a large annual subsidy.

Renewable energy holds strong potential in Lebanon. In the National Renewable Energy Action Plan (NREAP) 2016-2020, the Government of Lebanon set out the country's primary purpose of achieving 12% renewable energy by the year 2020, and a roadmap to achieve this, with investment targets of 450 MW in wind energy and 300 MW in solar PV in 2030. However, these targets are far from been achievable, as the country has been unable to mobilize the necessary investments. Besides higher financing costs and a perceived risky environment, this can be attributed to the insufficient action of the government and EDL.

A IRENA (2020) study considers that Lebanon could still achieve a 30% share of renewables by 2030, provided some conditions are met: the implementation of more stable and integrated regulations for renewable energy deployment; the adoption of new measures for small-scale applications; the complement of national targets with technology-specific renewable energy targets; setting up enabling tools for the installation of heating and cooling; the reform of the current market framework to increase investments and ensure project bankability; the reinforcement of the grid (including undertaking grid impact assessments) and the availability of financing coupled with a strengthened role of the private sector.

An Energy Efficiency Action Plan was also prepared by MoEW in 2016 . It includes a package of measures in the road transport sector, such as full implementation and control of already-existing measures on operational standards and roadworthiness, incentives for the purchase of energy-efficient vehicles (including revision of vehicle taxes), disincentives to importing used cars, fighting traffic congestion (with a focus on urban logistics), awareness-raising on ecodriving and legislative reforms.

The project intends to build upon the activities already initiated in Lebanon to revitalize public transport, to expand the share of renewables in energy generation and with the reconstruction strategies adopted after the August 4th 2020 blast. Stakeholders participating in these projects will be invited to the inception workshop and to the e-mobility network to be set up in component 3; more details are provided in Annex 8 (Stakeholder Engagement Plan). The following initiatives are currently active in the related areas:

? With the Support of the EU, the MPWT developed a National Integrated Strategy for Public Transport in Lebanon (MPWT & EU, 2016). The Strategy envisaged the purchase of 250 buses circulating on 20 routes, the erection of 911 new bus stops (310 in Municipal Beirut), and the establishment of an innovative ticketing system and the design of dedicated/priority bus lanes on main roads. The project is aligned with this approach, and envisages to integrate the electrification transition within this broader strategy to recover public transport in Lebanon, which has not been implemented until now due to the difficult environment in the country.

? Institutional Support to the RPTA. This was a UNDP managed project providing support to the Railways and Public Transport Authority (RPTA) and concluded in 2019. It built capacities and speeded-up cooperation with RPTA, the government's agency supervising public transport services in the country. The project provided RPTA with a strategy to enhance its work and with a reform plan and roadmap, aiming at updating the institutional and technical structural abilities of the RPTA and strengthening the public transportation sector in Lebanon.

? Greater Beirut Public Transport Project (GBPTP) or Bus Rapid Transit (BRT) project. In 2018, a USD 295 million concessional finance package was agreed by the World Bank with the Government of Lebanon[16]¹⁶ to implement a comprehensive national public transport program, including a BRT network of three trunk BRT lines in the center of the highways providing the Northern, Southern, and Eastern accesses to Beirut. It also envisages BRT lines extending within Beirut to connect the three trunk lines, improving connectivity between Beirut and the regions as well as within Beirut. The BRT network will be complemented by some 20 lines of feeder buses as well as investments to improve access to the system (bus stops, sidewalks, park and ride facilities). 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. January 2022 was the initial date envisaged for ground-breaking, but the challenging situation and Lebanon has delayed the start of the implementation of the project and is likely to request some restructuring. Once works start, the infrastructure construction could take at least 2 years, but soft-measures (e.g. the restructuring of current bus lines into feeder lines) could be implemented in advance. The WB remains committed in support the transport sector in

the country, as it is essential for its economic recovery (see WB's co-financing letter). There have been also feasibility studies on the renewal of the bus fleet for the new services, including hybrid and electric technologies. Therefore, the UNDP project can be seen as a useful preparatory pilot for the GBPTP.

? The CDR (Council for Development and Reconstruction) is responsible for executing all project-related infrastructure (e.g., roadworks, bridges, stations, and land acquisition) and procurements. The Railway and Public Transport Agency (RPTA) is in charge of oversight of the private operators that will undertake the system operation and maintenance of the system. The CDR will lead the selections of the operators in close collaboration with the RPTA and will transfer contract management to the RPTA. While feeder/regular buses will be fully financed by the Government, BRT fleets will be co-financed by the private operators. At the completion of the BRT project, expected by 2031 (therefore outside the scope of what the project will deliver), the BRT network is expected to attract about 300,000 passengers per day and halve the commuting time between Beirut and its northern suburbs by public transport.

? Sustainable Urban Public Transport (Bus) Investment Program in Greater Tripoli. Tripoli is the second largest city in Lebanon and located at 85 km northeast of the capital Beirut. With the support of European Investment Bank (EIB), RPTA and Ministry of Public works and Transport (MoPWT) has initiated the development of detailed design of construction of Tripoli bus network and its terminals and tender documents. The program will update the transport strategy and its implementation plan. The new bus network will have an integrated tariff and ticketing system with reform of concessionary fares and subsidy system. In addition, Tripoli Transport Authority (TTA) will be created under RPTA by reorganizing the transport sector in Tripoli. On a later stage following the project appraisal, the Bank is willing to provide his financial support to the Lebanese government for (a) the construction of the intermodal public transport hubs (new bus terminal) as Bahass Transport Center; (b) acquisition of new buses and (b) implementation ITS systems (traffic management, passenger information system, priority of public transport on the roads).

The municipality of Jbeil has undertaken the preparation of a new Master Plan, with the support of Dr. Tony Lahoud from the Lebanese American University. It is envisaged to be concluded and subsequently approved by the Municipality Council by 2024. The Master Plan provides a vision for 2040 including the objectives to preserve and enhance the historical architectural urban infrastructure of the old city of Byblos and to integrate it with the social economical activities of the urban city. In the urban mobility sector, the Master Plan calls for the promotion of sustainable mobility through enhancing non-motorized transportation systems by integrating intelligent transportation tools and encouraging pedestrian activities.

To overcome the current unsustainable path of passenger mobility in Lebanon, the project develops a strategy with the objective to promote sustainable transport in Lebanon, considering two key dimensions of sustainable mobility: on the one hand, the facilitation of the transition towards electrification; on the other hand, the improvement of the quality of service. Technology and a focus on users' experience (particularly vulnerable groups) are therefore at the centre of the project. The strategy aims at creating the enabling conditions to facilitate the deployment of electric drive technologies in Lebanon within a sustainable door-to-door mobility perspective. This strategy needs to be consistent with the exceptional situation Lebanon is going through (a complex political, financial

and economic crisis). As the project does not have the capacity to influence the situation, its strategy aims at empowering the civil society, municipalities and the national government to undertake sustainable mobility options that can already make a difference even within such challenging environment, and that will empower them to move further once the environment has improved, and when these stakeholders can again have access to financial resources, and undertake investments in sustainable mobility infrastructure and technologies and push forward again regulatory reforms. The project aims at creating such enabling conditions by building capacities, and by identifying and implementing low-cost actions that will facilitate the subsequent implementation of ambitious investments in low-carbon electric-drive technologies, such as the deployment of BRT systems serviced with e-buses, fleet renewal with a focus on low-carbon technologies and the enhancement and adaptation of the public space to the new practices induced by e-mobility[17]¹⁷. The project strategy is illustrated in Figure 2.

While keeping its focus on electric drive technologies and electric mobility (CCM-1-2), the project's strategy is consistent with the recently-issued UN-HABITAT's Guide for Mainstreaming Transport and Mobility in Lebanon's National Urban Policy[18]¹⁸, within the formulation stage of its National Urban Policy project. The guide provides a comprehensive assessment of urban mobility in Lebanon, stressing the challenges of high motorization rates, pervasive traffic congestion, poor quality of public transport services with inadequate buses and absence of rail, and lack of appropriate space and infrastructure for pedestrians and cyclists, among others. The project embraces the 'Enable-Avoid-Shift-Improve' (EASI) framework of this document for policy formulation- with a focus on modal shift and technological improvements- in order to:

- ? Enable sustainable mobility by establishing an effective governance system with the needed institutions, trained human resources and adequate financial resources to regulate, manage and finance the development and operation of the transport sector and all its systems.
- ? Avoid or minimize individual motorized travel and trip length through the integration of land-use and transportation planning to develop compact cities where residential, work and leisure districts are closely connected and intermixed.
- ? Shift to sustainable mobility modes such as public transport and non-motorized travel to make them the main modes of transport for the majority of commuters.
- ? Improve vehicle technology and fuel efficiency for passenger cars and public transport.

The concept of sustainable transportation promotes a balance between transportation's economic and social benefits and the need to protect the environment. A transportation system is sustainable when (1) it allows individuals and societies to meet their access needs safely and in a manner consistent with human and ecosystem health, and with equity within and between generations, and ensuring gender-

equal access; (2) it is affordable, operates efficiently, offers choice of transport mode, and supports a vibrant economy, increasing access to economic opportunities to vulnerable groups, including women; and (3) it limits emissions and waste within the planet's ability to absorb them, minimizes consumption of non-renewable resources, limits consumption of renewable resources to the sustainable yield level, reuses and recycles its components, and minimizes the use of land and the production of noise. Promoting sustainable passenger mobility in Lebanon will result in a reduced environmental footprint and improved quality of services for vulnerable social groups.

The Theory of Change (ToC) addresses three of the four barriers identified in the problem tree described in the previous section. The remaining barrier refers to the challenging socio-economic and political context in Lebanon, which cannot be removed by the project but that must be taken into consideration while developing the project strategy. Accordingly, the project intends to implement low-cost interventions delivering short-term results and empowering stakeholders to undertake more ambitious and expensive actions in the future, when financial resources become available. Therefore, the project's strategy (i) addresses the institutional barrier through a mixed approach that empowers and supports not only the public administration (top-down) but also the relevant stakeholders (bottom-up) through the provision of institutional and policy support as well as local-level engagement and awareness raising for the promotion of sustainable low emissions transport systems. It also promotes women's participation in policy-making processes and increases the share of women at decision-making positions. This approach is consistent with the conclusions of the UN-Habitat report mentioned above in creating the enabling conditions in which the private sector and the civil society at large can compensate the political weakness of the national government, in order to create the wide consensus needed to transition towards sustainable and gender-responsive urban mobility.

The project strategy (ii) addresses the technical barrier leading to skepticism towards electrification and other sustainable mobility measures through the design and completion of demonstrations in those areas more suitable to provide short-term results and to facilitate the subsequent deployment of the infrastructure projects in the pipeline. Furthermore, the strategy combines the encouragement to adopt self-imposed sustainability and quality measures with access to the use of electric vehicles by bus operators and one institutional car fleet. Additionally, the project will work with one municipality (Jbeil, within the future northern BRT corridor) to identify and implement key pilot actions facilitating non-motorized access to key public transport stops, and therefore exploring the optimal conditions for attractive door-to-door multimodality in anticipation of the future construction of the BRT.

Finally, the project strategy (iii) addresses the cultural barriers favoring private car ownership and use through the facilitation of replications and taking up of the demonstrations' results through awareness-raising and networking activities aiming at increasing the support of the public and influential stakeholders to sustainable mobility options. The comfort and security gains provided by the project's technical contributions provides a strong leverage to increase the acceptability of sustainable mobility options. Furthermore, the project's support to a national e-mobility network should empower a variety of stakeholders interested in sustainability, EV commercial opportunities and social integration to come together, establish a shared vision and roadmap and sustain a bottom-up approach to expand the project's demonstrations and support the implementation of the national e-mobility strategy.

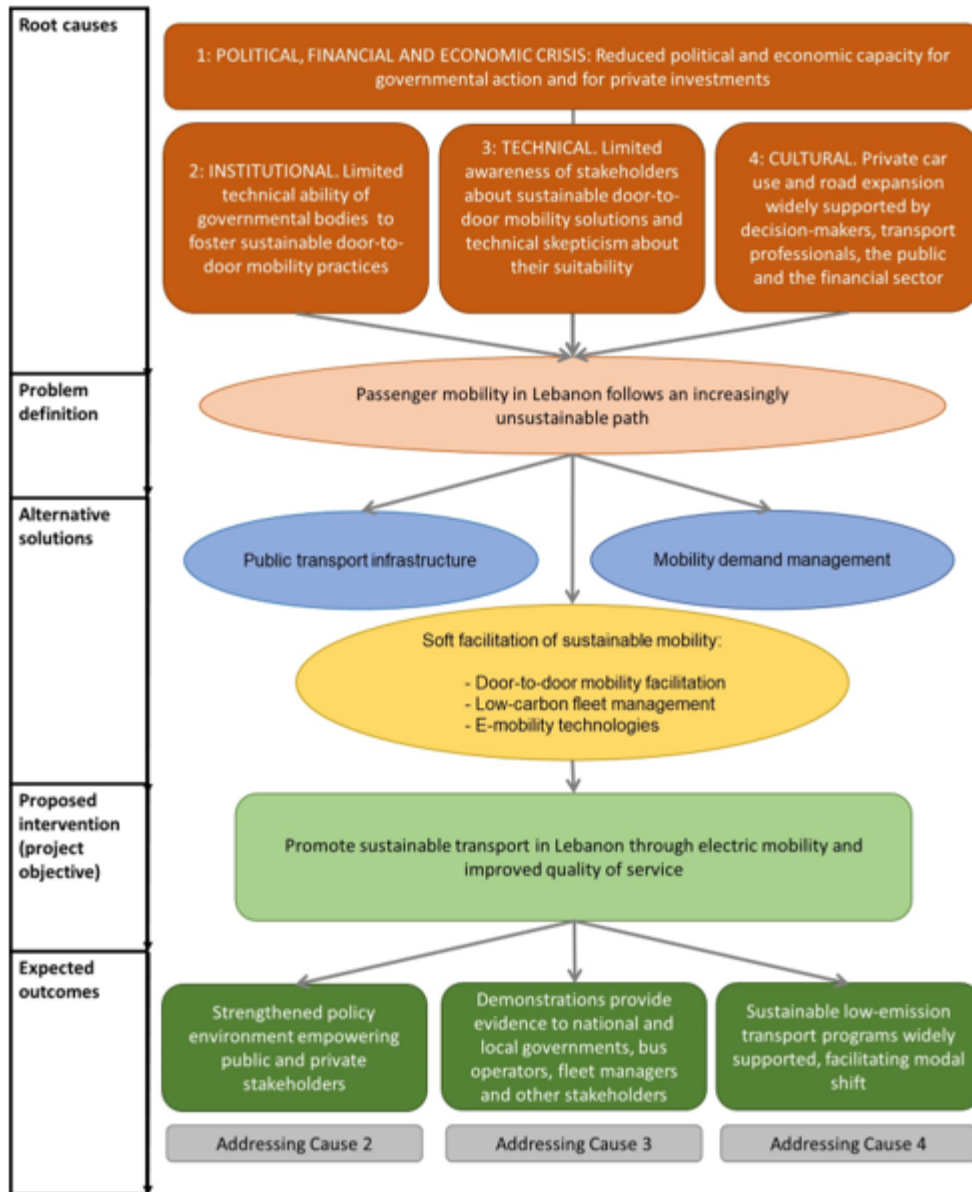


Figure 2: Connecting the problem tree with the project's outcomes

3) Proposed alternative scenario

The project intends to navigate this challenging context through a bottom-up approach^[19], while keeping significant actions also at the institutional level (e.g. through the development of a national e-mobility strategy), and also by firmly aligning its strategy with that of key international donors and financial institutions in the promotion of mass transit and the support to e-mobility, low-carbon emission approaches and alternative mobility options. The approach is illustrated in the figure below: the project provides guidelines and strategy (outcome 1), demonstrations (outcome 2) and upscaling

(outcome 3) To mainstream the project outcomes, it is expected that Lebanon will get out of its current crisis, so that (i) municipalities have financial resources to redesign their streets and public spaces putting pedestrians, cyclists and public transport users at the center, (ii) the WB financed scheme of BRT corridors is implemented, and (iii) users can get financing to renew their fleets in a context in which EVs become widely available.

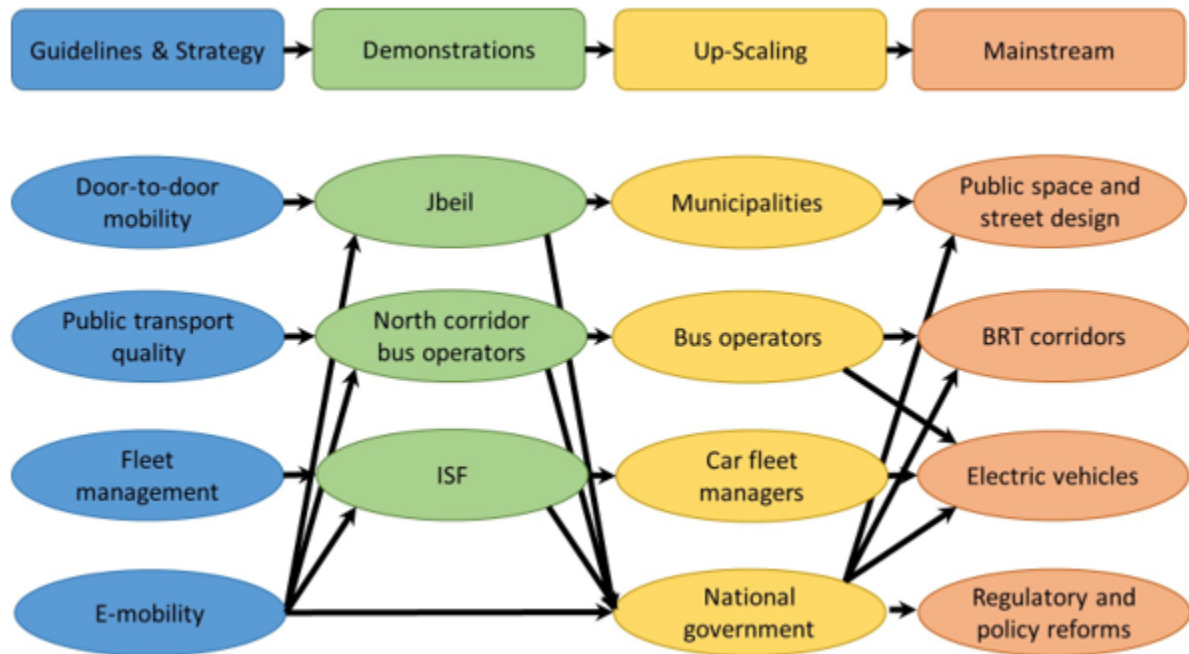


Figure 3: Project mainstreaming strategy

The project envisages the deployment of e-mobility through the interaction of an e-mobility strategy providing the general framework for the GoL's national policy in this area, and bottom-up facilitation of electrification through three key topics:

? Door-to-door (sustainable) mobility: In this project, door-to-door sustainable mobility (or just door-to-door mobility) refers to the need to provide a seamless and attractive multimodal mobility alternative to travelers from origin to destination through the combination of sustainable transport modes, as a convenient alternative to door-to-door mobility provided by the private car (notwithstanding parking issues). The emergence of electric-drive technologies provides additional opportunities to strengthen the appeal of such sustainable alternatives, as they reduce the physical effort associated to walking and cycling (e.g. electric micromobility devices and electric bikes) and increase the number of potential users. To sustain the use of such options, the street space has to be redesigned accordingly, reducing the space occupied by the general traffic, establishing clear rules and providing enough space and priority-if needed- to public transport, and increasing the space dedicated to the users of the new micromobility devices while preserving- and even enhancing- the conditions for pedestrians and conventional cyclists. Traditional public transport stops and stations are seen as a cornerstone of the concept, as they may become e-mobility hubs in which users conveniently change from one of those modes to public transport services, which provide for the longest part of the itinerary. To

facilitate door-to-door mobility, cities need to adapt their streets and to reconfigure their key public transport hubs[20]²⁰.

? Green Public Transport Services (GPTS). In this project, Green Public Transport Services refer to a combination of minimum service quality requirements (such as reliability, comfort, frequency, information prior and during the trip, safety, security, drivers' capacities?) and minimum environmental performance (vehicle's compliance with emission standards, environmental footprint of vehicle maintenance routines, drivers' training in eco-driving practice, management of vehicles and components at their end-of-life?) in public transport. GPTS is a stepping stone towards electrification, as it improves management capacities and users' experience, so that the public transport system can fully benefit of social advantages provided by electric buses in the future. These requirements can be established by regulations, can be included in authorizations or concession contracts or can be voluntarily established by service providers (public or private) as a part of their marketing or social corporate responsibility policies. The compliance with these requirements can be directly controlled by a public authority, certified by a third party or self-certified by the company itself. In the case of self-certification, companies integrate the self-certification procedures in order to improve their performance and efficiency. Self-certification is an attractive option for improvements in any sector when public authorities do not have the capacities and resources to enforce requirements and can be subsequently strengthened through voluntary agreements among those companies willing to implement such requirements in order to move towards a certification procedure made by a third independent party[21]²¹. The provision of service information (planned and real-time) can also be provided by the bus operators or through independent platforms managed by app developers (such as the limited information currently provided by Yallabus in Lebanon).

? Green Fleet Management (GFM). In this project, Green Fleet Management refers to the integration of sustainability considerations within traditional fleet management, a necessary step to reduce the carbon footprint of transport operations in institutions and corporations and to undertake fleet renewal plans factoring-in the environmental performance of vehicle technologies, ultimately accelerating electrification. Traditional fleet management provides corporations and institutions operating car fleets with guidance concerning the optimal size and composition of their fleets, rules for the assignment of vehicles to the different demands (considering travel distance, number of passengers, characteristics of the route?), planning of maintenance activities, or fleet replacement, among others. Fleet management systems typically provide historical records for every car and driver, as well as key performance indicators (maintenance costs, fuel consumption, idling time?) facilitating the identification of gaps and the adoption of remediation actions. On top of the efficiency focus of traditional fleet management, green fleet management includes as a relevant objective, together with costs and economic efficiency, the reduction of the environmental footprint of the company's or institution's car fleet. The latter is usually measured in terms of total GHG and pollutant emissions, although it can integrate other dimensions, such as the selection of the car fleet in accordance with life-cycle impact of the vehicles (including manufacturing and end-of-life disposal). Together with monitoring of vehicles' use and consumption and drivers' behavior, GFM typically includes the

development of fleet replacement plans with a focus on rightsizing and the inclusion of electric vehicles, mobility management measures to encourage ride-sharing and use of alternative transport means (including public transport) for professional trips, and the regular training and awareness-raising of drivers and the whole staff in sustainable mobility choices[22]²².

