Mid Term Review

"Lebanon Sustainable Low-Emission Transport Systems" Project

Project Title	Lebanon Sustainable Low-Emission Transport Systems
UNDP Project ID (PIMS #)	6468
GEF Project ID (PMIS #)	10358
Project period	5 years (29 May 2022 - 31 May 2027)
Country	Lebanon
Region	Jbeil
GEF Implementing Agency	UNDP Lebanon
Implementing Agency	UNDP Lebanon
Implementing Partners	MoPWT, MoE, MoIM, MoEW, ISF, and the Municipality of Jbeil
GEF Operational Focal Area/Strategic Program	Climate Change Mitigation
MTR Timeframe	September – December 2024
MTR Report Submission Date	31 December 2024
MTR Team	Elinor Bajraktari and Nader Hajj Shehadeh

Disclaimer and Acknowledgements

This report is the work of two independent evaluators and does not necessarily represent the views, or policies, or intentions of the United Nations Development Programme (UNDP) and/or of the Government of the Lebanon.

Acknowledging the extraordinary circumstances under which this Mid-Term Review was conducted, the evaluation team expresses its deepest gratitude to all stakeholders who, despite being personally affected by the severe security crisis in Lebanon, generously shared their time, insights, and documentation to support this assessment. Special thanks go to the Project Team and the UNDP Country Office staff who supported the process despite the challenging circumstances for them and their families.

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ACRONYMS AND ABBREVIATIONS

BRT	Bus Rapid Transit
COM-B	Capability, Opportunity, Motivation-Behavior
CSO	Civil Society Organization
DAC	Development Assistance Committee
DIM	Direct Implementation Modality
EV	Electric Vehicle
ESIA	Environmental and Social Impact Assessment
GEF	Global Environment Facility
GHG	Greenhouse Gas
ISF	Internal Security Forces
kWp	Kilo-Watt Peak
MoE	Ministry of Environment
MoEW	Ministry of Energy and Water
MoIM	Ministry of Interior and Municipalities
MoPWT	Ministry of Public Works and Transport
MTR	Mid-Term Review
NDC	Nationally Determined Contribution
NIM	National Implementation Modality
OECD	Organization for Economic Cooperation and Development
PIMS	Project Information Management System
PMU	Project Management Unit
PPA	Public Procurement Authority
PV	Photovoltaic
RRF	Resource and Results Framework
SDG	Sustainable Development Goal
TOC	Theory of Change
TOR	Terms of Reference
TRAC	Target Resource Allocation from Core
UNDP	United Nations Development Programme
UNEG	United Nations Evaluation Group
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar
VOC	Volatile Organic Compound

Executive Summary

Table 1: Project Information

Project Title:	Lebanon Sustainable Low-Emission Transport Systems		
UNDP Project ID (PIMS #):	6468	**PIF Approval Date:**	19/06/2021
GEF Project ID (PMIS #):	10358	**CEO Endorsement Date:**	19/12/2021
Award ID:	00127080	**Project Document (ProDoc) Signature Date (date project began):**	29 May 2022
Country:	Lebanon	**Date project manager hired:**	
Region:	Jbeil	**Inception Workshop date:**	14/10/2022
Focal Area:	Climate Change Mitigation	**Midterm Review date:**	November 2024
GEF-5 Strategic Programs:	Climate Change Mitigation	**Planned closing date (including extension):**	31 May 2027
Trust Fund:	GEF	**If revised, proposed closing date:**	
Executing Agency:	UNDP Lebanon		
Other Partners involved:	MoPWT, MoE, MoIM, and the Municipality of Jbeil		

Project Financing	at CEO endorsement (USD)	at MTR Evaluation (USD)
(1) GEF financing:	3,552,968 USD	3,552,968 USD
(2) UNDP contribution:	200,000 USD	109,439 USD
(3) Government:	1,245,000 USD	17,500,000 USD
(4) Other Partners:	42,690,000 (World Bank)	0 (World Bank)
(5) Total co-financing [2+3+4]:	44,135,000 USD	17,609,439 USD
Project Total Cost [1+5]:	**47,887,968 USD**	**21,162,407 USD**

This report presents the main findings of the Mid-term Review (MTR) of the GEF-funded project titled *"Lebanon Sustainable Low-Emission Transport Systems"* implemented by the United Nations Development Programme (UNDP) in Lebanon. Commissioned by UNDP Lebanon and carried out during September - December 2024 by a team of two independent experts, this review was conducted at the beginning of the third year of project implementation to determine progress towards the achievement of outcomes and identify potential corrections of project's course if needed. The report's main findings consist of three parts: assessment of key aspects of project design and formulation; assessment of implementation issues; and, assessment of the results achieved by the project along the standard dimensions of relevance, effectiveness, efficiency and sustainability.

The project, which began on May 29, 2022, with an original closure date set for May 31, 2027, aims to support the Government of Lebanon in curbing the unsustainable trends in passenger transport in Lebanon, accelerating the country's transition towards sustainable mobility in Lebanon as a means to reduce GHG emissions, to increase the quality of transport services and

the competitiveness and sustainable practices of companies, and improving the quality of life and social and gender inclusion. The MTR, conducted in the period September - December 2024, represents an independent assessment of the project's progress, offering feedback and actionable recommendations to UNDP, the Government of Lebanon and other stakeholders. The project was assessed using UNDP and GEF evaluation criteria, as well as OECD DAC and UNEG standards, employing a mixed-methods approach that included document review, interviews, questionnaires and information triangulation.

This MTR was conducted in an extreme situation of active conflict and humanitarian emergency. Initially, it was planned as a regular exercise based on the standard UNDP process for conducting evaluation. Interviews were planned with all key stakeholders, including many national institutions, and field work and on-site observations were envisaged to be conducted. As the data collection process for this MTR was about to be launched, the security situation in Lebanon escalated to unprecedented levels of conflict, leading to widespread civilian casualties, and a growing humanitarian crisis. As of early October 2024, the escalation of conflict had resulted in approximately 2,083 deaths, including many women and children, with nearly 9,869 injuries reported.[1] The ongoing violence had displaced over 608,509 individuals, representing a dramatic increase in internally displaced persons (IDPs).[2]

As a result of the escalating crisis, this MTR had to be completed under extraordinary circumstances. First of all, very few project stakeholders were available for interviews. Most had either left the country or fled to safer locations for their security. A few stakeholders agreed to being interviewed, and even those interviews revealed the trauma and shock caused for these individuals by the conflict. The list of interviewees is included in the annexes of this report. This list was limited to seven interviewees out of whom four were UNDP staff, reflecting the drastic limitation in the accessibility of external stakeholders in the extraordinary circumstances surrounding this MTR. For all efforts made by the evaluation team, this was the best that could be secured under the extreme conditions of this MTR. This is a severe limitation for this review, but the evaluators made the utmost effort to compensate for it by reviewing in great detail all the documents that were available for the project – especially, the project implementation reviews, the project board minutes, etc. Also, ample time was spent discussing key aspects of the project with the project team. There was nothing else that could have been done to mitigate the severe limitation of external sources for this MTR.

Project Strategy

The project was designed to support Lebanon's Nationally Determined Contributions (NDC) and advance climate change mitigation through sustainable transport solutions, including electric vehicles, public transport efficiency, and non-motorized mobility, aligning with SDGs 11, 13, 7, and 5. The project's multi-dimensional approach integrated institutional capacity building, technical demonstrations, stakeholder engagement, and policy development, ensuring alignment with Lebanon's national priorities and international commitments like the Paris

[1] https://reliefweb.int/report/lebanon/escalation-hostilities-lebanon-public-health-situation-analysis-phsa-09-october-2024
[2] https://reliefweb.int/report/lebanon/escalation-hostilities-lebanon-public-health-situation-analysis-phsa-09-october-2024

Agreement. Gender responsiveness was embedded through gender-sensitive designs, safety measures, and capacity-building initiatives to address women's specific transport challenges. While the design was generally well-structured, it lacked explicit plans for adapting to Lebanon's socio-political challenges, replicating demonstrations, and ensuring financial viability post-project. The Results Framework (RRF) was aligned with project objectives and included SMART indicators, focusing on capacity building and emission reductions, but faced gaps in sequencing, intermediate targets, and qualitative measures for institutional strengthening. The security crisis further complicated achieving gender and social inclusion goals, underscoring the need for adaptive strategies and clearer pathways for sustaining project outcomes.

Project Progress

The project has made progress toward planned results despite Lebanon's deteriorating security and economic conditions, which have significantly disrupted implementation. Key achievements include the development of guidelines for sustainable transport, progress in technical preparation for solar-powered bus stations and e-buses, and expanded stakeholder networks. However, major delays have affected critical outputs, including the national e-mobility strategy, voluntary agreements, and demonstration components, leaving many indicators off track. Gender mainstreaming efforts have shown promise, integrating gender-responsive designs and criteria, but gaps remain in tracking qualitative impacts and promoting women's participation in the transport sector. Social inclusion aspects, such as addressing accessibility for vulnerable groups, have been considered but require further focus on implementation. The security crisis poses a serious threat to sustaining progress, as institutional priorities have shifted toward emergency responses. Moving forward, the project needs to prioritize accelerating implementation, improving stakeholder coordination, and strengthening operational readiness while addressing barriers to policy adoption and gender equity, contingent upon stabilization of the security situation.

Project Implementation and Adaptive Management

The project, implemented under the Direct Implementation Modality (DIM) with UNDP as the lead agency, demonstrated adaptability to Lebanon's complex challenges, including economic instability, infrastructure limitations, and escalating security crises. Key achievements include establishing solar-powered charging infrastructure, procuring electric buses, and developing technical guidelines. UNDP coordinated stakeholders and adapted strategies, including redesigning infrastructure to address grid unreliability. However, institutional engagement shifted from national ministries to municipalities, with the Municipality of Jbeil emerging as a primary partner, though broader municipal participation remained inconsistent. Risk management addressed technical and financial risks but underestimated institutional and security vulnerabilities, revealing gaps in proactive planning. Financial performance showed delays, with only 29% of the budget executed, attributed to redesigns and procurement challenges. Monitoring and evaluation frameworks were well-designed, but struggled with incomplete baseline data, outcome-level tracking, and reactive risk monitoring. Gender mainstreaming and social inclusion efforts were integrated but required more systematic

tracking of results. Stakeholder engagement achieved successes in municipal-level partnerships and private-sector collaboration but faced challenges in maintaining national institutional ownership and informal sector engagement. Reporting and communications strategies were effective in documenting activities and promoting project visibility but lacked detailed financial analysis, systematic lessons learned, and measurable impacts of outreach efforts. Going forward, the project needs to address financial inefficiencies, enhance adaptive management, strengthen stakeholder engagement, and reassess goals based on the evolving security context.

Conclusion

Moving forward, the project requires a reassessment of objectives, enhanced risk management, and adaptive implementation strategies to sustain progress within Lebanon's volatile context, prioritizing resilience, local partnerships, and technical capacity building.

The following table summarizes the scoring of this project based on the MTR.

Table 2: MTR Ratings

MTR Ratings	
Progress Towards Results	Moderately Satisfactory
Project Implementation & Adaptive Management	Moderately Satisfactory
Overall likelihood of Sustainability:	Moderately Unlikely
Financial resources	Unlikely
Socio-economic	Moderately Likely
Institutional framework and governance	Moderately Unlikely
Environmental	Moderately Likely

The MTR also identified the following key recommendations for project stakeholders.

Table 3: Key Recommendations

Recommendation	Responsible Party	Timeframe
Recommendation 1: Project Design • Update the project design to include contingency measures for operating under extreme security conditions. Establish a formal adaptive management protocol with clear triggers for response actions, to be reassessed regularly as security conditions change.	Project Management Unit (PMU), UNDP, Government Partners	Short-term[3]
• Re-evaluate the sustainability of the project's financial model and institutional frameworks in light of the country's economic and security situation. Identify alternative financing options, such as scaling up partnerships with academic institutions, NGOs, and private stakeholders, to offset the loss of co-financing commitments from entities like the World Bank. Develop a sustainability action	PMU, UNDP, Ministry of Environment (MoE)	Short-term

[3] Short-term means within the lifetime of the project. The focus of this MTR has been on identifying short-term recommendations. Longer-term recommendations will be identified in the terminal evaluation.

plan with shorter timeframes and lower-cost interventions that can realistically continue in Lebanon's crisis conditions.		
• Focus the design on partnerships with resilient local actors, such as municipalities like Jbeil, and leverage local expertise to manage implementation. This involves decentralizing project components, building on existing local infrastructure, and developing localized monitoring mechanisms that maintain momentum and visibility, even if national-level coordination is limited.	PMU, Municipality of Jbeil, UNDP	Short-term
Recommendation 2: Project Implementation		
• Based on the findings of this MTR, review project objectives and targets and establish what remains feasible from the project's perspective. Adjust activities, refine timelines, and allocate resources to achievable activities.	PMU, Municipality of Jbeil, UNDP	Short-term
• Develop a flexible M&E framework to track adaptive measures, security risks, and ongoing project impacts in real-time. Ensure it includes both outcome and process indicators to better capture incremental achievements and maintain accountability. Establish interim progress milestones to help maintain focus on key deliverables, even if completion of all components remains uncertain.	PMU, UNDP, National Government	Short-term
• Strengthen the tracking and monitoring of project indicators in a gender-disaggregated fashion. Develop and integrate gender-sensitive tools to capture qualitative and quantitative data reflecting gender-specific barriers, preferences, and needs in transport systems. Provide gender training for project staff, implementing partners, and stakeholders to build their capacity to collect, analyze, and interpret gender-disaggregated data effectively.	PMU	Short-term
• Streamline engagement efforts by focusing on key stakeholders who remain interested and actively involved, prioritizing municipalities and community-based organizations over dispersed national actors. Scale back capacity-building activities to essential skills training and technical knowledge, emphasizing local ownership and roles that can adapt to shifting security conditions.	PMU, Municipality of Jbeil, UNDP, NGOs	Short-term
Recommendation 3: Project Results		
• Complete the demonstration projects that are minimally affected by the security situation, such as localized solar charging stations or non-motorized transport improvements. Continue to work closely with private sector partners and local authorities to operationalize these demonstrations and capture lessons learned that can later inform any scale-up activities.	PMU, Municipality of Jbeil, UNDP, Private Sector	Short-term
• Document adaptive strategies, challenges, and incremental achievements in real-time to share insights with UNDP's Global E-Mobility Programme and other stakeholders. This knowledge management will provide valuable lessons for future projects in	PMU, UNDP, Global Programme for E-Mobility	Short-term

volatile contexts and create a repository of adaptable strategies that could be replicated.		

1. INTRODUCTION

This report presents the main findings of the Mid-term Review (MTR) of the project "*Lebanon Sustainable Low-Emission Transport Systems*" implemented by the United Nations Development Programme (UNDP) in Lebanon and financed by the Global Environment Facility (GEF). The review was commissioned by the UNDP Lebanon[4] and was carried out during the period September – December 2024 by a team of two independent evaluators contracted by UNDP. This chapter provides an overview of the MTR's objectives and methodology of the evaluation employed for the collection of information and analysis of the data.

1.1. Purpose of the MTR

The MTR was conducted in the third year of the project's implementation with the goal of determining progress towards the achievement of project objectives and outcomes and assessing early signs of project success or failure with the goal of identifying the necessary changes to be made in order to set the project on-track to achieve its intended results.

The MTR's purpose was to provide an independent external assessment of the progress made towards the project's objectives and outcomes specified in the Project Document, and to provide feedback and recommendations to UNDP and project stakeholders to implement necessary adjustments and improvements to enhance the overall effectiveness of the project. Based on the Terms of Reference (ToR), the objectives of the MTR were to:

- Identify potential project design issues;
- Assess progress towards the achievement of the project objectives and outcomes;
- Assess early signs of project success or failure with the goal of identifying the necessary changes to be made in order to set the project on-track to achieve its intended results;
- Review the project's strategy and its risks to sustainability;
- Evaluate the effectiveness of the project's strategies and actions in promoting gender equality and women empowerment, advancing disability inclusion, and adhering to the principles of Leave No One Behind.
- Assess environmental impacts;
- Identify lessons learned and recommendations.

The MTR provides recommendations for follow-up activities, which require a management response by the project team and UNDP.[5] As such, the MTR report is envisaged to serve as an accountability tool for the stakeholders to assess the implementation of the project, while providing specific and achievable recommendations to stakeholders in order to inform future programming. Furthermore, the MTR findings may be used for further programme development in the field and resource mobilization.

[4] In accordance with UNDP and GEF Monitoring and Evaluation policies and procedures, all full and medium-sized GEF-financed projects are required to undergo a MTR to provide a comprehensive and systematic account of the performance by evaluating its progress and achievements vis-à-vis GEF project objectives and any agreed changes during project implementation.

[5] To be be uploaded in the Project Information Management System (PIMS) and the UNDP Independent Evaluation Office Evaluation Resource Center (ERC).

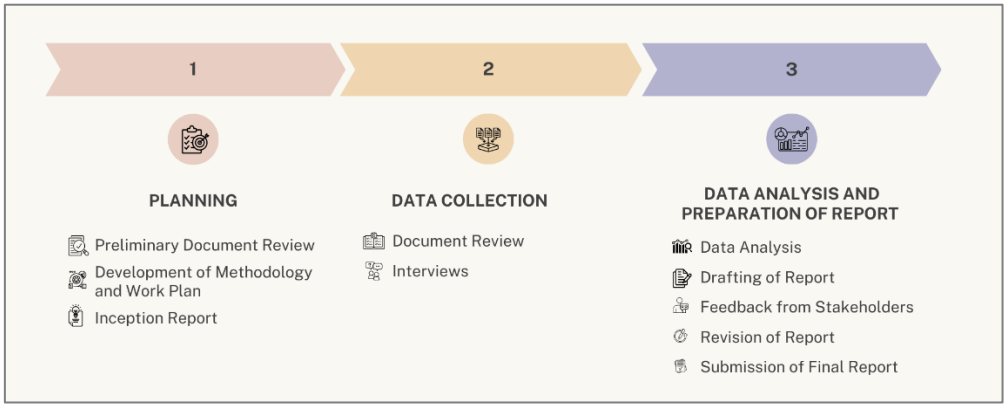
1.2. MTR's Scope and Methodology

The MTR's scope included all activities that took place from the project's start date indicated in the ToRs as 22 May 2022, to the point of review (November 2024). The ToR are attached in Annex I of this report. The MTR focused on the following issues identified in the ToR:

- Project design and its effectiveness in achieving stated objectives.
- Assessment of key financial aspects, such as planned and realized budgets, financing, etc.
- Effectiveness in building the capacity of institutions and strengthening policy frameworks.
- Strengths and weaknesses of implementation, monitoring and adaptive management.
- Recommendations and lessons learned.

