

Terminal Evaluation of the UNEP/GEF Project "Delivering the Transition to Energy Efficient Lighting in Residential, Commercial, Industrial and Outdoor Sectors in Pakistan"

GEF ID 5799 (2017 – 2022)



Evaluation Office of the United Nations Environment Programme

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Delivering the Transition to Energy Efficient Lighting in Residential, Commercial, Industrial and Outdoor Sectors in Pakistan

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The evaluation consultant hopes that the findings, conclusions, and recommendations will contribute to the successful finalization of the current project, formulation of a next phase and to the continuous improvement of similar projects in other countries and regions.

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About the Evaluation

Joint Evaluation: No

Report Language: English

Evaluation Type: Terminal Evaluation

Brief Description: This report is a Terminal Evaluation of a UNEP/GEF “Delivering the Transition to Energy Efficient Lighting in Residential, Commercial, Industrial and Outdoor Sectors in Pakistan” project implemented between 2017 and 2022. The project's overall development goal was to secure significant global climate change mitigation and environmental benefits by instituting efficient lighting policies and creating a framework for innovative financial mechanisms that promote innovative and high efficiency products. The evaluation sought to assess project performance (in terms of relevance, effectiveness, and efficiency), and determine outcomes and impacts (actual and potential) stemming from the project, including their sustainability. The evaluation has two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote learning, feedback, and knowledge sharing through results and lessons learned among UNEP, and the relevant agencies of the project participating countries.

Source(s) of Funding by Country: Pakistan

Source(s) of Funding by Institution Type:

Foundation/NGO	No
Private Sector	Yes
UN Body	Yes
Multilateral Fund	No
Environment Fund	Yes

Key words: Transition to Energy Efficiency, Energy Efficiency Policies, Energy Efficiency, Energy Conservation, Energy Efficient Lighting, LEDs, Energy Efficiency Standards, MEPs, Lighting Fund Window, Climate Change, Project Evaluation, Terminal Evaluation, Pakistan.

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List of acronyms and abbreviations

AWP	Annual Workplan
BISP	Benazir Income Support Program me
BRESL	Building Energy Efficiency Project
CCM	Common Carbon Metric
CDA	Capital Development Authority
CEO	Chief Executive Officer
CERAD	Centre for Energy Research & Development
CFL	Compact Fluorescent Lamps
CO ₂	Carbon Dioxide
COVID	Corona Virus Disease
EA	Expected Accomplishment
EC	European Commission
ECF	Energy Conservation Fund
EDB	Engineering Development Board
EE	Energy Efficiency
EEl	Electrical and Electronics Institute
EMTL	Electrical And Measurement and Test Laboratory
ECF	Energy Conservation Fund
ENERCON	(Formerly NEECA)
EO	Evaluation Office
EPA	Environmental Protection Agency
ESM	Environmental Sound Management
FAO	Food and Agriculture Organization
FBL	Faysal Bank Limited
FBR	Federal Board of Revenue
GAP	Gender Action Plan
GCF	Green Climate Fund
GEF	Global Environment Facility
GEFSEC	Secretariat of the Global Environment Facility
GHG	Green House Gas
GOP	Government of Pakistan
HBL	Habib Bank Limited
HID	High-Intensity Discharge
HITEC	HITEC University
HS	Harmonized System
IA	Implementing Agency
IESCO	Islamabad Electric Supply Company
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IIEC	International Institute for Energy Conservation
ILO	International Labor Organization
IR	Inception Report
IS	Intermediate State
JICA	Japan International Cooperation Agency

KDA	Karachi Development Authority
LC	Letters of Credit
LDA	Lahore Development Authority
LED	Light Emitting Diode
LFW	Lighting Funding Window
MEPS	Minimum Energy Performance Standards
MERV	Minimum Efficiency Reporting Values
MOCC	Ministry of Climate Change and Environmental Coordination
MOST	Ministry of Science and Technology
MRV	Measurement, reporting, and verification
MTE	Mid Term Evaluation
MTR	Mid Term Review
MTS	Medium-Term Strategy
MVE	Monitoring, Verification, and Enforcement
MVR	Measuring, Reporting & Verifying
MW	Mega Watt
NAMA	Nationally Appropriate Mitigation Actions
NDC	Nationally Determined Contribution
NEECA	National Energy Efficiency & Conservation Authority
NGO	Non-Governmental Organization
NIE	National Institute of Electronics
NLTC	National Light Testing Centre
NPD	National Project Director
NRSP	National Rural Support Program me
NUST	National University of Science & Technology
PAF	Pakistan Air Force
PCA	Project Cooperation Agreement
PCSIR	Pakistan Council of Scientific & Industrial Research
PDP	Power Development Plan
PEECA	Punjab Energy Efficiency and Conservation Agency
PEECB	Pakistan Energy Efficiency and Conservation Board
PIF	Project Identification Form
PIR	Project Implementation Reports
PM	Project Management
PMC	Project Management Cost
PMU	Project Management Unit
POW	Program me of Work
PPRA	Public Procurement Regulatory Authority
PRAL	Pakistan Revenue Automation Limited
PRS	Project Registration System
PSC	Project Steering Committee
PSQCA	Pakistan Standards and Quality Control Authority
QAU	Quaid-i-Azam University
RGF	Risk Guarantee Fund
RLF	Revolving Loan Fund