As a result of the project's components and outputs, it is expected that the current GoL's focus on 'hard' infrastructure investments will be balanced with soft regulatory measures protecting transport users and citizens from the current dominance of car use. The demonstrations with a variety of partners (the municipality of Jbeil, bus operators and ISF) will provide evidence of the competitiveness and social appeal of sustainable mobility solutions, empowering key players (local municipalities, fleet managers and public transport operators) to scale up their results, through self-managed processes to transition towards electric mobility. In this transition, it is recognized that the introduction of EVs (besides the necessary financial resources) needs to be preceded by sound reforms providing better management of the fleet and, in the case of bus operators, higher quality of service. Up-scaling is strongly relying in the project's networking and capacity building of interested stakeholders, as well as in the project's campaigns to increase awareness and support to sustainable mobility options. Assuming that the socio-economic and political conditions in Lebanon improve and the WB's BRT project is implemented, at the end of the project the deployment of sustainable mobility options will be much easier. Besides reducing the environmental footprint of passenger mobility, the project will also provide a crucial change in transport policy, as public transport, walking and cycling (all of them more relevant than car use for women and many vulnerable social groups[23]²³) will gain centrality among decision-makers.

In addition, the project's demonstrations are expected to accelerate the transition to low-emission urban mobility. The current poor quality of sustainable transport modes in Lebanese cities- electrified or not- is unable to attract car users, and needs to be improved with the guidance of consistent quality roadmaps associating public transport and soft modes. Furthermore, public transport operators and public and private and public car fleet managers are unlikely to make use of innovative electric technologies if this not accompanied by clear roadmaps to improve the services they are asked to provide. Last but not least, the project provides long-term sustainability for the future expansion of EVs, generating wider support to more sustainable operational practices and regulatory conditions in which the environmental advantages of EVs can be fully appreciated; this includes strengthened coordination of transport with the sectoral policies in energy and urban planning, so that the electrification transition is consistent with the deployment of renewables and urban codes facilitate the deployment of the charging infrastructure.

The project's strategy includes the mobilization of civil society organizations and especially those supporting gender equality, as a key support for effective implementation. This will also facilitate the effective integration of gender dimensions in the project, as women are better represented within CSOs

than in other projects? stakeholders such as municipalities, bus operators or institutions and corporations with large car fleets.

The project aligns its sustainability and exit strategy with the EV market transition design provided by the e-mob programme (figure below). It is a first step towards mainstreaming of EVs making them competitive in all market segments, while embedding the effort within the national and local governments' actions to improve and expand the public transport system and to modernize the country's fleet

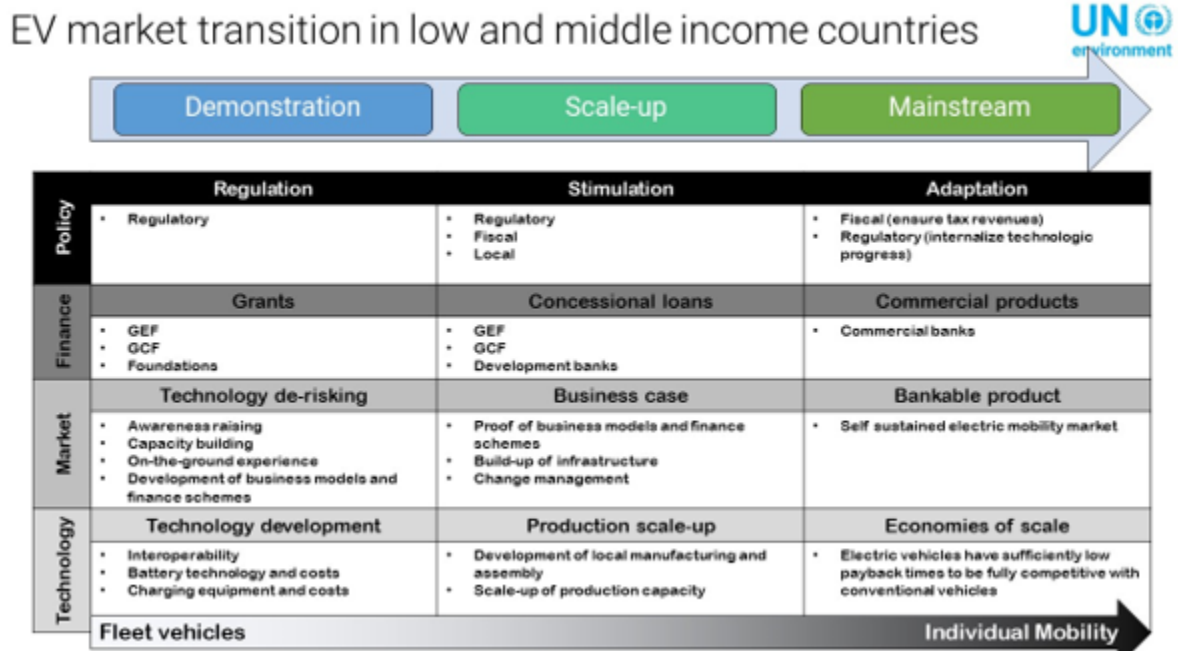


Figure 4: E-mobility strategy (Source: UNEP, Global E-Mobility Programme Framework Document)

The chosen strategy is summarized in the Theory of Change diagram below:

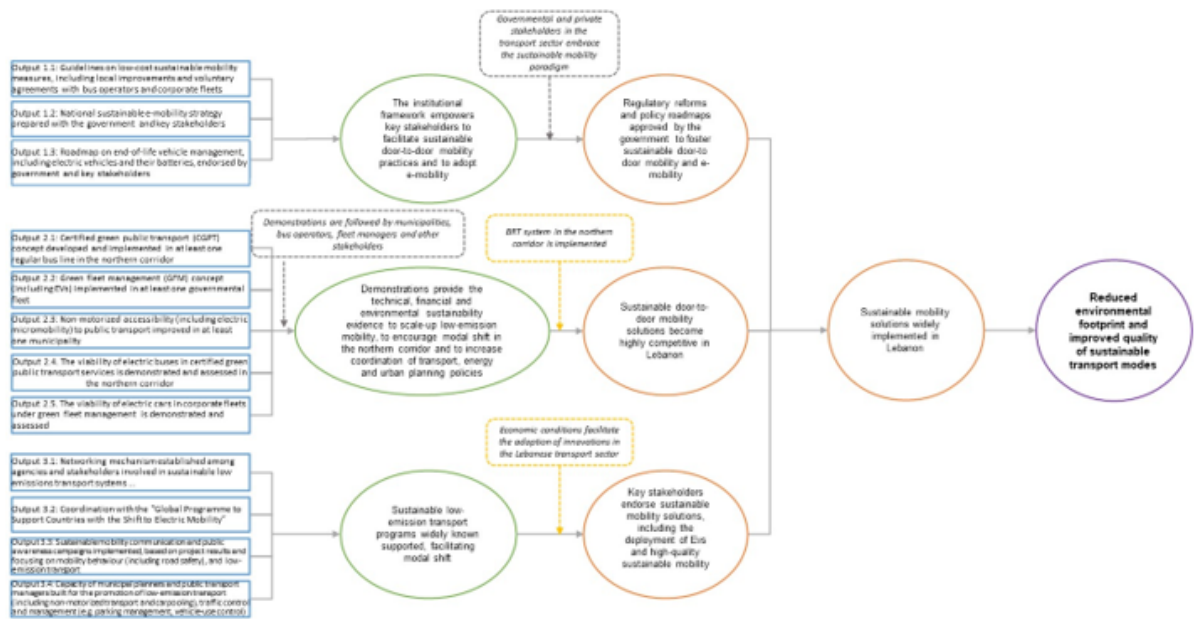


Figure 5: The project's Theory of Change

The main expected result of the project is the reduction of GHG emissions and the reduction of the mobility gap among non-car users (with a disproportionate share of vulnerable groups) and car users through the provision of higher quality alternatives to car mobility (improving bus service quality together with their inter-modality with non-motorized modes) and better fleet management practices.

The project's leading partner within the government is the Ministry of Interior and Municipalities (MoIM). As the key focal point for the relations between the GoL and local governments, the MoIM is in a central position to encourage and support municipalities in facilitating walking, cycling and the use of public transport. Furthermore, MoIM is responsible for the vehicle registration, and can therefore lead a national fleet renewal process fostering electrification. The project contributes to the energy efficiency strategy of the Ministry of Energy and Water (MoEW), which is also relevant in the adaptation of the electric to grid to cope with future EV charging needs. The project also contributes to the climate change mitigation strategy led by the Ministry of Environment (MoE). The Ministry of Public Works and Transport (MoPWT) is responsible of public transport regulations, and is the key partner of the WB in the implementation of the regulatory and operations changes associated to the implementation of the BRT corridors.

As a means to achieve that result, the project also foresees to empower the government and key stakeholders (bus operators and car fleet managers), as well as CSOs that are actively engaged in the sector, to adopt or promote gender-responsive sustainable mobility practices and to foster universal accessibility, including transitioning towards electrification.

The project intends to achieve these results through three components delivering outcomes that address the institutional, technical and cultural barriers mentioned in the previous section, and one additional component providing project monitoring and knowledge management:

COMPONENT 1: Institutional and policy support for the promotion of sustainable transport systems and e-mobility.

Outcome 1: The institutional framework empowers key stakeholders to facilitate sustainable door-to-door mobility practices and to adopt e-mobility.

This outcome addresses the institutional barrier, providing a strengthened environment to support the promotion of sustainable low-emission transport systems and modal shift. In accordance with the central role of the civil society in the reconstruction and recovery plans, the project expects to build such support from institutions (through a newly established Sustainable and Electrified Mobility Subcommittee within the already-existing Climate Change Committee) and from civil society organizations active in the transport sector (through their involvement in the design of guidelines aiming at sustainable mobility and electrification).

The project does not intend to push for changes in the current legislation concerning vehicle approval and taxation. Such legislative changes have already been approved (as stated in the context section above), although the financial crisis have prevented any investments in EVs or charging stations. In the case of public transport, substantial legislative reforms (including concession contracts for the exploitation of BRT and feeder lines and reform of RTPA, the public transport authority) are envisaged within the implementation of the BRT project with WB support. Changes in legislation may be necessary to facilitate the deployment of the charging network, but these changes can only be undertaken once the legislative reforms in progress to support the deployment of renewables and the resilience of the electricity grid are implemented. Accordingly, the project will provide guidance on these regulatory reforms within the e-mobility strategy.

Financing of imported vehicles for fleet renewal (or any other purpose) is all but unavailable to most Lebanese companies under the current socio-economic crisis. Therefore, the project cannot put in place financial schemes to facilitate access to EVs. However, the project can work together with the interested stakeholders (e.g. the Lebanese financial industry and vehicle importers and dealers) so that future lending and leasing facilities can also target EVs.

The enhanced institutional environment will facilitate the implementation of top-down initiatives to inform the national government's future policy (to be enshrined in a national e-mobility strategy), whereas the enhanced social environment will encourage bottom-up actions empowering key private and public stakeholders (such as bus operators, municipalities and institutions and companies managing large car fleets) to adopt sustainable mobility practices, including electrification options, on a voluntary basis, respecting the existing legislation while offering a clear way forward to those stakeholders eager to seize the opportunities linked to transport innovations: in the case of car fleet managers, the cost and environmental footprint reductions that EVs and innovative fleet management can provide; in the case

of bus operators, the passenger increase expected from higher service quality; in the case of municipalities, the improved public space conditions and the reduction in car pressure due to the facilitation of door-to-door sustainable mobility through improved walking, cycling access conditions to bus stops, as in the absence of these conditions, public transport services- even with the BRT operating- are unlikely to attract many car users.

This outcome is achieved through the delivery of the following project outputs.

Output 1.1: Guidelines on low-cost sustainable mobility measures, including local improvements and voluntary agreements with bus operators and corporate fleets. These guidelines intend to create favourable conditions that can subsequently facilitate the future deployment of electric drive technologies. Three groups of stakeholders (cities, bus operators and large car fleet managers) are targeted by these guidelines.

Local accessibility improvements are a prerequisite for the feasibility of multimodal door-to-door mobility options in cities and are critical for the deployment of passenger e-mobility. EVs are not intended to merely replace ICE vehicles, but to go hand-in-hand with the development of multimodal alternatives to private car use, in which they can materialize their huge sustainability potential. The physical reconfiguration of the urban space is a pre-condition for this, in order to accommodate the expected growth in walking, cycling and micromobility options facilitated by the new array of electric devices. The upgrading of public transport stops is also necessary to facilitate the exchange between these soft modes (old and new) and an invigorated public transport system integrating feeder lines and trunk BRT services operated by e-buses, as envisaged in the WB-financed Greater Beirut Public Transport Project (GBPTP). These local improvements are the responsibility of municipalities, usually with few economic and technical resources and many competing policy priorities. The project will provide basic guidance and ready-to-implement designs of low-cost improvements consistent with these future needs, to safely accommodate the users of future e-bikes and electric micromobility devices without interfering with pedestrians and conventional bike users, and to improve the safety and comfort conditions at bus stops and a seamless transfer experience from soft modes, electric or not, to bus services, encouraging the future use of e-buses, facilitating their routing and schedules and encouraging connectivity. The guidance material will be developed closely with the Jbeil municipality and will be integrated into the urban management plan it is designing. Ultimately, the guidance material and approaches to improve low-cost sustainable mobility will be provided to the Ministry of Interior to be shared with other municipalities and/or can be shared by UNDP directly with interested municipalities in the region and along the northern corridor for replication.

Bus operators are in need of support to identify low-cost improvements to increase their efficiency and their customers' satisfaction, empowering them to undertake their future transition to the use of electric drive technologies and to the integrated system envisaged in the WB-financed GBPTP. Similarly, large car fleet managers (corporations and institutions), which can find low-cost measures to improve the efficiency of their fleets, as a way to prepare their own transition towards an electrification scenario, which requires adequate skills to deliver the expected benefits to car fleet owners. Voluntary

agreements in different sectors have proven useful to engage and mobilize key stakeholders in pursuing environmental objectives without requiring enacting direct governmental regulations[24]²⁴.

The project initially targets two areas with substantial potential in terms of GHG emission reduction and future electrification: bus services and large car fleets. In both cases, the project will provide guidance to interested beneficiaries on how to properly manage their fleets to reduce their environmental footprint (which is usually associated also with long-term cost savings). Additionally, guidance to bus operators will include the identification of some quality thresholds, which should result in higher quality of service and the ability to attract more customers. Several international standards (e.g., EN 13816[25]²⁵) provide a useful basis to establish a framework consistent with the national context in Lebanon. Companies and institutions adhering to such voluntary agreements (GPTS in the case of bus operators and GFM in the case of fleet managers) can establish their self-regulated bodies to monitor progress in compliance levels and approve the integration of new members. They can also include such compliance in their corporate strategies on social and environmental responsibility and within their marketing and branding strategies to attract new customers.

The civil society will be actively engaged in this output. As identified in the stakeholder engagement plan, there are several Lebanese CSOs working in the promotion of sustainable mobility and interested in electrification. Their contribution will provide a better understanding of the users' priorities, the barriers for their acceptance of multimodal options and the identification of short-term and low-cost actions that can be immediately implemented.

These guidelines also provide the basis for the subsequent definition of the demonstrations included in component 2. The guidelines on local improvements will be used in the design of the demonstration in Jbeil; the guidelines for bus operators will be the basis to establish the GPTS concept to be demonstrated with the use of e-buses; and the guidelines for car fleet managers will be the basis for GFM and for the ISF fleet management demonstration including the use of 4 EVs. The guidelines will be validated with all stakeholders (including CSOs), presented to the government and widely disseminated among bus operators and private sector companies managing large fleets to share lessons learnt and replicate their use, particularly once the benefits are observed.

Three bus operators have initially confirmed their interest in developing and implementing such voluntary agreements. Their characteristics are summarized in the table below.

Company name	Number of buses	Of which, over 10?m	Main lines served	Total staff	Of which, bus drivers
Connexion	24	14	Tripoli-Jbeil-Beirut	17	9

Company name	Number of buses	Of which, over 10?m	Main lines served	Total staff	Of which, bus drivers
Connex Liban SAL	62	(50 over 7 m)	Tripoli-Jbeil-Beirut	140	70
Ahdab Commuting & Trading Company	25	NA	Tripoli-Jbeil-Beirut	30	25

Table 2: Bus operators interested in the project's voluntary agreements

Four car fleet managers have initially confirmed their interest in developing and implementing such voluntary agreements. Their characteristics are summarized in the table below.

Company name	Number of cars (M1) registered	Number of drivers
Aramex	70	130
DHL	45	45
Totters	TBA	TBA
Red Cross	? > 650	800 (approx.)

Table 3: Car fleet managers interested in the project's voluntary agreements

The contents of this output are well aligned with the GoL's policies to improve fleet management and public transport systems, as stated in the co-financing letter provided by MoIM.

This output will include the following activities:

? Activity 1.1.1: Guidelines to municipalities to facilitate door-to-door sustainable mobility and to implement short-term actions, with a focus on intermodality between public transport and non-motorized modes. The guidelines will focus on local conditions in the northern corridor, and particularly in the municipality of Jbeil. The guidelines will be prepared through a participatory process steered by the PMU and involving CSOs (providing the perspective of different residents and users? groups), transport stakeholders and municipal and national governments. This activity includes the publication and dissemination of the guidelines by the project, and its presentation to the GoL for their endorsement and further dissemination, through the MoIM.

? Activity 1.1.2: Guidelines addressing the legal, financial and regulatory aspects related to the implementation of Self-Certified Green Transport agreements, including review of international best-practice. The guidelines will be prepared through a participatory process steered by the PMU and involving CSOs (providing the perspective of different residents and users? groups), bus operators and other transport stakeholders and municipal and national governments. This activity includes the

publication and dissemination of the guidelines by the project, and its presentation to the GoL for their endorsement and further dissemination, through the MoIM.

? Activity 1.1.3: Guidelines addressing the legal, financial and regulatory aspects related to the implementation of Self-Certified Green Fleet Management agreements, including review of international best-practice. The guidelines will be prepared through a participatory process steered by the PMU and involving CSOs (providing the perspective of different residents and users' groups), fleet managers, car dealers and other transport stakeholders and the national government. This activity includes the publication and dissemination of the guidelines by the project, and its presentation to the GoL for their endorsement and further dissemination, through the MoIM.

Output 1.2: National sustainable e-mobility strategy prepared with the government and key stakeholders. The national sustainable e-mobility strategy addresses four key areas: (i) the expansion of EVs^[26] within the vehicle fleet in Lebanon, with a focus on bus, institutional and corporate fleets, including the consideration of incentives based on international best practice; (ii) door-to-door sustainable e-mobility, including convenient access to a public charging network and to electrified public transport services, as well as the conditions for the deployment of soft e-mobility (e-bike sharing, and micromobility options) and their integration with public transport (main bus stops as ?e-mobility hubs?); (iii) the role of electrification in the modernization of the public transport system, including guidelines for integrating EVs into the energy system to avoid rebound effects; (iv) the role of EVs in the country's transition towards renewables and distributed generation, and (v) government's guidelines for the involvement of national and international financial institutions in financing the e-mobility transition. Economic impacts, geographical deployment and environmental and social dimensions that are key for the development of these four intervention areas will be considered and integrated into the strategy. To this end, the national e-mobility strategy will provide guidelines on technological and industrial development, legal and regulatory framework reforms needed, and a strategy to raise awareness and build capacities in support of e-mobility implementation. Financing policy guidelines will be established in consultation with international and national financial institutions for creating an enabling environment to determine future funding options that may be available to upscale e-fleets in both the public and private sectors (to be further developed in component 3). A gender analysis and action plan will be included in the strategy to ensure EV deployment in Lebanon is gender-responsive and contributes to gender-equality in the energy and transport sectors.

The contents of this output are well aligned with the GoL's policies to improve energy efficiency in the transport sector and to mitigate GHG emissions, as stated in the co-financing letters provided by MoEW and MoE. The e-mobility strategy will also build on the NDC agenda and the work on climate mitigation. The MoEW will steer the process for the government's endorsement and approval of the e-mobility strategy, following the existing NDC coordinating body. It will be integrated, to the extent possible, within the national reform agenda.

This output will include the following activities:

- ? Activity 1.2.1: Assessment of progress in NDC transport targets and NAMA initiatives completed. This activity updates the baseline of sustainable transport initiatives in Lebanon, on which the project will build-up its contributions. Data collected during this activity must be gender-disaggregated, whenever feasible.
- ? Activity 1.2.2: Guidelines, including financial models and incentives, to support the supply and access to EV in Lebanon (focus on bus operators corporate and institutional car fleets).
- ? Activity 1.2.3: Study on electrification options for the Lebanese fleet (car and bus fleets), including future electricity demand by EVs, deployment of renewables, integration of EVs into the energy system, challenges for the national electricity grid and regulatory reforms needed for the deployment of charging stations.
- ? Activity 1.2.4: Drafting the national e-mobility strategy.
- ? Activity 1.2.5: Gender analysis and action plan and strategic environmental and social assessment (SESA) of the national e-mobility strategy.
- ? Activity 1.2.6: Integration in the national e-mobility strategy of lessons learnt and technical challenges identified during the project demonstrations (including results from the integrated lifecycle analysis for the use of the EVs).
- ? Activity 1.2.7: Setting up an institutional coordination body (Sustainable and Electrified Mobility Subcommittee within the national committee on climate change) to promote the endorsement of the national e-mobility strategy by key stakeholders and its implementation. The coordination body is expected to be chaired by the MoIM. The project will provide secretarial and organizational support to this Subcommittee. It will include national and local governmental institutions, and may also be open to the participation of the private sector, academia and civil society (which are expected to interact more intensely within the e-mobility network established through output 3.1). This Subcommittee will enable convergence among the various ministries and public institutions involved in e-mobility and more generally in sustainable transport, facilitating the preparation and approval of official policies and regulations, and will also serve as an entry point for partnerships with non-governmental stakeholders. Two stages are envisaged: initially, the key stakeholders will be convened with support from the project to establish and agree upon a mandate and working plan for the coordination space. Once finalized, the joint working plan will be delivered to the various governmental institutions involved in order to establish the adequate formal structure within the government.