The MTR used the UNDP and GEF criteria and followed norms and standards established by the United Nations Evaluation Group (UNEG). It was guided by the requirements of UNDP's evaluation toolkit, and in particular the "*Handbook on Monitoring and Evaluation for Development Results*"[6] and "*Guidance for Conducting Mid-Term Reviews of UNDP-supported, GEF-financed Projects*"[7] The methodology was based on mixed methods and involved the use of commonly applied tools such as documentary review, interviews, information triangulation, analysis and synthesis. A participatory approach was taken for the collection of data, formulation of recommendations and identification of lessons learned. MTR activities were organized according to the following phases: i) planning; ii) data collection; and, iii) data analysis and preparation of the report (as shown in Figure 1 below).

Figure 1: MTR Process



MTR Planning

The MTR team conducted a preliminary review of key project documentation shared by the project team. A preliminary evaluability analysis showed that the project's outputs, indicators, and the available data provided by the project team allow for an effective MTR of the project.

Data Collection

The data collection process involved further reviewing of the project documentation and semi-structured interviews with stakeholders and partners (see Annex IV for a list of interviewees and Annex V for a list of data sources).

[6] https://erc.undp.org/pdf/UNDP_Evaluation_Guidelines.pdf
[7] https://erc.undp.org/pdf/Guidance_Midterm%20Review%20_EN_2014.pdf

- ***Documentary Review*** - The MTR team completed the analysis of all relevant project documentation made available by the project team (listed in Annex V).
- ***Semi-structured Interviews*** – The list of stakeholders that were interviewed for this MTR is provided in Annex IV. An initial list was discussed and agreed with UNDP and the project team. As will be seen in more detail in the section about the limitations of this MTR, the initial list was extensive, prepared through purposive sampling and designed to include a range of key stakeholders. However, the list had to be reduced substantially after the escalation of the conflict, as the majority of the identified stakeholders became unavailable due to the severe escalation of the conflict. Ultimately, interviews involved only key stakeholders that were available and agreed to participate – in particular, project team, government partners, UNDP Country Office (CO) staff, and UNDP Regional Technical Adviser (RTA).
- ***Field Work*** – Field work was envisaged to be conducted by the national evaluator in target sites in support of the data collection process for the MTR. However, as the national evaluator was making preparations to travel to the designated sites, the conflict escalated and travel to and within the country became impossible.

The data collection process took into account gender considerations. Efforts were made to ensure that to the extent possible the information gathered was classified by gender. Additionally, efforts were made to utilize data sources and methods that promoted the inclusion of a diverse set of stakeholders, including those who are most vulnerable.

Data Analysis

The collected information was triangulated and synthesized using analytical judgement. The triangulation approach is illustrated in detail in Figure 2 below.

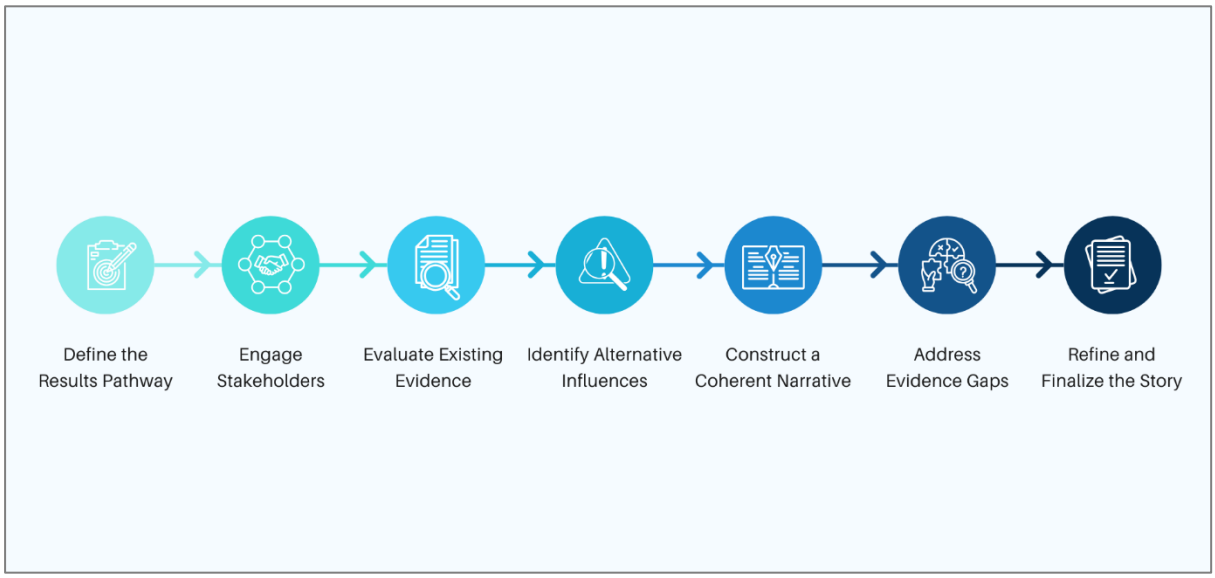
Figure 2: Triangulation Approach

The triangulation approach ensured that the MTR findings were precise, dependable, and reflective of the project's overall performance. Some basic questions that were used in the analysis of the collected information are shown in Annex II of this report.

Figure 3 shows the steps taken for the analysis of the data. The MTR process started with the definition of the results pathway to establish a clear framework for assessing outcomes.

Stakeholders were engaged to gather diverse perspectives and insights. Existing evidence was evaluated to determine its relevance and reliability. Alternative influences were identified to account for external factors that could impact results. A coherent narrative was constructed to connect findings and insights logically. Evidence gaps were addressed by collecting additional data or refining methodologies. Finally, the narrative was refined and finalized to ensure clarity, accuracy, and alignment with the overall objectives.

Figure 3: Data Analysis Process



The analysis was conducted on the basis of the standard criteria of relevance and coherence, effectiveness, efficiency, and sustainability.

- ***Relevance and Coherence,*** covering the assessment of how the project related to the main objectives of UNDP, and to the development priorities at the local, national, and global level, and the extent to which the project was internally and externally coherent;
- ***Effectiveness,*** covering the assessment of the extent to which the expected outcomes and objectives of the project have been achieved in a timely and cost-effective manner;
- ***Efficiency,*** covering the assessment of the quality of project implementation and adaptive management; adequacy of planning and financial management; the quality of monitoring and evaluation; the contribution of executing agencies in ensuring efficient implementation;
- ***Sustainability,*** covering the likely ability of the intervention to continue to deliver benefits for an extended period of time after the completion of activities.

Cross-cutting Issues

The MTR team used gender-responsive methodologies and tools and ensured that gender equality and women's empowerment, as well as other cross-cutting issues and Sustainable Development Goals (SDG) are incorporated into the MTR report. The MTR team assessed the project's approach to gender, including how gender considerations were incorporated into project design, implementation, monitoring and evaluation. It examined gender-disaggregated data collected by the project or the MTR exercise. The MTR team interviewed project

stakeholders to gather perspectives on how the project impacted women and men differently. The MTR also examined the inclusion of other vulnerable groups in project activities, including persons with disabilities.

Annex IV includes the standard scale used in GEF-funded projects that was used to rate the various dimensions of the project under this MTR.

1.3. MTR Limitations

This MTR was conducted in an extreme situation of active conflict and humanitarian emergency. Initially, it was planned as a regular exercise based on the standard UNDP process for conducting evaluation. Interviews were planned with all key stakeholders, including many national institutions, and field work and on-site observations were envisaged to be conducted. As the data collection process for this MTR was about to be launched, the security situation in Lebanon escalated to unprecedented levels of violence, leading to widespread civilian casualties, and a growing humanitarian crisis. As of early October 2024, the conflict had resulted in approximately 2,083 deaths, including many women and children, with nearly 9,869 injuries reported.[8] The ongoing violence had displaced over 608,509 individuals, representing a dramatic increase in internally displaced persons (IDPs).[9]

As a result of the escalating crisis, this MTR had to be completed under extraordinary circumstances. First, very few project stakeholders were available for interviews. Most had either left the country or fled to safer locations for their security. A few stakeholders agreed to be interviewed, and even those interviews revealed the trauma and shock caused for these individuals by the conflict. The list of interviewees is included in Annex VI of this report. This list was limited to seven interviewees out of whom four were UNDP staff, reflecting the drastic limitation in the accessibility of external stakeholders in the extraordinary circumstances surrounding this MTR. The idea of a questionnaire/survey with national stakeholders and beneficiaries was discussed at length with the project team and UNDP, but the resulting consensus and advice from the UNDP colleagues was the idea was unfeasible in the conditions of a vast majority of stakeholders being in the process of feeling for safety and lacking access to electricity and communications.

For all efforts made by the evaluation team, this was the best that could be secured under the extreme conditions of this MTR. This is a severe limitation for this review, but the evaluators made the utmost effort to compensate for it by reviewing in great detail all the documents that were available for the project – especially, the project implementation reviews, the project board minutes, etc. (these documents are listed in Annex VII of this report). Also, ample time was spent discussing key aspects of the project with the project team. There was nothing else that could have been done to mitigate the severe limitation of external sources for this MTR.

[8] https://reliefweb.int/report/lebanon/escalation-hostilities-lebanon-public-health-situation-analysis-phsa-09-october-2024
[9] https://reliefweb.int/report/lebanon/escalation-hostilities-lebanon-public-health-situation-analysis-phsa-09-october-2024

1.4. Ethical Considerations

Despite the very challenging circumstances, the evaluators tried to conduct this MTR in accordance with the principles outlined in UNEG's "*Ethical Guidelines for Evaluations*". First and foremost, in the face of an unfolding severe conflict and humanitarian emergency, the evaluators tried to uphold to the highest extent the "*do not harm*" principle, by engaging in interviews only those project stakeholders who could safely engage with the process. This was done by conducting remote interviews and being extremely flexible in terms of availability for those stakeholders who were able and agreed to participate in the interviews. Careful consideration was given to the circumstances in which the interviewees found themselves. Additionally, the evaluators safeguarded the rights and confidentiality of information providers, interviewees, and stakeholders through measures that ensure compliance with legal and other relevant codes governing data collection and reporting. The evaluators also ensured the security of collected information before and after the review and protocols to ensure anonymity and confidentiality of sources of information where that is expected. The information knowledge and data gathered in the MTR process were solely used for the MTR and not for other uses with the express authorization of UNDP and partners.

1.5. Report Structure

The current chapter provides an overview of the MTR's objectives and methodology. The second chapter describes Lebanon's development context and the project (following chapter). The third chapter presents the main findings of the report and focused on key aspects of project design and formulation, implementation issues, and the results achieved by the project. The fourth chapter summarizes the main conclusions and identifies key "lessons learned" drawn from the experience of this project and the last (fifth) chapter provides a set of recommendations for the consideration of project stakeholders. Additional information supporting the arguments made throughout the document is provided in the annexes attached to this report.

2. PROJECT DESCRIPTION AND BACKGROUND CONTEXT

2.1. Development Context

Even before the escalation of the conflict,[10] the development situation in Lebanon was challenging. For years now, the transport sector in Lebanon has faced significant sustainability challenges, with consequences across environmental, economic, social, and spatial dimensions. The reliance on motorized transport has led to increased greenhouse gas (GHG) emissions and deteriorating air quality, while economic productivity has decreased alongside rising mobility costs. Socially, long travel times and poor conditions disproportionately affect vulnerable groups, raising concerns about basic human rights, such as women's safety. Additionally, the dominance of cars in public spaces has rendered streets unsafe for pedestrians and negatively impacted urban ecosystems.[11]

Lebanon's passenger mobility is characterized by:

- Environmental Issues: The transport sector contributes significantly to GHG emissions and air pollution due to an aging vehicle fleet dominated by old-model cars that are inefficient and polluting.[12]
- Economic Challenges: The cost of mobility has risen, with estimates indicating an average mobility cost of 48 cents per kilometer traveled by passenger vehicles, factoring in externalities like pollution and congestion. This situation exacerbates the financial burden on citizens amid a broader economic crisis.[13]
- Social Inequities: Vulnerable populations face the brunt of transport inefficiencies, with inadequate public transport options leading to long travel times and unsafe conditions.[14]
- Spatial Concerns: The increasing share of public space occupied by cars has diminished areas for pedestrians and cyclists, contributing to urban blight and decreased quality of life.[15]

Lebanon has established several policy frameworks aimed at promoting low-emission transport systems. Key initiatives include:

- National Land Transport Strategy: This strategy emphasizes infrastructure investment across all transport modes, focusing on upgrading road networks and overhauling mass

[10] This MTR was planned as a regular exercise based on the standard UNDP process for conducting evaluation. Interviews were planned with all key stakeholders, including many national institutions, and field work and on-site observations were envisaged to be conducted. As the data collection process for this MTR was about to be launched, the security situation in Lebanon escalated to unprecedented levels of violence, leading to widespread civilian casualties, and a growing humanitarian crisis. As of early October 2024, the conflict had resulted in approximately 2,083 deaths, including many women and children, with nearly 9,869 injuries reported. The ongoing violence had displaced over 608,509 individuals, representing a dramatic increase in internally displaced persons (IDPs).

[11] https://unhabitat.org/sites/default/files/2022/03/nup-transport_guide-web.pdf

[12] https://www.undp.org/lebanon/projects/lebanon-sustainable-low-emission-transport-systems

[13] https://www.undp.org/lebanon/news/lebanons-bid-toward-low-carbon-mobility

[14] https://unhabitat.org/guide-for-mainstreaming-transport-and-mobility-in-lebanons-national-urban-policy

[15] https://www.undp.org/lebanon/projects/lebanon-sustainable-low-emission-transport-systems

transit systems. However, implementation is hampered by limited government capacity and resources.[16]

- Nationally Determined Contribution (NDC): Lebanon's commitment under the UNFCCC aims for significant GHG emission reductions by 2030, heavily relying on infrastructure development and fleet renewal. This plan necessitates substantial financial resources for effective execution.[17]
- Incentive Programs: The government has initiated programs to replace older vehicles with more fuel-efficient models, targeting a reduction in GHG emissions by approximately 14% by 2030 through the removal of one million older vehicles from the roads.[18]

Despite these frameworks, Lebanon faces numerous barriers:

- Weak Governance: The absence of a coordinated public transport system and reliance on informal services hinder effective mobility solutions. Municipal councils lack the capacity to provide direct public transportation services.
- Financial Constraints: Many proposed initiatives remain stalled due to insufficient funding and resources necessary for implementation.
- Public Sentiment: Growing awareness and interest in sustainable mobility solutions exist among the public; however, transitioning to low-carbon options requires overcoming entrenched car-centric attitudes and behaviors.

Overall, while Lebanon's transport sector grapples with challenges issues across multiple dimensions, there is potential for transition towards low-carbon passenger mobility through strategic policy frameworks and community engagement. However, addressing governance weaknesses and securing financial resources will be crucial for success.

2.2. Problems Targeted by the Project: Threats and Barriers

The project addressed several challenges in Lebanon's transportation sector, which is the second-largest energy consumer, running entirely on gasoline and diesel while contributing approximately 23% of the nation's greenhouse gas emissions. It is also responsible for more than 60% of nitrogen oxides and non-methane volatile organic compounds emissions, 99% of carbon monoxide emissions, and 5% of sulfur dioxide emissions, along with other pollutants including particulate matter, VOCs, copper, zinc, and lead. A major contributing factor to these emissions is Lebanon's ageing vehicle fleet, with approximately 54% of vehicles manufactured before 2001. Passenger cars are the primary contributors to transport-related greenhouse gas emissions at 58.38%, followed by heavy-duty vehicles at 23.81%, light-duty vehicles at 17.46%, and motorcycles at 0.35%. The economic impact of air quality degradation, particularly on human health, is estimated at about 1% of GDP, with air pollution from inefficient old cars causing at least USD 200 million in annual economic losses due to morbidity, adult mortality, child death, and discomfort, excluding healthcare costs. Congestion represents another significant challenge, estimated to cost 8% of GDP annually. This is driven

[16] https://www.undp.org/lebanon/news/lebanons-bid-toward-low-carbon-mobility
[17] Ibid
[18] https://www.thegef.org/sites/default/files/web-documents/10358_CC_PIF.pdf

by high passenger car penetration, lack of reliable public transportation, and uncoordinated public works and urban design.

The project also tackles social imbalances in access to transport services. Transport of the lowest quality affects women and other disadvantaged groups who are unable to procure the most accessible transport services all the time. Women also encounter additional problems stemming from street and public transport-related harassment which confines their degree of mobility and their ability to access social and economic opportunities. The situation is further complicated by Lebanon's deep economic, political, and social crisis, which has severely limited the government's capacity for action. The period of economic growth (2000-2015) was marked by chronic fiscal deficits and increasing difficulties in implementing needed public infrastructure improvements. Since summer 2019, political unrest, severe economic slowdown, and fiscal deficits have led to currency exchange depreciation, capital controls, and a severe economic crisis, exacerbated by the COVID-19 pandemic and the devastating Beirut port explosion in August 2020.

Population growth and displacement have intensified these challenges. The population increased by nearly 500,000 between 2006 and 2016, with an influx of displaced Syrians since 2011. This population is increasingly concentrated in the Greater Beirut Area, reaching 2.2 million inhabitants in 2016. While jobs remain concentrated in cities, particularly Beirut, the high cost of living forces many to live in overcrowded suburbs, making transportation along the three main radial access points to Beirut (northern, eastern, and southern corridors) critical for the living conditions of Lebanon's growing population.

The project recognizes that addressing these challenges requires overcoming institutional, technical, and cultural barriers. This includes improving coordination among governmental bodies, addressing limited awareness about sustainable mobility solutions, and changing cultural attitudes that favor private car use and road expansion among decision-makers, transport professionals, and the public.