RTOC	Reconstructed Theory of Change
SDG	Sustainable Development Goals
SE4All	Sustainable Energy for All
SMART	Specific, Measurable, Achievable, Relevant, Time-bound
SPP	Standard Public Procurement Procedures
SPPP	Standard Public Procurement Procedures
SSA	Special Service Agreement
TE	Terminal Evaluation
TFL	Tubular Fluorescent Lamps
TM	Task Manager
TOC	Theory of Change
TOR	Terms of References
TWG	Technical Working Group
U4E	United for Efficiency
UN	United Nation
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization
US	United States
USA	United States of America
USAID	United States Agency for International Development
USD	United States Dollar
WEEE	Waste from Electrical and Electronic Equipment

Project identification table

Table 1: Project Identification Table

GEF Project ID/SMA ID1:	5799 / 34287		
Implementing Agency:	UNEP	Executing Agency:	National Energy Efficiency and Conservation Authority (NEECA) and United for Efficiency (U4E)
Relevant SDG(s) and indicator(s):	SDG Goal 7: "Affordable and clean energy- Ensure access to affordable, reliable, sustainable, and modern energy for all; SDG 11: Sustainable cities and communities - Make cities inclusive, safe, resilient, and sustainable; SDG 12: Responsible consumption, production - Ensure sustainable consumption and production patterns; and SDG 5: Gender equality - Achieve gender equality and empower all women and girls.		
Sub-programme:	Climate Change	Expected Accomplishment(s):	MTS 2014-2017: EA2: Energy efficiency is improved, and the use of renewable energy is increased in partner countries to help reduce greenhouse gas emissions and other pollutants as part of their low emission development pathways MTS 2018-2021: EA2: Countries increasingly adopt and/or implement low greenhouse gas emission development strategies and invest in clean technologies. MTS 2022-2025: Outcome 2: Countries and stakeholders have increased capacity, finance, and access to technologies to deliver on the adaptation and mitigation goals of the Paris Agreement.
UNEP approval date:	August 2016	Programme of Work Output(s):	PoW 2016-2017: EA (b) Output 4 PoW 2018-2019: EA (b) Output 4 PoW 2020-2021: EA (b) Output 4 PoW 2022-2023: Outcome 1B
GEF approval date:	March 2017	Project type:	Medium Sized Project
GEF Operational Programme #:	01285	Focal Area(s):	Climate Change Mitigation
		GEF Strategic Priority:	GEF - 3

¹ SMA refers to the ID provided by the Integrated Planning, Management and Reporting Solution (IPMR) system, which was introduced by UNEP in July 2023.

<i>Expected start date:</i>	August 2016	<i>Actual start date:</i>	05 April 2017
<i>Planned completion date:</i>	February 2020	<i>Actual operational completion date:</i>	30 September 2022
<i>Planned project budget at approval:</i>	USD 7,362,200	<i>Actual total expenditures reported as of June 2022:</i>	USD 3,075,916
<i>GEF grant allocation:</i>	USD 1,575,500	<i>GEF grant expenditures reported as of 30 June 2022:</i>	USD 1,025,916
<i>Project Preparation Grant - GEF financing:</i>	USD 50,000	<i>Project Preparation Grant - co-financing:</i>	N/A
<i>Expected Medium-Size Project/Full-Size Project co-financing:</i>	USD 5,786,700	<i>Secured Medium-Size Project co-financing:</i>	USD 2,050,000
<i>First disbursement:</i>	4 May 2017	<i>Planned date of financial closure:</i>	30 September 2023
<i>No. of formal project revisions:</i>	3	<i>Date of last approved project revision:</i>	10 October 2021
<i>No. of Steering Committee meetings:</i>	3	<i>Date of last Steering Committee meeting:</i>	29 September 2021
<i>Mid-term Review/ Evaluation (planned date):</i>	N/A	<i>Mid-term Review/ Evaluation (actual date):</i>	N/A
<i>Terminal Evaluation (planned date):</i>	September 2023	<i>Terminal Evaluation (actual date):</i>	April 2023
<i>Coverage - Country(ies):</i>	Pakistan	<i>Coverage - Region(s):</i>	Asia Pacific
<i>Dates of previous project phases:</i>	N/A	<i>Status of future project phases:</i>	N/A