Output 1.3: Roadmap on end-of-life vehicle (ELV) management, including electric vehicles and their batteries, endorsed by government and key stakeholders. This roadmap will consider ELVs components, with a focus on EVs and their batteries, including the promotion of second-life use. There is limited documented information on current end-of-life vehicle ELV management practices in

Lebanon (no information on the rate of vehicles that are properly disposed or on the vehicle withdrawal rate); as ELV management generates valuable products, it usually is organized on a B2B basis, however without the intervention of producers; this can generate environmental hazards due to inadequate (or lack of treatment) of particular components (e.g., tires, lead batteries or lubricants). As identified at the Social and Environmental Screening, the future management for EVs at their end-of-life raises two challenges in Lebanon: on the one hand, the need to strengthen current waste management chains for ELV, or at least for some components; on the other hand, the need to introduce an adequate management approach for the EV battery. The management of ELVs and their parts, particularly batteries, falls within the mandate of the Ministry of Environment, which will be engaged in the development of the roadmap. The technical recommendations will feed into the national solid waste management strategy of the Ministry of Environment, which builds on Law 80 of 2019 on National Solid Waste Management.

In March 2021, UNDP started one project on e-waste management in Lebanon, with the support of the Government of Japan. The project includes analysis of battery recycling management and studies on disposal practices, as well as technical support related to e-waste (see UNDP co-financing letter). It provides an excellent basis and complement to this output.

Although still at its infancy, EV battery management is likely to be organized globally around the use of batteries for energy storage (second life), rather than recycling. Demand for energy storage systems is likely to increase substantially in Lebanon, considering current supply shortages and the strong market forces towards the expansion of a distributed renewable generation system. It is unclear whether the original EV (or battery) producer should be held responsible for the second-life use of its batteries, or whether this can be left to market forces, due to the relatively high value of used batteries. There is however a case to implement an EPR approach, in order to extend the lifespan of batteries as much as possible, as the production of a Lithium battery can emit between 39 kg CO₂e/kWh and 196 kg CO₂e/kWh: finding a new use for EV batteries when they are no longer fit for their original purpose is a smart way to reduce their carbon footprint, before recycling. At the global level, battery recycling is aiming at including some kind of credit system so that manufacturers using recycled materials can claim the associated emissions reduction. The project will align its ELV management guidelines to these global trends and in particular will make use of the lessons learnt from the Global E-mobility Programme, as well as from other UNDP e-mobility projects.

In order to address all these issues comprehensively, while focusing on the promotion of second-life battery use, this output will include the following activities:

? Activity 1.3.1: Roadmap on end-of-life vehicle management. Based on the lessons learnt from other UNDP projects and from the Global E-mobility Programme, the roadmap will be drafted through a participatory process and in close coordination with the Ministry of Environment, and will be supported by PMU's advocacy and promotional activities to secure timely approval.

? Activity 1.3.2: Strategic social and environmental assessment (SESA) of the ELV management roadmap.

? Activity 1.3.3: Business models for second life of EV batteries and end-of-life management of EVs. This will require the screening of successful financial and business models on ELV components and second-life battery use, and the subsequent development of commercially viable business models for Lebanon, including cost benefit analysis and estimates of investment needs and financing options.

COMPONENT 2: Short-term barrier removal through e-mobility and other low-carbon demonstrations

Outcome 2: Demonstrations provide evidence of technical, financial and environmental sustainability to plan for scale-up of low-carbon electric mobility, to encourage modal shift in the northern corridor and to increase coordination of transport, energy and urban planning policies.

This outcome addresses the existing technical, financial and environmental barriers. The demonstrations provide technical evidence to subsequently scale-up low-emission mobility and to encourage modal shift in the northern corridor and in the rest of the country. Furthermore, the demonstrations are expected to strengthen the case to undertake improved coordination of transport, energy and urban planning policies during the electrification transition. In the past, plans, projects and policies have been designed to foster sustainable mobility, but their implementation has often been hampered by institutional barriers and financial constraints, particularly in the last two years. Therefore, the project adopts a bottom-up approach to demonstrations, working directly with a few stakeholders that can immediately implement reforms in their practices. Their experience can have a significant impact and serve as references to other stakeholders and the general public.

The three project demonstrations build upon the guidelines developed in Component 1 and provide complementary alternatives to the problems associated to car dominance. They are also consistent with the GoL's long-term plans to improve public transport through the WB's financed Greater Beirut Public Transport Project (GBPTP, see WB's co-financing letter), expected to be completed by 2031, to encourage the efficient use of cars (see MoEW co-financing letter) and to support municipalities in the promotion of alternative modes (see MoIM co-financing letter). The latter is of particular relevance: whereas the promotion of walking and cycling strongly relies in local action, and much can be done without relatively scarce financial resources, municipalities lack technical capacities, guidance and reference models to undertake this. Ironically, lack of action on this front results in limited use of public transport, as the conditions in the walking or cycling trip to and from the bus stop can discourage users, and take them back to cars (a critical challenge for the GBPTP project). The plans included within the current reform agenda are intended to provide adequate response to the current situation in the country. With the same purpose, and the WB is considering the redesigning of the GBPTP, in order to better align it more with the expected increase in the use of public transportation and to better serve users' mobility needs from a door-to-door perspective. In this sense, the demonstration projects will provide the needed data and to mainstream lessons learnt to improve the design and operations envisaged for on e-mobility and accessibility within the GBPTP, to facilitate transfer from soft modes and to make the most of the contributions that electric drive technologies can provide.

Accordingly, the project will provide demonstrations in the areas of public transport services (working with bus operators), car fleet management (working with the national police department (Internal Security Forces, ISF)) and facilitation of door-to-door travel through improved intermodality between non-motorized modes and public transport (working with the municipality of Jbeil, located in the area to be served by the future BRT northern corridor). In the three cases, the contributions of electrification are at the centre of the demonstrations: In the first two cases, the demonstrations will also include the use of EVs; in the third case, the facilitation of door-to-door mobility will consider the integration of the new opportunities offered by electrification (not only through the electrification of public transport, but also with the expansion of e-bikes and electric devices for micromobility and the facilitation of intermodal transfers, even if these deployments will have to wait until the Lebanese socio-economic context improves), and provide suggestions to adapt streets, bus stops and public spaces accordingly. Through these demonstrations, the project's partners will provide factual evidence of their benefits, and useful implementation lessons to their peers, encouraging them to adopt similar sustainable mobility practices.

All the project demonstrations include two levels of stakeholders: core stakeholders, directly involved in the implementation and operation of the demonstration, and followers, participating in the monitoring and of the demonstrations and in the dissemination of results, lessons-learned and conclusions and in the discussion on follow-up actions. The core stakeholders are the MoIM, the municipality of Jbeil, ISF and the bus operators selected for the operation of the electric buses. Of them, MoIM plays a particular critical role, as the project's focal point in the GoL: on top of its role as ministry in charge of ISF, MoIM is expected to facilitate the administrative authorizations for implementing all the demonstrations (e.g. importing and registration of the electric vehicles and associated infrastructure, technical clearance of project's interventions in Jbeil, if needed, etc.). CSOs and research institutions active in the mobility field will be engaged since the design activities of the demonstrations in component 2.

All the project demonstrations include two levels of stakeholders: core stakeholders, directly involved in the implementation and operation of the demonstration, and followers, participating in the monitoring and of the demonstrations and in the dissemination of results, lessons-learned and conclusions and in the discussion on follow-up actions. The core stakeholders are the MoIM, the municipality of Jbeil, ISF and the bus operators adopting the GPTS concept and selected for the operation of the electric buses. Of them, MoIM plays a particular critical role, as the project's focal point in the GoL: on top of its role as ministry in charge of ISF, MoIM is expected to facilitate the administrative authorizations for implementing all the demonstrations (e.g. importing and registration of the electric vehicles and associated infrastructure, technical clearance of project's interventions in Jbeil, if needed, etc.). CSOs and research institutions active in the mobility field will be engaged since the design activities of the demonstrations in component 2.

Other stakeholders will be engaged as followers. These include other ministries and agencies in the GoL (MoEW, MoE, MTPW, RPTA?), all interested bus operators, institutions and corporations managing large car fleets and municipalities. The engagement activities are described in component 3. Core stakeholders and followers will meet at the e-mobility network established in output 3.1. The network will be regularly informed of the demonstration monitoring activities and results. The

dissemination of the demonstrations? results will follow the guidelines of the project dissemination plan developed in output 3.3 (see description of component 3 for details).

The public transport demonstration is based on the voluntary implementation of the Green Public Transport Services (GPTS) concept by a few interested bus operators in some of their services in the northern corridor, and their access to the temporal (3 -6 months, depending on the number of participating bus operators) use of one electric bus. These pilots will allow bus operators to assess the users' response to improvements in the quality of bus services and their associated costs and benefits, as well as to gain direct access and know-how about the EV technology. In this way, these operators will be empowered to adapt to the changing conditions that the northern BRT corridor will bring in the future. Those bus operators not participating in the demonstration will also benefit from these demonstrations, through the project's dissemination activities and knowledge management platform.

Procurement, ownership and operation of the project e-buses

Procurement

Main technical characteristics of the e-buses:

- ? Vehicle length: 12-m, with capacity (seating and standing) for 80 passengers
- ? Maximum motor power: 2x150 kW
- ? Maximum climb gradient: 18%
- ? Battery capacity: 350 kWh
- ? GPS tracking system including information of km travelled, number of passengers.

The availability of e-buses in Lebanon has been confirmed by their manufacturers or by local importers for the brands Yutong, BYD, VDL and Solaris.

The procurement can be made by UNDP (e-buses to be owned by UNDP or to be transferred to a third party) or by a third party.

Ownership

The main difficulties are linked to the financial crisis in Lebanon: the purchase of any e-bus must be paid in advance in USD at a time of extreme volatility of the local currency and capital control mechanisms temporarily in place. Lending by financial institutions has all but disappeared. Under these conditions, the usual contributions to the demonstration of e-buses in other countries become unsuitable for Lebanon: Even if the project provides the difference between the e-bus and a regular bus or if the project provides a generous compensation per veh-km operated with e-buses, there are no bus operators that can envisage to invest in new buses at all.

There are several ownership options: (1) ownership by UNDP, (2) private ownership by the bus operator, (3) private ownership by another for-profit private entity (e.g. the e-bus manufacturer or importer); (4) ownership by a not-for-profit third party (an electric utility, an NGO or a project's responsible party).

Option (1) is feasible in Lebanon. UNDP has already experience in the ownership of GEF's project's assets (Small Decentralized Renewable Energy Power Generation Project), to cope with the political and financial challenges in the country). Under UNDP's ownership, some bus operators, complying with certain minimum requirements and commitments, can make use of the e-buses for a period of time, reporting UNDP about the results and gaining first-hand experience on the advantages of the new technology, facilitating their subsequent transition towards electrification.

Option (2) is not feasible in Lebanon, due to the economic crisis, as bus operators lack financial resources to purchase buses, even if they could subsequently recover part of the investment through the project's payments for operating the e-buses during the project demonstration.

Option (3) is feasible, although extremely difficult, due to the economic crisis, as manufacturers and local importers do not have expectations in the short-term about a demand for new buses (electric or not) in Lebanon, due to the economic crisis. They cannot expect to recover the full investment in buses from the project. After project termination, they would need to sell or lease them to bus operators, but it is uncertain that they can find an interested partner for doing so. Another challenge is the relationship between the e-bus owner and the e-bus operator, which could interfere with the demonstration.

Option (4) is feasible, although there are no obvious reliable partners. There is no association of bus operators in Lebanon. The government (RTPA or MoIM) or the electricity utility (EDL) do not have the resources and capacities, although this is expected to change by the end of the project. An academic & research partner (e.g. Lebanese American University, LAU) seems a feasible option, but cannot guarantee that the e-buses will continue operating after the project's termination.

E-bus are operated by regular bus operators, selected through a competitive process, in which certain minimum requirements are set including service quality standards, insurance, provision of the operation permit (red plate). The selection of the operator is made by the bus owner (UNDP, for-profit private entity or not-for-profit private entity).

The e-bus operator must contract full-coverage insurance during the project demonstration. This will reduce the risk of the demonstration being interrupted in case the e-bus gets involved in an accident and needs to be repaired.

The compensation provided by UNDP will take into account insurance costs and other incremental costs incurred by the bus operator (assuming that the e-buses are replacing the operator's regular buses) and will be paid in accordance with the kilometers actually driven by the e-buses during the demonstration.

Contractual arrangements

Depending on bus ownership, different contractual arrangements are possible:

- (1) UNDP ownership. Two contracts are necessary: one for the procurement of the e-buses and one for its operation.
- (2) For-profit third-party ownership. One contract is necessary, for providing the regular e-bus services during the project demonstration.
- (3) Not-for-profit third-party ownership. One contract is necessary, stating the commitments of the third party (including the arrangements for the operations during the demonstration and transferring the funds for purchasing the e-buses).

Ownership transfer at the end of project

This is an issue in the case that the e-buses are procured by UNDP or by a not-for-profit third party. In both cases, the e-buses are expected to be transferred to MoIM or to the Municipality of Jbeil, so that the GoL or local authority can continue lending them to interested bus operators in the country and therefore ensure sustainability. By the time this takes place, it is expected that the financial situation in the country would have stabilized and market incentives would have kick-in to encourage the operation of these buses.

Project's approach

The project's budget, procurement plan and indicative ToR are based on option (1) (UNDP ownership and two contracts). Depending on the conditions at the time of the demonstration design, these elements provide all the information needed to move to options (2) or (3).

The selection of the bus operators participating in the demonstration will be established through an open and competitive procedure, based on their technical capacities and experience, their commitment to comply with the terms of the 'green public transport service' concept, the economic compensation requested for the kilometers of service provided during the demonstration, and subject to the provision of registered plates and full insurance for the vehicles. Two electric bus will be procured by UNDP, lend to each participating bus operator in the framework of a contract establishing responsibilities and monitoring commitments, and transferred to MoIM (in accordance with the project's results and lessons learnt) at the end of the project. MoIM is committed to make the e-buses available to other

interested bus operators and to municipalities interested in using them in their own public transport services as a way to increasing awareness and interest on the use of this technology in public transport. The car fleet demonstration is based on the voluntary implementation by the partner entity (ISF) of the Green Fleet Management (GFM) concept, including issues such as effective and timely car maintenance procedures, prioritization of cleaner and low-carbon vehicles (including EVs) in procurement and fleet renewal plans, staff behavior (e.g., eco-driving), and the inclusion of sustainability indicators (e.g. GHG emissions) in the fleet monitoring dashboard. As a way to gain direct access and know-how on EV technology, the project will transfer up to 4 electric cars to ISF, which will be regularly monitored together with the whole GFM system, during the whole demonstration.

At the time of preparation of this document, the use of electric cars in this pilot seemed feasible and provided the best option to introduced electric cars in Lebanon. Concerns about the reliability of electricity supply were solved by the fact that ISF enjoys priority service and has reliable electricity generation back up, if necessary. However, if the conditions in Lebanon further deteriorate, the project would procure plug-in hybrid or hybrid electric cars, instead. Both options offer GHG emission reduction potential similar to electric cars, considering the emission factor of electricity generation in Lebanon.

The procurement of electric buses and electric cars will be done by the UNDP following a competitive and transparent bidding and selection process. Supplier contracts shall include clauses for performance monitoring, vehicle servicing and training of drivers and maintenance staff from the participating entities (ISF and bus operators).

The preparation of the RFP requirements and the subsequent review and assessment of the proposals received for the operation of the e-buses will include a third-party expert to verify that the subsidy provided does not exceed the incremental costs incurred while operating the electric buses (including insurance), compared to the conventional buses of similar performance they are replacing.

Procurement, ownership and operation of the project e-cars

Procurement

The procurement of 4 electric cars will be made by UNDP with the following technical characteristics:

- ? Minimum Battery capacity 35 kWh; engine power: 100 kW; GPS tracker and fleet management software.
- ? The procurement contract includes a 4-year warranty and free-of-charge maintenance for at least 3 years.
- ? ISF commits itself to keep digital records of each car use, consumption and maintenance requirements, through the GPS tracker and software system provided by the project.
- ? The procurement includes the provision of a car fleet management software and the provision of 10 GPS trackers (4 for the project cars, 6 for conventional cars in the fleet, to serve as a baseline).

Ownership

The electric cars will be transferred to ISF at the beginning of the project demonstration, and will remain under ISF property after project completion.

Operation

ISF commits itself to make use of each car for at least an average of 1,500 km per month during the project demonstration period.

ISF will provide full-coverage insurance of the four cars during the project demonstration period. A dedicated amount will be allocated in the ISF budget to cover any damage/accident.

The demonstration on sustainable door-to-door travel will be based on the previous development of a technical study in Jbeil (benefiting with the on-going work in progress for the preparation of the Urban Master Plan) to establish a comprehensive roadmap for the improvement of walking and cycling accessibility to key bus stops. Modal shift to walking and cycling remains one of the most effective measures for GHG mitigation, and mostly relies on the action of local governments; this is acknowledged in the Urban Master Plan Jbeil is currently drafting, and the project demonstration will help to further develop this topic in the city (as stated in the co-financing letter provided by this municipality). Walking and cycling often require friendly conditions in the urban spaces (which not necessarily need to result in costly street reconfigurations and public works) pedestrians and cyclists travel through, and the demonstration will serve to test these conditions, based on the guidance provided by Component 1 and best international practice. Finally, there is little chance that public transport can attract current car users without convenient walking and cycling access to bus stops. This makes of this topic an essential contribution of municipalities for the success of the future WB's GBPTP, as it provides the adequate last-mile access to bus stops prior to the expected restructuring of

the BRT feeder bus lines and stops that will take place by 2031, once the BRT infrastructure has been completed.

The project will select a number (2 to 4) of bus stops to take part in the demonstration. Detailed construction projects will be prepared for these bus stops through a participatory co-creation process, and a monitoring plan will be implemented including number of passengers using the bus stops, the public's awareness, acceptance and satisfaction, safety and security or universal accessibility, among others.

Output 2.1: Self-certified green public transport services (GPTS) concept developed and implemented in at least one regular bus line in the northern corridor. This output provides the detailed adaptation of the GPTS concept (developed in output 1.1) to the conditions of the demonstration. A feasibility study with the participation of the interested bus operators and municipalities in the northern corridor will provide the agreed specifications to be included in the GPTS concept, and the conditions to participate in the pilot. The selection of the participating bus operators will follow, based on an open and competitive process. The project will subsequently provide technical support to the selected bus operators to implement the GPTS specifications in their bus services and to build-up a self-certification procedure with the cooperation of all the participants, so that they can establish adequate internal controls of compliance with the GPTS requirements, and the PMU can receive regular reporting and eventually provide support to improve compliance.

This output provides an opportunity to help bus operators to move towards a post-COVID environment. COVID has generally disrupted public transport operators (PTO) around the world, with a collapsing demand following mobility restrictions and raising operating costs to cope with additional sanitation requirements. Mobility patterns under COVID have also shown some opportunities, raising general awareness about the advantages of partial trip avoidance (e.g. through teleworking or teleshopping), increasing the support to car restriction measures and urban space reallocation and the vital role played by public transport. Most PT customers have also become more aware about the relevance of quality of service, including the provision of safe travelling environments. The project will explore, and include within the GPTS, specifications to provide services that will improve the customers' experience and regain their trust in regular bus services. The PTS concept will also include specifications on service resilience, disruption contingency plans, contactless accessibility (e.g. ticketing), passenger identification, cleaning and sanitation, asset repurposing and a general approach to engage with clients, in accordance with UITP's COVID recommendations^[27].

This output will include the following activities:

? Activity 2.1.1: Feasibility study on the green public transport service concept to implement them in the bus operators in Lebanon. Following the guidelines established in output 1.1, this exploratory activity identifies the concrete key performance indicators, targets, and internal control mechanisms to establish for the participating bus operators.

? Activity 2.1.2: Participating bus companies and services (existing bus lines) selected, and GPTS operational, monitored and evaluated. The selection of the participating bus companies will include a private sector risk analysis.

? Activity 2.1.3: GPTS certification procedure established.

Output 2.2: Green fleet management (GFM) concept (including EVs) implemented in one governmental fleet. This output provides the detailed adaptation of the GFM concept to the conditions of the demonstration. As, during the project design stage, ISF has been identified as a suitable institution to undertake the pilot, the GFM concept will be adapted to its particular conditions. However, the feasibility study will be open to the participation of other interested public and private fleet managers. As ISF manages a large car fleet, with different models, the project will need to identify which part of the fleet is suitable to undertake the pilot (including the replacement of 4 units by electric cars, see output 2.5). The project will subsequently provide technical support to ISF to implement the GFM specifications in the demonstration fleet.

This output will include the following activities:

? Activity 2.2.1: Planning and implementation of the green fleet management concept in ISF. This activity adapts and implements the GFM concept designed in component 1 to the particular conditions of ISF. It includes the preparation of a GFM implementation roadmap for ISF and capacity-building on ecodriving training and fleet management to the relevant staff. This activity also establishes the monitoring and evaluation framework to be implemented in activities 2.2.2 and 2.5.3.

? Activity 2.2.2: Pilot fleet selected within ISF, and GFM operational, monitored and evaluated. Monitoring data are collected by ISF following the procedures indicated in the evaluation framework provided by activity 2.2.1, including weekly reporting for each vehicle in the selected pilot fleet of mileage, drivers, fuel consumption, maintenance operations and incidents.

Output 2.3: Non-motorized accessibility (including electric micromobility) to public transport improved in at least one municipality. This output provides the demonstration of a variety of design options to facilitate the walking or cycling access to bus stops. The walking or cycling stage is often the weak link in the multimodal door-to-door trip, reducing the appeal of public transport and hampering the mobility of its users, especially women and other vulnerable groups. As electric drive technologies provide new alternatives (e.g. e-bikes and micromobility devices), which attract additional users, including vulnerable ones, there is a need for alternative designs with a more adequate distribution of the space and safer conditions for pedestrians, cyclists and users of electric devices to reach at least the main bus stops. These designs will be materialized around and inside the bus stops, including adequate width, pavement design and conditions, continuity of itineraries, protection and priority from general traffic and commodities at the bus stops. During the project design stage, the municipality of Jbeil was identified as an optimal partner for this demonstration. Jbeil is currently revising its master Plan, is

located within the future northern BRT corridor, has a substantial commuting flow with Beirut and has previous experiences in the implementation of sustainable mobility measures. The project will assess the accessibility conditions to bus stops and the profile of their current and potential users, and will develop design options to increase their accessibility and convenience. Subsequently, the project will implement the recommended improvements in 2 to 4 bus stops, through a co-creation design process involving bus users and residents ensuring the involvement of women and other vulnerable groups, and the project will monitor and assess the accessibility gains obtained for different user profiles. The location of the main bus stops in Jbeil is presented in the Figure below.