The table below shows the three main barriers identified in the Project Document along with their means of overcoming them in the Lebanese context. These barriers largely conform to common challenges faced in Lebanon using transport demand management and low-carbon vehicles, particularly in economies like Lebanon. The means outlined in the Project Document to overcome these barriers are summarized in the table below and closely aligned with the project components and outcomes, which provides an overall targeted approach for the project.

Table 4: Barriers to Climate Change Mitigation

Barrier	Means of overcoming the barriers
From the institutional perspective, the basic constraint is the lack of technical capability of the government to implement a sustainable door-to-door mobility solution. This limitation is exhibited in poor agencies cooperation and, even more, a dominance of infrastructure development investments, without enough funds for	Component 1/Outcome 1 - Strengthened policy and regulatory framework; The project adopted a mixed approach that empowered and supported both public administration and relevant stakeholders. It provided institutional and policy support and promoted local-level engagement. Also, the project increased women's participation in policy-making processes and decision-making positions. Enabled conditions

Barrier	Means of overcoming the barriers
execution. The government overlooks cost-effective sustainable mobility solutions, while progress is further hindered by technical departments operating in isolation. These departmental lack the cross-disciplinary expertise needed to develop viable sustainable mobility alternatives. The disconnected nature of governmental structures, combined with their focus on costly but unfunded projects, creates a systemic barrier to implementing practical and sustainable transportation solutions.	where private sector and civil society can compensate for the national government's political weakness; It aimed to build wide consensus needed for transitioning towards sustainable and gender-responsive urban mobility.
A critical technical barrier is the limited understanding and skepticism of sustainable mobility solutions, compounded by economic constraints and poor awareness of cross-sector policy coordination needs. This combination of knowledge gaps and financial challenges prevents stakeholders from seriously considering sustainable transportation alternatives.	Component 2/Outcome 2 - Demonstrated viability of sustainable mobility: Designing and completing demonstrations in areas suitable for short-term results; Facilitating subsequent deployment of infrastructure projects in the pipeline; Encouraging self-imposed sustainability and quality measures; Providing access to electric vehicles for bus operators and institutional car fleets; Working with municipalities (specifically Jbeil) to implement pilot actions facilitating non-motorized access to key public transport stops; Exploring optimal conditions for attractive door-to-door multimodality in anticipation of future BRT construction; Strengthening coordination between transport policies and other sectoral policies (energy and urban planning).
Cultural Barrier: Attitudes Favoring Private Car Use. This barrier includes strong social misconceptions towards public transport, cycling, and walking, a professional focus on road capacity expansion and infrastructure construction, and strong consumer preference for large cars. The cultural resistance to change favors private car use and road expansion among decision-makers, transport professionals, and the public.	Component 3/Outcome 3 - Enhanced awareness and capacity for replication: Public awareness campaigns; Stakeholder networking activities; Knowledge sharing platforms; Documentation of best practices; Support for civil society initiatives; Development of replication strategies
Additional Context and Implementation Strategy: The project recognizes that these barriers exist within Lebanon's challenging political, social, and economic context, which has severely limited access to financing. However, this situation also creates opportunities for implementing disruptive policies in the transport sector.	The alignment of these solutions with project components is expected to lead to: Improved policy framework for sustainable transport; Demonstrated feasibility of sustainable mobility solutions; Increased public awareness and support; Enhanced capacity for replication and scaling; Reduced environmental impact of transport sector; Improved mobility access for vulnerable groups; Strengthened institutional capacity; Enhanced coordination between sectors

The following is an analysis of these key barriers and their proposed solutions:

- ***Limited technical ability of government to foster sustainable door-to-door mobility practices:*** The project has sought to address this barrier through Component 1/Outcome 1 which focuses on strengthening the policy and regulatory framework through a comprehensive mixed approach. This approach empowers the public administration and stakeholders while delivering institutional and policy support. It emphasizes engagement at the local level and works to increase women's representation in both policy-making and decision-making roles. The component creates favorable conditions that allow private sector and civil society organizations to help address gaps created by national government political weakness. Ultimately, it seeks to foster broad consensus required for moving toward sustainable urban mobility solutions that are responsive to gender considerations.
- ***Limited awareness about sustainable mobility solutions and skepticism about their suitability:*** Component 2 demonstrates sustainable mobility's viability through targeted demonstrations designed for quick results and future infrastructure deployment. It promotes adaptive sustainability measures, introduces electric vehicles to bus operators and institutions, and partners in particular with Municipalities of Jbeil to pilot electric vehicles transport access. The component explores effective door-to-door multimodal solutions in preparation for BRT development while enhancing coordination between transport, energy, and urban planning policies.
- ***Cultural Barrier in regards to attitudes favoring private car use:*** This barrier was envisaged to be addressed through Component 3. Outcome 3.1 aimed at building awareness and replication capacity through public campaigns, stakeholder networking, and knowledge sharing platforms. It documents successful practices, supports civil society initiatives, and develops strategies for replicating effective solutions.

Overall, the actions proposed by the project to address the barriers were realistic, clearly identified, and well-articulated in relation to the project objectives and indicators.

2.3. Project Description and Strategy

The project's overarching Development Objective was to transition Lebanon towards a sustainable, low-emission transport system that mitigates greenhouse gas emissions, reduces air pollution, and improves mobility equity. This transformation was anticipated to improve public health, economic productivity, and environmental sustainability in Lebanon, while increasing social inclusion by enhancing transport quality for all citizens, including vulnerable populations such as women and those with limited access to mobility options.

The project had the following immediate objectives:

- Institutional Strengthening for Sustainable Transport: Establish a supportive institutional framework to promote sustainable mobility practices and e-mobility adoption. This includes setting up a Sustainable and Electrified Mobility Subcommittee, creating guidelines, and engaging public and private stakeholders in capacity-building for sustainable transport management.
- Demonstration of Low-Carbon Transport Solutions: Implement pilot projects to showcase the feasibility and benefits of low-carbon electric mobility in Lebanon, focusing on public

and private sectors (such as electric buses and fleet electrification within public institutions like the Internal Security Forces). These demonstrations provide practical evidence to support scaling up sustainable mobility practices.

- Encouragement of Modal Shift and Sustainable Urban Mobility: Increase accessibility to non-motorized transport options, especially walking and cycling, and integrate these with public transport systems.
- Development of a National E-Mobility Strategy: Formulate and endorse a national strategy to expand EVs within Lebanon's vehicle fleet. This strategy incorporates technological guidelines, regulatory frameworks, financial models, and incentives for EV deployment in both public and private fleets, aligned with Lebanon's climate and energy policies.

The project's objectives were to be achieved through the following components:

1. ***Institutional and policy support for the promotion of sustainable transport systems and e-mobility*** – The institutional framework empowers key stakeholders to facilitate sustainable door-to-door mobility practices and to adopt e-mobility. It addresses the institutional barrier, providing a strengthened environment to support the promotion of sustainable low-emission transport systems and modal shift.
2. ***Short-term barrier removal through e-mobility and other low-carbon demonstrations*** – This component relates in 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.
3. ***Knowledge management, capacity development and awareness raising, through sustainable low emissions transport programs widely supported*** – This component 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.

The project's ***Component 4*** was dedicated to monitoring and evaluation plan implementation. Under this component, the project undertook all its monitoring and evaluation activities.

The project's **Expected Results** are structured to address Lebanon's immediate and long-term sustainable transport needs through institutional, technical, and social advancements. These outcomes are intended to mitigate greenhouse gas (GHG) emissions, improve transport quality and accessibility, and shift Lebanon toward a low-emission, inclusive transport system.

- ***Reduction in GHG Emissions and Pollutants***: Significant decrease in GHG emissions from the transport sector, achieved by promoting electric vehicles (EVs), encouraging public transport usage, and implementing green fleet management practices. These efforts also contribute to reduced levels of air pollutants, improving public health and environmental quality.
- ***Enhanced Institutional and Policy Framework***: Establishment of an enabling institutional environment for sustainable mobility, including the development of a national e-mobility

strategy and strengthened regulatory support for sustainable transport practices. This framework is designed to empower local governments, civil society, and private sector actors to implement and expand low-emission transport options.

- ***Improved Quality and Accessibility of Public Transport***: Enhanced public transport options, particularly through the introduction of green public transport services (GPTS) and the integration of EVs in public and private fleets. Improved accessibility to sustainable mobility options is intended to offer a viable alternative to private car use, thereby benefiting underserved and vulnerable groups.
- ***Successful Demonstrations of Low-Emission Transport Solutions***: Execution of pilot demonstrations, including the deployment of electric buses and EV fleets, and the improvement of door-to-door multimodal transport options in key areas. These demonstrations aim to provide practical evidence of the financial, technical, and social benefits of sustainable mobility, setting a precedent for replication and scale-up by other stakeholders.
- ***Increased Public Awareness and Acceptance of Sustainable Mobility***: Shifts in public perception and behavior in favor of sustainable mobility, supported by targeted awareness campaigns. The project seeks to reduce cultural biases toward private car ownership, promoting the attractiveness of public, non-motorized, and shared modes of transport.
- ***Greater Social and Gender Inclusion in Transport Access***: Addressing the mobility needs of vulnerable populations, including women, by ensuring that sustainable transport solutions are safe, affordable, and accessible. The project includes gender-responsive planning and supports increased female participation in decision-making roles within the transport sector.
- ***Strengthened Capacity for Transport System Management***: Enhanced capacity among public and private stakeholders in sustainable transport management, with targeted training in fleet management, green transport practices, and policy implementation. This capacity-building supports ongoing improvements in transport system management, contributing to long-term sustainability.
- ***Foundation for Scale-Up and Sustainability of Sustainable Mobility Initiatives***: The project's outcomes create an evidence base and institutional readiness to support future investments and expansions in sustainable mobility. By aligning with Lebanon's climate commitments and international donor priorities, the project prepares the ground for further development of low-emission transport solutions even beyond the project's duration.

2.4. Project Implementation Arrangements

The project operates under a Direct Implementation Modality (DIM), which was adopted during the CEO endorsement stage as an adaptation to challenges posed by the financial crisis, COVID-19 impacts, and Beirut port explosion. This represented a shift from the originally planned National Implementation Modality (NIM).

The project is overseen by a Project Board that meets regularly, with meetings having taken place in October 2022 and December 2023. The Board comprises representatives from the UNDP Country Office and key government stakeholders including the Ministry of Environment, Ministry of Public Works and Transport, and Ministry of Interior and

Municipalities. Day-to-day implementation is managed by a Project Management Unit (PMU), which expanded its capacity in 2023 with the addition of a Transport Engineer. The project team is led by Project Manager, working closely with UNDP Country Office Programme Officer.

The project has established partnerships with implementing partners across government, academic, and civil society sectors (reviewed in more detail further in this report). Key government partners include the Ministry of Environment, Ministry of Public Works and Transport, and Internal Security Forces. The Municipality of Jbeil provides crucial support through land allocation for charging infrastructure, while the Lebanese American University contributes through transportation co-financing. Civil society organizations like Rider's Rights and Wave, along with private sector partners including Manalco, MEDCO, and Earth Technologies, round out the implementation network. The Lebanese Center for Energy Conservation has also been involved in project implementation.

The project has established a monitoring structure with monthly team meetings and quarterly senior management reviews. The UNDP Country Office provides additional support through weekly follow-up as needed. This implementation arrangement has helped the project navigate extremely severe challenges.

2.5. Project Timing and Milestones

The project operates on a five-year timeline, spanning 60 months from its initiation to completion. The project's foundational groundwork began with PIF approval in December 2019, followed by CEO endorsement in December 2021. Official implementation started with the project document signature on May 29, 2022, with first disbursement occurring shortly after in July 2022. The formal launch was marked by the inception workshop in October 2022.

The project's first year focused on establishing fundamental structures and processes, including team recruitment, PMU establishment, and initial stakeholder engagement. The second year saw significant operational progress, marked by the addition of a Transport Engineer in August 2023 and the completion of key deliverables including Guidelines for Non-Motorized Transport and certification frameworks for green public transport services. This period also saw the initiation of infrastructure development at Jbeil Bus Station and the successful tender award for electric buses.

Going forward, the project has several critical milestones on the horizon. The Green Public Transport Service Certification is set to roll out in Q1 2025, with e-buses expected to be commissioned by Q2 2025. These activities will lead up to the project's terminal evaluation in March 2027, before the planned closure date of May 29, 2027.

2.6. Main Stakeholders

The following are project’s main stakeholders, as identified in the Project Document. The actual implementation of the project changed the roles that the national partners played in the project, as will be seen in subsequent sections of this report.

- ***Ministry of Interior and Municipalities (MoIM)***: Serving as the lead government partner, MoIM is responsible for engaging municipalities, overseeing vehicle registration, and leading the national fleet renewal process. MoIM's role is central to coordinating local actions, especially regarding walking, cycling, and public transport enhancements.
- ***Ministry of Energy and Water (MoEW)***: MoEW contributes to the project by supporting energy efficiency measures in transportation and preparing the national electricity grid for future EV charging infrastructure, aligning with the energy sector's transition towards renewables.
- ***Ministry of Environment (MoE)***: As the lead on Lebanon's climate change mitigation strategy, MoE's involvement ensures the project aligns with national climate goals. MoE also plays a role in developing and implementing sustainable environmental practices, particularly around end-of-life vehicle (ELV) and battery management.
- ***Ministry of Public Works and Transport (MoPWT)***: Responsible for public transport regulation, MoPWT works with the World Bank on infrastructure upgrades, including the Bus Rapid Transit (BRT) system. Their involvement ensures alignment with regulatory and operational frameworks for public transport services.
- ***Municipality of Jbeil***: As a local implementation partner, Jbeil is central to pilot projects that focus on intermodal access and non-motorized mobility. The municipality collaborates closely on sustainable urban transport models that can be replicated in other areas.
- ***Internal Security Forces (ISF)***: ISF partners in the green fleet management demonstration, gaining experience with EV operations and sustainable fleet management practices. This partnership supports law enforcement and governmental efforts to model green practices.
- ***Private Sector (Bus Operators and Fleet Managers)***: Private bus operators and fleet managers, including corporate stakeholders like Aramex, DHL, and the Lebanese Red Cross, are involved in voluntary agreements for green public transport and fleet management. Their participation supports the adoption of sustainable practices and enhances service quality.
- ***UNDP***: As the executing agency, UNDP provides project management, technical expertise, and coordination among stakeholders, ensuring that project activities align with Lebanon's national strategies and international best practices.

Additional partners that are important to the project include:

- ***Civil Society Organizations (CSOs)***: Local CSOs play a key role in advocating for sustainable mobility and gender inclusion. Their participation in the project ensures the project addresses public concerns, promotes inclusivity, and encourages local acceptance of sustainable transport solutions. Key CSOs involved so far in the project are: Lebanon by Bike, Rider's Rights, and the Chain Effect.
- ***International Donors and Financial Institutions***: The World Bank were initially envisaged to provide substantial co-financing. However, in the course of project implementation the World Bank withdrew from its commitment.

2.7. Total Resources

The project operates with a comprehensive financial framework that combines GEF funding with significant co-financing arrangements. The total project value was initially set at

$48,130,150, comprising a GEF grant of $3,552,968, a PPG amount of $100,000, and original co-financing commitments of $44,477,182. However, as will be seen further in this report, the project has undergone significant changes in its co-financing structure due to Lebanon's evolving economic situation. The most notable change occurred when the World Bank's Bus Rapid Transit (BRT) project, which originally constituted $42,690,000 or 88.88% of total co-financing, became unviable in the current economic climate. In response, the project successfully secured alternative co-financing arrangements. The Municipality of Jbeil emerged as a key partner, providing land for charging infrastructure.

3. FINDINGS

It is important to understand upfront that the evaluation of this project must be understood in the context of the extremely severe security situation in the country at the time of this MTR was conducted. As noted in the context analysis section of this report, by early October 2024 the conflict had resulted in approximately 2,083 deaths, including significant civilian casualties, nearly 9,869 injuries, and the displacement of over 608,509 individuals. This severe conflict situation and humanitarian emergency has fundamentally altered the context in which the project operates. All aspects of the project discussed in the following sections of this MTR report have been directly or indirectly affected by the extraordinary situation in the country.

3.1. Project Strategy

It should be emphasized that the focus of this chapter is on the design of the project, not the actual implementation (which is addressed in the following sections).

