Mid-Term Review Report

of the UNDP-GEF **SURE** Project for Jordan

'A systemic approach to Sustainable Urbanization and Resource Efficiency in Greater Amman Municipality (GAM)'

(UNDP PIMS ID 5543, GEF Project ID 9204)

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Region and countries included in the project: Jordan Operational Focal Area: Climate Change Mitigation Executing Agency/Implementing Agency: Executing Agency: Greater Amman Municipality (GAM) Project period evaluated: September 2018 to September 2021

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The evaluator would also like to express their gratitude and special appreciation for the excellent support provided by the personnel of the UNDP Country Office in Jordan, and the close collaboration and assistance received from the project management team.

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ACRONYMS and ABBREVIATIONS

AFEX	Arab Future Energy Index
AMP	Amman Master Plan (2010)
AWP	Annual Work Plan
CCM	Climate Change Mitigation
CO	Country Office
CO2e	Carbon Di-oxide equivalent
CTA	Chief Technical Advisor
EE	Energy Efficiency
ESCO	Energy Service Company
GAM	Greater Amman Municipality
GEF	Global Environment Facility
GHG	Green House Gases
GIS	Geo Information System
GPSC	Global Platform for Sustainable Cities
JEA	Jordan Engineers Association
JNBC	Jordan National Building Council
JREEEF	Jordan Renewable Energy and Energy Efficiency Fund
JSMO	Jordan Standards and Metrology Organization
kWh	Kilowatt-hour
LED	Light Emitting Diode
M&E	Monitoring and Evaluation
MoE	Ministry of Environment
MoPIC	Ministry of Planning and International Cooperation
MRV	Measurement, Reporting and Verification
MTR	Mid-Term Review
NAMA	Nationally Appropriate Mitigation Action
NCE	Nature, Climate and Energy
NDC	Nationally Determined Contribution
NEEAP	National Energy Efficiency Action Plan
NERC	National Energy Research Center
NIM	National Implemented Modality
PIF	Project Identification Form
PIMS	Project Information Management System
PIR	Project Implementation Report
PMU	Project Management Unit
PPG	Project Preparatory Grant
RE	Renewable Energy
RTA	Regional Technical Advisor
SC	Steering Committee
SESP	Social and Environmental Screening Procedure
TA	Technical Assistance
ToR	Terms of Reference
TWG	Technical Working Group
UNDP	United Nations Development Programme
UNEG	United Nations Evaluation Group
USF	Urban Sustainability Framework
WEEC	Water, Energy and Environment Centre

1 Executive Summary

Table 1 – Project Information Table

Project Title:	A systemic approach to sustainable urbanization and resource efficiency in Greater Amman Municipality (GAM)			
GEF Project ID:	9204		*at endorsement (Million US$)*	*at completion (Million US$)*
UNDP Project ID:	5543	GEF financing:	2,640,000	
Country:	Jordan	IA/EA own:	250,000	
Region:	Arab States	Government:	15,850,000	
Focal Area:	Climate Change Mitigation	Other:	5,915,000	
Focal Area Objectives:	CCM-2	Total co-financing:	22,015,000	
Executing Agency:	GAM	Total Project Cost:	24,655,000	
Other Executing Partner(s):	Greater Amman Municipality (GAM)	CEO Endorsement: date project began:		Feb 06, 2018 Sept 25, 2018
		(Operational) Closing Date:	Proposed: Sept 24, 2023	Actual:

Brief Description of the Project

The UNDP-GEF project is designed to promote low-carbon buildings in Greater Amman Municipality, and eventually in other municipalities and cities in Jordan, through the application of Building Energy Codes, and in particular the Thermal Insulation Code for new buildings, and retrofit guidelines for existing buildings. The project will directly support the implementation of the National Energy Efficiency Action Plan 2016, and the National Green Growth Plan 2016. This will be achieved through four outcomes:

(i) putting in place planning and monitoring frameworks to foster accelerated low-carbon development in GAM and benchmark progress against established international standards;
(ii) strengthening the enabling conditions, methodologies and tools in GAM for enforcing regulatory frameworks for EE buildings and street lighting;
(iii) an integrated climate monitoring and finance framework is established for the development of urban NAMAs, and appropriate financial de-risking tools are identified and supported to promote adoption of EE measures in buildings attached to MRV systems; and
(iv) selected proof-of-concept mitigation interventions to operationalize the outputs under the previous outcomes.

The lifetime global environment benefits will accrue from enhancing building thermal

insulation in a combination of six proof-of-concept buildings in Amman and will be ~11.4 ktCO2e. Consequential emission reductions amounting to ~7.2 MtCO2e are expected between 2018 and 2042 predominantly through the enforcement of Codes. The project would yield a GEF abatement cost of 0.365 US$/tCO2e. The project will produce co-benefits such as job creation for enhancing building envelope thermal insulation, and the reduction in water used in buildings that will increase the water resilience of urban areas to an already water-stressed situation.

Project Progress Summary

The solid operational and management structure of the project have enabled an effective start phase and a continuity of project activities. The project started on September 25, 2018. The Project Manager was contracted in October 2018 and the Inception Workshop took place on December 5, 2018.

The Covid-19 pandemic has caused considerable delays in many activities and components of the project implementation. Despite the pandemic, the SURE project has successfully realized several key achievements by the Mid-Term. The project's most significant achievements so far include:

- The **Sustainable Building Unit** (SBU) and the **Inspection and Control Unit** (ICU) have been established in the Ministry of Public Works and Housing as the bodies responsible to enforce Building Energy Codes.
    - staffed with 7 female and 5 male engineers
    - equipped with administrative, test and inspection tools
    - Procedure Manual for inspections completed
    - Target of 3 million m2 new building in 2022 and 15 million m2 in 2023
- 1089 **EE street lights** have been installed in 56 public parks in Amman with total annual energy saving of 265 MWh.
- **Smart lighting systems** were installed in two public parks
- Proof of concept **EE renovations of two existing government buildings** were completed.
- Guidelines for Building EE Retrofitting for contractors is completed
- **Project Management Professional (PMP) training** conducted for GAM staff with a focus on environmental and sustainable urban projects.
- An **Inventory Quality Team (IQT)** composed of stakeholders with ownership and/or access to city data from has been formed to manage data collection.
- The draft report 'City Database Construction for Amman – **Data Collection, Analysis and Integration (Energy, Water and Waste)** was completed in November 2021 with 31 indicators and Quality Assessment (QA) plan

Apart from these achievements, several targets for the Mid-term have not been met. In particular, the following targets need to be addressed and outcomes brought on track.

- The Sustainability Plan and Financing Strategy have been omitted due to overlap with EBRD Amman Green City Action Plan project. Alternative activities have been proposed.

- Updated building energy codes (expected by the middle of 2022)
- 3 ESCOs operational (the draft regulation for accreditation of ESCOs expected by end of 2021, expected date for ESCO operation not specified)
- Application of MRV system for building EE (capacity strengthening required)
- 4 policy and 3 financial instruments were identified and quantified (international and local consultants are working with PMU to develop the DEEI by the end of 2021)

Further, a number of Outputs without specific mid-term targets urgently need to be addressed in order to be realized by end of project:

- Development of a training and accreditation programme for ESCOs (Output 2.4)
- Development and dissemination of an online life-cycle analysis tool for buildings (Output 2.6)
- Development of an energy rating and label for buildings for issuing Energy Performance Certificates (Output 2.7)
- Development of 2 city-wide sectoral NAMAs for buildings, and street lighting (Output 3.2)
- Customized financial incentives to promote investments in Building Energy Codes. (Output 3.3)
- 2 new private-sector residential buildings integrating best-practice resource efficiency measures/technology. (Output 4.1)

Overall, and despite the successful achievements outlined above, the overall project progress is seen as moderately satisfactory because of some shortcomings towards achieving mid-term targets. The ratings are detailed in Table 2 below. MTR Ratings Scales are elaborated in Annex 4.