Figure 6: Location of the main bus stops in Jbeil

This output will include the following activities:

? Activity 2.3.1. Accessibility criteria and conditions defined and pilot sites selected. In accordance with SESP and ESMF, the selection of the pilot sites will take into consideration their resilience to extreme weather events and changes in climate, building upon the municipal services' experience.

? Activity 2.3.2. Detailed construction plans developed (including ESMP), implemented and monitored in the pilot sites.

? Activity 2.3.3. Report on results, lessons learnt and replication options.

Output 2.4: The viability of the use of electric buses in certified green public transport services is demonstrated and assessed in the northern corridor. This output builds upon the results of output 2.1 in order to facilitate the transition of bus operators towards the use of electric buses. The current economic conditions in Lebanon make all but impossible to invest in new buses (electric or not). Furthermore, current instabilities in the electricity supply market add uncertainty about the feasibility of the e-bus technology in Lebanon. Therefore, this output will facilitate a trial access to e-buses to interested bus operators (all those participating in output 2.1 and implementing the GPTS concept), so that they can gain first-hand experience in its operation and performance. UNDP will procure two e-buses and will lend them to the participating bus operators for a 3-to-6 month trial. The procurement process will serve to assess the consistency of the supply and maintenance services in Lebanon (car dealers and importers, maintenance know-how, spare parts?), and to develop recommendations to strengthen it. Consumption, mileage and other parameters of the e-bus operation will be regularly tracked and results will be made publicly available. Charging equipment, including solar panels and energy storage, will be installed in a bus depot in Jbeil. In this way, different charging (charging from grid, generated electricity sent to the grid, generated electricity storage to charge the e-bus) and bus exploitation (early morning and late evening services, charging during the mid-day, long-distance or short-distance lines to be served..) strategies can be tested. As a result of this output bus operators will be in a much better position to make well-informed decisions, once the economic conditions in the country allow them to undertake the renewal of their fleets. At the end of the project, the e-buses will be transferred to the MoIM.

Jbeil bus depot

The project e-buses will be operated from the main Jbeil bus depot, located close to the Municipality Palace (diamond shape in the figure below). The project will install fast charging infrastructure in the area north of the Municipality Palace (rectangle shape in the figure below), connected to solar panels and an electricity storage unit. Charging from the electricity grid will also be possible (See Annex 13 for technical details of the charging infrastructure). The solar panels will be installed on the roof of the Municipality Palace (rectangle shape in the figure below). The Municipality Palace consists of three buildings with an available space of more than 1,000 m².

E-buses are expected to operate in the northern corridor during peak hours, and to recharge during off-peak periods and at night.

The charging infrastructure envisaged includes:

- ? One fast-charger (between 500 and 850VDC) providing DC power, able to fully load 2 e-buses with lithium battery with capacity of at least 350 kWh in less than 6 hours), connected to the electricity grid and to a PV system.
- ? Provision and installation of the PV system with capacity of 100kWp to feed the charger.
- ? Free-of charge provision of maintenance and technical service during at least four years.



Figure 7: Location of the bus depot in Jbeil

This output will include the following activities:

- ? Activity 2.4.1: Defining specifications for an e-bus compatible to the local environment and needs and the procurement of two e-buses and their operation.
- ? Activity 2.4.2: Design, procurement and installation at the bus depot in Jbeil of charging infrastructure based on renewable energy.

? Activity 2.4.3: Operation, monitoring and reporting of e-buses, including, lessons learnt and replication options. This activity includes the competitive selection of the bus operators that will use the project's e-buses during the demonstration, and the regular reporting of the demonstration results during the first year of operation (project year 4), as well as follow-up report for the second year of operation (year 5). The regular reporting follows the monitoring framework provided in output 2.1, and is based on weekly information provided by the bus operators on distance transport (on-route and off-route, passengers, drivers, electricity consumption, maintenance and incidents). The evaluation of the demonstration will include an integrated lifecycle analysis of the e-buses, including infrastructure, resource scarcities and recycling.

Output 2.5. The viability of electric cars in corporate fleets under green fleet management is demonstrated and assessed. This output provides 4 electric cars to ISF^[28]²⁸, which will be included in the fleet included in the GFM concept implemented in output 2.2. These cars will be procured by the project and transferred to ISF. The procurement process will serve to assess the consistency of the supply and maintenance services in Lebanon (car dealers and importers, maintenance know-how, spare parts?), and to develop recommendations to strengthen it. The project will provide ISF with guidelines on maintenance needs, routing characteristics and other related operational issues to optimize the information gathered from the demonstration. GPS tracking of the vehicles will provide data on mileage, consumption and other performance indicators, which will be publicly available to provide public and private car fleet managers in Lebanon with valuable information to support their fleet renewal options, once the economic conditions in the country improve. The evaluation of the demonstration will include an integrated lifecycle analysis of the EVs, including infrastructure, resource scarcities and recycling.

This output will include the following activities:

- ? Activity 2.5.1: Procurement of 4 e-cars and slow electric car chargers (domestic wall plug chargers).
- ? Activity 2.5.2: Guidelines to ISF for the operation of the cars, including routing selection and maintenance.
- ? Activity 2.5.3: Report on results, lessons learnt and replication options.

COMPONENT 3: Knowledge management, capacity development and awareness raising.

Outcome 3: Sustainable low emissions transport programs widely supported.

This outcome addresses the cultural barriers and provide the necessary support to up-scale the demonstrations results and to build up the framework for the sustainability of the project results, so that

sustainable low-emission transport programs receive wide support and, consequently, substantial changes in mobility practices and modal shift materialize.

Output 3.1: Networking mechanism established among agencies and stakeholders involved in sustainable low emissions transport systems to accelerate the implementation of the e-mobility strategy, the adoption of GPTS and GFM by corporations and public bodies and sustainable mobility policies by the GoL. UNDP will establish this networking mechanism, which supports the project's bottom-up approach with an open structure gathering together all stakeholders interested in electrification and sustainable mobility, raising public awareness and lobbying the national government. The network will liaise with the Sustainable and Electrified Mobility Subcommittee envisaged in output 1.2 to provide advice and support to operationalize the targets set up in Lebanon's updated NDC. UNDP's current role in Lebanon in climate mitigation policies and its strong involvement with international and local partners in the national climate reform agenda provide an excellent position to build-up and expand such a network. The open character of the network- like similar initiatives in other countries - provides excellent complementarity with the institutional subcommittee established in output 1.2. It also provides the necessary structure to disseminate the project's results and lessons learnt, discuss monitoring results and undertake the capacity building activities envisaged within this component.

This output will include the following activities:

- ? Activity 3.1.1. Convene and carry out periodic meetings with all key stakeholders participating in the network.
- ? Activity 3.1.2. Provide technical support to establish the mandate, structure, governance and working plan for the network.

Output 3.2: Coordination with the "Global Programme to Support Countries with the Shift to Electric Mobility" (participation at thematic working groups and at the Support and Investment Platform).

This output will include the following activities:

- ? Activity 3.2.1. Participation in UNEP-led Global E-mobility Programme working groups and activities and participation and benefit from the Regional Support and Investment Platform to be established under the Global E-mobility Programme.
- ? Activity 3.2.2. Report on lessons learnt from the UNEP-led Global E-mobility Programme and adaptation to the Lebanese context.
- ? Activity 3.2.3. Exit project strategy for the deployment of e-mobility in Lebanon.

Output 3.3: Sustainable mobility communication and public awareness campaigns implemented, based on project results and focusing on mobility behaviour (including road safety), and low-emission

transport (including EVs, public transport, walking and cycling). These activities will integrate a gender-sensitive approach, in accordance with the guidance provided in the Gender Action Plan, With the newly collected data and e-mobility information available, the project will make linkages with the reform agendas and the national context (financial, socio-economic and development needs) to design focused communication strategies that promote e-mobility and other low-carbon transportation. Awareness raising on e-mobility will be integrated into the climate communication and other development strategies.

This output will include the following activities:

? Activity 3.3.1. Project communication plan, including monitoring and evaluation. The communication plan is expected to identify the different target groups for the project's dissemination activities and identify the adequate communication channels, key messages, materials and activities, with detailed timelines, milestones and key performance indicators. The design of the communication plan will be open to the contributions of the participants in the networking mechanism, and in particular of the CSOs active in the mobility field.

? Activity 3.3.2. Implementation of campaigns targeting general users.

? Activity 3.3.3. Supporting materials and workshops targeting transport companies and professionals.

Output 3.4: Capacity of municipal planners and public transport managers built for the promotion of low-emission transport (including non-motorized transport and carpooling), traffic control and management (e.g., parking management, vehicle-use control). Following the project's gender action plan, capacity-building activities will facilitate female participation, including future professionals (e.g., female university students in the relevant fields).

This output will include the following activities:

? Activity 3.4.1: Supporting training and awareness-raising materials targeting municipal planners and decision-makers.

? Activity 3.4.2: Training workshops

? Activity 3.4.3: Support to a networking platform on sustainable mobility and electrification

? Activity 3.4.4: Train-the-trainer workshops on charging infrastructure, and EV and hybrid vehicle maintenance and driving. This activity facilitates access to the new job opportunities provided by e-mobility and builds upon the materials and services provided by the UNEP -led Global E-mobility Programme.

COMPONENT 4: Monitoring & Evaluation

Outcome 4: The project monitoring and evaluation plan is implemented.

Under this component, all the project's monitoring and evaluation activities are undertaken. Results from monitoring and evaluation activities will be regularly shared with the E-mobility Global Programme to support knowledge management activities at the global and regional levels.

Output 4.1: The project monitoring and evaluation plan and knowledge-management strategy are designed and implemented.

The project monitoring and evaluation plan is outlined in Annex J, and the monitoring and evaluation budget is presented in Section VI. This plan will be revised and updated during the inception workshop and will ensure the regular reporting on the project's indicators established in the PRF.

The project knowledge management (KM) strategy is outlined in the knowledge management section of this document, including liaise with the Global Programme. This strategy will be revised and updated during the inception workshop and will ensure the regular exploitation and dissemination of the materials developed under the other project components, including training and dissemination materials, policy and technical recommendations and technical tools.

This output will include the following activities:

- ? Activity 4.1.1: M&E plan designed and implemented.
- ? Activity 4.1.2: Mid-term evaluation completed.
- ? Activity 4.1.3: Terminal evaluation completed.
- ? Activity 4.1.4: Project monitoring platform and development & compilation of KM products.
- ? Activity 4.1.5: Monitoring of social and environmental safeguards management measures, stakeholder engagement activities and gender action plan.

4) Alignment with GEF focal area strategy

This project is aligned with Objective 1 of the Climate Change Focal Area, which is to 'Promote innovation and technology transfer for sustainable energy break-throughs', and more specifically with CCM1-2, to 'Promote innovation and technology transfer for sustainable energy breakthroughs for electric drive technologies and electric mobility'. By creating a favorable institutional and regulatory framework for sustainable mobility and promoting innovative transport management practices (including EV deployment), the project will contribute to point 112 of the GEF-7 Programming Directions to accelerate 'the speed and scale of sustainable energy investment in developing countries' and to point 113, developing 'innovative business models that go beyond business as usual'.

In addition, the demonstrations on EV operations (for bus operators and corporate/ institutional car fleets) are expected to accelerate the transition to low-emission urban mobility. They directly address the root cause of weak public transport systems, which are unable to afford the introduction of EV solutions and therefore cannot provide the higher quality mobility services associated to attract car users. They also address the root cause of the high risks perceived by public transport managers of making use of innovative electric technologies. Besides addressing the short-term barriers linked to these root causes, the project provides long-term sustainability for the adoption of EVs, providing adequate market conditions and management of potential environmental hazards generated by them.

5) Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, and co-financing

Sustainable mobility, and in particular electrification policies, are making quick progress in those countries and regions offering some key enabling conditions: strong support from local and national governments, empowered public transport operators, dynamic electric vehicle and battery manufacturing industries, strong research and innovation ecosystems in these fields, financial and political support from the public sector, users' financial capacity and interest in innovation and public and private commitment with GHG emission mitigation targets. These enabling conditions are enshrined in consistent governmental strategies, providing a long-term vision, and inspiring the legislative and institutional reforms to encourage the development and implementation of innovations.

After more than two decades of efforts, technological innovation is successfully generating a sustained decrease in EV prices, delivering higher performances in terms of range and lifespan, and new models, increasingly adapted to particular niche markets such as urban delivery or public transport. Legislation is being deployed on vehicle approval, roadworthiness and end-of-life management, as well as on the use of EVs for the provision of public services, and innovative financing schemes are being proposed.

In the absence of the enabling conditions mentioned above, developing countries risk to lag behind in the transition towards low-carbon mobility. EVs are being designed to meet the needs of those developed markets with higher actual or potential demand, while the other markets seem prone to become the dumping sites for old fashion technologies, as it has been the case in the past (and even today, as outdated technologies such as EURO III diesel buses remain being the standard for public transport concessions in some cities). EV manufacturers are unlikely to push forward on their own, as they carefully choose the most promising markets for development, to limit costs and risks. The situation is particularly challenging in the case of Lebanon, due to its long and deep political and economic crisis.

GEF-7 is in a unique position to support a step change, by contributing to supporting the Lebanese government and civil society to establish an adequate institutional framework, in which voluntary agreements are expected to play a central role. In this way, operators and consumers become more confident about the robustness of EV technologies, channelling EV introduction towards the public transport sector and large car fleets first, so that it benefits a larger population. Additionally, global players (from EV manufacturers or battery managers to financial institutions and global regulators) are more likely to be interested in the needs and priorities EVs can meet in Lebanon.

With the support of the project, the concerted and sustained efforts of civil society, local and national governments to improve urban mobility and public transport services, are likely to build up the conditions for a sustainable transition. The Lebanese crisis has stalled the renewal of the public and private fleets, creating a latent demand that should materialize in the next years, once the financial situation improves. At that time, the country is likely to experience a rapid fleet growth, which could be largely oriented towards EVs, if the enabling conditions are set. This provides an excellent environment for GEF-7 action. The benefits of current public transport enhancement actions can be expanded through the integration of considerations included in this project, such as fleet electrification, women empowerment (as users and workers) in this sector, and self-certification of green and high-quality public transport operations (as a preliminary step to move to formal concession contracts in the future with the WB project). This is likely to speed up quality service improvements and the adoption of environmentally-friendly technological developments. In terms of GHG emissions, the project may accelerate the transition towards EVs in public transport and large car fleets, with a potential for spill over effects in other types of vehicles. In the absence of project, the much-needed bus and car fleet renewal over the next years will largely rely on conventional technologies (and second-hand cars imported from the EU), which could remain on the Lebanese roads for decades, slowing down the introduction of electric technologies.

The GEF support provides the resources and political leadership necessary to undertake a comprehensive approach, addressing the coordination among public institutions and the civil society necessary to enable a transition towards sustainable mobility. In the absence of GEF support, it is unlikely that local stakeholders interested could move forward due to an unsupportive regulatory framework and a difficult political, economic and social climate.

In addition, the project plans to liaise with the Global E-mobility Programme, particularly with its participating countries in the Europe, Mediterranean and Central Asia regions, and to benefit from the access and reduction in the incremental costs of electric technologies that could be generated by the programme:

? Generic tools are expected to be produced at the global level, disseminated through regional support and investment platforms and adapted to the needs in Lebanon; in this way, return on investment for development of tools and methodologies is maximized.

? Bundling demand for e-vehicles for demonstration in a certain region can lead to lower vehicle prices, reducing investment risk.

? Through adequate training of vehicle operators and exchange between numerous projects, the industry is less likely to face misuse of technology.

Last but not least, the project will support Lebanon in the preparation of a national e-mobility strategy and to engage private and public stakeholders in the transport community in the transition towards sustainability and e-mobility through capacity building and practical evidence of the operation of these new technologies during the project lifespan.

6) Global environmental benefits

GHG emission mitigation has been estimated following the GEF 2019 updated Guidelines on Core Indicators and Subindicators[29]²⁹. Full details are provided in Annex M. Separate estimates have been made for the project's voluntary agreements, the demonstrations with e-buses, e-cars and the local improvements in walking and cycling mobility. Direct GHG emission reductions are considered only for the lifespan (15 years for buses and 10 years for cars) of the vehicles provided by the project.

An average consumption of 92 kWh/100 km for e-buses and 28 kWh/100 km for e-cars has been considered. The average emission factor for electricity generation in Lebanon (0.689 kg CO₂/kWh) has been taken as constant (although the government has plans to introduce renewables, the current situation of the country is preventing any investments).

The consequential emission reductions are estimated considering a replication factor of 5 (bottom-up approach) and considering a reasonable rate of fleet replacement from 2027 on (top-down approach). These additional emission reductions are estimated for a 15-year period after the beginning of the project. A causality factor of 20% is used to quantify the amount of the benefits obtained as a result of the project execution and its influences (consequential project benefits). The project GHG emission reductions and energy saving impacts are summarized in the table below.

GHG reductions and energy savings estimation	
Project information	
? Project duration: 5 years. Starting in 2022 and ending in 2026	
? Time frame for indirect effects: 15 years. Starting in 2022 and ending in 2035 (Effects produced by the introduction of electric cars and buses and by the improvement of public transport services and conditions for pedestrians and cyclists)	
? Causality factor: 20%	
Total project emissions reductions, t CO ₂	117,206
Total direct emission mitigation from demonstration projects, t CO ₂	39,069
A.1 : Intercity Public Transportation Beirut-Byblos- Tripoli	18,116
A.2. Solar Panels- Municipality of Jbeil	1,550
A.3. Police Patrol Fleet Replacement	1,435
A.4. Self-certified Green Public Transport Services (GPTS) concept	7,835
A.5. Green Fleet Management (GFM) concept	7,176
A.6. Pilot bus stops with improved pedestrian access in Jbeil	2,957

Total indirect emission mitigation, t CO ₂ (lower of values below)	78,137
Bottom-up estimate (replication factor 2)	78,137
Top-down estimate (causality factor 20%)	98,684
Total direct emission mitigation at the time of measurement, t CO ₂	
At end of month 30 (mid-term) (all pilots? operational by month 37)	0
At end of month 60 (project termination)	5,209
Total project energy savings, MJ	1,423,086,470
Total direct energy savings from demonstration projects, MJ	474,362,157
A.1. Intercity Public Transportation Beirut-Byblos- Tripoli	234,965,817
A.2. Solar Panels- Municipality of Jbeil	-
A.3. Police Patrol Fleet Replacement	17,094,667
A.4. Self-certified Green Public Transport Services (GPTS) concept	101,613,465
A.5. Green Fleet Management (GFM) concept	85,473,336
A.6. Pilot bus stops with improved pedestrian access in Jbeil	35,214,872
Total indirect energy savings, MJ	948,724,313

Table 4: Summary of Project's Expected GHG Emission and Energy Reductions

7) Innovativeness, sustainability and potential for scaling up. ?

The technological innovativeness of the project is very high, as the deployment of EVs is still low in most countries, and the characteristics of the EVs available in the market have been developed attending to contexts in countries, which are not facing the challenges of Lebanon. The project will be innovative in facilitating access to EVs to bus operators and ISF, and partnering with vehicle dealers, in order to look for electrification strategies that can be consistent with the Lebanese conditions and able to meet the needs of Lebanese users.

Another relevant innovation is the analysis and upgrading of end-of-life vehicle practices in Lebanon, including the management of EVs and its components. The introduction of EVs offers an excellent ecosystem to undertake this task, considering the reduced number of stakeholders initially involved. Furthermore, action at the international level is expanding in order to establish global recycling chains, at least for batteries, and regional legislation is being drafted (e.g. in the European Union). The project will facilitate access to the innovations associated to these recycling chains and their adaptation to national conditions.

Replication and scaling up is included in the project design at three levels: (i) within the demonstrations, through the support to bus operators participating in the demonstrations in the provision of higher quality of service and in the preparation of fleet renewal plans including EVs, facilitated by their first-hand experience gained from the project; (ii) at the broader country level, through support to set up a permanent network of stakeholders interested in sustainable mobility and electrification, for which the project will provide wide dissemination and full accessibility of demonstration results; and (iii) at the level of large fleets (bus operators and large corporate car fleets), through the provision of a national e-mobility strategy and the implementation of voluntary certification schemes, which jointly provides a roadmap and concrete tools to improve the sustainability of the transport sector. Thanks to these activities the Lebanese government and stakeholders will be able to make the most of the demonstration result, well beyond the short-term impact provided by the EVs acquired by the project:

Moreover, the project will facilitate the efforts to accelerate the shift towards EVs globally, through the cooperation channels envisaged by the Global E-mobility Programme.

The project's sustainability and exit strategy equally relies on the Lebanese government and the civil society. This is consistent with the social, economic and political situation in the country. On one hand, the project will provide capacity-building, technical support and strategic roadmaps to the government in order to move forward towards sustainable mobility and electrification. On the other hand, the project empowers key stakeholders in the civil society and municipalities, so that they can undertake significant steps towards sustainable mobility on their own, through self-certification processes, low-cost facilitation of walking and cycling in cities and more influential networking capacities. The institutional and informal networks established by the project's activities can provide a more favorable environment for the future implementation of sound regulations, if the political mood improves, but they also can facilitate the search of business models and financing schemes by interested transport operators and corporations on their own, facilitated by a robust network of stakeholders interested in e-mobility. Furthermore, awareness-raising and training activities will provide the necessary know-how in the transport sector at large, including national and local decision-makers. This friendly environment is expected to facilitate action from key stakeholders. Managers of public transport and other fleets can more easily find electric alternatives to their vehicle needs with reliable information and competent local expertise.

The e-mobility network sustained by the project is a key instrument for the project's exit and sustainability strategy, as it can bring together all market actors behind the national e-mobility strategy and a shared action plan. This network (hopefully with the active engagement of the government) is able to monitor future progress in the electrification of road transport mobility in Lebanon based on the project's results and the continuation of the operation of the knowledge management platform developed during the project.