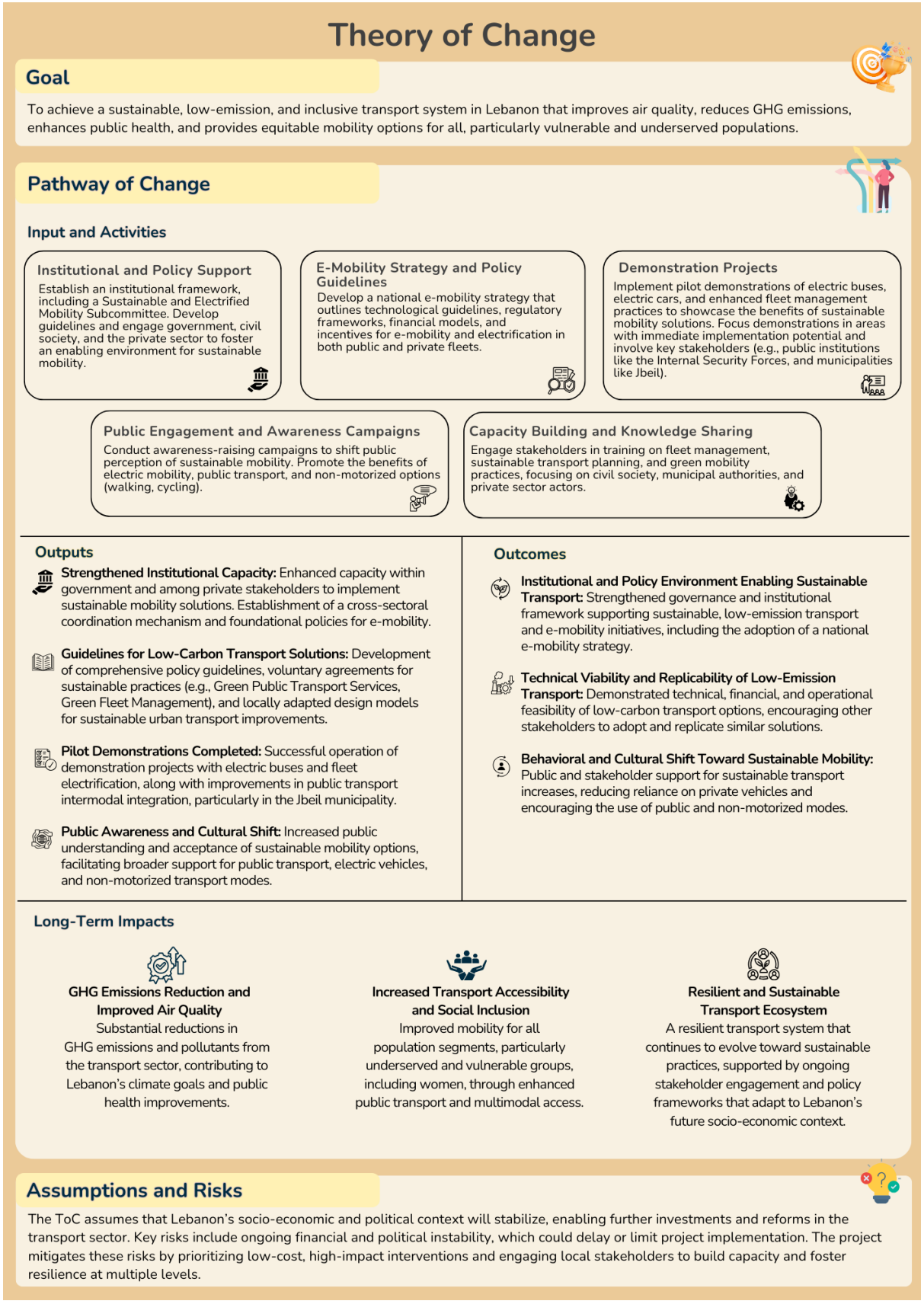
3.1.1. Project Design

The project was designed to directly support Lebanon's Nationally Determined Contributions (NDC) by promoting sustainable transport solutions and reducing emissions from the transport sector, which was identified as a key source of greenhouse gas emissions in the country. The focus on transitioning to electric vehicles, improving public transport efficiency, and promoting non-motorized transport aligned closely with Lebanon's climate change mitigation goals. Furthermore, the project showed clear alignment with multiple Sustainable Development Goals (SDGs), particularly SDG 11 (Sustainable Cities and Communities) through its focus on improving urban mobility, SDG 13 (Climate Action) through its emphasis on reducing transport-related emissions, SDG 7 (Affordable and Clean Energy) through the integration of renewable energy for charging infrastructure, and SDG 5 (Gender Equality) through its attention to gender-responsive transport solutions.

The review of the project document revealed that the project design is generally well-structured and well-conceived. Its logic is based on a multi-dimensional approach that integrates institutional capacity building, technical demonstrations, stakeholder engagement, and policy development. The project's strategic alignment with national and international goals enhances its relevance and feasibility. By aligning with Lebanon's national climate and energy commitments, as well as global frameworks like the Paris Agreement and UN Sustainable Development Goals, the project serves as a strategic initiative within Lebanon's broader development agenda. The project's logic is reinforced by clear objectives and outcomes, ranging from immediate objectives in institutional strengthening and e-mobility strategy development to the broader development objective of transitioning Lebanon to a low-emission, inclusive, and resilient transport system. Each objective links to specific outcomes, enhancing the project's focus and supporting effective monitoring and evaluation.

The project's Theory of Change (ToC) was reconstructed to provide a foundational logic and outline a sequential pathway to address key objectives. It is shown in the figure below.

Figure 4: Reconstructed Project's Theory of Change



The reconstructed ToC takes a problem-centered approach, focusing on three key barriers: institutional weaknesses, technical constraints, and cultural preferences for car use. The project's logic emphasizes that systemic change requires addressing each barrier simultaneously, linking targeted interventions to desired outcomes in institutional support, technical capacity, and public acceptance of sustainable mobility. The ToC outlines how the project could achieve its goal of transitioning Lebanon towards a low-emission transport system and addresses the three main barriers. The ToC reflects a strategic approach of combining low-cost, short-term actions with capacity building and demonstrations to generate early results. These initial steps are intended to lay the groundwork for more ambitious, long-term interventions once Lebanon's socio-economic conditions improve, enabling broader adoption of electric-drive technologies and a modal shift toward sustainable mobility.

The project's pilot demonstrations were designed with scalability and replicability in mind, creating practical models for expansion to other regions or sectors. Stakeholder engagement and participatory planning are key elements of the project's logic – they involve government ministries, local municipalities, private sector operators, and civil society organizations. This inclusive approach is necessary for buy-in and ownership, facilitates integration of local knowledge, and promotes social acceptance of sustainable transport options.

The project incorporated gender responsiveness as a key element of its design. The design process began with a gender analysis and needs assessment, establishing a foundation for understanding women's specific challenges in accessing and using transport services. The gender analysis that informed the project design identified several key issues affecting women in Lebanon's transport sector, including safety concerns, affordability challenges, and limited access to reliable public transport. The project design incorporated gender considerations through several channels. Safety and accessibility formed core elements, with specific attention to women's vulnerability to harassment in public spaces. Another strength of the project design was the integration of gender-specific outputs and RRF indicators (i.e. women's participation in project activities, gender-sensitive infrastructure design, and improvements in women's access to transport services). Stakeholder engagement was structured to include women's organizations and civil society groups focused on gender equality. This approach aimed to ensure that gender considerations would be consistently integrated throughout project implementation. The design recognized transport accessibility as a key enabler of women's economic participation and incorporated specific measures to address barriers that disproportionately affected women's mobility. Capacity building components were designed with attention to gender sensitivity. Public awareness and behavioral change campaigns were incorporated into the design with specific attention to gender equity issues.

For all these positive design elements, there are some limitations.

- The project document would have benefitted from a more explicit recognition of Lebanon's security and socio-political challenges and adaptive pathways.
- The project’s ToC also would have benefited from a clearer identification of pathways for replicating successful demonstrations across the country and a better defined plan for transitioning responsibilities and ensuring financial viability post-project.

- The behavior change strategy would have benefitted from a more structured model to ensure lasting shifts in public attitudes and transport choices, potentially incorporating frameworks like the COM-B (Capability, Opportunity, Motivation-Behavior) model.
- The project design would have benefited from more explicit consideration of how to maintain gender-focused activities during severe disruptions or crises.

3.1.2. Results Framework/Logframe

The project document included a Resource and Results Framework (RRF) that in general provided some alignment of resources with the stated outcomes. The RRF is generally well-structured with clear hierarchy: one project objective supported by four outcomes, each with corresponding outputs and indicators. The framework follows GEF standards and includes key indicators like direct beneficiaries and GHG emissions avoided, which are generally SMART.[19]

However, the RRF is not always logical or realistic, especially in its sequencing from inputs to impacts. For example, the RRF aimed for a significant increase in EV registrations, from a baseline of 0 in 2020 to 2,878 by 2024 (Indicator 8). While this growth cannot be attributed directly or indirectly to the project, this growth has made irrelevant the project's end target of registering 20 additional cars and 4 buses, showing that a market transformation was already taking place, catalyzed by factors such as global EV market trends, government policy support through import tax exemptions, and the expansion of renewable energy infrastructure.

Furthermore, several indicators jump from 0 to substantial end targets without meaningful midterm targets, making it difficult to track progress trajectory. For example, the beneficiary indicators (1 and 3) are specific and measurable, with clear gender disaggregation. However, the significant jump from 0 to over 700,000 direct beneficiaries without intermediate milestones raises questions about achievability. The framework would benefit from explaining the methodology for calculating these numbers.

The RRF rightly emphasized capacity building, allocating resources toward strengthening government agencies, municipalities, bus operators, and fleet managers. This focus on human and institutional capacity is crucial for the long-term sustainability of results, although the current security crisis puts all of this effort in doubt. However, framework focuses heavily on quantitative metrics but lacks indicators measuring quality of capacity building or stakeholders' satisfaction.

Gender and social inclusion considerations are integrated to some extent in the framework, with dedicated resources supporting gender-sensitive training, inclusive transport policies, and targeted awareness campaigns. However, the current security crisis creates significant challenges in maintaining the project's focus on these social objectives.

[19] Specific, Measurable, Achievable, Relevant, Time-bound.

3.2. Progress Towards Results

3.2.1. Progress Towards Outcomes Analysis

The section presents a summary of the progress made by the project towards the achievement of the planned results. Annex X of this report includes a number of pictures that portray the main activities undertaken by the project. Also, it should be noted that the analysis of achievements and shortfalls presented in this section of the report must be considered within Lebanon's challenging security, economic and institutional context – and in particular, the severe escalation of the conflict which occurred as this MTR was underway.

As data collection for this evaluation was being carried out, the conflict escalated to unprecedented levels, and the security situation deteriorated very rapidly. Many project stakeholders, including key UNDP staff, had either left the country or were fleeing to safety within the country. This major challenge has severely impacted all project activities. As noted elsewhere in this report, many project components have been either slowed down or completely frozen. The Ministry of Environment's focus has shifted dramatically, limiting attention to sustainable transport initiatives. This security situation has also affected stakeholder engagement at the sub-national level. Priority number one in the country has become the security situation.

Therefore, the following analysis of the project's effectiveness must be understood in the context of the highly disruptive effects that the crisis will have for this project for months and years to come. The following assessment is based primarily on an analysis of the documentation of the project up to the point of the conflict escalation, complemented with insights from the few interviews that the evaluation team was able to conduct in a situation where many project stakeholders were moving inside and outside of the country in search of better security for themselves and their families. Many of the achievements reported further in this section might not survive the highly disruptive effects of the escalation of the conflict. Which achievements will be maintained remains to be seen – this will largely depend on how the conflict will evolve in the months and years ahead.

***Outcome Area 1:* Strengthened policy and social environment to support sustainable low emissions transport**

Key Achievements:

- The project has so far developed several important guidelines, including:
    - Guidelines for municipalities on promoting non-motorized transport and door-to-door mobility, incorporating technical specifications and social/gender dimensions.
    - Guidelines on legal, financial, and regulatory aspects of self-certified Green Public Transport Service (GPTS) agreements, representing the first attempt to establish green criteria for transport service certification in Lebanon.
    - Guidelines for Green Fleet Management (GFM) certification, establishing frameworks for promoting energy efficiency and sustainability in fleet operations.

- Social, environmental and gender-responsive elements have been integrated into these guidelines, which shows that the project has taken a comprehensive approach to policy development.

Challenges and Limited Progress:

- The development of the national e-mobility strategy has been significantly delayed. The Terms of Reference (TOR) have been drafted, but the development of the actual strategy was postponed due to Lebanon's persistent electricity crisis. Therefore, as will be seen further in this section, no progress has been made on the project's indicator 5 (National e-mobility strategy prepared with key stakeholders) against a midterm target of presenting the strategy to stakeholders.
- The project plans to adapt the e-mobility strategy to current conditions through system dynamics modeling, but this remains in the planning stage and no concrete results have been produced yet.
- The roadmap for end-of-life vehicle management, another key deliverable, has experienced limited progress and remains in early planning stages with implementation pushed down the road.
- The number of voluntary agreements signed in the transport sector (project's indicator 6) remains at zero, against a midterm target of two agreements. While certification guidelines have been developed, they have not yet been operationalized.

***Outcome Area 2:* Demonstrations provide evidence of technical, financial and environmental sustainability to plan for scale-up of low-carbon electric mobility**

Key Achievements:

- The project has made progress in technical preparation and procurement for demonstration components, notably:
    - Design and specifications completed for a comprehensive 207 kWp solar system with 360 kWh battery storage at the Jbeil bus station, with procurement finalized and installation initiated at the point of this MTR.[20]
    - Successful procurement of four e-buses and associated charging equipment, with tender awarded in Q3 2024, contract signed at the beginning of August 2024, and delivery/commissioning expected by Q2 2025.
- The project has also made progress with the preparation for non-motorized transport improvements, including:
    - Completion of social and environmental site exclusion criteria for pilot bus stops.

[20] Commissioning was expected in Q4 2024, but the escalation of the conflict makes this objective highly unlikely now.

- Identification and assessment of six pilot bus stop locations, with conceptual designs for non-motorized transport accessibility.
- Development of a comprehensive situational analysis of the public transport in Lebanon and legal framework analysis governing the transport sector.

Challenges and Limited Progress:

- The number of passengers using green public transport services (project's indicator 7) remains at zero, as the operational phase has not commenced. Despite two operators expressing willingness to enroll in the Green Public Transport Services (GPTS) concept, implementation is pending. The self-certified GPTS concept is still under development, with implementation pushed further down the road.
- The demonstration of electric vehicles within the government's fleet, particularly the ISF, has faced significant delays due to inadequate grid electricity, reliance on diesel generators, and changing ISF priorities.
- The design of the bus stops has been completed only at the conceptual stage, but not in detail. The implementation of improvements at pilot bus stop sites, while well-planned, has not yet started, affecting the demonstration of improved non-motorized accessibility to public transport.

Outcome Area 3: Sustainable low-emission transport programs widely supported

Key Achievements:

- Expansion of stakeholder network, increasing from initial engagement of 2 governmental and 3 non-governmental stakeholders to 3 governmental and 7 non-governmental stakeholders by 2024 (project's indicator 9). In this area, the project is close to its midterm target of engaging 5 governmental and 5 non-governmental stakeholders. The network now includes key institutions like the Ministry of Environment, Ministry of Public Works and Transport, Lebanese American University, and private sector entities such as Manalco, MEDCO, and Earth Technologies.
- Progress in organizing capacity-building events, notably a technical training session on non-motorized transportation (NMT) in September 2023 that attracted diverse participation. The training contributed to building decision-maker capacity, with 12 public (4 women, 8 men) and 7 private (2 women, 5 men) participants trained (Indicator 10). While showing progress, this aspect of the project remains slightly below the midterm target of training 20 decision-makers (10 women, 10 men).
- Development and initial implementation of communication strategy through various channels, including a podcast episode on e-mobility in Lebanon and participation in events like Beirut Energy Week.
- Continued engagement with the Global Programme to Support Countries with the Shift to Electric Mobility, facilitating learning from global e-mobility experiences.

Challenges and Limited Progress:

- Governmental engagement remains below midterm targets, reflecting challenges in securing consistent public sector participation amid the ongoing economic crisis.
- Training of decision-makers has not yet achieved midterm targets, particularly in terms of gender balance. Current participation shows gender disparity that needs addressing.
- The project has not yet begun sharing reports on best practices and lessons learned with the global programme (project's indicator 11), as many components are still in implementation phases, limiting contributions to global knowledge sharing.

Status of the Achievement of Results

Annex IX of this report shows the project's results framework with updated indicators based on data collected by the project team. As can be seen from that table, the project has had mixed results in achieving its midterm targets. Table 2 below summarizes the status of the achievement of the project targets.

Table 5: Status of Achievement of Project Targets

Project Indicator	Baseline	Midterm Target	End Target	Midterm Level	Status[21]
1. Direct beneficiaries	0	0	1,417,000	0	On track[22]
2. CO2 avoided (tons)	0	0	39,069	0	On track
3. Indirect beneficiaries	0	0	2,223,000	0	On track
5. National e-mobility strategy	No strategy	Strategy presented to stakeholders	Strategy completed	No strategy	Off track
6. Voluntary agreements signed	0	2	5	0	Off track
7. Green transport passengers	0	4,500 daily	18,000 daily	0	Off track
8. EVs registered in Lebanon	0 (2020)	+5	+24	2,878	Completed

[21] Green: completed, the indicator shows successful achievement. Yellow = on target to be achieved by the end of the project.
Red = not on target to be achieved by project closure.
[22] Based on mid-term targets.

Project Indicator	Baseline	Midterm Target	End Target	Midterm Level	Status[21]
9. Stakeholders in network	0	10	18	10	On track
10. Decision-makers trained	0	20	40	19	On track
11. Best practice reports	0	0	6	0	On track

As can be seen from the table above, of the eleven key performance indicators, six are on track to meet their targets, three are off track, and one has already been completed. The most notable success has been in electric vehicle adoption, where registrations have exceeded expectations with 2,878 vehicles registered, far surpassing the end target of +24 vehicles. While this achievement stands out as a clear indicator of successful market transformation, even amid challenging circumstances, it can not be directly related to the project, but to the market structure in Lebanon. While many implementation-dependent indicators currently show zero progress, they remain classified as "on track" due to their zero midterm targets. These include direct and indirect beneficiary numbers and CO2 emissions avoided, which are expected to show progress as infrastructure and services become operational. The main challenges appear in the policy and institutional frameworks, where three indicators are currently off track. These include the development of the national e-mobility strategy, the establishment of voluntary agreements, and green transport passenger numbers. These delays reflect both the project's early stage and the complex operating environment in Lebanon.

The project’s progress in the coming months will depend on the security situation which at the time of this MTR remained extremely volatile and unpredictable. The conflict poses a direct and fundamental threat to the effectiveness of the project's achievements by potentially undermining both completed work and planned initiatives. The effectiveness of established frameworks - such as the guidelines for non-motorized transport, green public transport service certification, and green fleet management - may be significantly compromised as security concerns override environmental and transport considerations in municipal and national planning. The project's technical preparations for the Jbeil bus station's solar charging infrastructure and the procurement of four e-buses risk facing implementation delays or modifications as security considerations may affect construction timelines, route planning, and operational decisions. Furthermore, the effectiveness of capacity building efforts and stakeholder engagement achievements may deteriorate as key personnel and institutions redirect their attention and resources to security matters, evidenced by the Environment Minister's shift to emergency committee coordination and the Mayor of Jbeil's inability to maintain focus on long-term project planning. The security situation creates a serious risk that even successfully completed project components may not achieve their intended impacts, as

the operating environment becomes increasingly focused on immediate security concerns rather than sustainable transport objectives.

Key Cross-cutting Aspects related to Social Sustainability

The project demonstrates varying levels of attention to human rights, poverty-environment linkages, and social inclusion, though implementation of these aspects has been affected by the current security crisis.