Table 2 – MTR Ratings & Achievement Summary Table

Measure	MTR Rating	Achievement Description
Project Strategy	-	The project logframe requires update to be relevant as a management tool.
Progress Towards Results	Objective Achievement Rating: (6 pt. scale) **4**	166.9 tCO2e cumulative emission reductions achieved against a mid-term target of 255 tCO2e
	Component 1 Achievement Rating: 4 (6 pt. scale)	Water, energy and waste data collected and compiled in draft report with 31 indicators & procedures for data collection, analysis and Quality Assessment Sustainability Plan and Financing Strategy target removed from project.
	Component 2 Achievement Rating: 5 (6 pt. scale)	Sustainable Building Unit and Building Inspection Unit officially established as body responsible for building energy code enforcement. No ESCOs operational against mid-term target of 3
	Component 3 Achievement Rating: **3** (6 pt. scale)	NAMAs, de-risking tools, policy and financing instruments are being developed in 2nd half of project. Mid-term goals were 1 standardized baseline for MRV, 4 policy instruments and 3 financial instruments quantified.
	Component 4 Achievement Rating: **4** (6 pt. scale)	1089 EE street lights installed in 56 public parks saving 265 MWh annually 2174m2 of (existing) building envelop insulated against mid-term target of 2125m2 (new building) and 6140m2 (existing building)
Project Implementation & Adaptive Management	Rating: **4** (6 pt. scale)	PMU and SC have realized competent and continuous implementation of several key project outputs despite delays caused by Covid-19 pandemic International expertise (CTA) is lacking Robust adaptive management tools (ie.logframe) and M&E are lacking
Sustainability	Rating: (4 pt. scale) **3**	SBU and BIU support sustainability but delays in realizing other key outcomes (ESCO, financing mech. NAMA) are risks to sustainability.

Summary of Conclusions

The SURE project design as outlined in the Project Document is very ambitious in terms of scope of work. The project is designed to support a wide range of measures and strategies including ESCOs, building energy codes, enhanced enforcement, financing mechanisms, MRV, etc. The total project budget is US$ 24,655,000.- with US$ 2,640,000.- financed by GEF. Despite these budget limitations and the delays caused by the Covid-19 pandemic, the range of activities can be completed during the project lifetime provided:

1. the project duration is extended by 1 year and
2. the project engages an international expert as Chief Technical Advisor with experience from UNDP/GEF building EE projects realized worldwide.
3. Further engagement of international experts to support effective completion of project activities

The solid operational and management structure of the project have enabled an effective start phase and a continuity of project activities. The project started on September 25, 2018. The Project Manager was contracted in October 2018 and the Inception Workshop took place on December 5, 2018.

The Project Management Unit is well composed. The Project Manager has experience and technical background knowledge of the issues of building and energy. Further, he has experience with and connections in the municipality and government entities. He and the PMU have provided for effective continuity, efficient coordination of project stakeholders and a conscientious step-by-step realization of project activities.

Stakeholder involvement and ownership in the project are very good at all levels. Even during the corona lockdowns, stakeholders supported the project to precede with key activities including the establishment of the Sustainable Building Unit and the Building Inspections Unit. The Steering Committee is well composed from various stakeholders. It meets regularly and provides efficient support for project decision-making. Communication and coordination meetings were held with key stakeholders from the project start.

The project Results Framework/Logframe outlined in the Project Document is deficient as a tool for adaptive management. The indicators and targets in the Results Framework are a selection of project deliverables and not quantifiable indications of impact or market uptake. Further, an overriding logical structure (outputs ➔ outcomes ➔ objective) is not evident. As a result, the project management is proceeding with the project as a checklist of activities rather than a holistic mechanism to realize an overriding project objective.

Recommendations

Recommendation 1: The project should be extended by 1 year in order to complete project activities in an efficient and sustainable manner and to effectively implement other recommendations below. There have been considerable delays in the delivery of many

project activities caused in part by restrictions imposed by the global Covid-19 pandemic but also as a result of the wide scope of activities.

Recommendation 2: The project should engage a Chief Technical Advisor (CTA) to help guide the PMU through the remainder of the project. The CTA should be an international expert in building EE with experience in implementing UNDP/GEF building EE projects and their various strategies.
The accumulated knowledge and tools from UNDP/GEF building energy efficiency projects realized worldwide should be tapped to support this project. International support in the form of a CTA would help to integrate best practices and to channel and prioritize project activities so as to efficiently achieve the targeted impact and objectives. Further, close cooperation with local stakeholders would ensure effective transfer of available knowledge and tools.

Recommendation 3: An international expert should be engaged to update and revise the project Results Framework/Logframe. The current Logframe is deficient as a tool for tracking project progress and adaptive management. The indicators and targets are a selection of project deliverables and not quantifiable indications of impact or market uptake. Further, an overriding logical structure (outputs ➔ outcomes ➔ objective) is not evident. As a result, the project management is currently proceeding with the project as a checklist of activities rather than a holistic programme to realize the overriding project objective. The logframe should be revised so that it:

- applies robust and verifiable indicators and targets,
- builds on a logical relation between outputs, outcomes and objectives and
- validates direct, indirect and post-project indirect GHG emission reductions targets attributed to the project according to GEF calculation methodologies.

Recommendation 4: The project should support the development and implementation of a new Energy Performance Building Code for Jordan. The Thermal Insulation Code from 1993 is outdated and prescriptive. In order to create the basis for a new performance-based code, it is necessary to a) apply a simple but reliable online tool to calculate building energy performance (based on local climate conditions, building orientation and form, composition of exterior walls, roof and floors, window sizes and u-values, shading devices and renewable energy technologies used) and b) establish minimum energy performance limits for new and renovated buildings. The application of the new code should initially be on a voluntary basis alongside the existing code. In due time, the new code can be tightened and the existing code would become obsolete.

Recommendation 5: The remaining proof-of-concept projects should showcase best EE building practice and endorse other project activities such as updated codes, ESCOs and building energy performance rating and labels. Two demonstrations projects need to be identified; one renovation of an existing government building and one new low-cost housing building. The base projects need to be approved for building permit and their financing secured. The SURE project should engage an international expert in building EE and a team of 2-3 local architects to work together to apply Integrated Building Design to optimize the overall energy performance of the 2 buildings. The additional costs for EE improvements (thermal insulation, lighting, HVAC among others) should be isolated and separately financed within by an ESCO contract. The renovation should showcase best practice from the EE Building Renovation Guidelines prepared under the SURE project

and the new building should showcase application of the new Performance Based Building EE Code and Energy Performance Certification. The performance of both projects needs to be carefully monitored and documented to ensure a transparent evaluation.

Recommendation 6: The project should develop a NAMA which supports the realization of a model sustainable city district within the GAM which would showcase the principles outlined in the Amman Green City Action Plan. In preparing the proposal, international consultants should work with the GAM to identify locations, procedures and best practices towards achieving sustainable results including marketing and awareness campaigns. The proposal should include guidelines for financing and sustainable urban planning.

Recommendation 7: The Environmental Department within the GAM needs to become the focal point to evaluate, calculate and verify CO2 emission reductions from urban planning and building interventions and to enter these into the MRV. The capacity of the Environmental Department must be strengthened and they must work closely with the Urban Observatory in order to collect and process data initially secured under the SURE project. Further, they must work closely with the SBU and other departments in GAM to identify and quantify CO2 emissions reductions based on enhanced enforcement of building energy codes.

Recommendation 8: The project needs to apply an integrated effort to support the creation of an ESCO business model in Jordan. Currently, the project treats the different actions addressing ESCOs and financing independently. JREEEF should provide the bank guarantee to cover the risk involved in ESCO project implementation. Currently, banks are very reluctant to provide loans to contractors for EE renovations based on ESCO models (energy savings to finance EE investments). There is little understanding of EE investment opportunities in the banks.

Recommendation 9: Project financing should be used for capacity building. The replacement of lights in city parks should not be further financed by GEF funding. This aspect of the project has already clearly demonstrated a successful and lucrative model for GAM to reduce costs and save energy. The GAM should maintain the momentum by further engaging ESCOs (or EPCs) as required

2 INTRODUCTION

The Midterm Review of the UNDP-supported, GEF-financed Project 'A systemic approach to sustainable urbanization and resource efficiency in Greater Amman Municipality (GAM)' in Jordan was conducted between October and December 2021. The MTR mission took place from November 6 to November 10, 2021.

Purpose of the Midterm Review

In accordance with UNDP and GEF M&E policies and procedures, all full and medium-sized UNDP supported, GEF financed projects are required to undergo a Midterm Review (MTR). This report describes the MTR of the UNDP/GEF Project "A systemic approach to sustainable urbanization and resource efficiency in Greater Amman Municipality (GAM). The international consultant, Dr. Adil Lari, has been engaged by UNDP to conduct the MTR and is responsible for finalizing the report.
The MTR process is intended to promote accountability and transparency, assess whether the project has achieved its objectives, synthesize lessons to help guide future design and implementation of GEF-funded UNDP activities, and contribute to the overall assessment of results in achieving GEF strategic objectives aimed at global environmental benefits.

Scope and Methodology

The MTR will assess progress towards the achievement of the project objectives and outcomes as specified in the Project Document, and 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 towards achieving its intended results. The MTR will also review the project's strategy and its risks to sustainability.

The MTR will be conducted according to the guidance, rules and procedures established by UNDP and GEF as reflected in the document *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects*.

The objectives of the MTR are
• to assess progress towards results
• to monitor implementation and adaptive management used to improve outcomes
• to identify risks to sustainability
• to provide supportive recommendations
The emphasis of the MTR is a participatory and collaborative approach. The MTR opens opportunities for discussion and revision of the project, as needed.