The continuation of the project's intervention to accelerate Lebanon's transition towards sustainable mobility and electrification beyond the project is completed builds upon the Global E-mobility Programme strategy outlined in Figure 4. It aims at unleashing the potential of dynamic stakeholders in the private sector and the civil society at large, providing municipalities with affordable options to encourage sustainable mobility behavior, and build capacities in the national government to sustain,

rather than hamper, such bottom-up trends. The project sees itself as a preparatory stage to overcome the current stalemate and bridge the gap towards the completion of the substantial investments the World Bank and other IFI have agreed with the Government of Lebanon to promote sustainable mobility (such as the BRT corridors). Thanks to this project, these and other future investments will find a more favorable ecosystem to succeed.

[1] The 2020 National Land Transport Strategy builds upon previous governmental plans and strategies that have always found unsurmountable difficulties to be implemented: the draft Transport Policy, prepared in 2001 by the Directorate General for Land and Marine Transport; the National Integrated Strategy for Public Transport in Lebanon, delivered to the Ministry of Public Works and Transport (MPWT) in 2013 by the Support Programme for Infrastructure Sector Strategies and Alternatives Financing (SISSAF) Project financed by the European Union (EU), and the National Strategy for Public Transport, proposed by Rail and Public Transport Agency (RPTA, affiliated to MPWT) in 2016.

[2] The INDC presents two general reduction scenarios compared with the business-as-usual (BAU) scenario until 2030. The unconditional strategic target for the transport sector is to reach a share of person-kilometers driven annually using public transport at 36% by 2030. Actions include improving the bus system in the Greater Beirut Area. This will generate 2% reductions in GHG emissions compared with the sectorial emissions in the BAU business-as-usual scenario up to 2030. The conditional target is to increase the share of public transport to 48% by 2030. This will be achieved through infrastructure projects, including improving the bus system in the Greater Beirut Area, introduction of a bus rapid transit system and revitalization of the railway system. In addition, a share of 20% fuel efficient vehicles is to be achieved by 2030 using incentivizing activities such as scrappage programs. This will generate 8% reductions in GHG compared with the sectorial emissions in the BAU scenario up to 2030.

[3] A NAMA initiative on taxi fleet transformation was approved by the Council of Ministers in 2017. It was designed to look into financial mechanisms and operational structures for private sector taxi fleets to accelerate the transition of the road transport sector to low-carbon options. This NAMA aimed at establishing an enabling environment for the car scrappage and replacement program as well as the replacement of polluting taxi cars. However, the NAMA has been put on hold as purchasing a new vehicle is out of the reach of most potential beneficiaries in the rapidly deteriorating economic conditions since 2019.

[4] Electrification of road transport (generally referred to as e-mobility) is one of the key game-changers, and developing countries are lagging behind in the adoption of this new technology. The Government of Lebanon (GoL) has made some attempts to support the transition to electric vehicles: Article 55 of Law 79 (dated 18/04/2018) reduces certain taxes and fees, sometimes in full, for hybrid and electric vehicles: Car buyers wishing to purchase a hybrid vehicle pay only a 20% rate (of the vehicle value) as customs fees if that vehicle is for private use (instead of 50%) , and 10% if the vehicle is intended for public use; electric vehicles (EVs) are exempted from the customs fees altogether. Additionally, hybrid and electric vehicle owners do not pay registration nor the first *M?canique* (road-worthiness test) fees. In case of economic recovery, there are concerns about the sustainability of these

schemes, as the government is highly dependent on tax income from fuel and vehicle sale taxes, which would be reduced as electrification kicks-off and expands.

[5] In 2017, bike sharing systems were introduced in Beirut (Bike4All) and Jbeil, but they were subsequently put on hold due to the deteriorating political and financial situation. E-scooters and e-bikes are available for purchase in the country, but their prices are too high for average citizens under the current circumstances.

[6] For example, Kunhadi is a non-profit organization concerned established in 2006 and promoting road safety awareness, and avoiding dangerous driving behaviour, especially among young people. In 2007, Kunhadi created the Taxi Night concept, introducing a culture of "taxiing safely back home" as a practical and trendy alternative to drunk and fatigue driving. By May 2017, Kunhadi had organized eighteen editions of Taxi Night. TRACS is a coalition of public transport associations established in 2019, seeking to develop a sustainable transportation plan for Lebanon established in 2019. Several activities in collaboration with Bike Lebanon were conducted in 2019 to promote the usage of bicycle. Several seminars and surveys were performed to promote and assess current behavior and perception toward sustainable transportation. TRACS aims to have contact with Donors (e.g. Embassies) to highlight the importance of implementing sustainable transportation projects. Train is a non-profit organization, founded in 2010, to actively advocate, facilitate and support the preservation of Lebanese railway heritage and the establishment of a modern railway network providing inter-city and international rail connectivity for Lebanon. The Youth Association for Social Awareness (YASA) was established in 1996. YASA aims at safety promotion and injury prevention through public awareness campaigns. In 2001, YASA International started its work through participating and organizing events and programs aiming towards safety promotion in various Arab countries. YASA also focuses on the upcoming generation and tries to promote among them safety through partnerships with media and educational institutions.

[7] Haddad, M (2020). Guide for Mainstreaming Transport and Mobility in Lebanon's National Urban Policy. Final Draft. UN-Habitat Lebanon. This was prepared within the formulation stage of UN HABITAT's National Urban Policy project. The guide provides a comprehensive assessment of urban mobility in Lebanon, stressing the challenges of high motorization rates, pervasive traffic congestion, poor quality of public transport services with inadequate buses and absence of rail, and lack of appropriate space and infrastructure for pedestrians and cyclists, among others.

[8] A UNDP co-sponsored conference held in March 2019 gathered together most of the local stakeholders to revise existing barriers, identify possible infrastructure and policy instruments and suggest possible common actions. They highlighted that the transition towards electric vehicles needed prior clarification of the institutional, policy, technical and financial mechanisms necessary for such transition, as well as comprehensive perspective of the EV life cycle, including technical guidelines for the adequate disposal of EV (and particularly lithium batteries) at their end of life. In particular, it stressed the need to set up an appropriate technical and regulatory framework for the deployment of the charging infrastructure network, in coordination with the country's strategy to enhance the resilience of the electricity system and decrease its carbon footprint. It also calls for awareness-raising activities to include in the electrification debate additional stakeholders, such as vehicle insurance companies,

educational and training institutions, financial institutions and managers of large vehicle fleets, such as the internal security forces (ISF).

[9] MoE, UNDP, & GEF 2016. Lebanon's Third National Communication to the UNFCCC, Beirut, Lebanon.

[10] IPTEC et al, 2016.

[11] MoE & UNDP, 2016.

[12] MoE & UNDP, 2015, Mobility Cost ? Case Study in Lebanon.

[13] MoE, UNDP, Ecodit, 2011. The State and Trends of the Lebanese Environment (SOER), Beirut, Lebanon.

[14] MoE & UNDP, 2015, Mobility Cost ? Case Study in Lebanon.

[15] World Bank, 2018. Project Appraisal Document on a Proposed Loan in the Amount of \$295 million to the Republic of Lebanon for a Greater Beirut Public Transport Project.

[16] Council of Ministers Decision 66, 2018/5/16.

[17] The deployment of e-mobility is expected to be accompanied by a reduced use of privately-owned cars and increased multimodality, in which traditional walking and cycling are accompanied by the emergence of electric-drive micromobility (e-g- e-scooters), sharing services (electric-drive cars, bikes and scooters) and a regained centrality of electrified public transport services. Traditional public transport stops and stations may become e-mobility hubs in which users conveniently change from one of these modes to another. Cities are adapting their streets to these trends by reallocating their public space, providing space to the users of new electric micromobility and shared services and further while protecting traditional soft modes (that could otherwise be displaced), and reconfiguring key public transport hubs. Sperling, D. (2018). Three revolutions: Steering automated, shared, and electric vehicles to a better future. Island Press. Bell, D. (2019). Intermodal Mobility Hubs and User Needs. Social Sciences, 8(2), 65.

[18] Haddad, M (2020). Guide for Mainstreaming Transport and Mobility in Lebanon's National Urban Policy. Final Draft. UN-Habitat Lebanon.

[19] Including civil society organizations aware of the gender gap related to transportation.

[20] Abenoza, R. F, Cats, O & Susilo, Y. O, (2018). How does travel satisfaction sum up? An exploratory analysis in decomposing the door-to-door experience for multimodal trips. Transportation (Dordrecht), vol. 46, no. 5, pp. 1615-1642. ISSN 0049-4488. DOI 10.1007/s11116-018-9860-0. Also M?ller, B. & MEYER, G., (2020). Towards User-Centric Transport in Europe 2. Cham: Springer International Publishing AG. ISBN 9783030380274.

[21] Kim, Dong-Young & Hwang, Young-Ha, (2014). Self-certification framework for technological innovation: a case study. The International journal of quality & reliability management, vol. 31, no. 7, pp. 751-763. ISSN 0265-671X. DOI 10.1108/IJQRM-10-2012-0139.

[22] Herrmann, C., Mennenga, M.S. & Böhme, S., 2018. Fleets Go Green. 1st ed. 2018. S.l.: s.n. ISBN 3-319-72724-9.]. Also YOON, T. & CHERRY, C. R, 2018. Migrating towards using electric vehicles in campus-proposed methods for fleet optimization. Sustainability (Basel, Switzerland), vol. 10, no. 2, pp. 285. ISSN 2071-1050. DOI 10.3390/su10020285.

[23] As women (and other vulnerable groups) have much lower access to car ownership and use due to lack of economic resources, cultural barriers, or physical unsuitability (e.g. children, teenagers, elderly and many persons with reduced mobility (PRM) cannot drive?).

[24] Voluntary agreements have often served as a useful bridge to facilitate transitions, raising awareness and building up support toward environmental goals. They are subsequently replaced by regulations, once the political framework allows it. For an overview, see OECD (2003), Voluntary Approaches for Environmental Policy: Effectiveness, Efficiency and Usage in Policy Mixes, OECD Publishing, Paris, <https://doi.org/10.1787/9789264101784-en>.

[25] European Norm 13816:2002 Transportation - Logistics and services - Public passenger transport; Service quality definition, targeting and measurement.

[26] Any reference to EV technology in this project should be understood in a wide sense, including hybrid electric vehicles (HEV) and plug-in hybrid electric vehicles (PHEV).

[27] UITP (2020). The Future of Mobility post-COVID: Turning the crisis into an opportunity to accelerate towards more sustainable, resilient and human-centric urban mobility systems.

[28] If the conditions in Lebanon further deteriorate, the project would procure plug-in hybrid or hybrid electric cars, instead. Both options offer GHG emission reduction potential similar to electric cars, considering the emission factor of electricity generation in Lebanon.

[29] https://wwfgeftracks.com/sites/default/files/2019-04/indicators_0.pdf

1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.



Figure 8: The Northern BRT Corridor

Project sites	Latitude	Longitude
ISF depot (Emile Helou Police Station, Beirut)	33.8809	35.4820
Jbeil, bus depot (Municipality Palace)	34.1240	35.6516

Table 5: Project's Geo-Coordinates

1c. Child Project?

If this is a child project under a program, describe how the components contribute to the overall program impact.

2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Civil Society Organizations Yes

Indigenous Peoples and Local Communities No

Private Sector Entities Yes

If none of the above, please explain why:

Please provide the Stakeholder Engagement Plan or equivalent assessment.

The stakeholder engagement plan is attached at the ProDoc as Annex 9. The plan includes all relevant stakeholders: national and local government services, public transport operators, the public electricity utility, EV providers, academia and civil society, as well as vulnerable groups. Project's stakeholders and means of engagement are summarized in the Table below.

Stakeholder name	Stakeholder group	Means of engagement
MoE, MoEW, MoIM, MPTW	National government	Project Board Regular meetings with PMU
Municipality of Jbeil	Local governments	Project Board Regular meetings with PMU
National Council for Lebanese Women	CSO and social researchers working on gender and intersectionality	Regular consultation meetings at national and local level.
Connexion Ahdab CTC, Sawi Zantout LT, WeGo	Bus operators	Exchange of correspondence, meetings, training courses, demonstration design, supervision. Data collection templates and procedures
ISF, Aramex, DHL, Red Cross, Totters	Large car fleet managers (public and private)	Exchange of correspondence, meetings, training courses, demonstration design supervision. Data collection templates and procedures
WB EIB	International Financial Institutions (and national financial sector)	Exchange of correspondence, meetings
EDL	Electricity utilities	Exchange of correspondence, meetings
AIA, E?ecosolutions	Car importers and sectoral associations	Exchange of correspondence, meetings, training activities
LAU	Academia	Exchange of correspondence, meetings, training activities
TRACS, Kunhadi, Disability Hub, Lebanese Handicap Association, Carpolo, Yallabus, YASA, Bus Map Project, GiZ	NGOs and civil society associations	Exchange of correspondence, meetings, training activities

Table 6: Project's stakeholders and means of engagement

During the project design stage, the process of identifying the private sector actors that are co-financiers of the project consisted of two stages. First, an initial mapping was carried out by UNDP, based on the contacts established during the preparation of the PIF. Second, the project design team verified the capacities of the actors identified through bilateral meetings and interviews, as well as

during the validation workshop. The following main elements were relevant in the selection of stakeholders:

- ? Identification of actors that could benefit and be disadvantaged with the development of project's activities.
- ? Level of knowledge / information that the actors have on electric vehicles a sustainable mobility.
- ? Previous collaboration among actors and their stated level of interest in the project.
- ? The likely benefits the project could deliver for each actor.

The engagement plan envisages initial consultations with stakeholders since the first months and during implementation, information disclosure through public reports, website and publications, as required, and periodic reporting. Engagement activities aim at increasing the involvement of key partners (national and local governments, public transport stakeholders, vulnerable groups, the electricity sector) during all project activities, and particularly during the demonstrations. They also aim at providing a collaborative space for the preparation of strategic planning, regulatory proposals and voluntary agreements. Finally, the engagement plan also intends to give voice to vulnerable groups and to integrate their mobility needs during the demonstrations, scaling-up and replications after project conclusion.

The engagement tools are based on different meetings: regular (quarterly or annual) meetings for project implementation and *ad hoc* meetings with particular stakeholders, as project activities are deployed. The project includes training activities and awareness-raising workshops to further facilitate the engagement of stakeholders.

Resources for stakeholder engagement activities are included within design and awareness-raising activities, as well as within the project management budget.

South-South and Triangular Cooperation (SSTrC) opportunities and technology transfer from peer countries will be further explored during project implementation. To present opportunities for replication in other countries, the project will codify good practices and facilitate dissemination through global ongoing South-South and global platforms, such as Africa Solutions Platform, the UN South-South Galaxy knowledge sharing platform and PANORAMA^[1]. The project intends to liaise with the UNEP-led Global E-mobility Programme, which provides an excellent platform for cooperation with the other participating countries and particularly with those in the Mediterranean, Europe and Central Asia region. The project will facilitate the participation of local stakeholders and Lebanese government officials in the working groups and other activities organized within the global programme. The project will also network with other transport-related initiatives and opportunities for regional and global cooperation.

In addition, to bring the voice of Lebanon to global and regional fora, the project will explore opportunities for meaningful participation in specific events where UNDP could support engagement

with the global development discourse on sustainable mobility and transport electrification. The project will furthermore provide opportunities for regional cooperation with countries that are implementing initiatives on sustainable mobility and transport electrification in geopolitical, social and environmental contexts relevant to the proposed project in Lebanon.

[1] <https://panorama.solutions/en>

In addition, provide a summary on how stakeholders will be consulted in project execution, the means and timing of engagement, how information will be disseminated, and an explanation of any resource requirements throughout the project/program cycle to ensure proper and meaningful stakeholder engagement

Select what role civil society will play in the project:

Consulted only;

Member of Advisory Body; Contractor; Yes

Co-financier;

Member of project steering committee or equivalent decision-making body;

Executor or co-executor;

Other (Please explain)

3. Gender Equality and Women's Empowerment

Provide the gender analysis or equivalent socio-economic assesment.

The preparation of the gender analysis and action plan were integrated within the project design stage, and are presented in Annex 11 of the ProDoc. The project follows the recommendations of the UNDP's Lebanon Gender Analysis, published in 2021 under the UNDP's NDC Support Programme, to integrate the gender perspective in the design and implementation of GHG emission reduction projects and programmes.

The gender analysis states that women in Lebanon are less likely to work than men and more likely to undertake unpaid work such as caring for children and elderly or doing the house chores (washing, cooking, cleaning). They have a lower economic power compared to men and fewer opportunities to

hold a decision-making position within and outside their household. Participation of women in decision-making processes is very low, although increasing. Gender policies remain perceived as a low-priority niche, a "women's matter" in the Lebanese political system. In the labor market, the participation of women is low, generally limited to assistant positions (only 29% of managerial positions are occupied by women) and with lower salaries.

The gender analysis also states the additional challenges faced by women due to uncontrolled and informal urbanization trends in Lebanon, with poor supply of vital services (water, waste, energy and transport). The insufficiency of services is partially replaced by private actors, sometimes outside the legal framework, such as NGOs, political parties and sectarian groups, which are not always committed to implementing the gender equality provisions of the Lebanon legal system. In particular, access to transportation means is one of the key challenges faced by women living in suburban areas, especially the most marginalized ones such as refugees or domestic workers. Access to transportation means, including cars, bus or taxi, varies according to income level. Many women do not feel safe in transportation means, and harassment and sexual abuse may occur during their journey, especially in shared-taxis, and abusers are rarely taken accountable for their behavior. Furthermore, as the transport system has low coverage, walking distances to bus stops are long and there is not always a safe walking environment, from crossing facilities to street lighting. This strengthens cultural attitudes in favor of car use and road expansion over the development of an urban public transport system. Considering that the lack of security and comfort of transport means in Lebanon undermines women's mobility, the gender analysis recommends making available and accessible safe transportation for women, with a focus on those of vulnerable socio-economic backgrounds, to facilitate their access to education and livelihood opportunities.

The key elements of the gender action plan aim at increasing the participation of women's and other underrepresented groups in the economic and social development by making transportation accessible for all and thus to improve their living conditions. This is made through the involvement of women at all levels of the policy making process in project activities, the provision of capacity building activities with a gender focus, raising awareness on the gender dimensions of e-mobility, collecting gender-disaggregated data (and data disaggregated by age, place of residence, nationality) to understand the needs, behaviors and perceptions to support an inclusive transport system; and promoting women's participation in networking, access to job and trainings provided by the project for bus companies, car fleet businesses and at institutional level.

Gender-sensitive activities have been included in all relevant outputs within all the project's components: Output 1.1, 1.2, 2.3, 3.1, 3.3., 3.4 and 4.1. The project includes gender-responsive measures to address gender gaps or promote gender equality and women's empowerment at various levels: at the institutional, planning and regulatory levels (activities 1.1.2 and 1.2.5); in the removal of barriers to sustainable mobility and electrification, including the project's demonstrations (activities 2.3.1, 2.1.2, 2.2.2, 2.3.2), and in capacity-building, networking and awareness-raising (activities 3.1.1, 3.3.1, 3.3.2, 3.4.1, 3.4.2, 3.4.4) and project monitoring and evaluation (activity 4.1.5).

The project is expected to contribute to gender equality in the results areas of improving women's participation and decision-making, and generating socio-economic benefits or services for women (through improved transport services, better suited to their mobility needs).

The project's results framework includes gender-responsive indicators in what refers to project's beneficiaries (indicators B and C), and training activities (indicators 2.1 and 3.2). Furthermore, the gender action plan includes additional indicators and targets for all the project activities with a relevant gender dimension.

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment?

Yes

Closing gender gaps in access to and control over natural resources;

Improving women's participation and decision making Yes

Generating socio-economic benefits or services or women Yes

Does the project's results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Elaborate on the private sector's engagement in the project, if any.

The project is engaging the private sector in a variety of ways:

Project's activities are expected to raise interest and ultimately create demand for EVs in Lebanon, to the benefit of vehicle (and charging infrastructure) dealers and importers interested in trading and providing maintenance services to EV. These stakeholders will also benefit from the project's development of business and financial schemes, which should be instrumental for developing their own market strategies.

Private bus operators will benefit from the project's demonstration and other supporting actions to transition towards the progressive introduction of EVs in their own fleets and to manage their fleets more efficiently and providing better services to users.

Owners of private fleets (including companies in sectors such as urban delivery, car rental and taxi) will benefit from the project's demonstration and other supporting actions to transition towards the progressive introduction of EVs in their own fleets, based on the experience shared by ISF during the project. The reduced uncertainty provided by the National Sustainable E-mobility Strategy and the more favorable legal and financial framework recommended by the project will facilitate such transition.

The private sector is also targeted by most of the capacity-building activities included in the project. Capacity building activities within component 3 are targeting:

? Decision makers and professionals in the public and private sector, and will focus on the technical advantages of EVs, and their growth prospects.

? Future trainers of drivers and maintenance specialists in the country so that they become familiar with EV technologies. This will serve as a strong support for those private companies interested in using EVs.

Additionally, networking activities within component 3 will provide support to the private sector in the development and sharing of business models and financial schemes.

Finally, the involvement of the private sector in EV policy decision making will be supported by the project:

? Representatives from the private sector is expected to participate in the new Sustainable and Electrified Mobility Subcommittee E-mobility as well as in the design of the national sustainable e-mobility strategy.

? The project will support and encourage active private sector stakeholders to network in order to foster the deployment of e-mobility through component 3.

The engagement of private financial institutions in e-mobility is expected to increase as the local socio-economic conditions stabilize in the country. The project is facilitating such engagement through the development of financial models and business plans for the transition towards e-mobility, in which financial institutions are expected to participate, the reduction of current uncertainty through the preparation of the National Sustainable E-mobility Strategy, and the dissemination of lessons learnt from the project and from the Global E-mobility Programme. During project preparation, they expressed their interest in getting information about the project progress, particularly in what referred to the possible financial instruments and models that the project could develop. Accordingly, they will be approached at a later stage during project implementation.

5. Risks to Achieving Project Objectives

Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.(table format acceptable):

1) Risk Table

Risk is defined as the effect of uncertainty on project objectives. It is formulated in terms of 'future events'. Risks have been identified during project design through detailed stakeholder consultations and tools such as the UNEP Safeguard Risk Identification Form (SRIF), the gender analysis and the theory of change. A qualitative 1-5 scale has been used to characterise the likelihood (probability of occurrence: 1 =

not likely, 5 = expected) and the negative impact on the achievement of project objectives (1 = negligible; 5 = extreme) associated to each risk. In accordance with the combination of likelihood and impact, each risk is assessed as low (green), moderate (yellow), substantial (orange) or high (red) as follows:

		Likelihood				
		1	2	3	4	5
Impact	5					
	4					
	3					
	2					
	1					

Table 7: Risk Categorization

The project analysis has identified seventeen risks for the achievement of the intended results, as described in the Table below and in Annex 7 of the Project Document. They include environmental, financial, political, cultural and health risks. All of them are rated as moderate or low, which is consistent with the project's bottom-up strategy, not focusing on changes in the institutional and regulatory framework that would have required political will and action that is not possible today in Lebanon. Similarly, demonstrations are providing enabling conditions without requiring strong investments that are unlikely to be feasible in the current economic context.