- ***Human Rights-Based Approach***: Conceptually, the project has integrated some human rights considerations primarily through its focus on the right to mobility and accessible transport. An element of the project's gender and social approach was the understanding that transportation is not gender-neutral. It reflects the different travel patterns and constraints experienced by women, children, the elderly, persons with disabilities, and other vulnerable groups. For instance, women in Lebanon often experience unique travel challenges due to socio-economic, cultural, and safety factors that limit their access to public transport. The development of gender-responsive criteria for bus stop selection and design demonstrates attention to women's rights to safe and accessible transportation. However, the project could strengthen its explicit rights-based framework, particularly in addressing the right to participate in decision-making about transport systems that affect communities. The current security situation, where project stakeholders are being displaced within and outside the country, raises additional human rights considerations that require attention.

- ***Social Inclusion***: Social inclusion has been an aspect of the project's non-motorized transport (NMT) guidelines, which have emphasized creating safe, accessible, and supportive spaces for all users. The guidelines recommend interventions such as improved sidewalks, pedestrian crossings, and designated cycling lanes, which aim to reduce physical and social barriers to mobility. These spaces are designed to serve as multifunctional areas that promote social interaction, economic activity, and cultural expression, contributing to a sense of identity and belonging within the community.

- ***Poverty-Environment Nexus***: The project shows understanding of the poverty-environment relationship, particularly in its response to Lebanon's economic crisis. The focus on affordable transport options has become especially relevant as the economic crisis has pushed more middle-class users toward public transport. The integration of solar power solutions addresses both environmental sustainability and economic accessibility, particularly important given the severe electricity shortages and rising fuel costs that disproportionately affect poorer communities. However, the project could strengthen its analysis of how transport poverty intersects with environmental degradation and develop more targeted interventions for economically marginalized communities.

- ***Benefits to Disadvantaged and Marginalized Groups***: The project has shown attention to vulnerable groups' needs in its design and planning. The development of specific measures for refugees, migrants, and persons with disabilities in transport planning demonstrates

recognition of diverse accessibility needs. The project's social inclusion approach has evolved to address the changing demographics of public transport users due to the economic crisis. For persons with disabilities specifically, the project has integrated accessibility requirements into infrastructure design and bus stop criteria. However, the implementation of these features remains pending as pilot projects are not yet operational. The project could strengthen its engagement with disability rights organizations and develop more specific metrics for measuring improvements in transport accessibility for persons with disabilities.

Overall, the project faces several challenges in achieving its social inclusion objectives:

- The ongoing security crisis has shifted institutional attention and resources away from social inclusion initiatives.
- The limited financial resources and institutional capacity constrain the implementation of comprehensive accessibility features and social inclusion measures. The Ministry of Environment's severe resource constraints affect the ability to monitor and enforce social inclusion requirements.
- The lack of systematic data collection on transport usage by disadvantaged groups limits the project's ability to demonstrate concrete improvements in accessibility and inclusion.

Gender Mainstreaming

The project has made efforts to mainstream gender considerations in project activities and results, with some achievements in integrating gender considerations across components while facing certain implementation challenges. The project's gender mainstreaming efforts have evolved significantly since inception, particularly through the development of a revised gender analysis and action plan that emphasizes transformative outcomes rather than merely addressing surface-level gender considerations.

A notable achievement in the project's gender mainstreaming approach is the early engagement of a dedicated Gender Expert through a long-term agreement. This decision has led to the integration of gender considerations across project activities, particularly evident in the development of technical guidelines and infrastructure planning. The expert's involvement has helped ensure that gender considerations are not merely additive, but integrated into project design and implementation.

The development of gender-responsive criteria for bus stop selection and design has included comprehensive considerations such as safety, visibility, lighting, and accessibility. These criteria have addressed women's specific mobility needs and safety concerns, including considerations for different travel patterns, time-of-day usage, and security requirements. The integration of these elements into technical specifications rather than as separate considerations represents an adequate approach to gender mainstreaming.

The project has also made some progress in data collection and analysis from a gender perspective. The development of pre-design tools for data collection specifically incorporates gender-disaggregated data gathering, ensuring that women's transport needs and behaviors are

properly understood and addressed. This includes attention to different travel patterns, purpose of travel, frequency, and distance to essential services and economic opportunities.

However, there was potential for improvement in the project's gender mainstreaming efforts. While the framework for gender integration is adequate, the tracking of gender-related outcomes has not received significant attention. The project's indicators for measuring gender results remain are primarily focused on quantitative metrics (number of women beneficiaries) rather than qualitative changes in gender relations or women's empowerment in the transport sector. The project's engagement with women in decision-making positions, particularly in technical and management roles within the transport sector, requires strengthening. While the gender action plan addresses this aspect, there is limited evidence of concrete progress in increasing women's participation in transport sector leadership or technical roles. The economic empowerment dimension of gender mainstreaming, particularly concerning women's participation in the transport sector workforce and business opportunities, needs more attention. While the project recognizes this aspect, specific initiatives to promote women's economic participation in the sector remain underdeveloped.

The project has identified key areas that require further gender mainstreaming efforts. A priority is the integration of gender considerations into procurement processes, alongside the development of gender-responsive budgeting approaches that ensure resources are allocated in ways that advance gender equality. The project recognizes the need to enhance gender-specific safety measures in transport infrastructure, while simultaneously creating meaningful opportunities for women's economic participation in the transport sector. This comprehensive approach is strengthened by the project's gender action plan, which appropriately acknowledges the intersection of gender with other social identities and vulnerabilities. By considering the specific needs of refugees, migrants, and persons with disabilities within its gender mainstreaming approach, the project demonstrates a sophisticated understanding of the complex social dynamics that affect women's mobility needs and access to transport systems.

Going forward, when the security situation normalizes, the project will need to focus on developing more effective mechanisms for tracking gender-related outcomes. This needs to be supported by enhanced capacity building for gender-responsive implementation and strengthened stakeholder engagement in gender-related initiatives. The path to strengthened gender mainstreaming will require sustained attention to both institutional and operational aspects. At the institutional level, this includes strengthening capacity for gender-responsive planning and implementation among project staff and partners. At the operational level, it involves ensuring that gender considerations are effectively translated into concrete actions and measurable outcomes. The project's understanding of the need for comprehensive gender integration provides a good foundation, but further attention to implementation and outcome measurement will be crucial for achieving meaningful gender-related impacts. All of this, of course, is subject to an eventual improvement in the security situation in the country.

3.2.2. Remaining Barriers

Outcome Area 1: ***Strengthened policy and social environment to support sustainable low emissions transport***

The following are project aspects that require the project's team attention:

- Accelerating the e-mobility strategy development, using adaptive approaches like the proposed system dynamics modeling, to provide at least an interim framework given infrastructure constraints.
- Strengthening stakeholder engagement in policy development, particularly in the transport sector, to complement technical progress. The results framework shows some progress here, with 3 governmental and 7 non-governmental stakeholders engaged in the sustainable transport network (indicator 9), close to the midterm target of 5 each. However, further engagement is still needed.

Going Forward:

The project team needs to prioritize several actions to strengthen the achievement of objectives under Outcome 1:

- Expediting the adaptive development of the e-mobility strategy;
- Enhancing stakeholder engagement and coordination in policy development;
- Focusing on implementation mechanisms for developed guidelines;
- Accelerating work on end-of-life vehicle management frameworks.

Assuming the security situation will stabilize, progress by the project in this area will require balancing technical development with practical implementation, stronger stakeholder coordination, attention to policy enforcement, and more aggressive timeline management. The project has so far made some important progress in technical framework and guideline development, but needs to focus on translating these into operational policies and practices. In the remaining period, the project needs to bridge the gap between policy development and practical implementation, while maintaining the commitment to comprehensive, sustainable solutions. The path forward requires simultaneously accelerating remaining policy frameworks and strengthening implementation of completed guidelines. This dual focus will be crucial to achieving the intended impact of a strengthened policy and social environment for sustainable transport.

***Outcome Area 2:* Demonstrations provide evidence of technical, financial and environmental sustainability to plan for scale-up of low-carbon electric mobility**

The following are project objectives that require the project's team attention:

- Accelerating the transition from procurement and design to actual implementation to demonstrate operational systems.
- Strengthening coordination between infrastructure development and service implementation, synchronizing charging infrastructure completion with bus delivery and operational readiness.

- Improving stakeholder engagement and capacity building for system operation, matching technical readiness with operational capability for successful demonstration.

Going Forward:

The project team needs to prioritize several actions to strengthen the achievement of objectives under Outcome 2:

- Accelerating implementation of infrastructure components;
- Enhancing coordination of parallel activities;
- Focusing on operational readiness and stakeholder engagement in implementation.

While the project has made some progress in technical preparation and procurement, the key challenge lies in moving to operational demonstration. The technical foundations established need to be translated into successful demonstrations of operational systems. This requires focused attention on implementation timing, stakeholder coordination, technical support, and operational capacity. If the security situation permits, the project will need to concentrate on accelerated infrastructure completion, coordinated system deployment, enhanced operational preparation, and clear impact demonstration.

Outcome Area 3: Sustainable low-emission transport programs widely supported

The following are project aspects that require the project's team attention:

- Further strengthening governmental stakeholder engagement, as broader public sector participation is crucial for sustainable program support.
- Addressing gender balance in capacity building activities through more targeted recruitment and engagement strategies.
- Enhancing knowledge management and documentation systems to better capture and share project experiences and lessons learned.

Going Forward:

The project team needs to prioritize several actions to strengthen the achievement of objectives under Outcome 3:

- Developing targeted strategies for government stakeholder engagement;
- Adopting more targeted approaches to ensure gender-balanced participation;
- Strengthening knowledge management systems and expanding communication and awareness activities;

If the security situation stabilizes, the project will need to expand governmental participation, enhance training effectiveness, strengthen knowledge sharing, and improve communication impact.

* * *

The project's "Progress Towards Results" is rated as Moderately Satisfactory. While the project has achieved technical milestones and made progress on stakeholder engagement and capacity building, significant delays in key policy components, implementation of green transport services, and challenges due to the escalating security crisis hinder its ability to achieve intended impacts. The shifting focus of stakeholders toward immediate security priorities undermines the effectiveness of completed project components, creating substantial uncertainty around the achievement of long-term sustainable transport objectives. The score given here also reflects the severity of the external challenges and the impossibility of the project stakeholders to address them in a tangible way.

3.3. Project Implementation and Adaptive Management

3.3.1. Management Arrangements

The project has been implemented under the Direct Implementation Modality (DIM), with UNDP serving as the primary implementing agency. This arrangement was chosen after shifting from the originally planned National Implementation Modality (NIM) during the CEO endorsement stage, a change necessitated by Lebanon's financial crisis, COVID-19 impacts, and the aftermath of the Beirut port explosion.

UNDP's Implementation Role

Based on the DIM arrangement, UNDP has played a central coordinating and implementing role, adapting its approach to navigate Lebanon's challenging context effectively. UNDP's role was evident in several key aspects of project implementation. On the procurement side, UNDP successfully contracted a joint venture between MEDCO and Dagher Hayek for the supply of four electric buses and their chargers. UNDP structured this procurement carefully, ensuring the supplier would retain responsibility for the buses upon arrival until proper registration was completed and an operator was selected. This arrangement helped minimize risks for both UNDP and the Municipality of Jbeil.

In the infrastructure development component, UNDP managed the implementation of the solar charging infrastructure in Jbeil. By October 2024, this represented the first time the UNDP Country Office had undertaken a high-voltage system installation, marking a significant technical milestone for the organization. The infrastructure included a 207 kWp PV system and a 360 kWh Battery Energy Storage System with two rapid chargers.

UNDP also played a crucial facilitating role between various stakeholders. The organization worked to bridge communications between the Municipality of Jbeil, potential operators, and national institutions. This was particularly evident in the discussions about bus operations, where UNDP committed to supporting the municipality in developing tender documents and ensuring appropriate revenue-sharing arrangements were established.

UNDP has demonstrated good adaptability in its project management approach. When security concerns emerged regarding the protection of infrastructure and equipment, UNDP incorporated additional requirements into the contracts, including the installation of steel doors, surveillance cameras, and lighting around the bus station. The organization also showed flexibility in adjusting implementation timelines in response to regional security challenges.

UNDP's Green and Inclusive Development Programme team played an active role in project oversight and strategic direction. This is evident in their participation in project board meetings and their emphasis on key issues such as stakeholder engagement, particularly regarding the informal transport sector. The team advocated for proactive stakeholder consultations before launching bus operations to minimize potential conflicts.

Technical assistance was another significant aspect of UNDP's role. The organization provided expertise in developing operational models for the e-buses, including detailed timetables for

departure and charging times. UNDP also conducted environmental safeguards impact assessments and developed monitoring plans for the pilot bus stops and bus operations.

However, UNDP's implementation has faced several challenges. The financial delivery remains concerning, with a low cumulative delivery rate against the total approved amount. Procurement management shows extended timeframes for tender processes and complications in technical specification development. Also risk management appears more reactive than proactive, particularly evident in the delayed integration of security considerations for infrastructure.

National Partners' Execution Role

The project document envisioned substantial involvement from multiple central-level institutions. The Ministry of Interior and Municipalities (MoIM) was designated as the project's leading government partner, chosen for its central position in relations between national government and local authorities, as well as its responsibility for vehicle registration. The plan also outlined key roles for several other ministries: the Ministry of Energy and Water (MoEW) for energy efficiency strategy and grid adaptation, the Ministry of Environment (MoE) for climate change mitigation, and the Ministry of Public Works and Transport (MoPWT) for public transport regulations.

However, the actual implementation revealed a significant shift toward more localized institutional engagement. While MoIM maintained its official partner status, its active involvement appeared primarily focused on specific aspects, particularly through the Internal Security Forces (ISF) component and vehicle registration matters. The other ministries' involvement was notably reduced compared to what was planned. The Ministry of Environment has shown moderate, but consistent ownership of the project objectives, particularly in integrating transport sector greenhouse gas emission reductions into Lebanon's NDCs. Their participation in technical workshops and stakeholder meetings demonstrates institutional commitment, though this engagement has been somewhat constrained by the broader challenges facing government institutions during the ongoing economic crisis. The Ministry of Public Works and Transport, while participating in project activities, has shown limited proactive engagement, partly due to budget constraints and other competing priorities. The Rail and Public Transport Authority's involvement has been hampered by weak institutional structure and limited operational capacity, affecting its ability to take ownership of relevant project components.

As noted in the Adaptive Management section of this report, instead of the broad ministerial coordination initially envisioned, the project's implementation showed a strong pivot toward municipal-level institutional engagement, particularly with the Municipality of Jbeil. The municipality emerged as the most actively engaged institutional partner, taking on numerous crucial responsibilities including:

- Providing land for the bus depot
- Participating in infrastructure development decisions

- Preparing to own and register the electric buses
- Planning to manage the tender process for bus operations
- Contributing to revenue sharing arrangements

The project has also faced challenges in securing consistent ownership from some municipalities along the planned bus route. The Municipality of Jounieh's reluctance, but not complete disengagement, exemplifies the difficulties in securing strong local government buy-in across the project's geographical scope. This varying level of municipal engagement poses challenges for implementing a cohesive transport system across multiple jurisdictions.

Overall, the execution capacity of national partners has shown institutional, human and financial constraints. These factors are now further exacerbated by the security crisis which has redirected key personnel to emergency response duties. Furthermore, the current emergency situation, where project stakeholders are being displaced both within and outside the country in search of better security, has fundamentally altered execution capabilities.

Risk Management

This MTR took place during an unprecedented crisis in Lebanon, with the security situation deteriorating dramatically. As noted in the context analysis section of this report, by early October 2024 the conflict had resulted in approximately 2,083 deaths, including significant civilian casualties, nearly 9,869 injuries, and the displacement of over 608,509 individuals. This severe humanitarian emergency has fundamentally altered the context in which the project operates and has fundamentally challenged conventional risk management frameworks.

Prior to the conflict, the project's risk management had showed both strengths and limitations in dealing with risks. The following table summarizes the project’s ability to anticipate and mitigate risks, and some limitations in managing risks.

Box 1: Project’s Management of Risks Prior to the Conflict Escalation

Anticipated and Mitigated Risks:

- The project anticipated and developed mitigation strategies for several key risks. Most notably, the technical risk of unreliable grid electricity was effectively anticipated and mitigated through the development of a solar-powered charging system with battery storage (207 kWp solar system with 360 kWh battery storage). This adaptation, which was a departure from the original Prodoc plan that relied on the national electricity grid for charging, demonstrated foresight in addressing infrastructure challenges while maintaining project viability.
- The project also anticipated financial risks related to traditional funding sources. When faced with the loss of World Bank co-financing, the team secured alternative arrangements with the Municipality of Jbeil and Lebanese American University, demonstrating effective adaptive risk management.
- The project's awareness of potential social and political risks in the transport sector led to careful stakeholder engagement strategies, particularly with informal transport operators.
- The project identified and mitigated risks associated with the original project document, which was developed before the energy crisis in Lebanon and proved infeasible due to the lack of a reliable national electricity grid and the technical limitations of electric buses for the planned 240 km Jbeil-Tripoli-Beirut route. The project engaged a backstopping consultancy to support the

redesign of the pilot project's technical aspects, resulting in revised specifications that included a hybrid PV charging system with battery storage and the procurement of four medium-sized 8m battery electric buses instead of the initially planned two 12m buses. While this redesign contributed to delays in implementing high-budget activities like bus procurement and the postponement of the e-mobility strategy, it demonstrated the project's ability to adapt to changing circumstances and mitigate risks associated with the original plan.

Unanticipated or Inadequately Mitigated Risks:

- The project document could have accounted more effectively for the severity of institutional capacity constraints. The Ministry of Environment's extreme resource limitations and the assignment of the climate change focal point position to a single person handling multiple duties represent institutional risks that were not adequately assessed or mitigated in project design.
- The project also failed to anticipate the complete shutdown of critical monitoring infrastructure. The closure of the national air quality monitoring network in 2019 due to budget constraints ($600,000 annual maintenance cost) created an unforeseen gap in the project's ability to measure and verify environmental impacts, a risk that wasn't adequately considered in the monitoring and evaluation framework.
- The severity of the economic crisis's impact on private sector participation was underestimated. The dramatic reduction in bus service capacity (from 26 to 8 buses daily by one operator) and the difficulties in accessing financial support ("neither the bank can trust the company or the company can trust the bank") represent risks that exceeded anticipated mitigation measures.
- Security risks, particularly those related to PV charging systems and e-buses added in 2024, represent another category of inadequately anticipated risks. The current regional conflict's impact on project activities, with many components "slowed down or completely frozen" and key personnel like the Minister of Environment redirected to emergency duties, reveals the need for more robust security risk planning.