(i) Preparatory MTR Work

This initial stage involved extensive desk reviews of project-related documentation such as the project document, progress and annual reports, focal area tracking tools, project files, national strategic and policy documents, and any other materials (Annex 7) that the evaluator considers useful for an evidence-based MTR assessment. The documents were partly provided by the UNDP Country Office and partly obtained through research.

As part of the preparatory work, an Inception Report was prepared and submitted to UNDP CO for approval; it included a preliminary itinerary for the field mission (*Annex 5*), a tentative list of interviewees selected to provide a broad sample of the achievements and influence of the project, and a general interview (questionnaire) format for project team,

stakeholders and beneficiaries.

(ii) MTR Mission

The MTR mission in Jordan took place from November 6 to November 10, 2021. Meetings were held with UNDP at the beginning of the mission to brief on the purpose and methodology of the MTR, to obtain latest update on the project, and to finalize the mission schedules and arrangements.

The MTR mission consisted of interviews with the UNDP team, the project management unit, key stakeholders and selected beneficiaries. Discussions with several stakeholders (i.e. the UNDP Regional Technical Advisor) were conducted remotely. In addition, visits to selective pilot projects were conducted. The mission was concluded with a wrap-up meeting at the UNDP CO.

(iii) Preparation of the MTR Report

Following the mission, the collected data, updates and materials received during the mission were carefully reviewed and analyzed in accordance with UNDP Project Evaluation Methodology. All data were then consolidated, and based on accountable information and opinions of the stakeholders with all sources and assumptions given, the draft MTR Report has been prepared and submitted to UNDP CO for review and feedback.

UNDP Jordan Country Office shall subsequently circulate the report to key project partners for review. Consolidated questions and comments on the draft MTR Report received from UNDP CO shall be reviewed, responded to and incorporated into the final Report. An Audit Trail will be included to indicate how the comments received were (or were not) addressed in the final MTR Report.

Structure of the report

The structure of this MTR Report corresponds to the guideline outlined in the Annex B of the ToR.

This MTR is based on a performance assessment approach guided by the principles of results-based management. The review tracks results and impact against the project's Logical Framework. The contribution of project outputs and project management is evaluated with reference to the achievement of the project outcomes and overall objective. This MTR reviews the implementation and achievement of the project results against the Project Document endorsed by the GEF CEO, including any changes made during implementation.

3 Project Description and Background Context

Development Context

A rapid increase in economic activity, population growth and successive influxes of refugees over the last decades have imposed huge stresses on Jordan's urban areas and fragile water and energy resources. Providing for the needs of Syrian refugees has impacted heavily on the Greater Amman Municipality's public finances, increasing expenditures on subsidies and public services, and further degrading the built environment.

The Greater Amman Municipality (GAM)[1] developed the Amman Master Plan (AMP) in 2010: this Plan provides a vision for the growth of the city until 2025, with a clear overarching focus on climate-resilient development, the creation of green jobs, and a strive for resource efficiency in all aspects of municipal planning and investments. The AMP is reflective of a city and a country with limited indigenous energy and water resources and one that is heavily dependent on imports of energy to meet growing demand, expected to double by 2020.

Jordan's Nationally Determined Contribution (NDC)[2] establishes a 1.5% voluntary GHG reduction from 2006 levels compared to business as usual by 2030. An additional 12.5% GHG emission reduction is conditional upon availability of international climate finance. The analysis suggested significant prospects for energy efficiency (EE) in the commercial and household sectors, requiring more performance standards and incentives.

Jordan's National Energy Efficiency Action Plan (NEEAP), endorsed in 2013, sets a national energy efficiency (EE) target of a 20% reduction across all sectors by 2020 and proposes concrete measures in cities to guide Jordan towards achieving this target. While an updated NEEAP (2016-2020) has been developed with the ambitious target to save 15% of electricity by 2020 (2080 GWh), compared to the annual average electricity consumption between 2010 and 2014. The NEEAP 2016-2020 includes 16 measures covering residential, tertiary, industrial, water pumping and street lighting sectors.

Problems that the project sought to address

The Government of Jordan and the GAM recognize that climate change mitigation and adaptation are an integral part of a much broader strategy for green growth and sustainable development. Authorities have already shown the political will to undertake many of the underlying regulatory reforms needed to catalyse green growth while GAM has committed to a vision of green and sustainable growth via the AMP. However, as observed in the latest AFEX report, "Jordan still needs to strengthen its implementation capacity to properly capitalize on introduced energy efficiency policies" and there is still a great deal of support needed for customized solutions at the city-level, particularly around enforcement of existing codes, proper monitoring of policies and targets, financial engineering and support for proof-of-concepts.

Project Description and Strategy

The UNDP-GEF project is designed to promote low-carbon buildings in Greater Amman

[1] GAM is the municipality (Amanah) for the Amman Governorate of Jordan.

[2] http://www4.unfccc.int/submissions/INDC/Published%20Documents/Jordan/1/Jordan%20INDCs%20Final.pdf – accessed 14 November 2016.

Municipality, and eventually in other municipalities and cities in Jordan, through the application of Building Energy Codes, and in particular the Thermal Insulation Code for new buildings, and retrofit guidelines for existing buildings. The project will directly support the implementation of the National Energy Efficiency Action Plan 2016, and the National Green Growth Plan 2016. This will be achieved through four outcomes:

(v) putting in place planning and monitoring frameworks to foster accelerated low-carbon development in GAM and benchmark progress against established international standards;
(vi) strengthening the enabling conditions, methodologies and tools in GAM for enforcing regulatory frameworks for EE buildings and street lighting;
(vii) an integrated climate monitoring and finance framework is established for the development of urban NAMAs, and appropriate financial de-risking tools are identified and supported to promote adoption of EE measures in buildings attached to MRV systems; and
(viii) selected proof-of-concept mitigation interventions to operationalize the outputs under the previous outcomes.

The lifetime global environment benefits will accrue from enhancing building thermal insulation in a combination of six proof-of-concept buildings in Amman and will be ~11.4 $ktCO_{2e}$. Consequential emission reductions amounting to ~7.2 $MtCO_{2e}$ are expected between 2018 and 2042 predominantly through the enforcement of Codes. The project would yield a GEF abatement cost of 0.365 US$/$tCO_{2e}$. The project will produce co-benefits such as job creation for enhancing building envelope thermal insulation, and the reduction in water used in buildings that will increase the water resilience of urban areas to an already water-stressed situation.

Project Implementation Arrangements

The project is being implemented according to UNDP's National Implementation Modality (NIM), with UNDP acting as the GEF Implementing Agency, while Greater Amman Municipality (GAM) is the implementing partner at the national level. Accordingly, the Project Management Unit (PMU) was established in the GAM premises. The national Project Manager was contracted by UNDP in October 2018 to supervise and coordinate the project activities and ensure its results are in accordance with the project document, and to be responsible for daily project coordination.

The PMU also engages two national project officers, one based in the Jordan National Building Council (JNBC) and the other in Greater Amman Municipality (GAM).

Main Stakeholders

Greater Amman Municipality (GAM)
Amman Urban Observatory Jordan National Building Council
Jordan Renewable Energy & Energy Efficiency Fund (JREEEF)
under the Ministry of Energy and Mineral Resources (MEMR)
Jordan Engineers Association (JEA)
The Ministry of Environment (MoEnv.)
The Jordan Green Building Council (JGBC)
The Royal Scientific Society (RSS)
The National Energy Research Centre (NERC)
The Jordan Standards and Metrology Organisation (JSMO)

4 FINDINGS

4.1 Project Design / Formulation

The Project Document is well formulated with a detailed description of the development context, the legislation and programs which clearly illustrate the national agenda to reduce GHG emissions and realize sustainable development. 5 key barriers are identified on page 11 of the ProDoc and subsequently addressed in the project strategy;

1. Lack of systematic assessment, planning and reporting tools for optimized climate-resilient, resource-efficient development and decision-making at GAM
2. Lack of enabling conditions and tools for enforcing and enhancing regulatory frameworks (including financial incentives) for EE in the GAM
3. Information/Awareness and perception barriers about resource efficiency benefits
4. Technical capacity barriers and absence of performance-based GHG monitoring frameworks and quality assurance
5. Lack of fiscal incentives for uptake of EE building measures and proof-of-concept investments in the GAM

Stakeholder engagement and participation in the formulation of the project are evident. The project identifies and addresses the capacities, strengths and needs of government institutions, and in particular, the Greater Amman Municipality (GAM), towards meeting their development and climate change mitigation targets. The roles and responsibilities of project partners and stakeholders are described in detail (pages 40 to 45) along with programmes and projects operating parallel to the project which would inform and support project activities and outcomes.