The mitigation measures for the risks mentioned above (and others) build upon the already substantial experience of the UNDP country office (including several projects in the energy sector), the support of the e-mob global programme and the experience and engagement of private and civil society stakeholders and the municipality of Jbeil in mobility issues. These projects and initiatives have been successful in building and widening social and political consensus on sustainable mobility, on which the project will build up.

Furthermore, the project is including activities addressing these risks: for example, the project is integrating gender, climate change adaptation or COVID challenges within its deliverables, and develops awareness-raising and networking activities to gain broader consensus around its proposed sustainable mobility policies as a way to facilitate their perception by the national government as non-controversial measures with low political risk.

Climate and COVID risks are identified in the sections following this table.

#	Description	Risk Category	Impact & Probability	Risk Treatment / Management Measures	Risk Owner
1	Government's inaction in the project, due to pervasive political instability	Political	I = 3 L = 4	The project includes a bottom-up approach, working with private stakeholders and civil society, as well as with local governments and public agencies, less exposed to political instability. The project would further strengthen this approach, in case the expected national government's involvement does not materialize	PMU
2	Investments envisaged in other projects do not materialize, due to the financial crisis	Financial	I = 3 L = 4	The project is creating enabling conditions on sustainable mobility that will remain useful and operational in case of delays in the expected investments, and will remain valuable once these investments materialize	PMU
3	EV technologies and other technical deliverables not adapted to the country conditions	Technical	I = 4 L = 2	UNDP will liaise with the technical teams in various ministries and local stakeholders to determine the needs for technical information. During project implementation. Support from UNEP's e-mob global programme will also mitigate this risk.	PMU
4	Pervasive electricity shortages weakens interest in EVs	Technical	I = 3 L = 2	The design of the pilots includes distributed generation alternatives for assessment, and actions will be taken with the Ministry of Energy and Water as one of the key stakeholders	PMU, MoEW
5	High upfront investment competing with cheap second-hand imported vehicles	Financial	I = 1 L = 2	Significant investment in EVs is not envisaged during the project lifetime, which is consistent with the economic context in Lebanon. The national e-mobility strategy will provide regulatory proposals to address this, consistent with the economic expectations at end of project	PMU, GoL

#	Description	Risk Category	Impact & Probability	Risk Treatment / Management Measures	Risk Owner
6	Negative public perception on e-mobility technology and its societal and economic impacts	Cultural	I = 2 L = 1	Awareness raising activities will be attuned to the current social perception so that the communication is targeted to the specific negative impressions	PMU
7	COVID 19 pandemic remains as a threat, resulting in sustained changes in mobility and social behavior	Health	I = 4 L = 2	<p>The project concepts (particularly in the design of demonstrations) will integrate changes in mobility and social behavior.</p> <p>COVID prevention policies in Lebanon include mobility as a key area for action, and the project will include COVID lessons learned in other countries.</p> <p>The following mitigation measures will be implemented If the pandemic results in continued application of lockdown and social distancing measures:</p> <p>Physical meetings will be replaced by virtual meetings. Online tools (such as clouds for document preparation) will be used to facilitate the development of draft documents. Travel to activities of the global programme will be held through means of ?virtual missions? if travel restrictions are established.</p> <p>Instructions will be provided for the operation of the vehicles used in the demonstrations, in line with those issued by public transport authorities. Targets for the relevant indicators will be revised accordingly.</p> <p>Additional efforts will be made by PMU to identify potential positive mobility practices issued from the COVID quarantine contributions and encourage its continuation.</p>	PMU

#	Description	Risk Category	Impact & Probability	Risk Treatment / Management Measures	Risk Owner
8	Exposure and vulnerability to climate change of charging stations and bus stops	Environment	I = 3 L = 2	Selection of the bus stops where rehabilitation activities will be undertaken (Activity 2.3.1) and charging stations installed (Activity 2.4.21) will take into consideration risk of flooding as described in the ESMF and project activities themselves. If this risk cannot be avoided, then the design (Activity 2.3.2) will include climate adaptation measures and measures added in the ESMP. (Addressed also as risk 3 in SESP).	PMU
9	Inadequate (or lack of) treatment of EVs and their particular components (e.g., tires, batteries or lubricants) in the e-mobility strategy and during operation of the e-buses and cars	Environment	I = 4 L = 3	In line with the ESMF that has been prepared for the project, a SESA (Activity 1.3.2) will be undertaken during preparation of the roadmap (Activity 1.3.1) to ensure that socioeconomic implications of the road map have been taken into account and that environmentally sound options for management of EV batteries and other components potentially containing hazardous material have been considered. For that purpose, Activity 1.3.3 entails preparing business models for second life of EV batteries and end-of-life management of EVs. This will require the screening of successful financial and business models on ELV components and second-life battery use, and the subsequent development of commercially viable business models for Lebanon. As for operation of the e-vehicles and hybrid cars (Activity 2.1.2 and Activity 2.2.2), a SESP will be undertaken once the GPTS and GFM concepts have been defined, so that the full range of the risks are assessed and management measures developed. (Addressed also as risk 6 in SESP).	PMU
10	Master Plan of Jbeil not approved, impacting on the implementation of the pilots	Political	I = 2 L = 2	Although the Master Plan provides a favourable framework for implementation, the PMU can approach the pilots in Jbeil (improved access to some bus stops) as stand-alone actions that can be undertaken even if the approval of the Master Plan is delayed	PMU

#	Description	Risk Category	Impact & Probability	Risk Treatment / Management Measures	Risk Owner
11	Marginalized populations (especially people living in poverty, persons with disabilities and older people) and women are not involved in decision making on the E-mobility strategy and ELV roadmap for issues that may affect them, such as disposal location of the ELVs	Social	I = 3 L = 3	As this project is rated overall as a Substantial Risk project, and according to the Environmental and Social Management Framework (ESMF) that was prepared during the project preparation phase (ProDoc Annex 10), a Strategic Environmental and Social Assessment (SESA) (Activities 1.2.5 and 1.3.2) for the e-mobility strategy (Activity 1.2.4) and roadmap on end-of-life management (Activity 1.3.1) will be prepared. (Addressed also as risk 1 in SESP).	PMU
12	Marginalized population, women and small business owners prevented from participating in decision making on issues that affect them.	Social	I = 3L = 3	<p>In line with the ESMF, and in order to address the issue of business disruptions during the improvements in 2 to 4 bus stops (Activity 2.3.2), an Environmental and Social Management Plan (ESMP) will be prepared (based on an appropriately scoped ESIA), which will require engaging local businesses and obtaining their feedback on scheduling of rehabilitation activities and additional measures such as ensuring accessibility to reduce disruption to their activities to the extent possible. A Grievance Redress Mechanism (GRM) will be set up during project implementation to collect feedback from residents and other stakeholders and address any complaints.</p> <p>The project also includes a Stakeholder Engagement Plan (SEP) (ProDoc Annex 9) and Gender Action Plan (ProDOc Annex 11) that ensures consultation with local community and women during decision-making for the project. (Addressed also as risk 2 in SESP).</p>	PMU

#	Description	Risk Category	Impact & Probability	Risk Treatment / Management Measures	Risk Owner
13	Air and dust emissions, noise, vibration, injuries, and physical hazards from rehabilitation activities of bus stops and other accessibility infrastructure	Health	I = 2 L = 4	The ESMP that will be prepared for the project will include an Occupational and Community Health and Safety Plan, Spill Prevention and Management Plan, and Traffic Management Plan for the rehabilitation activities for the bus stops and other accessibility infrastructure (Activity 2.3.2) aiming at reducing the potential impacts related to emissions, noise and risk of accidents and injuries. (Addressed also as risk 4 in SESP).	PMU
14	Spread of respiratory diseases (such as Covid-19) among workers and community during bus operation and rehabilitation activities	Health	I = 3 L = 3	WHO guidelines to limit the spread of Covid-19 will be applied during bus operation (Activity 2.4.3) and rehabilitation (Activity 2.3.2). (Addressed also as risk 5 in SESP).	PMU
15	Inappropriate behavior by drivers of the buses and ISF personnel using the vehicles provided by the project	Health	I = 4 L = 2	Prior to commencing operation of the vehicle fleet (Activity 2.1.2 and Activity 2.2.2), a Code of Conduct reflecting SES requirements will be prepared for the project such that all users of the vehicles must abide by them. Training will be offered to participating individuals to ensure they are aware of their responsibilities. (Addressed also as risk 7 in SESP).	PMU
16	Damage to cultural heritage sites during rehabilitation of bus stops and other accessibility infrastructure	Cultural	I = 4 L = 3	Per the ESMF, during selection of the bus stops and accessibility infrastructure to be rehabilitated (Activity 2.3.2), the ESIA will consider the location of cultural heritage sites and necessary measures for SES compliance will be included in the ESMP. (Addressed also as risk 8 in SESP).	PMU

#	Description	Risk Category	Impact & Probability	Risk Treatment / Management Measures	Risk Owner
17	Working conditions at the bus companies and services selected by the project do not meet national or labour laws and international labour commitments	Social	I = 3 L = 3	Engagement of the private sector (in particular the bus companies in Activity 2.1.2) will be preceded by a private sector risk assessment (supplemented by a SESP) to ensure compliance with SES. (Addressed also as risk 9 in SESP).	PMU

Table 8: Table of Project's Risks

2) Covid risk analysis

On February 21, 2020, the first case of Covid-19 was identified in Lebanon. The Lebanese government initiated a National Committee for Covid-19 (NCC) to oversee national preparedness and response through a public-private partnership with the Ministry of Health and other ministries to manage the implementation. On March 15, Lebanon declared a state of "public health emergency" and announced full mobilization to combat the Covid-19. The transport sector was called to comply with the mobilization guidelines and the government announced two-weeks closure of Beirut Airport, seaports, and land entrances to begin on March 18. Starting March 26, Lebanon imposed a partial curfew from 7 p.m. to 5 a.m. On April 9, the government extended the national lockdown for an additional two weeks. On May 5, the government extended the lockdown by including more measures: national travel bans and overnight curfew. During this period, vehicles are only permitted on the road on an odd/even license plate system with no vehicles allowed on Sundays. A limit of three passengers in one vehicle, including the driver, was enforced and all citizens and residents over the age of 65 were required to remain at home. On May 13, a full lockdown was enforced till May 18. On August 18, another two-weeks lockdown was enforced. After this period, a partial lockdown was enforced on a weekly basis for municipalities and villages with high rate of infected cases while maintaining a nationwide curfew from 9 p.m. to 5 a.m.

On January 14, 2021, with more than 5,000 daily confirmed cases and a total 230,000 confirmed reported cases, Lebanon went into a full and a tight national lockdown with full restriction for vehicles and pedestrians. The full lockdown is extended till February 8, 2021.

On January 21, 2021, the World Bank approved a reallocation of USD \$34 million under the "Lebanon Health Resilience Project" to support vaccines for Lebanon. The financing will provide vacancies for over 2 million residents starting February 2021.

The project risk associated to the COVID-19 pandemic has been included. The eventual implementation of lockdown and social distancing measures is expected to have a low impact on the project, as its activities can be undertaken under mobility-restricted conditions. In fact, the deterioration of economic and social conditions due to the pandemic has highlighted the critical importance of urban mobility and increased the attention of governments and key stakeholders to safe mobility. Urban mobility demand has decreased, and non-collective transport modes (walking, cycling and private transport) have been perceived as safer by many users. IN most countries, public transport authorities and operators have reacted by establishing safety protocols, and the critical importance for cities of safe urban public transport systems has become even more relevant. The project provides additional arguments for the use of PT, based on higher quality and safer door-to-door mobility. The demonstrations are expected to include innovative protocols for a safe trip by the bus operators and car fleets participating in the project, but their ability to reach the expected number of beneficiaries will largely rely on gaining the trust of their users.

In the identification of the mitigation measures on Covid-19 risks, the following aspects were considered;

- ? Availability of Technical Expertise and Capacity and Changes in Timelines
 - o Government capacity as human resources are mobilized elsewhere;
 - o Change in capacity of other executing entities and the effectiveness of the overall project implementation arrangement;
 - o Limited capacity and experience for remote work and online interactions as well as limited remote data and information access and processing capacities that projects will need to strengthen;
 - o Changes in project implementation timelines;
 - o Changes in baseline;
 - o Changes in conditions of beneficiaries;
- ? Stakeholder Engagement Process: Mobility and stakeholder engagement, including risk mitigation measures for both project staff and stakeholders.
- ? Enabling Environment
 - o Government focus on environment during crisis;
 - o Government priorities during COVID-19 response.
- ? Financing : Co-financing availability and price increase in procurement.

3) Climate risk screening.

Climate hazards. Climate hazards. In accordance with the Third National Communication to UNFCCC (2016), Lebanon is a country with ecosystems particularly vulnerable to climate change. Analysis of climatic records of Lebanon with future emissions trajectories indicates that the expected warming in Lebanon has no precedent. Climate projections show an increase of temperature, and a decrease in precipitation of with drier conditions. Projections also show increasing trends of warming, with additional days with maximum daily temperature higher than 35°C and an increase in number of consecutive dry days when precipitation is less than 1.0 mm. This combination of significantly less wet and substantially warmer conditions will result in hotter and drier climate. Impacts of climate change in Lebanon climatic changes are expected to have diverse implications on Lebanon's environment, economy, and social structure. Extreme weather events can have adverse impacts on public health, human settlements, transport infrastructure, agriculture production, power supply and the economy at large. The fragile biodiversity, ecosystems, and natural habitats will be threatened by increased forest fires, pest outbreaks and sea level rise. Climate change impacts are: less snow, less water availability, increase drought period, less agriculture productivity, higher energy demand, sea level rise, forests at risk, increased mortality and morbidity, and damaged infrastructure. Based on the 2015 National Strategy on Climate Change, Lebanon has developed climate scenarios to reduce GHG emissions by 15% by 2030 as an unconditional target and by 30% as a conditional one. Emissions reduction will emanate from the implementation of various strategies and policies related to the main sources of greenhouse gas emissions in Lebanon. A 22% GHG reduction in 2030 is estimated to be delivered by 13 key projects actions: 8 energy, 3 transport, 1 irrigation, and 1 waste.

Vulnerability and exposure. The project's vulnerability to climate change is related to the disruption in the operation of EVs due to their inability to be recharged. This vulnerability may come from (a) disruption in electricity supply or (b) lack of access or disruption of the charging infrastructure. According to the third National Communication, increasing resilience includes improving energy-use efficiency of transportation systems and developing energy-supply systems that are less vulnerable to the disruptions of extreme weather events, higher average temperatures, and other aspects of climate change. The national energy policy[1] is reducing this vulnerability through the expansion of renewables and distributed generation, as well as with improvements in the integrated distribution grid; the future availability of charging infrastructure relies on the adequate deployment of the network, for which the project will contribute through the preparation of the e-mobility strategy. The exposure of the project to changes in climate is low, due to the fact that the electricity network in Lebanon, especially in Beirut and Byblos, is highly integrated, the availability of charging infrastructure is already growing, and the primary charging points for the fleets targeted by the project will be located in Beirut and Byblos, with lower exposure to the effects of climate events.

The probability of occurrence of climate events can be rated as moderate, considering the vulnerability of Lebanon, and the impact of such events on the project can be rated as low, considering the likelihood of major electricity disruptions in Beirut and Byblos, the expected location of the charging stations, the availability of alternative charging ports in both cities, and the quick response capacity, through the installation of alternative charging points. This risk is accordingly rated as low.

The adaptation measures considered in the project include the preparation of the national e-mobility strategy and the study of the charging networks in Beirut and on the northern corridor, in which the

resilience of the system will be integrated; during the preparation of the pilots, contingency plans will be prepared to make it possible to recharge the EVs in case of disruption or failure of the project's charging points and to provide quick recovery of these points.

Mitigation measures on Climate Change Adaptions risks. The exposure of the project's outputs to changes in climate have been assessed during project design (see risk #8 in Annex 7 and the additional information on climate screening in the same section), and the project has built resilience within the design of activities xxx in accordance with the relevant guidance in the National Adaptation Plan.

Vulnerability and exposure. One of the project's key vulnerabilities to climate change is related to the disruption in the transport infrastructure provided. This is relevant for EV charging equipment and also for the newly designed walking/ cycling accesses to bus stops. For example, changes in climate can result in disruptions in electricity supply (which is already a problem in Lebanon); furthermore, the access of EVs to charging infrastructure could be hampered in future by the effects of extreme weather events. The latter can be mitigated by including a vulnerability analysis of the locations selected to charge the EVs during the demonstration, and through the integration of a climate change adaptation analysis within the national e-mobility strategy. A similar analysis can be included in the selection and design of the walking accessibility improvements to bus stops.

The probability of occurrence of climate events can be rated as moderate, considering the vulnerability of Lebanon, and the impact of such events on the project can be rated as high considering the likelihood of major electricity disruptions in Lebanon, even if the location of the charging stations is thoroughly chosen. For this reason, the project is including self-generation and storage of energy from solar cells.

[1] MoEW & LCEC (2016), The National Renewable Energy Action Plan for the Republic of Lebanon (NREAP) 2016-2020.

6. Institutional Arrangement and Coordination

Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

a) Roles and responsibilities of the project's governance mechanism:

The project will follow the Direct Implementation Modality (DIM), where the UNDP CO in Lebanon will act as the Implementing Partner (IP), responsible for the UNDP-GEF project execution and accountable for the disbursement of funds and the achievement of the project goals, according to the approved results framework and work plan presented in this Project Document.

To ensure sound management of project implementation and continuous engagement of stakeholders in all project activities, the UNDP CO in Lebanon will follow UNDP rules and procedures to ensure. More data on stakeholder engagement is presented in the Stakeholders' Engagement Plan.

The Beneficiary Representatives for this project are the Ministry of Interior and Municipalities (MoIM) (with the specific pilot activities being implemented with the municipality of Jbeil and the Internal Security Force, ISF), and the Ministry of Energy and Water (MoEW). However, the institutional, legal and policy recommendations of the project will benefit other national entities such as the Ministry of Public Works and Transport.

b) Project organisation structure

The project organisation structure is as follows:

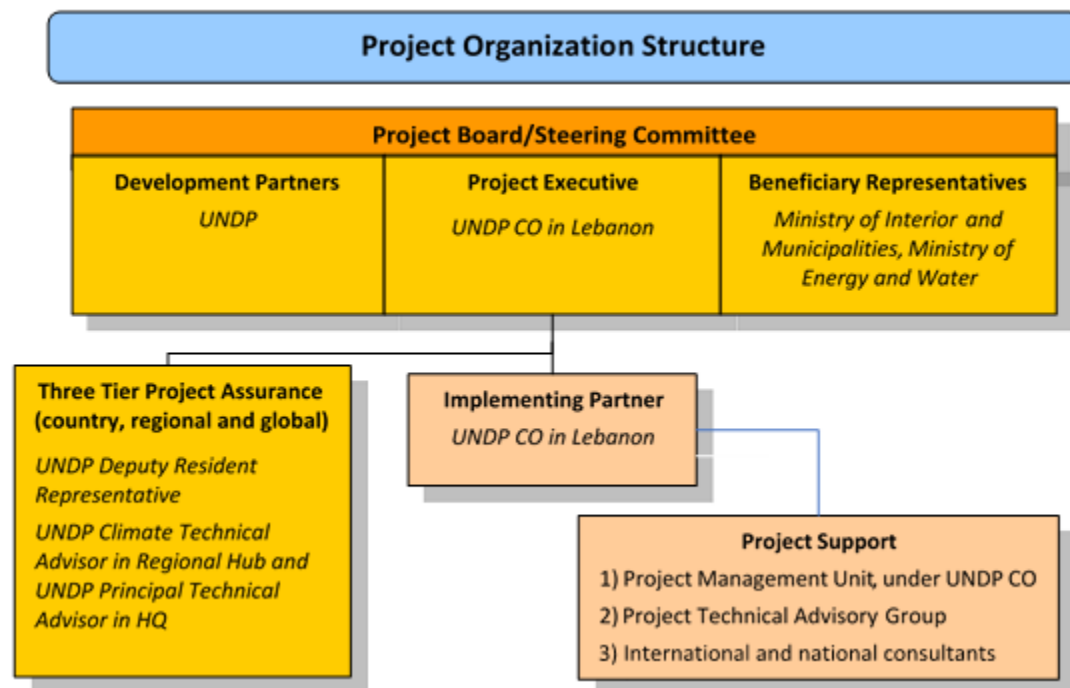


Figure 9: Project Organization Structure

Project Board: The Project Board (also called Project Steering Committee) is responsible for making by consensus, management decisions when guidance is required by the Project Manager, including recommendations for UNDP/Implementing Partner of project plans and revisions, and addressing any project level grievances. In order to ensure UNDP's ultimate accountability, Project Board decisions should be made in accordance with standards that shall ensure management for development results, best value money, fairness, integrity, transparency, balanced gender representation and effective international competition. In case a consensus cannot be reached within the Board, final decision shall rest with the UNDP Resident Representative. The Project Board will be responsible for directing the project and will ensure adherence of planned activities to intend long-term and immediate objectives as well as timeliness and quality of deliverables produced. The Project board will meet once a year (more frequently if required) and will review project work plan and progress as well as approve budget and activity revisions.

Specific responsibilities of the Project Board include:

- ? Provide overall guidance and direction to the project, ensuring it remains within any specified constraints;
- ? Address project issues as raised by the project manager;
- ? Provide guidance on new project risks, and agree on possible counter measures and management actions to address specific risks;
- ? Agree on project manager's tolerances as required; within the parameters set by UNDP-GEF, and provide direction and advice for exceptional situations when the project manager's tolerances are exceeded;
- ? Advise on major and minor amendments to the project within the parameters set by UNDP-GEF;
- ? Ensure coordination between various donor and government-funded projects and programmes;
- ? Ensure coordination with various government agencies and their participation in project activities;
- ? Track and monitor co-financing for this project;
- ? Review the project progress, and provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to plans;
- ? Appraise the annual project implementation report, including the quality assessment rating report; make recommendations for the workplan;
- ? Ensure commitment of human resources to support project implementation, arbitrating any issues within the project;
- ? Review combined delivery reports prior to certification by the implementing partner;
- ? Provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to plans;
- ? Address project-level grievances;
- ? Approve the project Inception Report, Mid-term Review and Terminal Evaluation reports and corresponding management responses;
- ? Review the final project report package during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.
- ? Ensure highest levels of transparency and take all measures to avoid any real or perceived conflicts of interest.