While successful in anticipating and mitigating some technical and operational risks, the project's risk management strategy has generally been more reactive than proactive, particularly regarding security concerns for charging infrastructure. The late addition of security risks to the risk register in 2024 indicates that these considerations could have been anticipated earlier.

The project's framework unsurprisingly proved inadequate in the face of catastrophic security events that exceeded any normal risk management capabilities conceivable. The escalation of conflict represents a fundamental risk for the project, the impact of which still remains unclear and unpredictable. The unfolding severe security crisis represents a force majeure event that has fundamentally altered the project's operating environment. Many project achievements are now at risk of not surviving the highly disruptive effects of the escalation, and the maintenance of these achievements is largely dependent on the conflict's evolution.

Looking forward, risk management will be a critical priority requiring heightened attention from project stakeholders. When the crisis has abated, the project will need to conduct a security risk assessment and planning, along with comprehensive mitigation strategies, that need to account for the expected of consequences of the conflict. The project's future progress will depend on maintaining flexibility and responsiveness in the face of the unpredictable consequences of the unfolding crisis and emergency situation.

Adaptive Management

Adaptive management has been a key necessity for this project, given Lebanon's extremely challenging context. UNDP has tried to address the severe infrastructure and economic challenges – while the recent escalation of the security crisis has created a demand for adaptive responses at far higher level. As the severe security crisis was unfolding at the time this MTR was being conducted, the extent to which the project will be able to adapt itself to the emerging situation – which at the point of the MTR was very unclear – remains to be seen. This will be a crucial aspect of the project to be evaluated at the end of the project.

The security situation aside, a fundamental adaptive shift in this project has been in the role of national institutions. The project document envisioned substantial involvement from multiple central-level institutions. However, the actual implementation saw a significant shift toward more localized institutional engagement. While the original project document emphasized the role of national institutions in policy development and regulatory reform, the actual implementation showed a more pragmatic focus on working with those institutions that could directly enable project implementation. This was particularly evident in discussions about vehicle registration, where MoIM's role was focused on specific administrative functions rather than broader policy development.

The institutional arrangements for security and risk management also evolved differently than planned. While the original project document focused primarily on technical and operational aspects, by 2024 significant attention was being paid to security arrangements, requiring coordination between municipal authorities and potential private operators.

The shifting institutional landscape also affected the project's approach to stakeholder engagement. While the original plan envisioned extensive coordination among national institutions, the actual implementation relied more heavily on direct engagement with municipal authorities and private sector participants, with national institutions playing more limited, specific roles.

This evolution in institutional roles appeared to reflect both the realities of Lebanon's challenging context and a pragmatic approach to achieving project objectives. While this meant some planned institutional coordination and policy development aspects were less fully realized than originally envisioned, it also appeared to enable more concrete progress in project implementation, particularly at the municipal level. The experience suggests that future similar projects in challenging contexts will benefit from initially focusing on strong municipal partnerships while maintaining flexible arrangements for engaging with national institutions as circumstances permit.

Another significant adaptive response by the project was a technical pivot (adaptation) in response to Lebanon's severe electricity crisis, as detailed in the inception report. Rather than abandoning e-mobility objectives, the team creatively redesigned the charging infrastructure to incorporate solar power systems. This adaptation, which included developing a 207 kWp solar system with a 360 kWh battery storage system using high-voltage technology at the Jbeil bus station, effectively created a self-sustaining charging solution that mitigates unreliable grid

electricity. The project also adjusted the route from the initially planned Jbeil-Tripoli-Beirut route (240 km roundtrip) to the more feasible Jbeil-Beirut route (80 km roundtrip). Additionally, the project modified the bus specifications, opting for four medium-sized 8m Battery Electric Buses instead of the initially planned two 12m buses. These adaptations demonstrate the project's ability to maintain core objectives while accommodating local infrastructure limitations and technical feasibility.

Similarly, the project has shown flexibility in its implementation strategy by recalibrating e-bus specifications. Working with international consultants through a backstopping consultancy, the team modified technical requirements to favor smaller buses with reduced battery capacity, demonstrating practical adaptation to local conditions. The project also displayed agile stakeholder management in its co-financing arrangements. When the World Bank's Bus Rapid Transit project became unfeasible due to the economic crisis, the team successfully secured alternative co-financing through partnerships with the Municipality of Jbeil.

The project's adaptation to institutional realities was evident in how it handled the tendering process for bus operations. Rather than working through central government institutions as initially planned, the project team worked directly with the Municipality of Jbeil to develop appropriate tender documents, with UNDP providing technical support to ensure legal compliance and operational viability.

Further, the project has shown adaptation of its gender and social inclusion approach. The team expanded its original gender action plan to address emerging needs, particularly focusing on changing demographics of public transport users due to the economic crisis. This included developing specific measures for vulnerable groups such as refugees, migrants, and persons with disabilities.

However, several aspects of the project's adaptive management would have benefitted from greater focus. The relatively low delivery (budget execution) rate - which is examined in more detail in the following sections of this chapter – suggests gaps in the project’s ability to translate adaptive strategies into implementation speed. While many delays are attributable to the extremely challenging context and the need to postpone high-budget activities like the bus procurement, more aggressive adaptive measures could have accelerated the implementation process. The postponement of the national e-mobility strategy, while reasonable given the electricity crisis and the need to observe how the country adapts to the new energy situation, would have benefitted from a more proactive interim approach through preliminary policy frameworks that could have functioned under the existing conditions.

Going forward, first and foremost, the project needs to assess the damage that the severe security crisis has caused to the project’s human and physical infrastructure. This can be done after the situation in the country has been stabilized sufficiently and the extent of the damage has become assessable. Based on the assessment of the damage, the project needs to decide what is feasible and what is not feasible for the remainder of this project’s lifetime. This should result in a set of realistic and feasible targets. Based on that assessment and targets, the project

team will need to identify a whole range of adaptation measures that are necessary to achieve those targets and results. In conjunction with this, the project team also needs to develop a more structured framework for monitoring the effectiveness of adaptive measures, enabling a quicker identification of necessary adjustments. Clearer triggers for implementing adaptive measures, potentially through a more formal adaptive management protocol, will enhance response effectiveness. Knowledge management systems will benefit from strengthening to better capture and share lessons learned, facilitating faster responses to challenges. The project will also need to consider developing parallel implementation tracks that can progress independently, when certain components face delays, helping maintain overall momentum. Contingency planning, particularly for infrastructure security and stakeholder engagement, needs strengthening to shift from reactive to proactive adaptation.

3.3.2. Work Planning

In addition to the extraordinary security situation, the project has faced some significant challenges. One notable challenge has been the need to redesign the project due to the energy crisis in Lebanon, which rendered the original plans in the Project Document infeasible. As detailed in the inception report, the originally planned Jbeil-Tripoli-Beirut route (240 km roundtrip) was not technically feasible for a pilot project using electric buses due to the high range and the lack of charging infrastructure beyond Jbeil. Moreover, the absence of a reliable national electricity grid necessitated a redesign of the charging infrastructure to incorporate a hybrid PV system that could generate sufficient energy for the pilot e-bus project. Consequently, the route was adjusted to the Jbeil-Beirut route (80 km roundtrip), and the technical specifications were revised to include a 207 kWp hybrid PV charging system with a 360 kWh battery energy storage system using high-voltage technology, and the procurement of four medium-sized 8m battery electric buses instead of the initially planned two 12m buses. While these adaptations demonstrate the project's responsiveness to changing circumstances, they also contributed to delays in implementing the highest-budgeted activities, such as bus procurement, and the postponement of the e-mobility strategy.

Other challenges included complex procurement processes, which have become particularly cumbersome within Lebanon's deteriorating economic environment, where currency devaluation and banking restrictions complicate even routine procurement activities. This challenge was compounded by severely limited institutional capacity across implementing partners, a situation now further exacerbated by the security crisis that has redirected key personnel, including the Minister of Environment, to emergency response duties. The project also struggled with stakeholder coordination, as varying levels of municipal engagement and the difficulty of maintaining consistent stakeholder participation in an unstable environment created delays and inefficiencies in implementation. Adding to these challenges were the technical complications in infrastructure implementation, particularly evident in the solar charging station and e-bus systems, where the need to adapt designs to account for unreliable grid electricity while ensuring technical feasibility required additional time and resources.

Financial efficiency was another challenging aspect of project performance. The cumulative delivery rate of just 22.19% against the total approved amount by 2024, with cumulative

disbursement reaching only $788,474, indicates challenges in financial execution. This low delivery rate becomes particularly significant when considered against the project's planned closure date of May 2027. The initial six-month gap between project document signing in May 2022 and the inception workshop in October 2022 contributed to early implementation delays, setting a pattern of slow financial execution that proved difficult to overcome.

The project's operational efficiency has been mixed. The project has shown efficiency in adapting technical specifications to address local constraints, particularly in the redesign of charging infrastructure to incorporate solar power systems. However, the project experienced delays in the recruitment of project staff. As the country office could not post the positions for project staff early on due to the first disbursement not going through, the only position that was posted online was the Project Manager position, who joined in July 2022. So, the project had to wait until the administrative issues were resolved to be able to launch the positions for project staff, which further caused delays. Also, the project experienced slower-than-planned implementation of demonstration projects and postponement of key components like the national e-mobility strategy represent efficiency challenges.

Process efficiency showed challenges in procurement and implementation procedures. The project's experience with developing technical specifications and conducting procurement for e-buses and charging infrastructure, while thorough, took longer than anticipated, partly due to the need to revise specifications in response to the energy crisis. The transition from UNDP's ATLAS to Quantum system created additional technical challenges in procurement, budget reporting, and other areas, further complicating efficient project execution.

Resource utilization efficiency showed both strengths and weaknesses. The project showed efficiency in leveraging existing resources and partnerships, particularly in working with the Municipality of Jbeil and Lebanese American University. However, challenges were experienced in engaging some municipalities and stakeholders in resource allocation for stakeholder engagement. The project's ability to secure alternative co-financing arrangements following the loss of World Bank funding showed adaptability and resourcefulness, though the process consumed significant time and effort.

Time efficiency was another concern. The project experienced some delays in key components, with some activities pushed back by multiple quarters. While some delays can be attributed to external factors such as the electricity crisis, economic conditions, and more recently the security situation, others suggest internal inefficiencies in project management and implementation processes. The need to redesign the project in response to the energy crisis, while necessary, contributed to timeline extensions and reduced time efficiency.

The escalating conflict is bound to have a significant impact on the project's efficiency in the remainder of its lifetime. A lot will depend on the path of the conflict, but further perseverance of the current intensity has the potential to severely disrupt project timelines, complicate resource allocation, and create additional operational barriers. The redirection of key personnel and institutional attention to security matters - exemplified by the Environment Minister's new role coordinating the emergency committee – might create delays and inefficiencies in

decision-making processes and project oversight. Activities that have been "slowed down or completely frozen" due to the security situation will likely face increased implementation costs and timeline extensions when they resume, reducing the overall cost-efficiency of project delivery. The inability to plan ahead will force the project to operate in a reactive rather than proactive mode, potentially leading to inefficient use of resources and missed opportunities for coordinated implementation. The security situation might also complicate procurement processes, stakeholder coordination, and monitoring activities, requiring additional time and resources for basic project operations that would otherwise be routine. These efficiency challenges are particularly concerning given the project's already low delivery rate (29% against total approved amount), suggesting that the security situation could further impede the project's ability to achieve its objectives within the planned timeframe and budget.

The extent to which the project's efficiency challenges can be mitigated will depend on how the security situation evolves. If the security situation subsides, more aggressive measures will be needed by the project team to accelerate implementation, while maintaining quality and seeking to ensure sustainable outcomes. This will require stronger project management systems, enhanced coordination mechanisms, and more effective resource utilization, all while navigating the complex security and economic environment in Lebanon. Going forward, the project team must find ways to operate more efficiently within these constraints, while maintaining focus on core objectives.

3.3.3. Finance and Co-finance

The total cost of the project was budgeted at USD 48,030,150. This was envisaged to be financed through a GEF grant of USD 3,552,968 administered by UNDP, and additional support of USD 44,477,182.[23]

Co-financing

The co-financing table in Annex VIII of this report summarizes the project's secured co-financing at the point in which this MTR was conducted. As can be seen from the table, the comparison between the planned co-financing at the project's inception and the actual realization of co-financing at the point of the MTR reveals significant variances across contributors, an indication of challenges in meeting initial financial commitments.

Originally designed with a total co-financing commitment of $44.1 million from five different sources, the actual contributions at midterm present a dramatically different picture, with total contributions of $17.6 million representing 40% of the expected amount. The most notable change involves the World Bank's planned loan of $42.69 million, which has not materialized due to Lebanon's economic crisis. However, this shortfall has been partially offset by an extraordinary contribution from the Municipality of Jbeil, which has provided $17.5 million in in-kind support, primarily through land allocation for charging infrastructure. This represents over 5,275% of their original commitment of $331,700. UNDP has maintained steady support, contributing $109,440 of their pledged $200,000 (54.72% of commitment). However, both

[23] As per the Project Document – Financial Planning and Management (page 50).

government partners - the Ministry of Interior and Municipalities ($663,300 pledged) and the Ministry of Energy and Water ($250,000 pledged) - have not yet contributed their committed in-kind support.

Budget Execution

The analysis of the project's financial delivery shows the challenges the project has experienced. At the point of this MTR, the project had spent 29% of its total budget (see table below), which is a relatively low overall execution rate and which reflects the significant challenges the project has encountered in implementing planned activities and utilizing the allocated resources. Component 1 has consistently underspent across all years, with a 25% execution rate, suggesting difficulties in implementing related activities. Component 2 has also faced significant underspending in 2022 and 2023, but surprisingly exceeded its budget by 15% in 2024, indicating an acceleration in activities or unexpected costs. In contrast, Component 3 has demonstrated the highest execution rate at 56%, despite not being allocated any budget in 2022, suggesting more successful implementation compared to other components.

Table 6: Project's Budget Execution by Component

No.	Component	Budgeted (as per ProDoc)	Spent	Execution Rate
Year 2022				
1	Component 1	$81,173	$1,090	1%
2	Component 2	$55,085	$897	2%
3	Component 3	$0	$3,640	Not Applicable
4	**Total**	**$136,258**	**$5,627**	**4%**
Year 2023				
1	Component 1	$51,250	$34,471	67%
2	Component 2	$1,543,740	$153,993	10%
3	Component 3	$91,740	$57,668	63%
4	**Total**	**$1,686,730**	**$246,132**	**15%**
Year 2024 (point of evaluation)				
1	Component 1	$219,050	$51,966	24%
2	Component 2	$288,250	$330,477	115%
3	Component 3	$195,610	$98,982	51%
4	**Total**	**$702,910**	**$481,425**	**68%**
ALL YEARS				
1	Component 1	$351,473	$87,527	25%
2	Component 2	$1,887,075	$485,367	26%
3	Component 3	$287,350	$160,291	56%
4	**Total**	**$2,525,898**	**$733,184**	**29%**

The analysis (shown in the table below) shows the project's financial performance by year. The low 4% execution rate in 2022 points to significant start-up delays or challenges in initiating project activities. While 2023 saw improved execution rates, particularly for Components 1 and 3, Component 2 remained significantly underspent. The notable increase in overall

execution rate to 68% in 2024 was largely driven by accelerated spending in Component 2, though Components 1 and 3 still lagged.

Table 7: Project's Budget Execution by Year

Component	2022	2023	2024	Total
Component 1	1%	67%	24%	25%
Component 2	2%	10%	115%	26%
Component 3	Not Applicable	63%	51%	56%
Total	**4%**	**15%**	**68%**	**29%**

Several factors have contributed to this lower-than-expected financial performance and well before the recent escalation of the security crisis. The need to redesign the project due to Lebanon's energy crisis, as detailed in the inception report, has been a significant factor. The original plans, developed before the energy crisis, included two 12-meter electric buses operating on the Jbeil-Tripoli-Beirut route (240 km roundtrip) with charging supported by the national electricity grid. However, this proved infeasible due to technical limitations of electric buses for the high-range route and the lack of a reliable national electricity grid. Consequently, the project was redesigned to adjust the route to Jbeil-Beirut (80 km roundtrip), install a hybrid PV charging system with battery storage, and procure four medium-sized 8m battery electric buses. While these adaptations were necessary, they contributed to delays in implementing high-budget activities like bus procurement and the postponement of the e-mobility strategy.

An initial six-month gap between the signing of the project document (May 2022) and the inception workshop (October 2022) created early implementation delays. The project's first year focused primarily on preparatory activities and strategic planning, resulting in limited financial execution. Technical challenges have also emerged from UNDP's transition from ATLAS to Quantum internal systems, with some expenses, particularly salary costs, not being properly reflected in total expenditure figures.

The severe security crisis has further complicated the project's financial challenges, redirecting institutional attention and resources. The project must find ways to maintain financial momentum and co-financing commitments to the extent possible, while acknowledging that some achievements may not survive the highly disruptive effects of the escalating conflict.

Once the security situation stabilizes, the project's first step should be to assess the damage caused to its human and physical infrastructure. Based on this assessment, the project team needs to determine what is feasible for the remainder of the project's lifetime and establish realistic and achievable targets. With these targets in mind, the team should develop a new financial framework that aligns with the revised objectives and targets.

Success in the remaining project period will depend on balancing the need for financial execution with maintaining implementation quality and achieving project objectives under the severe constraints imposed by the security situation. This will require strategic planning, including reviewing implementation timelines, developing clear resource allocation priorities, exploring new co-financing opportunities, and considering innovative financing mechanisms.