The ProDoc also includes appropriate project management arrangements and an adequate Monitoring and Evaluation (M&E) Plan. The partnership strategy was well designed to allow key local stakeholders and decision-makers to actively participate in and benefit from project implementation. A Steering Committee (SC), chaired by the GAM and Technical Working Groups are outlined in the Project document. Further, gender mainstreaming is adequately addressed at several levels in the project strategy from project beneficiaries (including refugee women and children) to supporting equality in capacity development in government institutions. Supplementary Annex 6 (SA6) contains a gender analysis of the project strategy and a gender action plan for the project.

The evaluator analyzed the intended project outcomes by using the "SMART" (Specific, Measureable, Achievable, Relevant, Time-bound) approach and found them with exceptions to be ambitious in terms of budget and time. The project scope is wide in that it pursues a range of measures and strategies to support everything from sustainable urban planning, to building energy performance standards and labeling, to establishing the legal and financial framework for ESCOs in Jordan.

In paragraphs 30 and 31 (page 15) of the project document, an possible explanation is given as to why the project includes such a broad scope of work; in addition to its application for support as a UNDP/GEF CCM project, the originally conceived project was also designed to be included within (and receive funding through) the Sustainable Cities Integrated Approach Pilot (IAP). After the project was rejected for inclusion in the AIP, the Project Document and the scope of work were only marginally altered (pp. 16-17) despite this change in program and financing context. While some adjustments were made to project outputs, the project components and corresponding outcomes were not changed

and a discrepancy between project expectations and financing remained.

For example, under Outcome 1: Urban Sustainability Planning Tools and Benchmarks, it is foreseen that a Sustainability Plan is developed for an updated Greater Amman Metropolitan Growth Plan (GAMGP) based on the Urban Sustainability Framework (USF) being developed under the aegis of the Sustainable Cities AIP. While it is conceivable that the project applies the results of the AIP, the efforts required to implement this include the update of the GAMGP itself. In paragraph 35 (page 18), it states that the GAMGP has not been updated since 2008 and in the Multi Year Work Plan (Annex A, page 88), a rather meager budget of US$15,000 is allotted to Activity 1.1.1 to review and update the GAMGP based on global framework and indicators.

The project strategy and activities addressed gaps and opportunities which were highly relevant at the time they were initially proposed in 2015 (PIF). However, by the time the project started at the end of 2018, it was acknowledged that many of the project activities had become redundant because of overlap with other initiatives and programmes in the sector.

For example – GAM had already begun replacement the implementation of an MRV system (output 3.1) was addressed by the World Bank PMR project (completed 2020) and the Sustainability Plan (output 1.1) was being addressed by the Amman Green City Action Plan being prepared by GAM and the EBRD (completed May 2021).

Further, in the Inception Report from January 2019 (p.15) it is noted that GAM had already made agreement with a private Investment firm to install LED lights on the major roads and minor streets in Amman and to build an 80 MW PV-farm to compensate the electrical consumption of all of GAM's buildings, facilities, gardens and street lightings. As a result, the 570 standalone street lights powered by PV cells and battery storage system proposed under Outcome 4.4 were deemed redundant. The budget was re-allocated to LED streetlights in public parks.

Results Framework / Logframe

The Project Results Framework in the Project Document (pp.62-65) is deficient as a tool for project management. In almost all cases, the indicators are project outcomes and not quantifiable measurements of the project impact. The indicators and targets selected are not appropriate measures to assess and report on performance of the project towards meeting its objectives.

For example, in the Project Results Framework the mid-term targets for indicators include;

- 3 resources quantified (corresponds to output 1.2 Quantification of all energy, water and material flows in the GAM),
- 1 Sustainability Plan and 1 Financing Strategy (corresponds to output 1.1, Development of a Sustainability Plan (SP) and Financing Strategy (FS) for the GAM using the updated Amman Master Plan),
- 1 new department established in the GAM (corresponds to output 2.1: A new Sustainable Development Department (SDD) set up in within GAM)
- 2 updated Energy Building Codes and 2 newly developed 'Retrofit Building Guidelines' (corresponds to Outcome 2.3 Update of the existing Building Codes and development of a 'Retrofit Building Guidelines' to make upgrades more

acceptable.)

These targets are project deliverables and not indicators of impact. The lack of indicators which measure the impact of the project outside its direct influence make it unsuitable for project management to implement effective adaptive management, that is, for project management to consider and implement adjustments to the project based on verifiable indications that the project is on track or needs to be brought back on track to meeting its global objectives. Adjustments to the project strategy need to be primarily informed by verifiable measures of impact and market uptake. The Results Framework is focused on activities and outputs without adequately considering targets in terms of quantifiable impacts towards meeting the project objective; in this case GHG emission reductions. As an example, the following indicators (among others) would be appropriate for a project supporting building EE;

- Annual new building area conforming to building energy codes (resulting from increased enforcement capacity and awareness) or
- market uptake of thermal insulation products.

Further, an overriding logical structure (outputs ➔ outcomes ➔ objective) is not clearly evident in the Results Framework . For example, under component 2, the outcome is 'the enabling conditions, methodologies and tools in GAM for enforcing regulatory frameworks for EE buildings and street lighting strengthened.' Outputs 2.1 and 2.2 clearly support this outcome but the remaining 5 outputs deal with updating codes, creating ESCOs and developing a building rating and certification scheme, each of which is potentially an outcome in itself.

GHG emission reduction calculation

The calculation of GHG emission reductions in the ProDoc is difficult to follow and to validate. The calculation and background information are dispersed between the Prodoc (pp.37-39), the Supplimentary Annex 5 and an excel-based GEF-EE-Tool. A clear breakdown of sources of expected direct and indirect GHG emission reductions during the project implementation and after according to GEF methodologies is lacking (refer to Calculating Greenhouse Gas Benefits of the Global Environment Facility Energy Efficiency Projects, Version 1.0. March 2013).

Generally, it is perceived by the PMU and other stakeholders that the expected GHG emission reductions described in the ProDoc are higher than what is realistically achievable considering the implemented measures and budget. A detailed evaluation of the expected and targeted GHG emission reductions taking into account the energy savings from proof-of-concept pilot projects and their replication, from increased enforcement of codes during and after the project, from ESCO activity and from de-risking and financing incentives needs to be implemented.

It is recommended that the project Results Framework/Logframe be revised and updated (also considering changes made to the project scope during implementation) with:

- indicators and targets which verify the impact and market uptake
- a logical relation between outputs, outcomes and objectives and
- comprehensive direct, indirect and post-project GHG emission reduction targets.

An international expert with experience with UNDP/GEF building EE projects should be

engaged to work with the project team to perform this task.

4.2 Project Results

Key Accomplishments

Despite considerable delays caused chiefly by the global Covid-19 pandemic, the project has successfully implemented a number of key outputs. These include:

- The establishment of the **Sustainable Buildings Unit (SBU)** and **Building Inspection Unit (BIU)** at the Jordan National Building Council (JNBC) in the Ministry of Public Works and Housing (MoPWH).
    - The two units are staffed (7 female engineers, 5 male engineers and 4 drivers) and equipped with the necessary administrative and logistics support including test and inspection tools
    - A **Procedure Manual** for performing on-site inspections has been completed
- **Guidelines for Building EE Retrofitting** for contractors is completed
- **Project Management Professional (PMP) training** conducted to build the capacity of 13 Senior Greater Amman Municipality (GAM) staff in Project Management with a focus on environmental and sustainable urbanization projects. The training aimed at familiarizing the target groups with the Project Management skills for cities Sustainable Urban planning. The training was conducted 30 November - 2 December 2020.
- An **Inventory Quality Team (IQT)** was established to manage data collection and verification. The IQT is comprised of multiple key stakeholders whom have ownership and/or access to city data including but not limited to Greater Amman Municipality (GAM), Jordanian Electric Power Company (JEPCO), Jordan Water Company (Miyahuna), Department of Statistics (DoS) and Royal Jordanian Geographic Center (RJGC)
- The draft report 'City Database Construction for Amman – **Data Collection, Analysis and Integration (Energy, Water and Waste)** was completed in November 2021.
    - Each of the 25 indicators under Energy, Water and Waste sectors along with additional six (6) cross-cutting indicators were quantified and analyzed using the datasets received from stakeholders. Indicator quantification and analysis was carried out for years 2017-2020 for all indicators, considering 2017 as the baseline.
    - The **Quality Assessment (QA)** plan has been developed with the aim of providing guidance to IQT and GAM for enhancing, streamlining data collection, monitoring, and reporting processes.
- **Two proof of concept EE renovations** were completed in two existing government buildings; GAM Bassman District Building and the Water, Energy and Environment Center (WEEC) building in Jordan University. 2174.2 m^2 of building envelope were insulated with 5cm extruded polystyrene and single glass windows were replaced with double glazed windows significantly reducing heating requirements.
    - Monitoring of the building energy use before and after implementation of measures has determined that 3514 liters of diesel (133.5 GJ) and 15.6

MWh of electricity were saved in the first 6 months.