The composition of the Project Board must include the following roles:

Project Executive: The Executive is an individual who represents ownership of the project who will chair the Project Board. The Executive will be UNDP Senior management represented by the Resident Representative or the Deputy Resident Representative.

The Executive is ultimately responsible for the project, supported by the Senior Beneficiary and Senior Supplier. The Executive's role is to ensure that the project is focused throughout its life cycle on achieving its objectives and delivering outputs that will contribute to higher level outcomes. The executive has to ensure that the project gives value for money, ensuring cost-conscious approach to the project, balancing the demands of beneficiary and supplier.

Beneficiary Representatives: Individuals or groups representing the interests of those who will ultimately benefit from the project. Their primary function within the Board is to ensure the realization of project results from the perspective of project beneficiaries. The Beneficiary Representatives are the Ministry of Interior and Municipalities and the Ministry of Energy and Water, represented by their respective National Focal Points.

Development Partners: Individuals or groups representing the interests of the parties concerned that provide funding and/or technical expertise to the project. The Development Partner(s) is/are: Resident Representative or the Deputy Resident Representative at UNDP CO in Lebanon.

Project Assurance: UNDP performs the quality assurance and supports the Project Board and Project Management Unit by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed, and conflict of interest issues are monitored and addressed. The Project Board cannot delegate any of its quality assurance responsibilities to the Project Manager. UNDP provides a three ? tier oversight services involving the UNDP Country Offices and UNDP at regional and headquarters levels. Project assurance is totally independent of project execution.

Project extensions: The UNDP Resident Representative and the UNDP-GEF Executive Coordinator must approve all project extension requests. Note that all extensions incur costs and the GEF project budget cannot be increased. A single extension may be granted on an exceptional basis and only if the following conditions are met: one extension only for a project for a maximum of six months; the project management costs during the extension period must remain within the originally approved amount, and any increase in PMC costs will be covered by non-GEF resources; the UNDP Country Office oversight costs in excess of the CO's Agency fee specified in the DOA during the extension period must be covered by non-GEF resources.

c) Coordination with other projects

The project intends to build upon the activities already initiated in Lebanon to promote sustainable mobility and electrification (already presented in baseline section above). Partnerships with these projects and stakeholders will allow the project to focus on particular subsectors (local soft mobility, public transport and car fleets), so that they become the spearhead of the country's transition to sustainable mobility. The following projects are currently active in the field of sustainable mobility in Lebanon, and this project has already established links with them during its design stage. Stakeholders participating in these projects will be invited to the inception workshop and to the e-mobility network to be set up in component 3:

? Greater Beirut Public Transport Project (GBPTP) or Bus Rapid Transit (BRT) project. Included in USD 295 million concessional finance package agreed by the World Bank with the Government of Lebanon in 2018 to implement a comprehensive national public transport program, including a BRT network of three trunk BRT lines in the center of the highways providing the Northern, Southern, and Eastern accesses to Beirut. The WB remains committed in support the transport sector in the country, as it is essential for its economic recovery (see WB's co-financing letter). There have been also feasibility studies on the renewal of the bus fleet for the new services, including hybrid and electric technologies. Therefore, this project can be seen as a useful preparatory pilot for the GBPTP.

? The CDR (Council for Development and Reconstruction) will lead the selections of the operators in close collaboration with the RPTA and will transfer contract management to the RPTA. While feeder/regular buses will be fully financed by the Government, BRT fleets will be co-financed by the private operators. At the completion of the BRT project, (therefore outside the scope of what the project will deliver), the BRT network is expected to attract about 300,000 passengers per day and halve the commuting time between Beirut and its northern suburbs by public transport.

? Sustainable Urban Public Transport (Bus) Investment Program in Greater Tripoli. With the support of European Investment Bank (EIB), RPTA and Ministry of Public works and Transport (MoPWT) has initiated the development of detailed design of construction of Tripoli bus network and its terminals and tender documents. In addition, Tripoli Transport Authority (TTA) will be created under RPTA by reorganizing the transport sector in Tripoli. On a later stage, following the project appraisal, the Bank could provide financial support to the Lebanese government for (a) the construction of the intermodal public transport hubs (new bus terminal) as Bahsassa Transport Center; (b) acquisition of new buses and (b) implementation ITS systems (traffic management, passenger information system, priority of public transport on the roads).

? The municipality of Jbeil has undertaken the preparation of a new Master Plan. The Master Plan provides a vision for 2040 including the objectives to preserve and enhance the historical architectural urban infrastructure of the old city of Byblos and to integrate it with the social economical activities of the urban city. In the urban mobility sector, the Master Plan calls for the promotion of sustainable mobility through enhancing non-motorized transportation systems by integrating intelligent transportation tools and encouraging pedestrian activities.

? In addition, the project will liaise with the UNEP-led Global E-mobility Programme in order to participate in the global working groups and to network with similar projects in other countries. This is expected to maximize the impact of the incremental financing provided by GEFTF, through the

optimization of capacity building and knowledge management activities, guidance on EV procurement, provision of generic tools for business and financial modelling, etc.

7. Consistency with National Priorities

Describe the consistency of the project with national strategies and plans or reports and assessments under relevant conventions from below:

NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

Addressing the project challenges described above is consistent with national priorities as stated in the following documents:

? An Energy Efficiency Action Plan was prepared by MoEW in 2016[1]. It includes a package of measures in the road transport sector, such as full implementation and control of already-existing measures on operational standards and roadworthiness, incentives for the purchase of energy-efficient vehicles (including revision of vehicle taxes), disincentives to importing used cars, fighting traffic congestion (with a focus on urban logistics), awareness-raising on ecodriving and legislative reforms.

? In the National Renewable Energy Action Plan (NREAP) 2016-2020, the Government of Lebanon sets out the country's primary purpose of achieving 12% renewable energy by the year 2020, and a roadmap to achieve this, with investment targets of 450 MW in wind energy and 300 MW in solar PV in 2030[2].

? Lebanon has set out its climate goals in a recently revised Nationally Determined Contribution (NDC). As part of its updated NDC under the Paris Agreement, Lebanon pledged to reduce GHG emissions by 20% by 2030 as an unconditional target and by 31% by 2030 as a conditional target.

? Lebanon submitted its third Biennial Update Report (BUR) in 2019[3]. The report states a sustained growth in GHG emissions until 2015 (last year in the inventory), driven by the energy sector (including transport), with an annual average growth of 7%.

? Master Plan Inland Public Transport for Passengers (2014). Presented by the MoPWT to the CoM, the Master Plan includes short and medium term actions to shift passenger transport demand to mass transit systems. The WB's GBPTP is the main follow-up to this Master Plan, which has otherwise lacked any relevant implementation thus far.

? The Lebanon Reform, Recovery & Reconstruction Framework (3RF)[4], led by the WB, is part of the international response to the massive explosion on the Port of Beirut on August 4, 2020. It focuses on a period of 18 months that will bridge the immediate humanitarian response and the medium-term recovery and reconstruction efforts to put Lebanon on a path of sustainable development.

The promotion of sustainable passenger mobility is linked in these documents to other national priorities, such as the reduction in the dependence on imported fossil fuels, the reduction of the carbon intensity of the Lebanese electricity generation system, and support to economic development opportunities.

[1] MoEW (2016), The Second National Energy Efficiency Action Plan for the Republic of Lebanon (NEEAP) 2016-2020.

[2] MoEW & LCEC (2016), The National Renewable Energy Action Plan for the Republic of Lebanon (NREAP) 2016-2020.

[3] <https://unfccc.int/sites/default/files/resource/LEBANON-%20Third%20Biennial%20Update%20Report%202019.pdf>

[4] <https://www.worldbank.org/en/country/lebanon/publication/lebanon-reform-recovery-reconstruction-framework-3rf>

8. Knowledge Management

Elaborate the "Knowledge Management Approach" for the project, including a budget, key deliverables and a timeline, and explain how it will contribute to the project's overall impact.

The project team will ensure extraction and dissemination of lessons learned and good practices to enable adaptive management and upscaling or replication at local and global scales. Results will be disseminated to targeted audiences through relevant information-sharing platforms and networks. The project will contribute to scientific, policy-based and/or any other networks as appropriate (e.g. by providing content, and/or enabling participation of stakeholders/beneficiaries).

The knowledge management approach integrated into the project will contribute to its overall impact, making special emphasis on lessons learned and good practices. The knowledge management activities will ensure that the knowledge generated is aligned and integrated into UNDP's knowledge management systems. This will lay the conditions for replicability and up-scaling of the overall project activities.

The project will liaise with the global GEF-UNEP Programme on electric vehicles. It will actively participate in the global programme's global and regional activities through its component 3, for example by participating and contributing to the knowledge exchange in the regional knowledge and investment platforms and the relevant global working groups, as well as by providing insights and knowledge (monitored through indicator 4.1). A budget is reserved within component 3 for travel associated with the participation in these international activities.

9. Monitoring and Evaluation

Describe the budgeted M and E plan

a) Description of the budgeted M&E Plan

The project results as outlined in the project results framework will be monitored annually and evaluated periodically during project implementation to ensure the project effectively achieves these results.

Project-level monitoring and evaluation will be undertaken in compliance with UNDP requirements as outlined in the [UNDP POPP and UNDP Evaluation Policy](#). The UNDP Country Office will work with the relevant project stakeholders to ensure UNDP M&E requirements are met in a timely fashion and to high quality standards. Additional mandatory GEF-specific M&E requirements (as outlined below) will be undertaken in accordance with the [GEF M&E policy](#) and other relevant GEF policies[1].

In addition to these mandatory UNDP and GEF M&E requirements, other M&E activities deemed necessary to support project-level adaptive management will be agreed during the Project Inception Workshop and will be detailed in the Inception Report. This will include the exact role of project target groups and other stakeholders in project M&E activities including the GEF Operational Focal Point and national/regional institutes assigned to undertake project monitoring. The GEF Operational Focal Point will strive to ensure consistency in the approach taken to the GEF-specific M&E requirements (notably the GEF Climate Change Mitigation Tracking Tool) across all GEF-financed projects in the country.

b) M&E Oversight and monitoring responsibilities:

Project Manager: The Project Manager is responsible for day-to-day project management and regular monitoring of project results and risks, including social and environmental risks. The Project Manager will ensure that all project staff maintain a high level of transparency, responsibility and accountability in M&E and reporting of project results. The Project Manager will inform the Project Board, the UNDP Country Office and the UNDP-GEF RTA of any delays or difficulties as they arise during implementation so that appropriate support and corrective measures can be adopted.

The Project Manager will develop annual work plans based on the multi-year work plan included in Annex, including annual output targets to support the efficient implementation of the project. The Project Manager will ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality. This includes, but is not limited to, ensuring the results framework indicators are monitored annually in time for evidence-based reporting in the GEF Project Implementation Report (PIR), and that the monitoring of risks and the various plans/strategies developed to support project implementation (e.g. ESMP, gender action plan, stakeholder engagement plan etc.) occur on a regular basis.

Project Board: The Project Board will take corrective action as needed to ensure the project achieves the desired results. The Project Board will hold project reviews to assess the performance of the project and appraise the Annual Work Plan for the following year. In the project's final year, the Project Board will hold an end-of-project review to capture lessons learned and discuss opportunities for scaling up and to highlight project results and lessons learned with relevant audiences. This final review meeting will also discuss the findings outlined in the end of project report.

Project Implementing Partner: There are no implementing partners in this project. The Implementing Partner is responsible for providing all required information and data necessary for timely, comprehensive

and evidence-based project reporting, including results and financial data, as necessary. The Implementing Partner will strive to ensure project-level M&E is undertaken by national institutes, and is aligned with national systems so that the data used and generated by the project supports national systems.

UNDP Country Office: The UNDP Country Office will support the Project Manager as needed, including through annual supervision missions. The annual supervision missions will take place according to the schedule outlined in the annual work plan. Supervision mission reports will be circulated to the project team and Project Board within one month of the mission. The UNDP Country Office will initiate and organize key GEF M&E activities including the annual GEF PIR, the independent mid-term review and the independent terminal evaluation. The UNDP Country Office will also ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality.

The UNDP Country Office is responsible for complying with all UNDP project-level M&E requirements as outlined in the UNDP POPP. This includes ensuring the UNDP Quality Assurance Assessment during implementation is undertaken annually; that annual targets at the output level are developed, and monitored and reported using UNDP corporate systems; the regular updating of the ATLAS risk log; and, the updating of the UNDP gender marker on an annual basis based on gender mainstreaming progress reported in the GEF PIR and the UNDP ROAR. Any quality concerns flagged during these M&E activities (e.g. annual GEF PIR quality assessment ratings) must be addressed by the UNDP Country Office and the Project Manager. The UNDP Country Office will retain all M&E records for this project for up to seven years after project financial closure to support ex-post evaluations undertaken by the UNDP Independent Evaluation Office (IEO) and/or the GEF IEO.

UNDP-GEF Unit: Additional M&E and implementation quality assurance and troubleshooting support will be provided by the UNDP-GEF Regional Technical Adviser and the UNDP-GEF Directorate as needed.

Audit: The project will be audited as per UNDP Financial Regulations and Rules and applicable audit policies on DIM projects[2].

c) Additional GEF monitoring and reporting requirements:

Inception Workshop and Report: A project inception workshop will be held within two months after the project document has been signed by all relevant parties to, amongst others:

- a) Re-orient project stakeholders to the project strategy and discuss any changes in the overall context that influence project strategy and implementation;
- b) Discuss the roles and responsibilities of the project team, including reporting and communication lines and conflict resolution mechanisms;
- c) Review the results framework and finalize the indicators, means of verification and monitoring plan;
- d) Discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E budget; identify national/regional institutes to be involved in project-level M&E; discuss the role of the GEF OFP in M&E;

- e) Update and review responsibilities for monitoring the various project plans and strategies, including the risk log; SESP, Environmental and Social Management Plan and other safeguard requirements; project grievance mechanisms; the gender strategy; the knowledge management strategy, and other relevant strategies;
- f) Review financial reporting procedures and mandatory requirements, and agree on the arrangements for the annual audit; and
- g) Plan and schedule Project Board meetings and finalize the first year annual work plan.

The Project Manager will prepare the inception report no later than one month after the inception workshop. The inception report will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser and will be approved by the Project Board.

GEF Project Implementation Report (PIR): The Project Manager, the UNDP Country Office, and the UNDP-GEF Regional Technical Adviser will provide objective input to the annual GEF PIR covering the reporting period July (previous year) to June (current year) for each year of project implementation. The Project Manager will ensure that the indicators included in the project results framework are monitored annually in advance of the PIR submission deadline so that progress can be reported in the PIR. Any environmental and social risks and related management plans will be monitored regularly, and progress will be reported in the PIR. The PIR submitted to the GEF will be shared with the Project Board. The UNDP Country Office will coordinate the input of the GEF Operational Focal Point and other stakeholders to the PIR as appropriate. The quality rating of the previous year's PIR will be used to inform the preparation of the subsequent PIR.

Lessons learned and knowledge generation: Results from the project will be disseminated within and beyond the project intervention area through existing information sharing networks and forums. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to the project. The project will identify, analyse and share lessons learned that might be beneficial to the design and implementation of similar projects and disseminate these lessons widely. There will be continuous information exchange between this project and other projects of similar focus in the same country, region and globally.

Independent Mid-term Review (MTR): The terms of reference, the review process and the final MTR report will follow the standard templates and guidance for GEF-financed projects available on the [UNDP Evaluation Resource Center](#) (ERC).

The evaluation will be 'independent, impartial and rigorous'. The evaluators that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. Equally, the evaluators should not be in a position where there may be the possibility of future contracts regarding the project under review.

The GEF Operational Focal Point and other stakeholders will be actively involved and consulted during the evaluation process. Additional quality assurance support is available from the BPPS/GEF Directorate.

The final MTR report and MTR TOR will be publicly available in English and will be posted on the UNDP ERC by 1 January 2025. A management response to MTR recommendations will be posted in the ERC within six weeks of the MTR report's completion.

Terminal Evaluation (TE): An independent terminal evaluation (TE) will take place upon completion of all major project outputs and activities. The terminal evaluation process will begin three months before operational closure of the project allowing the evaluation mission to proceed while the project team is still in place, yet ensuring the project is close enough to completion for the evaluation team to reach conclusions on key aspects such as project sustainability. The Project Manager will remain on contract until the TE report and management response have been finalized. The terms of reference, the evaluation process and the final TE report will follow the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the [UNDP Evaluation Resource Center](#) by 1 September 2026. As noted in this guidance, the evaluation will be 'independent, impartial and rigorous'. The consultants that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. The GEF Operational Focal Point and other stakeholders will be involved and consulted during the terminal evaluation process. Additional quality assurance support is available from the UNDP-GEF Directorate. The final TE report will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser, and will be approved by the Project Board.

The UNDP Country Office will include the planned project terminal evaluation in the UNDP Country Office evaluation plan, and will upload the final terminal evaluation report in English and the corresponding management response to the UNDP Evaluation Resource Centre (ERC). Once uploaded to the ERC, the UNDP IEO will undertake a quality assessment and validate the findings and ratings in the TE report, and rate the quality of the TE report. The UNDP IEO assessment report will be sent to the GEF IEO along with the project terminal evaluation report.

Final Report: The project's terminal GEF PIR along with the terminal evaluation (TE) report and corresponding management response will serve as the final project report package. The final project report package shall be discussed with the Project Board during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

[1] See https://www.thegef.org/gef/policies_guidelines

[2] See guidance here: <https://info.undp.org/global/popp/frm/pages/financial-management-and-execution-modalities.aspx>

10. Benefits

Describe the socioeconomic benefits to be delivered by the project at the national and local levels, as appropriate. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?

The number of direct project beneficiaries is estimated at 704,000 women and 713,000 men. This includes the estimated passengers in the northern corridor (25% of the total demand) that will make use of the higher-quality bus services introduced by the project through voluntary agreements and by the use of the pilot electric buses. It also includes the residents in Jbeil (25% of the population) and tourists (40% of visitors) that will benefit from walking and cycling infrastructure improvements to access the main bus stops. It also includes 10% of the total Lebanese population that will benefit from the implementation of the national e-mobility strategy (details are provided in Annex M). Indirect project beneficiaries are estimated at 1,105,000 women and 1,118,000 men, based on the Lebanese urban population that could benefit from the replication and up-scaling of the project's activities (details are provided in Annex M).

In terms of benefits for the local population, through the improvement of public transport, walking and cycling, and the introduction and scale-up of electric vehicles over the medium- to long-term, the project will contribute to reducing air pollution from transport-related emissions, improving air quality around the northern corridor and, through scaling up, in other urban areas in the country. This has the co-benefit of improving the health of the citizens and reducing associated health care costs and possibility mortality rates, which has become even more relevant with the COVID-19 pandemic. Although the EVs initially introduced by the project will be unable to impact significantly on noise abatement, the scaling up of project results has a strong potential to reduce noise pollution. Facilitating the introduction of EVs into the public transport system may improve the quality of the service in terms of comfort by reducing noise and vibrations. It may consequently promote a modal shift from the use of private transport to the public transport system.

A number of climate change adaptation benefits can also be attained from the project. The implementation of management measures through GPTS and GFM is likely to enhance the resilience of the fleets through the identification of vulnerabilities and the development of contingency plans. The provision of enhanced door-to-door mobility and public transport services are likely to provide mobility conditions less exposed to weather conditions (bus stop shelters, well-ventilated and climatized buses) and information available to users in order to better plan their trips. These enhanced conditions are likely to make the Lebanese society more resilient in the face of changes in climate in the region, particularly in what refers to heat waves.

In terms of economic benefits, the deployment of EVs in the country will reduce the needs to import oil, and will further stimulate the electricity market, and the appetite of investors in renewables, in accordance with the country's policy, as investment uncertainties are reduced.

11. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification *

PIF	CEO Endorsement/Approval	MTR	TE
High or Substantial			

Measures to address identified risks and impacts

Elaborate on the types and risk classifications/ratings of any identified environmental and social risks and impacts (considering the GEF ESS Minimum Standards) and any measures undertaken as well as planned management measures to address these risks during implementation.

Nine potential risks have been identified for this project, two of which are assessed as SUBSTANTIAL and seven as MODERATE. As a result, the project has been categorized as SUBSTANTIAL risk. During the PPG, an ESMF (ProDoc Annex 10), Stakeholder Engagement Plan (ProDoc 9) and Gender Action Plan (ProDoc Annex 11) have been prepared to meet SES requirements. During project implementation, a SESA and ESMP will be prepared. The ESMP will include an Occupational and Community Health and Safety Plan, Spill Prevention and Management Plan, Traffic Management Plan and a Waste Management Plan will also be prepared and implemented. The project will set up a GRM to ensure all community concerns and complaints are addressed. Engagement of the private sector will be preceded by a private sector risk assessment to ensure compliance with SES.

Supporting Documents

Upload available ESS supporting documents.