Executive Summary

Project background

1. The present report constitutes the terminal evaluation of the project “Delivering the Transition to Energy Efficient Lighting in Residential, Commercial, Industrial and Outdoor Sectors in Pakistan,” known as “Energy Efficient Lighting Project.” Funded by GEF, implemented by UNEP, and executed by the National Energy Efficiency & Conservation Authority (NEECA) and United for Efficiency (U4E), the project had a budget of USD 3,075,916, started in July 2018 and ended operations in September 2022, after two no-cost extensions for a total of 28 months.
2. At the project's outset, Pakistan grappled with a severe energy crisis, marked by up to a 5,000 Mega Watts (MW) deficit and extensive blackouts, compounded by the energy sector's contribution to over half of the country's emissions. With a population projected to swell to 298 million by 2035 and energy demand set to soar, the carbon intensity of the energy sector loomed to increase. Despite a high electrification rate, inefficient lighting prevailed, dominated by incandescent lamps. Government initiatives, notably a Compact Fluorescent Lamps (CFL) distribution project, curbed load demand by 880 MW. Transitioning from voluntary to mandatory energy performance standards and labeling was underway, supported by the National Energy Efficiency and Conservation Act, 2016, which established regulatory frameworks and the Pakistan Energy Efficiency and Conservation Board. However, challenges persisted, including inadequate policies, public awareness, resources, and financing options, hindering widespread adoption of energy-efficient lighting practices.
3. The main objective of the project was to secure significant global climate change mitigation and environmental benefits by instituting efficient lighting policies and creating a framework for innovative financial mechanisms that promote innovative and high-efficiency products. The project comprised four key components: (i) Developing a National Efficient Lighting Strategy; (ii) Enhancing monitoring, verification, and enforcement (MVE) capacities to facilitate a smooth transition to efficient lighting practices in Pakistan; (iii) Establishing a "Lighting Funding Window" within Pakistan's Revolving Loan Fund (RLF); and (iv) Promoting the adoption of light-emitting diodes (LEDs) and related controls. These components aimed to yield substantial global climate change mitigation and environmental benefits by implementing efficient lighting policies and fostering innovative financial mechanisms to support high-efficiency products.

This evaluation

4. The terminal evaluation process started in June 2023; it involved thorough document review, including project-related documents such as the Project Identification Form, budgets, and meeting minutes. Data collection comprised interviews with stakeholders conducted in three cities in Pakistan, following a semi-structured approach outlined in provided interview tools. Additionally, remote exchanges with the UNEP Task Manager (TM) and the Evaluation Manager occurred before and after the field mission.
5. The data analysis phase involved thematic review of collected data, followed by assessment of evidence depth and frequency across emerging themes. Evaluation criteria encompassing strategic relevance, effectiveness, financial management, and sustainability guided the analysis, utilizing both qualitative and quantitative analytical tools. The resulting Evaluation Report, following a provided template, presents validated

conclusions and practical recommendations drawn from robust data triangulation and verification from stakeholders. Key findings from the evaluation are summarized below.