- 232 EE floodlights with 100 watts each, and 857 cobra-head EE lights with 60 watts were installed in more than **56 public parks** and on government buildings in Amman with total annual **electricity savings of 265.27 MWh**.
- **Smart lighting systems** were installed in two public parks within GAM
    - Training sessions were conducted for staff operators on how to use the smart lighting systems and control software to minimize electricity use.

Overall results (attainment of objective)

Estimated emission reductions of 166.9 tCO_{2e} were achieved up to mid-2021, as a result of

- Installation and commissioning of 857 units 60 Watt LED floodlights and 230 Smart 60 Watt dimmable LED lights, and 25 PV standalone streetlights. The annual emission reductions generated from this activity are calculated to be 149 tCO_{2e}
- 17.9 tCO_{2e} savings has been achieved in 6 months as a result of EE retrofitting of two public buildings within GAM. The savings are about 30% below the savings expected in the ProDoc (p.38).

The emission reductions are below the mid-term target of 255 tCO_{2e} as stated in the Project Document (p.62). It should be noted here that these are cumulative values based on annual savings and not life-cycle savings according to GEF GHG calculation methodologies. According to the document 'Calculating Greenhouse Gas Benefits of the Global Environment Facility Energy Efficiency Projects, Version 1.0. March 2013', the direct emission reductions of a demonstration project completed within the project timeframe are the cumulative savings over the lifecycle of the measures implemented (up to 20 years in the case of buildings). Further, the GHG calculation in the ProDoc does not take into account the indirect savings and post-project indirect savings resulting from the updated energy efficiency codes, the guidelines for EE building renovation, the increased institutional capacity to enforce of building energy codes and the realization of ESCOs. These components are key to creating sustainable impact and long-term GHG savings even after project completion and should be assessed accordingly. The project would benefit greatly from a thorough reassessment of the GHG emission reductions associated with the project and how they can be credited to the project.

Table 3. Progress Towards Results Matrix (Achievement of Outcomes against Mid-term and End-of-project Targets)

Project Strategy	**Indicator[3]**	**Baseline Level[4]**	**Level in 1st PIR (self- reported)**	**Midterm Target[5]**	**End-of-project Target**	**Midterm Level & Assessment[6]**	**Achievement Rating[7]**	**Justification for Rating**
Objective: To assist the Greater Amman Municipality (GAM) improve the quality of life for its citizens and comply with the National Energy Efficiency Action Plan (NEEAP) via support for more sustainable resource-efficient urban planning and targeted low-carbon interventions in the municipal buildings and street lighting sub-sectors.	Direct project CO_2 emission reductions from the range of interventions proposed by the project, tCO_{2e}	0	17.8 tCO_{2e}	255	1602	166.9 tCO_{2e} (149 tCO_{2e} from lights and 17.9 tCO_{2e} from retrofitting public buildings)	**MS**	GHG emission reductions are below mid-term targets largely because proof of concept building EE projects are behind schedule. Additional 265MWh electrical energy has been saved by upgrading street lights in public parks Visitors have been reduced due to covid-19
	Energy saved through application of Thermal Insulation Code and water efficient fixtures	0		- 1,780 GJ (from diesel avoided) - 218 MWh (electricity saved)	- 7,742 GJ (from diesel avoided) - 1,822 MWh (electricity saved)	-133.5 GJ (from diesel avoided) -15,6 MWh (electricity saved)	**MS**	
	Number of gender-disaggregated beneficiaries benefiting from investments in building envelope thermal insulation	0		94,0008 (of which at least 40% for women)	153,000 (of which at least 40% for women)	8860 visitors to 2 renovated buildings (31.9% women)	**MS**	
Outcome 1: Planning and monitoring frameworks in place to foster accelerated low-carbon development in GAM and benchmark progress against established international standards	Indicator 1: Number of resources quantified in GAM inventory using best practice methodologies by the Amman Urban Observatory	0		3	3	3 – Water, energy and waste have been quantified and compiled in 31 indicators with procedures for collection & QA	**S**	Data collection activities are slightly behind schedule. Sustainability Plan and Financing Strategy have been cancelled due to overlap with EBRD Amman Green City Action Plan project. Alternative activities have been identified to compensate for the change of project activities.
	Indicator 2: Number of plans and strategies that set medium-to-long-term targets for sustainable use of energy and water, and the sustainable management of solid waste in GAM	0		- 1 Sustainability Plan - 1 Financing Strategy - 1 Communications Plan	Plans and Strategy updated where necessary	0 – Outcome cancelled due to EBRD project Green City Action Plan (GCAP) adopted as official Sustainability plan for Amman 2022-2030	**MS**	

[3] Populate with data from the Logframe and scorecards
[4] Populate with data from the Project Document
[5] If available
[6] Colour code this column only
[7] Use the 6 point Progress Towards Results Rating Scale: HS, S, MS, MU, U, HU

Outcome 2: The enabling conditions, methodologies and tools in GAM for enforcing regulatory frameworks for EE buildings and street lighting strengthened	Indicator 3: Number of new department established and operational in GAM	0		1 (at least 30% of staff are women)	1 (at least 30% of staff are women)	2 - Sustainable Building Unit (SBU) and Building Inspection Unit established and operational.(7 female and 5 male engineers)	**HS**	The SBU and Building Inspection Unit are operational and it is expected that they will enforce building energy codes in 3 million m2 of new buildings in 2022 and 15 million m2 in 2023. Update of new codes is behind schedule. The risk that they will not be implemented by end of project is high. Activities supporting ESCO are behind schedule and there is a high risk that these may not be operational by end-of-project.
	Indicator 4: Number of updated Building Codes and newly developed 'Retrofit Building Guidelines'	0		- 2 updated Energy Building Codes - 2 newly developed 'Retrofit Building Guidelines'	- 2 updated Energy Building Codes - 4 newly developed 'Retrofit Building Guidelines'	0 - codes and guidelines are expected by the middle of 2022.	**MS**	
	Indicator 5: Number of ESCOs accredited and capacitated by programme	0		3	5	0 - draft regulation for accreditation of ESCOs expected by end of 2021	**MU**	
Outcome 3: An integrated climate monitoring and finance framework is established for the development of urban NAMAs. Appropriate financial	Indicator 6: Number of standardized baselines for calculating emission reductions in MRV system	0		1	4	0 - The Ministry of Environment has launched online Monitoring, Reporting and Verification (MRV) system in Feb 2019	**MS**	There is a lack of capacity for application of the MRV for building EE and street lighting. Responsible entities need to be identified and capacities

de-risking tools are identified and supported to promote adoption of EE measures in buildings attached to MRV systems.	Number of policy and financial de-risking instruments identified and quantified	0		- 4 policy instruments identified and quantified - 3 financial instruments identified and quantified	- at least 2 policy instruments implemented - at least 1 financial instrument implemented	0 - international and local consultant to work along with the project team to develop the DEEI by the end of 2021.	**MS**	strengthened. Realization of policy and financing instruments is behind schedule. There is a risk that these will not be implemented by end of project.
	Gender-disaggregated population covered by a registered UNFCCC NAMA for energy efficient buildings applying the Thermal Insulation Code and retrofit guidelines	0		0	Total population of GAM at the end of the project	N/A	**MS**	NAMA is scheduled for year 4..
Outcome 4: Selected proof-of-concept mitigation interventions	Area of building envelope insulated (differentiated between new and existing buildings)	0		- 2,125 m2 (new building) - 6,140 m2 (old buildings)	- 2,125 m2 (new building) - 9,988 m2 (old buildings)	- 0 m2 new buildings, - 2174.2 m2 existing buildings	**MS**	Realization of new EE proof-of-concept buildings is behind schedule
	Percentage of GAM lighting adopting smart usage system	0		30%	100%	? - installed 230 smart lighting systems in 2 public parks	**S**	Application of smart lighting systems has been demonstrated.
	Number of standalone PV outdoor/street lighting units installed	0		570	570	25	**S**	It is not necessary to pursue this target considering PV farm.