Title	Module	Submitted
6468-Lb-SustTr-SESP-May20	CEO Endorsement ESS	

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

<p>This project will contribute to the following Sustainable Development Goal (s): 7 (Affordable and Clean Energy), 9 (Industry, Innovation and Infrastructure), 11 (Sustainable Cities and Communities) and 13 (Climate Action).</p>				
<p>This project will contribute to the following country outcome CPD 2017-2020): Outcome 4.1. Tons of CO2 eq emissions (or equivalent) reduced in the industrial and commercial sectors</p> <p>Outcome 4.3: Number of national development plans and processes integrating: biodiversity, renewable energy, energy efficiency, sustainable consumption and production, climate change, sound chemical management, sustainable consumption & production and ecosystem services values</p>				
	<p>Objective and Outcome Indicators</p> <p>(no more than a total of 20 indicators)</p>	<p>Baseline[1]</p> <p><i>Must be determined during PPG phase</i></p>	<p>Mid-term Target[2]</p> <p><i>Expected level of progress before MTR process starts</i></p>	<p>End of Project Target</p> <p><i>Expected level when terminal evaluation undertaken</i></p>
<p>Project Objective: Promote sustainable transport in Lebanon through electric mobility and improved quality of service</p>	<p><u>Mandatory</u> <u>Indicator 1:</u> # direct project beneficiaries disaggregated by gender (individual people)[3]</p>	0	0	704,000 women and 713,000 men
	<p><u>Mandatory</u> <u>GEF Core Indicator 6.2:</u></p> <p>Indicator 2: Expected (direct) metric tons of CO₂e avoided (at the time of measurement)</p>	0 tons	0 tons	39,069 tons (5,209 tons at end of project)

	Indicator 3: # indirect project beneficiaries disaggregated by gender (individual people)	0	0	1,105,000 women and 1,118,000 men
Project component 1	Institutional and policy support for the promotion of sustainable transport systems and e-mobility			
Project Outcome[4] 1: Strengthened policy and social environment to support the promotion of sustainable low emissions transport systems	Indicator 4: National e-mobility strategy prepared with key stakeholders	No national e-mobility strategy	National e-mobility strategy presented to key stakeholders	National e-mobility strategy completed with government and at least 4 other key stakeholders
	Indicator 5: Number of voluntary agreements signed in the transport sector	0	2 (minimum number of bus companies necessary to carry out the pilots)	5
Outputs to achieve Outcome 1	Output 1.1: Guidelines on low-cost sustainable mobility measures, including local improvements and voluntary agreements with bus operators and corporate fleets Output 1.2: National e-mobility strategy prepared with government and key stakeholders Output 1.3: Roadmap on end-of-life vehicle management, including electric vehicles and their batteries endorsed by government and key stakeholders			
Project component 2	Short-term barrier removal through e-mobility and other low-carbon demonstrations			
Outcome 2: Demonstrations provide evidence of technical, financial and environmental sustainability to plan for scale-up of low-carbon electric mobility	Indicator 6: Number of passengers (women and men) making use of green public transport services in the northern corridor	0	Daily average: 2,500 women and 2,000 men	Daily average: 10,000 women and 8,000 men [Figures to be checked]
	Indicator 7: Number of EV registered in Lebanon	0 (2020)	+4 cars, +1 bus (those provided by the project)	+20 cars, +4 buses

Outputs to achieve Outcome 2	<p>Output 2.1: Self-Certified green public transport services (GPTS) concept developed and implemented in at least one regular bus line in the northern corridor</p> <p>Output 2.2: Green fleet management (GFM) concept (including EVs) implemented in one governmental fleet</p> <p>Output 2.3: Non-motorized accessibility (including electric-mobility) to public transport improved in at least one municipality</p> <p>Output 2.4. The viability of electric buses in certified green public transport services is demonstrated and assessed in the northern corridor</p> <p>Output 2.5. The viability of electric cars in corporate fleets under green fleet management is demonstrated and assessed</p>			
Project component 3:	Knowledge management, capacity development and awareness raising			
Outcome 3: Sustainable low-emission transport programs widely supported	Indicator 8: Number of governmental and non-governmental stakeholders actively engaged in the network	0	5 governmental, 5 non-governmental	8 governmental, 10 non-governmental
	Indicator 9: Number of public and private decision-makers trained (women and men)	0	10 women, 10 men	20 women, 20 men
Outputs to achieve Outcome 3	<p><i>Output 3.1: Networking mechanism established among agencies and stakeholders involved in sustainable low emissions transport systems to accelerate the implementation of the e-mobility strategy and the adoption of GPTS and GFM by corporations and public bodies</i></p> <p><i>Output 3.2: Coordination with the "Global Programme to Support Countries with the Shift to Electric Mobility? (participation at thematic working groups and at the Support and Investment Platform)</i></p> <p><i>Output 3.3: Sustainable mobility communication and public awareness campaigns implemented, based on project results and focusing on mobility behaviour (including road safety), and low-emission transport (including EVs, public transport, walking and cycling)</i></p> <p><i>Output 3.4: Capacity of municipal planners and public transport managers built for the promotion of low-emission transport (including non-motorized transport and carpooling), traffic control and management (e.g. parking management, vehicle-use control)</i></p>			
Project component 4:	Monitoring & Evaluation			

Outcome 4	Indicator 10: Number of reports on best practices and lessons learned on the project shared with the global programme	0	0	6 reports (corresponding to activities 1.2.6, 2.3.3, 2.4.3, 2.5.3, 3.2.2 and 3.2.3)
Outputs to achieve Outcome 4	Output 4.1: The project monitoring and evaluation plan and knowledge-management strategy are designed and implemented			

[1] Baseline, mid-term and end of project target levels must be expressed in the same neutral unit of analysis as the corresponding indicator. Baseline is the current/original status or condition and needs to be quantified. The baseline can be zero when appropriate given the project has not started. The baseline must be established before the project document is submitted to the GEF for final approval. The baseline values will be used to measure the success of the project through implementation monitoring and evaluation.

[2] Target is the change in the baseline value that will be achieved by the mid-term review and then again by the terminal evaluation.

[3] Provide total number of all direct project beneficiaries expected to benefit from all project activities until project closure. Separate the total number by female and male. This indicator captures the number of individual people who receive targeted support from a given GEF project and/or who use the specific resources that the project maintains or enhances. Support is defined as direct assistance from the project. Direct beneficiaries are all individuals receiving targeted support from a given project. Targeted support is the intentional and direct assistance of a project to individuals or groups of individuals who are aware that they are receiving that support and/or who use the specific resources.

[4] Outcomes are medium term results that the project makes a contribution towards, and that are designed to help achieve the longer-term objective. Achievement of outcomes will be influenced both by project outputs and additional factors that may be outside the direct control of the project.

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

Comments from Canada
Sustainable transport systems have important linkages with socio-economic development, including the important role it has for inclusive development. To what extent has this project considered aspects of inclusion and vulnerability (i.e. building an accessible and equitable transport system for most vulnerable groups) as part of its outcomes and activities?
<p>Agency's response</p> <p>Inclusion and vulnerability issues are addressed mainly in project component 1. The guidelines to municipalities (activity 1.1.1) and the development of guidelines on public transport (activity 1.1.2) take into consideration equity issues in mobility. Furthermore, the preparation of the sustainable e-mobility strategy includes a gender, social and environmental analysis (activity 1.2.5).</p>
Lebanon has seen nation-wide protests since October 17, 2019. It is highly unlikely that the Government of Lebanon would be able to co-finance such initiatives given the current status of debt and foreseen financial/economic crisis. It is also the question if environmental projects would be on the top of the priority list of a caretaker government or any newly formed government, given the more urgent challenges facing the country at the moment.
<p>Agency's response</p> <p>UNDP Lebanon has been implementing various projects funded by GEF, but also other donors such as EU. Despite the current economic and political crisis, the Government continues to function (even in caretaker mode) and the cabinet is being reformed so line ministries, especially technical ones, continue to operate. Development projects are therefore very relevant in this context and any national economic strategy or reform package will consider priority areas that would boost the economy; transport is a specifically important one for Lebanon and relates to all economic sectors. Furthermore, co-financing from the World Bank remains, which include large infrastructure investments valid and on-going.</p> <p>During the PPG stage, the project design has been adapted to the challenging situation in Lebanon. Transport remains a critical challenge for the GoL, more even so after the August 4th, 2020 blast in the port of Beirut. This is confirmed by the attention transport receives in the Lebanon Reform, Recovery and Reconstruction Framework (3RF).</p> <p>Project's co-financing has been carefully identified and assessed. The government's co-financing in all cases correspond to in-kind, recurrent expenditures for activities to be carried out but the various institutions in areas closely-related to the project and with very low-risk of lack of materialization, even under the difficult circumstances in the country.</p>
Comments from Germany
<p>Germany recommends revising the document to mainstream the "Avoid-Shift-Improve Approach" in Lebanon. This involves reducing the need to travel, shifting to more environmentally friendly transit modes, and improving the energy efficiency of transport modes and vehicle technology.</p> <p>It would be helpful to describe more clearly how the shift in transport systems fits into an overall shift towards sustainability in other systems (energy, urban areas). A dedicated section could be added to the theory of change.</p>

Agency's response

The description of the the baseline scenario includes a reference to the ASI approach, which is included in UN-HABITAT's recently-issued Guide for Mainstreaming Transport and Mobility in Lebanon's National Urban Policy. The project's strategy is embedded within this framework, while respecting the CM-1-2 focus on electric-drive technology and electromobility. Output 1.2 (National sustainable e-mobility strategy) will provide further guidance on this.

The relationship with energy and urban policies is included in the baseline description and in the Theory of Change, with a focus on the need to establish synergies among these sectoral policies. This is translated within the project in the inclusion of renewables in the demonstration (solar panels feeding the charging infrastructure for buses) and the inclusion of one demonstration in Jbeil, where the Master Plan is under revision.

Germany recommends integrating this project with the National Strategy for Public Transit as discussed in section 1.3. The project can then contribute to Sustainable Development Goal 11 (make cities and human settlements inclusive, safe, resilient and sustainable).

Agency's response

The National Strategy for Public Transit is included in the baseline description. The demonstrations on door-to-door mobility and e-buses are aligned with its recommendations, and are expected to facilitate its implementation through the provision of factual evidence. The implementation of the Strategy has been thus far hampered by the situation in the country. Accordingly, SDG 11 is identified as one of the contributions of the project.

Germany encourages Capacity Building initiatives, such as training local people to implement, manage, and operate EV-projects.

Agency's response

Capacity building initiatives are included in the project, mainly in output 3.4 with training workshops for municipal planners and decision-makers and train-the-trainer workshops on charging infrastructure, and EV and hybrid vehicle maintenance and driving targeting current and future transport staff (drivers, maintenance staff, etc).

Germany recommends making public transport more attractive, affordable and accessible for all, for example with mobility apps.

Agency's response

This is the purpose of the GPTS concept introduced and demonstrated by the project. Although there are already mobility apps providing information on public transport, developed by one of the project's stakeholders (Yallabus), the GPTS concept includes the availability of planned and real-time information from bus operators, which would strengthen the role of such information platforms (activity 1.1.2).

On the technical side of e-mobility, Germany highly recommends to review the document as to assess whether the following activities could be integrated:

- ? Increasing the share of renewable energies in the transport sector
- ? Effectively integrating e-vehicles into the energy system to avoid rebound effects
- ? Conducting an integrated lifecycle analysis for the use of e-vehicles, considering infrastructure, resource scarcities, and recycling
- ? Establishing incentives for EV-usage, such as parking privileges

Agency's response

Increasing the share of renewable energies in the transport sector is integrated in the project through the promotion of EVs and also with the demonstration of the fast-charging system for e-buses, which are fed by solar panels. The national sustainable e-mobility strategy (output 1.2) also addresses the challenges associated to increasing the share of renewables in electricity generation in Lebanon in parallel to the deployment of EVs.

The integration of EVs into the energy system is addressed by the national sustainable e-mobility strategy (output 1.2).

The assessment of the pilots (in outputs 2.4 and 2.5) include an integrated lifecycle analysis for the use of e-vehicles in the demonstrations, including infrastructure, resource scarcities, and recycling.

The consideration of incentives for EV-usage is included in the national sustainable e-mobility strategy (output 1.2).

Comments from USA

Given the lack of a government and the current economic crisis, implementation and co-financing with government counterparts appears at highly risk. Can the implementing agency explain why this is appropriate timing for this project? We do not understand the current environment on the ground to be conducive for development projects, particularly with government counterparts.

Agency's response

UNDP Lebanon has been implementing various projects funded by GEF, but also other donors such as EU. Despite the current economic and political crisis, the Government continues to function (even in caretaker mode) and the cabinet is being reformed so line ministries, especially technical ones, continue to operate. Development projects are therefore very relevant in this context and any national economic strategy or reform package will consider priority areas that would boost the economy; transport is a specifically important one for Lebanon and relates to all economic sectors. Furthermore, co-financing from the World Bank remains, which include large infrastructure investments valid and on-going.

ANNEX C: Status of Utilization of Project Preparation Grant (PPG). (Provide detailed funding amount of the PPG activities financing status in the table below:

PPG Grant Approved at PIF: USD 100,000
<i>GETF/LDCF/SCCF Amount (\$)</i>

<i>Budgeted Amount</i>	<i>Amount Spent to Date</i>	<i>Amount Committed</i>	<i>Uncommitted Balance</i>
40,000.00	0.00	0.00	40,000.00
48,000.00	48,500.00	30,220.00	-30,720.00
12,000.00	436.25	0.00	11,563.00
100,000.00	48,936.25	30,220.00	20,843.75

ANNEX D: Project Map(s) and Coordinates

Please attach the geographical location of the project area, if possible.



Figure A.3.1: The Northern BRT Corridor

Project sites	Latitude	Longitude
ISF depot (Emile Helou Police Station, Beirut)	33.8809	35.4820
Jbeil, bus depot (Municipality Palace)	34.1240	35.6516

ANNEX E: Project Budget Table

Please attach a project budget table.

Expenditure Category	Detailed Description	Component (USD eq.)	Total (USD eq.)	Responsible Entity
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		<i>Component 1</i>	<i>Component 2</i>	<i>Component 3</i>	<i>Sub-Total</i>	<i>M&E</i>	<i>PMC</i>		(Executing Entity receiving funds from the GEF Agency) [1]
		<i>Sub-component 1.1</i>	<i>Sub-component 2.1</i>	<i>Sub-component 3.1</i>					
Furniture/Equipment	Technical assistance to output 3.1 (virtual platform and website, 1.0 pm)			10,000	10,000			10,000	UNDP
Furniture/Equipment	PPEs, first aid kits (400 USD/year)				-		2,000	2,000	UNDP
Furniture/Equipment	(50 USD docusign+ 156 USD e-mail subscription+27 USD Office 365+24 USD Zoom) *3 staff*5 years						6,855	6,855	UNDP
Furniture/Equipment	3 computers @ USD 1,300						3,900	3,900	UNDP
Furniture/Equipment	Maintenance of equipment (329 USD/year)						1,645	1,645	UNDP
Furniture/Equipment-Vehicle	Procurement of 2 e-buses (2@ USD 450,000); procurement of pilot cars and fleet management hardware and software (USD 160,000)		1,060,000		1,060,000			1,060,000	UNDP
Furniture/Equipment-Vehicle	Office furniture						3,589	3,589	UNDP

Contractual Services ? Individual	Project manager (2.5 pm output 1.1; 5.5 pm output 1.2; 2 pm output 1.3) @ USD 6,900/pm. Transport engineer (1.0 pm output 1.2) @ USD 5,200/pm. Project assistant (1.0 pm output 1.1; 4.1 pm output 1.2) @ USD 3,100/pm. Project safeguards officer (1.2 pm output 1.1; 3.0 pm output 1.2) @ USD 2,500/pm	100,510			100,510			100,510	UNDP
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<p>Contractual Services ? Individual</p>	<p>Project manager (3.0 pm output 2.1; 2.4 pm output 2.2; 1.5 pm output 2.3; 0.8 pm output 2.4; 0.8 pm output 2.5) @ USD 6,900/pm. Transport engineer (10.0 output 2.1; 7.0 output 2.2; 7.0 pm output 2.3; 4.0 pm output 2.4; 4.0 pm output 2.5) @ USD 5,200/pm. Project assistant (1.0 output 2.1; 0.5 output 2.2; 1.1 pm output 2.3) @ USD 3,100/pm. Project safeguards officer (0.5 pm output 2.1; 0.5 pm output 2.2; 0.9 pm output 2.3) @ USD 2,500/pm.</p>		237,860		237,860			237,860	UNDP
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Contractual Services ? Individual	project manager (9.0 pm output 3.1; 10.0 pm output 3.2; 5.0 pm output 3.3; 3.0 pm output 3.4) @ USD 6,900/pm. Transport engineer (6.0 pm output 3.1; 6.0 pm output 3.2; 9.0 pm output 3.4) @ USD 5,200/pm. Project assistant (5.5 pm output 3.1; 2.5 pm output 3.2; 3.5 pm output 3.3; 5.8 pm output 3.4) @ USD 3,100/pm. Project safeguards officer (2.5 pm output 3.1; 1.6 pm output 3.2, 3.5 pm output 3.3; 1.9 pm output 3.4) @ USD 2,500/pm.			372,880	372,880			372,880	UNDP
Contractual Services ? Individual	Project manager (5.5 pm output 4.1) @ USD 6,900/pm. Transport engineer (6.0 pm output 4.1) @ USD 5,200/pm. Project assistant (2.0 pm output 4.1) @ USD 3,100/pm. Project safeguards officer (3.0 pm output 4.1) @ USD 2,500/pm				-	82,850		82,850	UNDP

Contractual Services ? Individual	Project manager (9.0 pm) @ USD 6,900/pm. Project assistant (18.0 pm) @ USD 3,100/pm.				-		117,900	117,900	UNDP
Contractual Services ? Company	Technical assistance for activities 1.1.2 (4 pm), 1.1.3 (3.5 pm), 1.1.1 (9 pm), 1.2.2 (4 pm), 1.2.3 (4 pm), 1.2.4 (4 pm), 1.3.1 (8.5 pm), 1.3.2 (1.5 pm) and 1.3.3 (10.0 pm). Environmental expertise team for activity 1.2.5 (1.5 pm)	500,000			500,000			500,000	UNDP
Contractual Services ? Company	Technical assistance for activities 2.1.1 (3.7 pm), 2.1.3 (2.0 pm), 2.2.1 (1.7 pm), 2.3.1 (2.0 pm), 2.3.3 (1.0 pm), 2.4.3 (1 pm), 2.5.1 (2.0 pm), and 2.5.3 (1.0 pm). Construction works in Jbeil (activity 2.3.2) USD 375,000. Environmental expertise team for activity 2.3.2 (1.0 pm)		549,000		549,000			549,000	UNDP

Contractual Services ? Company	Technical assistance to output 3.3 (communication plan, 1.7 pm or USD 17,000). Transport professionals: Training and supporting materials (USD 18,000) and gender training materials (USD 10,000). Planners and decision-makers: 2 workshops (USD 16,000). Train-of-trainers workshops: 2 workshops (USD 20,000)			81,000	81,000			81,000	UNDP
Contractual Services ? Company	Technical assistance on project monitoring platform and compilation of knowledge products (USD 10,000).					10,000		10,000	UNDP
International Consultants	Technical assistance to activities 3.2.2 (1.0 pm) and 3.2.3 (1.0 pm)			20,000	20,000			20,000	UNDP
International Consultants	Mid-term evaluation (USD 30,000). Terminal evaluation (USD 40,000)				-	70,000		70,000	UNDP
International Consultants					-			-	UNDP
Local Consultants	Gender expert for activities 1.1.2 (0.5 pm), 1.2.5 (0.5 pm) @ USD 10,000/pm	10,000			10,000			10,000	UNDP

Local Consultants	Gender expert for activities 2.1.2 (0.3 pm), 2.2.2 (0.3 pm), 2.3.2 (1.0 pm) @ USD 10,000/pm		16,000		16,000			16,000	UNDP
Local Consultants	Gender expert for activities 3.1.1 (0.2 pm); 3.3.1 and 3.3.2 (0.4 pm); 3.4.1 and 3.4.2 (0.2 pm). Planners and decision-makers: training materials (USD 2,179); gender training materials (USD 4,000); social & environmental materials (USD 2,000).			16,179	16,179			16,179	UNDP
Local Consultants	Gender expert: monitoring of gender action plan (USD 7,000). Technical assistance to monitor social and environment safeguards (USD 8,000)					15,000		15,000	UNDP
Trainings, Workshops, Meetings	E-mobility network meetings: 10 meetings (USD 20,000)			20,000	20,000			20,000	UNDP
Trainings, Workshops, Meetings	Inception workshop (USD 2,000).				-	2,000		2,000	UNDP
Travel	13 trips @ USD 1,500 to participate at UNEP's E-mob Global Programme activities			19,500	19,500			19,500	UNDP

Travel	5 trips for public consultancies @ USD 400				-		2,000	2,000	UNDP
Office Supplies	Office supplies				-		16,800	16,800	UNDP
Other Operating Costs	Procurement and installation of fast-charging equipment for e-buses (USD 150,000)		150,000		150,000			150,000	UNDP
Other Operating Costs	General public campaigns (USD 40,000). Social & environmental audio visual and printed materials (USD 1,000).			41,000	41,000			41,000	UNDP
Other Operating Costs	Custodial and Cleaning services, Utilities (300 USD/year)				-		1,500	1,500	UNDP
Other Operating Costs	5 independent financial audits @ USD 2,000				-		10,000	10,000	UNDP
Other Operating Costs	Mailing and clearances (300 USD/year)*5=15,000				-		1,500	1,500	UNDP
Other Operating Costs	Office operations (USD 300 per year)*5=15,000				-		1,500	1,500	UNDP
Grand Total		610,510	2,012,860	580,559	3,203,929	179,850	169,189	3,552,968	

ANNEX F: (For NGI only) Termsheet

Instructions. Please submit an finalized termsheet in this section. The NGI Program Call for Proposals provided a template in Annex A of the Call for Proposals that can be used by the Agency. Agencies can use their own termsheets but must add sections on Currency Risk, Co-financing Ratio and Financial Additionality as defined in the template provided in Annex A of the Call for proposals. Termsheets submitted at CEO endorsement stage should include final terms and conditions of the financing.

ANNEX G: (For NGI only) Reflows

Instructions. Please submit a reflows table as provided in Annex B of the NGI Program Call for Proposals and the Trustee excel sheet for reflows (as provided by the Secretariat or the Trustee) in the Document Section of the CEO endorsement. The Agency is required to quantify any expected financial return/gains/interests earned on non-grant instruments that will be transferred to the GEF Trust Fund as noted in the Guidelines on the Project and Program Cycle Policy. Partner Agencies will be required to comply with the reflows procedures established in their respective Financial Procedures Agreement with the GEF Trustee. Agencies are welcomed to provide assumptions that explain expected financial reflow schedules.

ANNEX H: (For NGI only) Agency Capacity to generate reflows

Instructions. The GEF Agency submitting the CEO endorsement request is required to respond to any questions raised as part of the PIF review process that required clarifications on the Agency Capacity to manage reflows. This Annex seeks to demonstrate Agencies' capacity and eligibility to administer NGI resources as established in the Guidelines on the Project and Program Cycle Policy, GEF/C.52/Inf.06/Rev.01, June 9, 2017 (Annex 5).