Key findings

6. The project demonstrated strong alignment with strategic priorities outlined by UNEP and GEF, focusing notably on climate change mitigation, resource efficiency, and sustainable development. It directly supported UNEP's Medium-Term Strategies and Programme of Work, as well as GEF's objectives concerning climate change and energy efficiency. Additionally, the project's relevance extended to global initiatives such as the Paris Agreement and Sustainable Development Goals, alongside national policies, and frameworks in Pakistan, addressing critical issues like energy conservation and gender mainstreaming in the energy sector.
7. Moreover, the project exhibited coherence with existing interventions, particularly with initiatives like the en.lighten project and Energy Conservation Fund. By promoting energy-efficient lighting technologies and establishing standards and financing mechanisms, the project complemented ongoing efforts to enhance environmental sustainability and energy conservation in Pakistan. Despite challenges, the project's endeavors contributed significantly to shaping a more regulated and efficient lighting market while facilitating access to financing for energy-efficient lighting projects, thereby reinforcing its coherence with existing interventions.
8. The project's design indicated that the design was well-structured and relevant to its goals, addressing hurdles at various levels effectively. It incorporated policy initiatives, stakeholder involvement, and gender mainstreaming. However, despite its ambitious approach, the project faced challenges due to limited time and budget, particularly in implementing strategies like the National Efficient Lighting Strategy and the RLF. The design lacked thorough consideration of financing challenges and accompanying mitigation strategies, highlighting a discrepancy between the project's ambition and available resources. One reason for this oversight is that the PPG did not have enough resources to conduct a thorough analysis, and therefore, the detailed assessment was planned to be carried out during project implementation.
9. The project's effectiveness in delivering outputs had a mixed picture across its components. In Component 1, significant progress was made in developing policies and mechanisms for efficient lighting, despite delays due to COVID-19. However, challenges persisted in fully implementing the MRV process. Component 2 encountered challenges in establishing legal and administrative processes for compliance with standards, attributed to delays in establishing a public registry system (PRS) and engaging governmental entities. Component 3 faced setbacks in creating a Lighting Funding Window within the Energy Conservation Fund, resulting in challenges in developing financing mechanisms for lighting-specific loans. Finally, Component 4 was successful in communication campaigns and pilot demonstrations for LED adoption, although challenges arose in timely MRV development and procurement for pilot projects, partly due to product availability issues. Despite these challenges, the project demonstrated significant progress in key areas of policy development, capacity building, and pilot implementation for efficient lighting adoption in Pakistan.

10. In terms of Outcome achievement, Outcome 1.1 focused on establishing policies and standards for efficient lighting products. While milestones such as developing MEPS and regulatory frameworks were achieved, challenges in enforcement and compliance were identified, hindering full realization of this outcome. Similarly, Outcome 2.1 aimed at enhancing market compliance with energy efficiency policies, yet the absence of an established monitoring and enforcement framework limited progress. Additionally, Outcome 3.1 sought to establish an RLF for transitioning to efficient lighting, but challenges in securing funding and establishing administrative structures led to its non-fulfillment. Despite successful awareness initiatives under Outcome 4.1, including demonstration projects and gender mainstreaming efforts, achieving EoP targets was partially accomplished due to challenges in monitoring and verification processes, impacting the overall effectiveness of the project's outcomes.
11. In terms of the achievement of likelihood of impact across four outcomes, Outcome 1 partially achieved due to challenges in implementing certain outputs and Outcome 2 was also partially achieved primarily due to unmet assumptions regarding stakeholder commitment. Outcome 3 saw no realization during implementation, attributed to the non-development of a RLF and lack of governmental support. However, Outcome 4 saw significant progress with successful communication campaigns and pilot demonstrations. Intermediate State 2 was partially achieved with the formalization of MEPS and capacity building efforts, while Intermediate States 1 and 3 faced challenges due to funding constraints and limited timeframe.
12. The project's financial management indicated overall adherence to UNEP's financial policies. The financial information provided was generally complete and clear, with the satisfactory completeness of financial management demonstrated. Notably, the project utilized about 65% of its allocated GEF grant, with varying expenditure across components. Co-financing fell short of the initially planned amount, with NEECA being the largest contributor, including termination despite unutilized funds for RLF establishment.
13. In terms of efficiency, the project demonstrated adaptability and efficiency despite challenges such as staffing issues and bureaucratic delays. Utilizing a public-private collaboration involving various stakeholders, including government agencies, financial institutions, and private sector entities, the project successfully engaged multiple partners and leveraged resources for cost-effective solutions. However, operational challenges, including delays in signing agreements and bureaucratic challenges within NEECA, impacted implementation timelines. Despite facing external factors like political instability and the COVID-19 pandemic, the project received two no-cost extensions but was eventually terminated despite available unutilized funds.
14. The project's monitoring and reporting highlighted both strengths and areas for improvement. The monitoring plan demonstrated a comprehensive approach with a clear budget allocation, SMART objectives, and detailed log frame components. However, some indicators lacked specificity and faced achievability issues due to external factors. Monitoring of project implementation revealed gaps in strategic support, limited PSC meetings, and inconsistencies in activity-level progress tracking. Also, while annual PIRs were comprehensive, no mid-term review was undertaken, impacting the overall effectiveness of the monitoring and evaluation framework.
15. The project's sustainability has mixed prospects across different dimensions. Socio-politically, efforts to develop MEPS and conduct pilot demonstrations shows promise, yet lack of binding national laws and enforcement pose risks. Financially, limited funding and

price sensitivity among consumers hinder long-term viability. Institutionally, strong stakeholder engagement is noted, although challenges exist in testing energy-efficient lighting products against MEPS criteria and establishing the RLF. Based on the analysis of the evaluation criteria discussed above, the project received an overall performance rating of “Moderately Satisfactory”.