Indicator Assessment Key

Green= Achieved	Yellow= On target to be achieved	Red= Not on target to be achieved

Remaining barriers to achieving the project objective

1. The continuing world-wide Covid-19 pandemic and related restrictions remain a major obstacle for the smooth implementation of the project. It is recommended to extend to the project timeframe by 1 year in order to ensure project activities and outcomes are realized within the project duration.
2. As described in section 4.1 above, the Project Results Framework in the Project Document is deficient as a tool for project management. The lack of indicators which measure the impact of the project outside its direct influence make it unsuitable for project management to effectively apply adaptive management, that is, for project management to consider and make adjustments to the project based on verifiable indications that the project is on track or needs to be brought back on track to meeting its global objectives. It is recommended that the project Results Framework be revised with indicators and targets which measure the impact of project deliverables and consider project GHG emission reduction targets according to GEF practices and methodologies.
3. A lack of international expert guidance in coordinating and implementing the strategies outlined in the Project Document mean that the PMU needs to unnecessarily 're-invent the wheel new.' The strategies outlined in the Prodoc have already been implemented in a wide range of UNDP/GEF projects worldwide. A Chief Technical Advisor with knowledge of building EE and experience with UNDP/GEF building sector EE projects and tools should be integrated into the project management and decision- making procedures.
4. The existing building code for thermal insulation is almost 20 years old. The prescriptive code is outdated and should be replaced with a performance code supported with integrated building energy efficiency software and practices. The proof-of-concept building EE projects should demonstrate a new energy performance code with energy performance software to balance the most energy efficient measures and costs.
5. Local awareness and capacities in the private sector need to be built up. The proof-of-concept new building EE projects should involve co-operations between local young architects, newly formed ESCO contractors and an international building EE consultant to

ensure sustainability through the transfer of knowledge and practice.

4.3 Project Implementation and Adaptive Management

Key Project Dates	
PIF Approval Date	Jun 9, 2016
CEO Endorsement Date	Feb 6, 2018
Project Document Signature Date (project start date):	Sep 25, 2018
Date of Inception Workshop	Dec 5, 2018
First Disbursement Date	Oct 31, 2018
Expected Date of Mid-term Review	Aug 6, 2021
Actual Date of Mid-term Review	October-December 2021
Expected Date of Terminal Evaluation	Jun 25, 2023
Original Planned Closing Date	Sep 25, 2023
Revised Planned Closing Date	*(not set or not applicable)*

Management Arrangements

The project began on Sept 25, 2018. In the inception phase, the Project Management Unit,

the Steering Committee and the Technical Working Groups were established as follows:

Project Management Unit

The National Project Manager: Eng. Meqdad Rababa
National Project Officer: Eng. Maisam Otoum
National Project Officer: Eng. Dana Al-Lweisy
Administrative Assistant: Eng. Ala'a Alsamhouri

Project Steering Committee

No.	Stakeholder	Position	Name
1	Jordan National Building Council (under the aegis of the Ministry of Public Works and Housing)	Secretary General	Dr. Jamal Qutaishat
2	The Ministry of Planning and International Cooperation (MoPIC)	Secretary General	Eng. Ziad.Obeidat
3	Jordan Renewable Energy & Energy Efficiency Fund (JREEEF) under the umbrella of the Ministry of Energy and Mineral Resources (MEMR)	Executive Director	Rasmi Hamzeh
4	The Ministry of Environment (MoEnv.)	Director of Climate Change Directorate	Bilal Shaqarin
5	The Jordan Green Building Council (JGBC)	Executive Director	Alaa Abdulla
	The Royal Scientific Society (RSS)	Director of Water & Environment Centre	Eng. Rafat Assi
6	The National Energy Research Centre (NERC)	Director	Eng. Walid Shahin
7	The Jordan Standards and Metrology Organisation (JSMO)	Manager of Standardization Department	TBD
8	A representative of the private sector (member of the Jordan Housing Developers Association).	Board Director of Jordan Housing Developers Association	Zuhair Al Omari
9	United Nations Development Program	Resident Representative	Sara Ferrer Olivella
10	United Nations Development Program	National Project Manager (as a non-voting member)	Eng. Meqdad Rababa

Technical Working Groups (TWGs)

No.	Stakeholder	Position	Name
1	Jordan National Building Council (under the aegis of the Ministry of Public Works and Housing)	Senior civil engineer	Moheeb Arabiyat
2	Greater Amman Municipality (GAM)	Manger of Building Licensing Department (Chairman of TWG)	Mohanna Alkattan
		Focal Point of GAM	Ali Belal AlShamayleh
		Senior Architecture in Amman Master Plan Department	Nour Al khatib
		Manger of Amman Urban Observatory	Akram Awad Khraisat
		Manger of Traffic Operation Department	Ziad Farraj
3	Jordan Renewable Energy & Energy Efficiency Fund (JREEEF) under the umbrella of the Ministry of Energy and Mineral Resources (MEMR)	Project Development Manager	Lina Mubaideen
		Senior electrical Engineer	Karam Ajarmeh
4	Jordan Engineers Association (JEA)	Section head of Technical Auditing	Mohammad AbuSurieh
5	The Ministry of Environment (MoEnv.)	Director of Climate Change Directorate	Maha Abu Moais
6	The Jordan Green Building Council (JGBC)	Board Member	Dr. Ismael Al-Hinti
		Executive Director	Alaa Abdulla
7	The Royal Scientific Society (RSS)	Manager of Climate Change Studies	Ruba Ajjour
8	The National Energy Research Centre (NERC)	Manager of Energy Efficiency & Solar Thermal Division	Muhieddin Tawalbeh
9	The Jordan Standards and Metrology Organisation (JSMO)	Senior Engineers	Majd Shatnawi and Thamer Alshoshan
10	UNDP	National Project Manager	Meqdad Rababa
11	UNDP	Environment, DRR and Climate Change Programme Analyst	Rana S. Saleh
12	UNDP	National Project Officer	Maisam Otoum
13	UNDP	National Project Officer	Dana Al-Lweisy
14	UNDP	Administrative Assistant	Ala'a Alsamhouri
15	Minister of Industry, Trade and Supply (Mit)	Senior Engineer	Mohammad Abu Ghanami
16	Ministry of Public Works & Housing (MoPWH)	Section Head of Green buildings	Khaled Saudi
17	Jordanian Construction Contractors Association (JCCA)	Senior Engineer	Abdelrahman Abdulhakim
18	The University of Jordan (JU)	Manager of Water, Energy and Environment Center	Khaldoun Shatanawi
19	A representative of the private sector (member of the Jordan Housing Developers Association).	Board Member	Salaheddin Abu-Dayeh

The Project Management Unit is well composed. The Project Manager has experience and technical

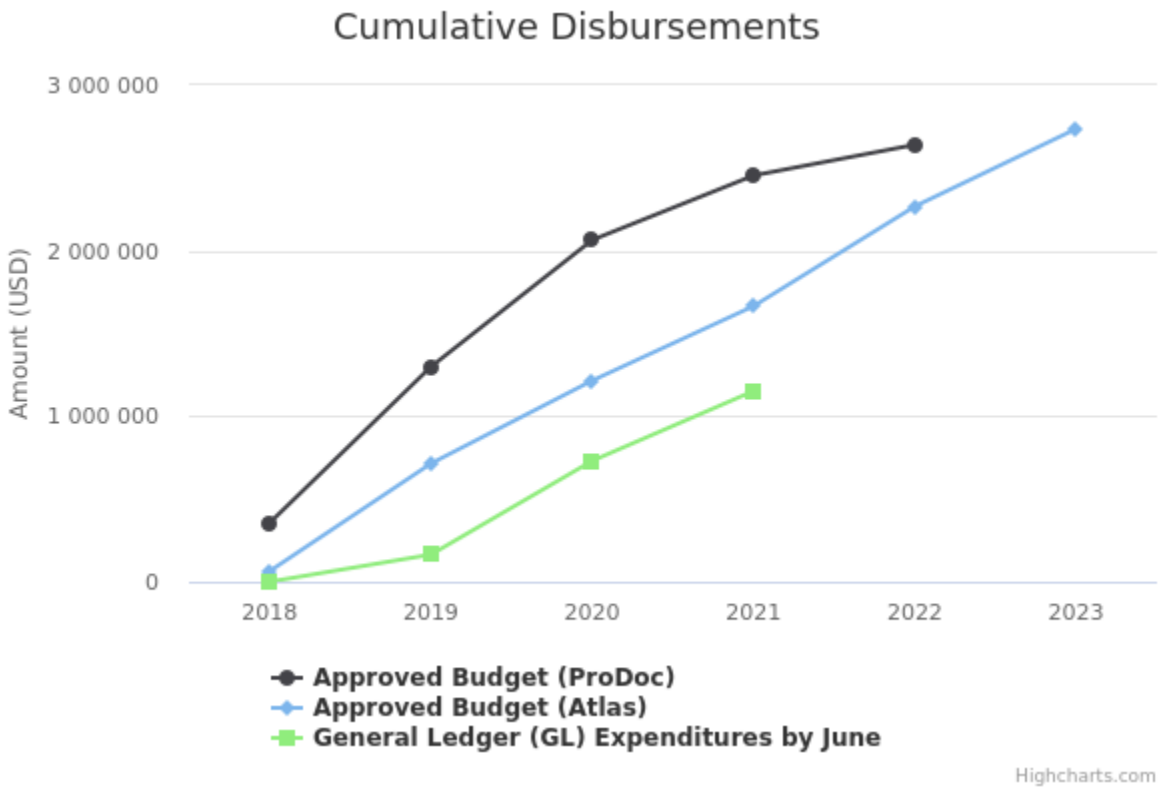
background knowledge of the issues of building and energy. Further, he has experience with and connections in the municipality and government entities. Although the PMU has provided for solid continuity, good coordination of project stakeholders and the step-by-step realization of project activities, the project management would benefit greatly from the support of an international Chief Technical Advisor (CTA) familiar with building energy efficiency and the realization of UNDP/GEF building energy efficiency projects worldwide and the various strategies and tools applied. The accumulated knowledge and tools from the vast array of UNDP/GEF building energy efficiency project realized in various countries is available for application in this project. International support in the form of a CTA would help to integrate the accumulated knowledge and tools and to channel and prioritize project activities so as to achieve the targeted impact and objectives.