Financial planning will need to be adjusted to align planned activities with actual expenditure, and more realistic forecasting should be conducted based on the renewed targets. The project team must remain adaptable and proactive in navigating the complex financial landscape while striving to maintain progress towards its goals in the face of unprecedented challenges.

3.3.4. Project Level Monitoring and Evaluation

The following is a brief assessment of the project's monitoring and evaluation (M&E) framework both in terms of its design and implementation.

Design of M&E Framework

The project's M&E framework – presented in the project document – is well-designed, providing a solid foundation for tracking progress toward objectives and outcomes. It includes all essential elements of GEF project monitoring, from inception workshop and regular Project Implementation Reports (PIRs) to independent mid-term and terminal evaluations. Key performance indicators are established for each objective, enabling continuous monitoring and adaptive management. The governance structure supporting M&E activities is robust, with well-defined roles for the Project Board and independent quality assurance from UNDP. The framework also effectively integrates knowledge management through public sharing of evaluation reports and engagement with the Global E-mobility Programme.

However, there were some areas where the M&E framework presented in the project document could have been more adequate. The project document provided limited details on specific data collection methodologies and verification sources for project indicators. Some baseline data were incomplete. While stakeholder engagement was mentioned, the framework did not explicitly integrate stakeholder participation in monitoring activities beyond the Project Board meetings. Additionally, the project document could have included a more detailed discussion of how M&E data was going to be used for adaptive management beyond annual reviews.

Overall, the M&E framework provided good foundations for tracking progress toward the project’s objectives and outcomes. However, the project faced challenges in implementing the M&E framework effectively. These challenges were further exacerbated by the severe security situation, complicating the framework's ongoing effectiveness. This is assessed in the following section of this report.

Implementation of M&E Framework

The project's implementation of the M&E framework has had several positive aspects. Key M&E requirements, such as regular project board meetings, annual PIR reporting, and basic progress tracking against indicators, have been implemented. An M&E plan was designed and put into action following the inception workshop in October 2022, providing a foundation for project monitoring. Effective mechanisms for stakeholder feedback have been established through regular meetings and workshops, with Project Board meetings serving as a structured forum for progress review and stakeholder input. Three project board meetings have been held so far: the Inception Workshop in October 2022, followed by meetings in December 2023 and October 2024.

The project has maintained good documentation of adaptive management decisions, particularly evident in the modifications to e-bus specifications and charging infrastructure design in response to electricity shortages. Progress against project indicators, such as tracking electric vehicle registrations in Lebanon, have been adequately documented.

However, prior to the escalation of the crisis, several challenges were noted in the M&E system. Baseline data and targets showed some gaps, with several indicators lacking clear baseline data and some targets requiring revision based on changed circumstances. Results tracking has so far focused on activity-level monitoring. Going forward, the focus needs to shift to outcome-level results, with more dedicated analysis of qualitative achievements. Risk monitoring has generally been reactive rather than proactive, with limited evidence of systematic monitoring and updating. While gender and social inclusion monitoring was included, it required strengthening in terms of systematic tracking of outcomes and collection of disaggregated data for vulnerable groups.

The current security situation has created severe complications for the project's M&E function. Going forward, the project will benefit from a strengthened M&E framework that includes clearer methodologies for data collection and analysis, more outcome-focused monitoring mechanisms, and more systematic data collection procedures that can function in the current environment. Risk monitoring will require particular attention, with better early warning indicators and more systematic response tracking needed.

3.3.5. Stakeholder Engagement

Stakeholder Engagement at Design

The project was designed to have a broad approach to stakeholder participation, recognizing that successful sustainable transport initiatives require broad-based support and active involvement from various groups. However, this planned participation must now be examined in the context of the severe security crisis, which fundamentally affects stakeholder engagement capabilities.

The project’s design included the engagement of government ministries, municipalities, civil society organizations, international donors, and private sector actors. This approach aimed to capture diverse perspectives and expertise in designing practical and equitable transport solutions. Key government partnerships were a crucial component of the stakeholder framework. The involvement of the Ministry of Interior and Municipalities, Ministry of Public Works and Transport, Ministry of Energy and Water, and Ministry of Environment is key for regulatory support and policy alignment. Local governments and municipalities play a vital role in ground-level implementation, with the Municipality of Jbeil serving as a key pilot location. Private sector engagement was envisaged on practical implementation through bus operators, fleet managers, and transport-related businesses. Civil society organizations were also envisaged as crucial partners for community engagement and social inclusion, particularly in promoting gender-sensitive and socially inclusive transport solutions. International donors and development partners were envisaged to provide essential financial and technical support, though the project eventually had to adapt to the loss of significant World Bank co-financing.

While the design of stakeholder engagement was generally well-conceived, the escalation of the crisis requires that the project balance maintaining its comprehensive stakeholder engagement framework with the fundamental constraints imposed by the security situation. Further progress will require careful attention to preserving stakeholder relationships, while preparing for eventual resumption of full participation activities.

Stakeholder Engagement during Implementation

The project's approach to stakeholder engagement evolved significantly between 2022 and 2024, shaped by both successes and emerging challenges in Lebanon's complex operating environment. The cornerstone partnership with the Municipality of Jbeil proved particularly dynamic, with Mayor Wissam Zaarour demonstrating strong leadership and consistent engagement throughout the period. This was evidenced in the 2024 board meeting, where the Mayor actively participated in discussions about bus operations, revenue sharing, and infrastructure development.

A notable development was the successful contracting of a joint venture between MEDCO and Transauto part of Sofidal Holding (Dagher Hayek Group) for the supply of electric buses and chargers, representing a significant private sector partnership achievement not originally anticipated in the project design. However, engagement with other municipalities along the planned bus route proved challenging, particularly in areas like Dora and Antelias.

The project's handling of informal transport sector relationships evolved to become more nuanced by 2024. Rather than viewing informal operators as potential opponents, the project team developed a strategy to ensure new bus stops would be distinct from those used by the informal sector, aiming to reduce tension and competition while attracting new clientele.

The implementation of the Public Procurement Authority's (PPA) requirements emerged as a new institutional partnership consideration by 2024, adding complexity to the project's stakeholder arrangements. This included specific requirements for the Municipality of Jbeil to register on the PPA's electronic platform and follow detailed procurement procedures.

Engagement with national government entities faced increasing challenges by 2024, particularly evident in the reduced participation of the Internal Security Forces (ISF) due to the security situation. The project adapted by focusing more intensively on municipal-level partnerships.

The project's stakeholder engagement strategy showed some resilience in technical implementation areas. Based on project estimates, by late 2024, despite challenging circumstances, the project had achieved 30% completion of the PV charging infrastructure construction and maintained productive relationships with technical partners and contractors.

However, certain partnership arrangements proved vulnerable to external pressures. The inability to proceed with some planned activities, such as ISF's participation in the 2024 project board meeting, highlighted the need for more robust contingency planning in stakeholder engagement strategies.

Project Ownership

As other dimensions of this MTR, the project's national ownership must be understood in the context of severe security deterioration, which has fundamentally altered institutional priorities and engagement capabilities. From this perspective, the project shows varying levels of national ownership, with both some successes but also challenges in securing sustained engagement from national partners. The most dramatic impact on national ownership stems from the redirection of key institutional attention and resources to security matters. The Environment Minister's new role as coordinator of the ministerial emergency committee exemplifies how national priorities have shifted away from sustainable transport initiatives. This shift in institutional focus, combined with the project stakeholders' displacement both within and outside the country in search of better security, severely undermines the foundation of national ownership.

The project's transition from National Implementation Modality (NIM) to Direct Implementation Modality (DIM) during the design phase, necessitated by Lebanon's financial crisis, has influenced the dynamics of national ownership and participation. In this context, the Ministry of Environment has shown moderate, but consistent ownership of the project objectives, particularly in integrating transport sector greenhouse gas emission reductions into Lebanon's NDCs. Their participation in technical workshops and stakeholder meetings demonstrates institutional commitment, though this engagement has been somewhat constrained by the broader challenges facing government institutions during the ongoing economic crisis. The Ministry of Public Works and Transport, while participating in project activities, has shown limited proactive engagement, partly due to budget constraints and other competing priorities. The Rail and Public Transport Authority's involvement has been hampered by weak institutional structure and limited operational capacity, affecting its ability to take ownership of relevant project components.

The Municipality of Jbeil stands out as a primary example of strong national ownership. Under the leadership of Mayor Wissam Zaarour, the municipality has demonstrated exceptional commitment through tangible contributions, including the provision of strategically located land for the charging station. The municipality's active participation in project planning, consistent engagement in project board meetings, and alignment of the project with their broader environmental and tourism development objectives exemplify how local government ownership can significantly enhance project implementation. Their integration of the project into their broader municipal vision, including existing initiatives like electric cars for tourism and solar street lighting, demonstrates genuine ownership and commitment to sustainable transport solutions.

The project has faced challenges in securing consistent ownership from some municipalities along the planned bus route. The Municipality of Jounieh's reluctance, but not complete disengagement, exemplifies the difficulties in securing strong local government buy-in across the project's geographical scope. This varying level of municipal engagement has posed challenges for the implementation a cohesive transport system across jurisdictions.

The private sector's ownership of project initiatives shows mixed results. While there has been growing interest in electric vehicle adoption, as evidenced by increasing registration numbers, formal engagement and ownership of project initiatives by transport operators and other private sector stakeholders has been limited. The concerns raised by informal transport operators about potential negative impacts on their operations indicated challenges in building broad-based ownership across the transport sector.

To enhance national ownership, the project has taken several steps. The development of technical guidelines for non-motorized transport has involved extensive consultation with national stakeholders. The project's adaptation to include solar power solutions demonstrates responsiveness to national energy security concerns, potentially increasing the relevance and attractiveness of the project to national partners.

The path forward for national ownership must take into account the fact that several project achievements might not survive the highly disruptive effects of the conflict escalation. Which aspects of national ownership can be maintained remains to be seen and will largely depend on how the conflict evolves in the months and years ahead.

3.3.6. Reporting

The project has produced comprehensive project implementation reviews (PIRs), which provide substantial detail about project achievements, particularly in documenting specific activities completed during the reporting period. For example, PIRs thoroughly describe the development of guidelines for non-motorized transport, progress on pilot projects, and stakeholder engagement activities. The challenges faced by the project are candidly addressed, especially regarding the contextual difficulties in Lebanon such as electricity shortages, economic crisis, and security concerns. The reports explain how these challenges have impacted project implementation and describes adaptive measures taken in response. The progress on gender mainstreaming is well-documented, with clear examples of how gender considerations have been integrated into various aspects of the project, from bus stop design criteria to community engagement strategies.

The reports will however benefit from a more explicit inclusion of evidence. More consistent documentation of evidence would strengthen the report's credibility. Also, while the reports include basic financial figures (15.26% delivery against total approved amount), they would benefit from more detailed analysis of financial performance and explanations for any significant variances from planned expenditure. Furthermore, the project's approach to documenting lessons learned shows challenges. The documentation indicates that no reports on best practices and lessons learned have been shared.

Also, while the project has developed technical guidelines and certification frameworks, the mechanisms for sharing these tools and ensuring their adoption by other stakeholders remain underdeveloped. The project's engagement with the Global Programme to Support Countries with the Shift to Electric Mobility provides a potential platform for knowledge sharing, but concrete examples of successful knowledge transfer are limited.

3.3.7. Communications

The project has established a structured communications approach, having developed and implemented a formal communication strategy. It has also established an official presence on UNDP's website and garnered coverage across various media platforms. The communication outputs include press releases, social media content on platforms like Instagram, Facebook, and LinkedIn, and traditional media coverage. Of particular note is the production of a podcast focused on e-mobility in Lebanon, demonstrating efforts to diversify communication formats.

The project has made efforts in stakeholder communication and knowledge sharing through the organization of focused capacity-building workshops, including sessions on non-motorized transport guidelines and urban mobility promotion. These events have engaged municipal planners and various stakeholders, facilitating direct knowledge transfer. The project team has maintained regular meetings with e-mobility stakeholders in Lebanon and actively participated in the GEF E-mobility Support Programme, showing commitment to both local and international knowledge exchange.

Despite these achievements, several areas require further attention:

- First, the project could better quantify the reach and impact of its communication efforts. While various communication channels are used, there is limited data on engagement metrics or the effectiveness of different communication approaches.
- Second, while the project has conducted workshops and meetings, there is limited information about how feedback from these events is incorporated into project implementation.
- Third, the communication strategy could be more proactive in addressing the project's challenges, particularly in managing stakeholder expectations given the country's ongoing electricity crisis and economic challenges.

* * *

The project's "Project Implementation & Adaptive Management" is rated as Moderately Satisfactory. The project demonstrated good adaptability in shifting from NIM to DIM, adequately managing procurement, stakeholder coordination, and technical assistance under challenging circumstances. However, issues with financial delivery rates, prolonged procurement timelines, and reactive risk management highlight areas for improvement in overall execution. While national partners, especially at the municipal level, have actively engaged in project implementation, broader ministerial coordination has been limited.

3.4. Sustainability

The project's sustainability must be understood within the context of multiple overlapping crises affecting the country - the economic collapse, severe electricity shortages, and now the escalating conflict that has dramatically shifted governmental priorities and attention. These circumstances have created a very challenging environment for long-term sustainability.

The conflict has severely impacted the project's sustainability by fundamentally shifting institutional priorities within the relevant government institutions and disrupting their implementation capacity. As an example, the Minister of Environment's new role as coordinator of the ministerial emergency committee has dramatically reduced attention to sustainable transport initiatives, while project activities have been either slowed down or completely frozen due to the security situation. The instability has severely affected stakeholder engagement and planning capabilities, making it extremely difficult to maintain momentum on project activities or plan for future implementations. This security situation compounds existing challenges from the economic crisis and institutional limitations, creating an environment where even maintaining existing project achievements becomes questionable, with the environmental advisor noting that which achievements will be maintained remains largely dependent on how the conflict evolves in the months and years ahead. The combination of immediate security concerns with existing challenges creates a particularly complex implementation environment where further progress and the preservation of outcomes requires careful navigation of multiple constraints while maintaining focus on core project objectives.

3.4.1. Institutional Sustainability

The current legal frameworks, policies, and governance structures pose significant risks to project benefits. The weak governance context in Lebanon, characterized by the absence of a coordinated public transport system and limited municipal capacity, creates fundamental challenges for sustaining project outcomes. The recent security crisis has further weakened institutional structures, with key personnel being redirected to emergency response duties. This institutional fragility, combined with financial constraints and the ongoing economic crisis, creates substantial risks for maintaining project benefits beyond the closure date.

The project has established some frameworks for accountability and knowledge transfer, though their effectiveness is uncertain. The development of technical guidelines for municipalities, certification frameworks for Green Public Transport Service, and Green Fleet Management demonstrate efforts to institutionalize project learnings. However, the documentation suggests limited progress in establishing robust mechanisms for ensuring accountability and transparency after project closure. The project's knowledge management component, while planned, shows minimal progress in documenting and sharing best practices, with zero reports produced against a target of six by project end.

The project's approach to institutional capacity development shows mixed results. While some capacity building has occurred, particularly at the municipal level with the Municipality of Jbeil, the broader institutional landscape remains fragile. The training of 19 decision-makers against a midterm target of 20 indicates some progress in technical capacity building. However,

the severe resource constraints facing key institutions, exemplified by the Ministry of Environment's limited staffing, raise concerns about long-term institutional sustainability. The current security crisis has further complicated capacity development efforts by displacing key personnel and disrupting institutional operations.

The project has identified and engaged some champions, particularly at the municipal level. The Mayor of Jbeil stands out as a key champion, demonstrating strong leadership and commitment through significant co-financing and active engagement in project implementation. However, the project has had limited success in cultivating champions at the national level, where institutional engagement has been constrained by resource limitations and competing priorities. The involvement of civil society organizations like Lebanon by Bike, Rider's Rights, and the Chain Effect indicates some progress in developing advocacy support, though their long-term influence remains unclear.

The project's ability to respond to future institutional and governance changes appears limited. While the project has shown some adaptability in technical implementation, such as modifying infrastructure designs to address electricity constraints, its strategies for managing political and institutional changes are less developed. The current security crisis has exposed vulnerabilities in the project's ability to maintain momentum during significant external changes. The mainstreaming of project strategies into future planning faces substantial challenges given the uncertain security situation and weak institutional environment.

These findings suggest that while the project has made some progress in establishing foundations for sustainability, significant challenges remain in ensuring the long-term continuation of project benefits. The current security crisis adds another layer of complexity to sustainability prospects, potentially undermining even previously achieved results. For these reasons, the rating for Institutional Sustainability is Moderately Unlikely.

3.4.2. Financial Sustainability

The financial sustainability outlook for this project is challenging. The project's current financial performance, with only 29% budget execution and materialization of just 40.36% of planned co-financing, indicates fundamental challenges in securing and utilizing financial resources. These difficulties are likely to persist or worsen given Lebanon's ongoing economic crisis and the recent security situation. The loss of World Bank co-financing, which was initially planned at USD 42.69 million, represents a significant blow to the project's long-term financial sustainability. While the Municipality of Jbeil has significantly exceeded its co-financing commitment (contributing USD 17.5 million against a planned USD 331,700), other government partners have not provided their planned contributions. The Ministry of Interior and Municipalities and the Ministry of Energy and Water have contributed none of their planned in-kind support.

Despite these challenges, some opportunities for financial sustainability exist. The private sector's growing interest in electric vehicles, evidenced by the dramatic increase in EV registrations (2,878 vehicles registered against a target of 24), suggests potential for market-driven sustainability. The recent extension and expansion of import tax exemptions for electric

vehicles, including e-bicycles and e-scooters, creates favorable conditions for continued private sector investment. The project's integration of solar power solutions for charging infrastructure demonstrates potential for reducing operational costs and creating more sustainable financial models. The 207 kWp solar system with 360 kWh battery storage at the Jbeil bus station represents a model for energy-independent transport infrastructure that could reduce long-term operational costs.

Creating an enabling environment for continued financing requires several additional factors. First, institutional stability and capacity need significant strengthening. The current security crisis has severely disrupted institutional operations, with key personnel being redirected to emergency response duties. This institutional instability poses a fundamental challenge to establishing sustainable financing mechanisms. Second, the regulatory framework requires further development. While the project has created guidelines for Green Public Transport Service and Green Fleet Management certification, these frameworks need operationalization to support sustainable financing models. Third, private sector engagement mechanisms need strengthening. The project's experience with bus operators and fleet managers suggests potential for private sector participation, but formal engagement structures remain limited.