Work Planning

The first annual work plan was prepared, discussed and finalized during the Inception Workshop in December 2018. Further work plans were prepared on an annual basis. Project operational

guidelines were not available for review at the time of the MTR.

Finance and co-finance



Cumulative General Ledger Expenditures as mid 2021 against total approved amount (in Prodoc):	43.65%
Cumulative disbursement as of 30 June:	1,152,403

Although project expenditures and co-financing remain comfortably within budget, financial accounting procedures - in particular annual audits - set out in the Prodoc and acknowledged in the Inception Workshop, have not been carried out so far. Further, financial and administration guidelines for the project were not available for review at the time of the MTR.

GAM has signed agreements with a private investment company to replace all existing high pressure sodium lighting fixtures with 60 watt LED lights on major streets in Amman, and to realize an 80MW solar PV farm in order to significantly minimize the electricity consumption. GAM considered these initiatives a part of the co-financing agreement provided to the SURE project.

Stakeholder engagement

Stakeholder involvement and ownership in the project are very good at all levels. Even during the corona lockdowns, stakeholders supported the project to precede with key activities including the establishment the Sustainable Building Unit and the Building Inspections Unit. The Steering Committee is well composed from various stakeholders, meets regularly and provides efficient support for project relevance and decision making. Communication and coordination meetings were held with key stakeholders from the project start.

On December 5, 2018, the Inception Workshop was held with a project launch ceremony, presentations of objectives, Technical Working Group (TWG) meetings and follow-up. The project was launched under the patronage of the City Manager in the GAM and the Program Manager in UNDP CO Jordan. The ceremony was attended by approximately 94 participants representing a vast spectrum of national stakeholders from government institutions, NGOs, academia, semi-governmental and research institutions, private sector, environmentalists and media including Jordan television (JTV) and Roya'a Channel.

Project level monitoring and evaluation systems

Annual Progress Reports have been prepared and reviewed for the years 2019 and 2020.

PIR reports have been prepared and reviewed for the period 2019 to mid- 2020 and for the period mid-2020 to 2021.

The review of project progress by all parties in the PIR reports needs to realistically acknowledge a delay in project deliverables. In the PIR 2021, all components are reported to be 'on Track' whereby in actual fact, considerable delays in meeting mid-term targets are apparent (see section 4.2 Findings-Progress toward Results).

As discussed in section 4.1 above, the Project Results Framework in the Project Document is deficient as a tool for project monitoring and evaluation. It is recommended that the project Results Framework be revised with indicators and targets which measure the impact of project deliverables and consider the project GHG emission reduction targets.

Adaptive management (changes to the project design and project outputs during implementation)

Project management and good communication channels with stakeholders have helped prevent overlaps and coordinate with partner projects and programmes. At the Inception Workshop in December, 2018 changes to the project outcomes were discussed and agreed upon. In particular, it was stated in the Inception Report that GAM had already made agreement with a private investment firm to install LED lights on the major roads and minor streets in Amman and to build an 80 MW PV-farm to compensate the electrical consumption of all of GAM's buildings, facilities, gardens and street lightings. As a result, the 570 standalone street lights powered by PV cells and battery storage system proposed under Outcome 4.4 of the project were deemed redundant. The budget was re-allocated to LED streetlights in public parks.

While the decision to adjust the outcomes is comprehensible, the re-directing of project funds to install more streetlights under the proof-of-concept component of the project is not considered by the evaluator as a necessary and sustainable approach. On the one hand, it is apparent and positive that the GAM realizes the effectiveness of energy efficient streetlights and has already proceeded with the installation outside the project scope, but GEF funding is intended to create sustainable impact which probably would not have

happened without the support. In this respect, re-directing the funds to activities which build capacity in the GAM or support the more difficult proof-of-concept projects dealing with building EE and/or implementing the ESCO model would have been more appropriate.

In March 2021, GAM launched the Amman Green City Action plan (GCAP) funded by the EBRD. UNDP was officially informed by the Mayor of Amman that GCAP will be the official sustainable plan for the city of Amman for 2022-2030. The project team was advised to collaborate with the GCAP team at GAM and to re-allocate the budget of Activity 1.1 (a Sustainable Plan and Financing Strategy) to implement the following activities instead:

1. Conducting web-services for data linkages with services providers to ensure the sustainability of city major resources (water-energy-waste).

2. Carry out advocacy and training among national government, development partners, and civil society organizations on green buildings and climate change mitigation interventions

3. Development of an online tool for carrying out comparative socio-economic and environmental analysis of buildings.

These activities support the GCAP and would ensure cooperation and prevent overlap.

As discussed in section 4.1 above, the project Results Framework/Logframe in the Project Document is deficient as a tool for adaptive management. The indicators and targets in the Results Framework are project deliverables and not quantifiable indications of impact or market uptake. Further, an overriding logical structure (outputs ➔ outcomes ➔ objective) is not evident. As a result, the project management is proceeding with the project as a checklist of activities rather than a holistic mechanism to realize an overriding project objective.

Communication and Knowledge Management.

Communication and knowledge management among management and stakeholders within the project is positive. Even considering the Covid lock-downs, the team was able to maintain communication with key stakeholders and to carry the project forward.

Project knowledge management activities included:

In December 2018, a 3-day Energy Efficient Building Envelope Training Course was held for project stakeholders.

In 2020, the SURE project organized a 3 day customized Project Management Professional (PMP) training, to build the capacity of 13 Senior Greater Amman Municipality (GAM) staff in Project Management with a focus on environmental and sustainable urbanization projects. The training aimed at familiarizing the target groups with the Project Management skills for cities Sustainable Urban planning.

There is an accumulated knowledge and experience from a range of UNDP/GEF building EE projects completed worldwide which the project needs to tap into and integrate. A lack of international expert guidance in coordinating and implementing the strategies outlined in the Project Document means that the PMU needs to unnecessarily 're-invent the wheel new.' The strategies outlined in the SURE Project Document have already been implemented in a wide range of UNDP/GEF projects worldwide. The project team would benefit greatly from A Chief Technical Advisor (CTA) with knowledge of building

EE and experience with UNDP/GEF building sector EE projects and available tools.

The communication of the project activities to the public is positive. The project launch ceremony was attended by approximately 94 participants representing a vast spectrum of national stakeholders from government institutions, NGOs, academia, semi-governmental and research institutions, private sector, environmentalists and media including Joran television (JTV) and Roya'a Channel. Further, proof-of-concept projects, especially the lighting in public parks have been credited to the UNDP/GEF project with appropriate signage.

In 2020, considering the COVID-19 curfew, the SURE project reduced direct face-to-face engagement with local people and communities. However, through the awareness campaign, SURE tried to reach the local communities to raise the awareness for the citizens of Amman on energy and water efficiency and its best practices especially during the lockdown when significant increases in energy and water consumptions were detected.

4.4 Sustainability

Financial Risks to Sustainability:

The project proposes to implement a number of financing mechanisms and instruments to leverage market uptake of building EE in Jordan including ESCOs (Output 2.5), financial incentives though the JREEEF (Output 3.3) and financial de-risking instruments using UNDP's DEEI methodology (Output 3.4). There have been delays in realizing these activities which need to be addressed.

The realization of EE measures in the proof-of-concept projects for existing buildings have proven to be more expensive than outlined in the Project Document. Regardless, the implementation of the proof-of-concept projects needs to be carried out at a big scale and in an effective manner. These projects must be conceived as opportunities to demonstrate new building energy performance codes, software and labels, to validate financing mechanisms (ESCOs or revolving funds) and to transfer international best practice to local professionals.

Socio-economic Risks to Sustainability:

The lack of de-risking instruments for building owners and contractors to invest in building EE measures is still seen as a risk. Combined with low compliance to building energy codes and lack of awareness on the part of building owners and users, the socio-economic risks to sustainability remain considerable obstacles which the project activities and outputs address. The establishment of the Sustainable Building Unit (SBU) and the Building Inspection Unit (BIU) the JNBC are important steps towards countering this risk. Further project activities including awareness campaigns, financing mechanisms and proof-of-concept projects will further support sustainability.

Institutional Framework and Governance Risks to Sustainability:

The GOM and other government stakeholders have made EE in the building sector a priority. There is national incentive and momentum towards achieving this goal. The GOM has already invested EE lighting and RE, and will continue to pursue building EE

as an important means to reduce reliance on imported fossil fuels. The major risks to sustainability in the institutional framework and governance are capacity and knowledge building which the project continues to address.

Environmental Risks to Sustainability:

The environmental benefits of building EE are evident. Environmental risks associated with the production, application and disposal of EE materials and technologies are considered minimal.

Naturally, the Covid-19 pandemic remains a risk to project implementation.

5 CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

The SURE project design as outlined in the Project Document is very ambitious in terms of scope of work. The project is designed to support a wide range of measures and strategies towards realizing the following:

- a sustainable urban plan and financing strategy for Amman
- a city resource database,
- enhanced building code enforcement,
- updated building energy performance codes,
- a building energy rating, certification and labeling scheme
- a MRV system for building energy codes and street lighting,
- financial de-risking mechanisms,
- ESCOs,
- preparation of NAMAs
- energy efficient street lighting
- building EE demonstration projects

The total project budget is US$ 24,655,000.- with US$ 2,640,000.- financed by GEF. Despite the budget limitations, the range of activities can be completed during the project lifetime provided:

4. the project duration is extended for 1 year and
5. the project contracts an international expert as Chief Technical Advisor with experience and tools from UNDP/GEF building EE projects realized worldwide.
6. Further engagement of international experts to support effective completion of project activities

The Project Management Unit is well composed. The Project Manager has experience and technical background knowledge of the issues of building and energy. Further, he has experience with and connections in the municipality and government entities. He and the PMU have provided for effective continuity, efficient coordination of project stakeholders and a conscientious step-by-step realization of project activities.

Stakeholder engagement and ownership in the project is very good at all levels. Even during the corona lockdowns, stakeholders supported the project to precede with key activities including the establishment the Sustainable Building Unit and the Building Inspections Unit. The Steering Committee is well composed from various stakeholders. It meets regularly and provides efficient support for project decision-making. Communication and coordination meetings were held with key stakeholders from the project start.

The project Results Framework/Logframe in the Project Document is deficient as a tool for adaptive management. The indicators and targets in the Results Framework are a selection of project deliverables and not quantifiable indications of impact or market uptake. Further, an overriding logical structure (outputs ➔ outcomes ➔ objective) is not

evident. As a result, the project management is proceeding with the project as a checklist of activities rather than a holistic programme to realize an overriding project objective.

The Covid-19 pandemic has caused considerable delays in parts of the project implementation. Despite the pandemic, the SURE project has successfully achieved several key achievements by the Mid-Term. The project's most significant achievements in terms of sustainable GHG emission reductions so far include:

- The **Sustainable Building Unit** (SBU) and the **Inspection and Control Unit** (ICU) have been established in the Ministry of Public Works and Housing as the bodies responsible to enforce Building Energy Codes.
    - staffed with 7 female and 5 male engineers
    - equipped with administrative, test and inspection tools
    - Procedure Manual for inspections completed
    - Target of 3 million m2 new building in 2022 and 15 million m2 in 2023
- 1089 **EE street lights** have been installed in 56 public parks in Amman with total annual energy saving of 265 MWh.
- **Smart lighting systems** were installed in two public parks
- Proof of concept **EE renovations of two existing government buildings** were completed.
- Guidelines for Building EE Retrofitting for contractors is completed
- **Project Management Professional (PMP) training** conducted for GAM staff with a focus on environmental and sustainable urban projects.
- An **Inventory Quality Team (IQT)** composed of stakeholders with ownership and/or access to city data from has been formed to manage data collection.
- The draft report 'City Database Construction for Amman – **Data Collection, Analysis and Integration (Energy, Water and Waste)** was completed in November 2021 with 31 indicators and Quality Assessment (QA) plan

RECOMMENDATIONS

Recommendation 1: The project deadline should be extended by 1 year in order to complete project activities in an efficient and sustainable manner and to effectively implement other recommendations below. There have been considerable delays in the delivery of many project activities caused in part by restrictions imposed by the global Covid-19 pandemic but also as a result of the wide scope of activities.

Recommendation 2: The project should engage a Chief Technical Advisor (CTA) to help guide the PMU through the remainder of the project. The CTA should be an international expert in building EE with experience in implementing UNDP/GEF building EE projects and their various strategies.
The accumulated knowledge and tools from UNDP/GEF building energy efficiency projects realized worldwide should be tapped to support this project. International support in the form of a CTA would help to integrate best practice and to channel and prioritize

project activities so as to efficiently achieve the targeted impact and objectives. Further, close cooperation with local stake-holders would ensure effective transfer of available knowledge and tools.

Recommendation 3: An international expert should be engaged to update and revise the project Results Framework/Logframe. The current Logframe is deficient as a tool for tracking project progress and adaptive management. The indicators and targets are a selection of project deliverables and not quantifiable indications of impact or market uptake. Further, an overriding logical structure (outputs ➔ outcomes ➔ objective) is not evident. As a result, the project management is currently proceeding with the project as a checklist of activities rather than a holistic programme to realize the overriding project objective. The logframe should be revised so that it:

- applies robust and verifiable indicators and targets,
- builds on a logical relation between outputs, outcomes and objectives and
- validates direct, indirect and post-project indirect GHG emission reductions targets attributed to the project according to GEF calculation methodologies.

Recommendation 4: The project should support the development and implementation of a new Energy Performance Building Code for Jordan. The Thermal Insulation Code from 1993 is outdated and prescriptive. In order to create the basis for a new performance-based code, it is necessary to a) apply a simple but reliable online tool to calculate building energy performance (based on local climate conditions, building orientation and form, composition of exterior walls, roof and floors, window sizes and u-values, shading devices and renewable energy technologies used) and b) establish minimum energy performance limits for new and renovated buildings. The application of the new code should initially be on a voluntary basis alongside the existing code. In due time, the new code can be tightened and the existing code would become obsolete.

Recommendation 5: The remaining proof-of-concept projects should showcase best EE building practice and endorse other project activities such as updated codes, ESCOs and building energy performance rating and labels. Two demonstrations projects need to be identified; one renovation of an existing government building and one new low-cost housing building. The base projects need to be approved for building permit and their financing secured. The SURE project should engage an international expert in building EE and a team of 2-3 local architects to work together to apply Integrated Building Design to optimize the overall energy performance of the 2 buildings. The additional costs for EE improvements (thermal insulation, lighting, HVAC among others) should be isolated and separately financed within by an ESCO contract. The renovation should showcase best practice from the EE Building Renovation Guidelines prepared under the SURE project and the new building should showcase application of the new Performance Based Building EE Code and Energy Performance Certification. The performance of both projects needs to be carefully monitored and documented to ensure a transparent evaluation.

Recommendation 6: The project should develop a NAMA which supports the realization of a model sustainable city district within the GAM which would showcase the principles outlined in the Amman Green City Action Plan. In preparing the proposal, international consultants should work with the GAM to identify locations, procedures and best practices towards achieving sustainable results including marketing and awareness campaigns. The proposal should include guidelines for financing and sustainable urban planning.

Recommendation 7: The Environmental Department within the GAM needs to become the focal point to evaluate, calculate and verify CO_2 emission reductions from urban planning and building interventions and to enter these into the MRV. The capacity of the Environmental Department must be strengthened and they must work closely with the Urban Observatory in order to collect and process data initially secured under the SURE project. Further, they must work closely with the SBU and other departments in GAM to identify and quantify CO_2 emission reductions based on enhanced enforcement of building energy codes.

Recommendation 8: The project needs to apply an integrated effort to support the creation of an ESCO business model in Jordan. Currently, the project treats the different actions addressing ESCOs and financing independently. JREEEF should provide the bank guarantee to cover the risk involved in ESCO project implementation. Currently, banks are very reluctant to provide loans to contractors for EE renovations based on ESCO models (energy savings to finance EE investments). There is little understanding of EE investment opportunities in the banks.

Recommendation 9: Project financing should be used for capacity building. The replacement of lights in city parks should not be further financed by GEF funding. This aspect of the project has already clearly demonstrated a successful and lucrative model for GAM to reduce costs and save energy. The GAM should maintain the momentum by further engaging ESCOs (or EPCs) as required