Overall, the combination of external economic pressures, institutional weaknesses, and the current security crisis creates substantial risks for maintaining project benefits after GEF assistance ends. As such, the rating for Financial Sustainability is Unlikely.

3.4.3. Social Sustainability

The project faces substantial social and political risks that could jeopardize the sustainability of outcomes. The recent escalation of conflict represents the most severe threat, having fundamentally disrupted project activities and displaced key stakeholders. This security crisis has redirected institutional attention away from sustainable transport initiatives, with key personnel like the Environment Minister being reassigned to emergency response duties.

The project operates within a challenging political context characterized by weak governance structures and limited institutional capacity. The absence of a coordinated public transport system and the reliance on informal services create political complexities that could undermine long-term sustainability. The varying levels of municipal engagement along the planned bus route, particularly evident in areas like Jounieh, indicate political challenges in maintaining cohesive support across jurisdictions.

The level of stakeholder ownership shows significant variation that could affect sustainability. The Municipality of Jbeil demonstrates strong ownership through exceptional commitment and tangible contributions, including strategic land provision and significant co-financing. However, engagement from national-level institutions remains limited, with ministries showing constrained participation due to resource limitations and competing priorities. Private sector stakeholders show mixed levels of ownership. While there is growing interest in electric vehicle adoption, as evidenced by increasing registration numbers, formal engagement from transport operators remains limited. The concerns expressed by informal transport operators

about potential negative impacts on their operations indicate challenges in building broad-based ownership across the transport sector.

The project remains highly relevant to the context of Lebanon, but it needs to strengthen mechanisms for maintaining stakeholder engagement despite the security crisis, focusing on preserving key relationships and institutional memory. As such, the rating for Social Sustainability is Moderately Likely.

3.4.4. Environmental Sustainability

Environmental Sustainability appears relatively more robust, though facing significant monitoring challenges. The project's focus on reducing transport sector emissions through electric mobility and renewable energy integration aligns well with long-term environmental objectives. The promotion of non-motorized transport and development of green transport certification systems suggest potential for sustained environmental benefits. However, the shutdown of the national air quality monitoring network in 2019 due to budget constraints ($600,000 annual maintenance cost) has created a critical gap in the ability to measure and verify environmental impacts. This lack of monitoring capability affects both project evaluation and future planning.

The environmental standards implementation shows strength in several key areas. The project's focus on climate change mitigation is evident through the integration of renewable energy solutions, emphasis on reducing transport sector emissions, and promotion of non-motorized transport options. Sustainable infrastructure development is demonstrated through solar-powered charging systems and energy efficiency considerations, while environmental planning has incorporated impact considerations in site selection and green design principles.

However, several areas require strengthening in the project's SES implementation. Documentation and monitoring show limitations, with incomplete evidence of systematic SES monitoring and inadequate tracking of mitigation measure effectiveness. Stakeholder engagement in SES implementation needs enhancement, particularly in documenting consultation processes and establishing stronger feedback mechanisms. The risk management approach appears more reactive than proactive in identifying social risks, with limited integration of environmental risks in project planning. Capacity building for safeguards implementation also requires attention, with limited evidence of systematic training and technical support.

The rating for Environmental Sustainability is Moderately Likely. The project's focus on emission reductions through electric mobility and renewable energy has the potential for lasting environmental impact, but gaps in national air quality monitoring hinder the ability to track progress, affecting both immediate and future environmental sustainability assessments.

4. LESSONS LEARNED

The following are a set of lessons drawn from the experience of the project.

Lesson 1: Adaptive Project Design and Implementation in Crisis Contexts

The project demonstrated crucial lessons about adaptation in volatile environments. The project faced not only the anticipated challenges of economic crisis and electricity shortages but also an unprecedented security crisis by late 2024 that resulted in widespread civilian casualties and the displacement of over 600,000 people. In the face of these compounding challenges, the project exhibited both strengths and limitations in its adaptive capacity.

The project's most successful adaptation appeared in its technical design elements. By October 2024, the development of a solar-powered charging system with battery storage (207 kWp solar system with 360 kWh battery storage) had achieved 30% completion. This adaptation proved particularly prescient given Lebanon's continuing electricity challenges and demonstrated how technical modifications could enhance project resilience.

Financial adaptation emerged as another critical area of learning. Following the loss of World Bank co-financing, the project successfully pivoted to alternative arrangements. By late 2024, this included a contract with a joint venture between MEDCO and Transauto (part of Sofidal Holding/Dagher Hayek Group) for bus procurement, demonstrating creative approaches to resource mobilization despite Lebanon's severe economic constraints.

The project also showed significant adaptation in its implementation approach. Rather than pursuing the original ambitious route between Tripoli and Beirut, the project focused on a more manageable corridor with carefully selected bus stops. This pragmatic scaling of ambitions helped maintain project viability while still delivering meaningful results.

The security crisis by late 2024 exposed some gaps in adaptive planning. As noted in the October 2024 project board meeting, many project components were either slowed down or completely frozen, and key personnel were redirected to emergency duties. This highlighted how even well-adapted projects could be overwhelmed by force majeure events.

The key insight from this period was that adaptation required not only flexibility in approach and resolution in objectives but also realistic assessment of limitations. While the project maintained its core goal of promoting sustainable transport, the experience demonstrated that adaptation strategies needed to include explicit consideration of extreme scenarios and their implications for project viability.

This lesson suggested that future projects in volatile contexts should incorporate even more robust adaptive mechanisms in their initial design, including specific protocols for operating under severe security conditions and maintaining core functions during extreme disruptions. The experience highlighted the importance of balancing ambitious objectives with pragmatic recognition of operational constraints in crisis environments.

Lesson 2: The Critical Role of Municipal Leadership in Sustainable Transport Initiatives

The experience of the project demonstrated how strong municipal leadership could drive progress even amid severe national challenges. The Municipality of Jbeil, under Mayor Wissam Zaarour's leadership, emerged as an exemplar of effective local government engagement.

- The success of this municipal partnership manifested through several key elements. First, the Municipality of Jbeil's commitment extended beyond merely providing land for the bus depot. By late 2024, the municipality had achieved 30% completion of the PV charging infrastructure construction, demonstrating tangible progress in project implementation. This practical commitment proved crucial for maintaining project momentum.
- Second, the municipality successfully integrated the sustainable transport initiative with other environmental projects, including a completed 2km sidewalk project funded by the ILO. The Mayor's vision of connecting this walkway to the bus station demonstrated how the project could be woven into broader urban development goals.
- Third, Mayor Zaarour's leadership style proved particularly effective in balancing ambitious environmental goals with practical implementation challenges. This was evident in the municipality's approach to implementing solar solutions, where LED lighting was pragmatically chosen for the old town due to the unique properties of the stone walls, while maintaining commitment to solar-powered solutions elsewhere.
- Fourth, the municipality demonstrated remarkable adaptability in addressing emerging challenges. When security concerns arose regarding the protection of infrastructure and equipment, the municipality worked constructively with UNDP to implement additional security measures, including the installation of steel doors, surveillance cameras, and lighting around the station.

The contrast between Jbeil's strong engagement and the challenges faced with other municipalities along the planned bus route became particularly apparent. While some municipalities like Jounieh showed reluctance but not complete disengagement, others like those in Dora/Borj Hammoud and Antelias areas proved more difficult to engage, highlighting how crucial strong municipal leadership was to project success.

This lesson highlights the importance of building strong municipal partnerships, while remaining realistic about what could be achieved in volatile contexts. Future project designs in similar settings might benefit from explicitly incorporating municipal leadership as a key success factor while also including contingency planning for scenarios where even strong municipal support might become constrained by external circumstances.

5. CONCLUSIONS

The "*Lebanon Sustainable Low-Emission Transport Systems*" project is operating in an environment of unprecedented crisis, with an escalating security and emergency situation severely impacting all aspects of implementation. The conflict has not only displaced key stakeholders, redirecting governmental attention and resources toward emergency responses, but has also strained institutional capacities and disrupted crucial partnerships. Core project components, from sustainable transport initiatives to stakeholder engagement, face indefinite delays or suspension, as basic security and survival priorities now overshadow longer-term development goals. This extreme situation poses a profound threat to the project's viability, leaving its carefully built foundations vulnerable and casting uncertainty on any future progress.

Project Strategy

The project strategy demonstrates a well-conceived and strategically aligned framework that supports both national climate commitments and international sustainable development goals. The project's design strengths lie in its multi-dimensional approach, integrating institutional capacity building, technical demonstrations, stakeholder engagement, and policy development, with particular attention to gender responsiveness through comprehensive analysis and targeted interventions. However, despite these foundational elements, the design shows some limitations, particularly in its Results Framework, where indicator targets sometimes lack realistic progression and methodology clarity. While the project's Theory of Change effectively addresses key barriers through a problem-centered approach, it would have benefited from more explicit consideration of Lebanon's security and socio-political challenges, clearer replication pathways, and more structured behavior change strategies, all of which have become particularly relevant given the country's ongoing crisis situation.

Project Progress

The progress towards results analysis reveals a mixed performance picture. Of eleven key performance indicators, six are on track, three are off track, and one (EV registrations) has exceeded expectations with 2,878 vehicles registered against a target of +24. However, this success in EV adoption appears to be driven by market forces rather than direct project interventions. The project has made achievements in developing guidelines for non-motorized transport, Green Public Transport Service agreements, and Green Fleet Management certification, while also successfully procuring infrastructure components including a 207 kWp solar system and four e-buses. However, significant challenges persist, particularly in policy framework development, with delays in the national e-mobility strategy and no progress on voluntary agreements. The project's effectiveness is further complicated by the escalating security crisis in Lebanon, which has fundamentally disrupted implementation and threatens the sustainability of achieved results. While the project demonstrates good integration of cross-cutting issues like gender mainstreaming and social inclusion, these efforts are now overshadowed by the security situation, which has shifted institutional priorities and resources

away from sustainable transport initiatives. This complex scenario emphasizes the project's need to reassess its objectives and implementation strategy within Lebanon's volatile context while maintaining focus on its core sustainable transport goals.

Project Implementation and Adaptive Management

Operating under the DIM modality, the project has shown adaptability in responding to Lebanon's complex operating environment, particularly in redesigning technical specifications for e-buses and charging infrastructure in response to electricity shortages. However, the project faces substantial efficiency challenges, evidenced by its low financial delivery rate of 29% and implementation delays across components. While some aspects show promise - such as strong municipal engagement from Jbeil and successful adaptation of technical specifications - others reveal persistent challenges, including complex procurement processes, limited institutional capacity, and stakeholder coordination difficulties. The project's monitoring and evaluation framework, though well-designed, has faced implementation challenges, particularly in systematic data collection and outcome-level monitoring. The recent security crisis has fundamentally altered the project's operating context, necessitating a comprehensive reassessment of objectives, targets, and implementation strategies, while raising serious concerns about the sustainability of achieved results and the feasibility of planned activities.

Sustainability

The project faces significant sustainability challenges across institutional, financial, social, and environmental dimensions, primarily exacerbated by the country's overlapping crises - economic collapse, severe electricity shortages, and the escalating conflict. Institutional sustainability is rated as Moderately Unlikely due to weak governance structures and the redirection of key personnel to emergency response duties, while financial sustainability is rated as Unlikely given the project's limited co-financing materialization (40.36%). Social sustainability, though rated as Moderately Likely due to strong municipal-level engagement particularly from Jbeil, faces substantial risks from the security crisis and varying levels of stakeholder ownership. Environmental sustainability shows more promise through the project's focus on emissions reduction and renewable energy integration, but faces significant monitoring challenges due to the shutdown of the national air quality monitoring network. The combination of these factors, particularly the recent security crisis, which has either slowed or frozen many project activities, creates a complex environment where maintaining existing achievements and ensuring long-term sustainability requires careful navigation of multiple constraints while maintaining focus on core project objectives.

Going Forward

The path forward for the project requires a highly pragmatic and adaptive approach in light of the country's complex security and economic challenges. Once the security situation stabilizes, the project's immediate priority is a comprehensive assessment of damage to both human and physical infrastructure, leading to a realistic recalibration of targets and objectives for the remainder of its lifetime. This reassessment needs to focus on preserving essential project

elements while identifying feasible opportunities for continued progress within severe contextual constraints. Key areas for enhancement include developing more comprehensive monitoring and evaluation frameworks, strengthening stakeholder engagement mechanisms, improving risk management integration, and enhancing capacity building through targeted training programs. However, all future planning need to acknowledge that implementation strategies need to remain highly adaptable as the security situation evolves, and that some project achievements may not survive the highly disruptive effects of the current conflict. Success will depend on maintaining strong local partnerships and community engagement while building resilience through improved knowledge management systems and technical support structures, all within the practical limitations imposed by Lebanon's ongoing crises.

The following table summarizes the scoring of this project based on the MTR.

Table 8: MTR Ratings

MTR Ratings	
Progress Towards Results	Moderately Satisfactory
Project Implementation & Adaptive Management	Moderately Satisfactory
Overall likelihood of Sustainability:	Moderately Unlikely
Financial resources	Unlikely
Socio-economic	Moderately Likely
Institutional framework and governance	Moderately Unlikely
Environmental	Moderately Likely

6. RECOMMENDATIONS

The evaluation also identified the following key recommendations for project stakeholders. All these recommendations are subject to the security situation normalizing in the coming days.

Table 9: Key Recommendations

Recommendation	Responsible Party	Timeframe
Recommendation 1: Project Design		
• Update the project design to include contingency measures for operating under extreme security conditions. Establish a formal adaptive management protocol with clear triggers for response actions, to be reassessed regularly as security conditions change.	Project Management Unit (PMU), UNDP, Government Partners	Short-term[24]
• Re-evaluate the sustainability of the project's financial model and institutional frameworks in light of the country's economic and security situation. Identify alternative financing options, such as scaling up partnerships with academic institutions, NGOs, and private stakeholders, to offset the loss of co-financing commitments from entities like the World Bank. Develop a sustainability action plan with shorter timeframes and lower-cost interventions that can realistically continue in Lebanon's crisis conditions.	PMU, UNDP, Ministry of Environment (MoE)	Short-term
• Focus the design on partnerships with resilient local actors, such as municipalities like Jbeil, and leverage local expertise to manage implementation. This involves decentralizing project components, building on existing local infrastructure, and developing localized monitoring mechanisms that maintain momentum and visibility, even if national-level coordination is limited.	PMU, Municipality of Jbeil, UNDP	Short-term
Recommendation 2: Project Implementation		
• Based on the findings of this MTR, review project objectives and targets and establish what remains feasible from the project's perspective. Adjust activities, refine timelines, and allocate resources to achievable activities.	PMU, Municipality of Jbeil, UNDP	Short-term
• Develop a flexible M&E framework to track adaptive measures, security risks, and ongoing project impacts in real-time. Ensure it includes both outcome and process indicators to better capture incremental achievements and maintain accountability. Establish interim progress milestones to help maintain focus on key deliverables, even if completion of all components remains uncertain.	PMU, UNDP, National Government	Short-term
• Strengthen the tracking and monitoring of project indicators in a gender-disaggregated fashion. Develop and integrate gender-sensitive tools to capture qualitative and quantitative data reflecting	PMU	Short-term

[24] Short-term means within the lifetime of the project. The focus of this MTR has been on identifying short-term recommendations. Longer-term recommendations will be identified in the terminal evaluation.

gender-specific barriers, preferences, and needs in transport systems. Provide gender training for project staff, implementing partners, and stakeholders to build their capacity to collect, analyze, and interpret gender-disaggregated data effectively.		
• Streamline engagement efforts by focusing on key stakeholders who remain interested and actively involved, prioritizing municipalities and community-based organizations over dispersed national actors. Scale back capacity-building activities to essential skills training and technical knowledge, emphasizing local ownership and roles that can adapt to shifting security conditions.	PMU, Municipality of Jbeil, UNDP, NGOs	Short-term
Recommendation 3: Project Results		
• Complete the demonstration projects that are minimally affected by the security situation, such as localized solar charging stations or non-motorized transport improvements. Continue to work closely with private sector partners and local authorities to operationalize these demonstrations and capture lessons learned that can later inform any scale-up activities.	PMU, Municipality of Jbeil, UNDP, Private Sector	Short-term
• Document adaptive strategies, challenges, and incremental achievements in real-time to share insights with UNDP's Global E-Mobility Programme and other stakeholders. This knowledge management will provide valuable lessons for future projects in volatile contexts and create a repository of adaptable strategies that could be replicated.	PMU, UNDP, Global Programme for E-Mobility	Short-term

ANNEX XI: UNEG CODE OF CONDUCT

Evaluators/Consultants:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence, and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals, and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study limitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

MTR Consultant Agreement Form

Agreement to abide by the Code of Conduct for Evaluation in the UN System:

Name of Consultant: Elinor Bajraktari

Name of Consultancy Organization (where relevant): UNDP Lebanon

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at Edmonton *(Place)* on 22 August 2024 *(Date)*

Signature: Elinor Bajraktari

Evaluators/Consultants:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence, and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals, and must balance an evaluation of management functions with this general principle.
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7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

MTR Consultant Agreement Form

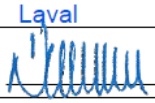
Agreement to abide by the Code of Conduct for Evaluation in the UN System:

Name of Consultant: Nader Hajj Shehadeh

Name of Consultancy Organization (where relevant): _____

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at Laval *(Place)* on 23/10/2024 *(Date)*

Signature: 

ANNEX XII: MTR CLEARANCE FORM

Midterm Review Report Reviewed and Cleared By:

Commissioning Unit

Name: Jihan Seoud, Programme Manager, Energy & Environment
Verena Gantner, Monitoring and Reporting Specialist

Signature: DocuSigned by: B9C552CD991843C... DocuSigned by: 69E83A59BB6B409... Date: 15 January 2025

UNDP-GEF Regional Technical Advisor

Name: Amal Aldababseh DocuSigned by: CE9E55F8BEE048B... 14-Jan-2025

Signature: _____ Date: _____