Lessons Learned

16. The evaluation of the project yielded several key lessons.

- Lesson 1: The development of financial mechanisms for energy-efficient lighting requires a deep understanding of the financial landscape and significant funding to attract borrowers, alongside time to convince stakeholders. Financial institutions are deterred by small funding amounts, hindering the creation of specialized financing entities.
- Lesson 2: Large-scale pilot projects can influence consumer behavior but necessitate accompanying awareness campaigns.
- Lesson 3: Challenges in testing facilities' capabilities for energy-efficient lighting standards compliance may impede widespread adoption.
- Lesson 4: Economic stability is crucial for the transition to energy-efficient lighting.
- Lesson 5: Partnerships between government agencies and technical energy expert organizations can yield beneficial results, especially in technical cooperation.
- Lesson 6: Consumer awareness of quality energy-efficient lighting is essential, exerting pressure on manufacturers and importers.
- Lesson 7: Fragmentation in the energy-efficient lighting sector, particularly in countries like Pakistan, hampers capacity building and enforcement of standards.
- Lesson 8: Future project designs should integrate input from various relevant technical entities, such as U4E, based on their lessons learned from similar programming. This will ensure realistic strategies aligned with budget and time constraints, promoting sustainability.

Recommendations

17. Based on the evaluation findings, some recommendations are formulated to address challenges or opportunities in this project, and some are for future projects.

- Recommendation 1: Annual revisions of MEPS should be conducted to keep pace with technological advancements, with a directive to the Ministry of Energy (Power Division) in Pakistan.
- Recommendation 2: NEECA should pursue cabinet approval for MEPS.
- Recommendation 3: Future energy efficiency projects in Pakistan should prioritize light testing and MRV in collaboration with UNEP and GEF.
- Recommendation 4: The government of Pakistan should promote energy efficiency lighting policies and standards through knowledge-sharing events, with recommendations conveyed to NEECA.

- Recommendation 5: NEECA should establish an energy efficiency lighting directorate staffed by experienced personnel with expertise in both public sector management and private sector engagement.
- Recommendation 6: The Evaluation Office of UNEP should review the documented process for extending/prematurely closing projects with a particular focus on those with: a) a substantive element that the project has not been able to implement, or b) where significant funds are remaining.

1 INTRODUCTION

1. The project “*Delivering the Transition to Energy Efficient Lighting in Residential, Commercial, Industrial and Outdoor Sectors in Pakistan*” received a grant of USD 1,025,916 from the Global Environment Facility (GEF), along with in kind co-financing from the Ministry of Climate Change (MoCC), National Energy Efficiency and Conservation Authority (NEECA) and other partners for a total of USD 3,075,916. It was implemented by UNEP’s GEF Climate Change Mitigation Unit, Mitigation Branch, within the Climate Change Division² and the Executing Agency was NEECA. Originally the project was planned to span 34 months, commencing in April 2017, and concluding in February 2020. However, due to delays faced in onboarding the project management, the project implementation started in July 2018, after a delay of 15 months. Moreover, the project was granted two no-cost extensions, extending the implementation period to approximately 65 months (April 2017 to September 2022).
2. The project was implemented in Pakistan (Asia-Pacific), and contributed towards the Expected Accomplishments (EA) of the UNEP Medium-Term Strategy 2014-2017, Program of Work (PoW) 2016 – 2017 EA (b): “Energy efficiency is improved and the use of renewable energy is increased in partner countries to help reduce greenhouse gas emissions and other pollutants as part of their low-emission development”; Indicator (ii): “Increased percentage of countries meeting energy efficiency standards in specific sectors, with support from UNEP.”
3. Since this was a Medium Sized Project, no Midterm Review was undertaken. However, in accordance with the UNEP Evaluation Policy³ and the UNEP Programme Manual⁴, this Terminal Evaluation (TE) was undertaken at completion of the project. The TE covers the implementation of the project from its inception in April 2017 until its operational closure in September 2022.
4. The TE assessed the project performance in terms of relevance, effectiveness and efficiency and determined outcomes and impacts stemming from the project, including sustainability. The primary objectives of the evaluation were to: (i) provide evidence of results to meet accountability requirements, and (ii) promote operational improvement, learning and knowledge sharing through results and lessons learned among various project stakeholders.
5. The audience for the findings of the TE includes (but is not limited to): UNEP Evaluation Office; UNEP GEF Climate Change Mitigation Unit project team members and their respective units; UNEP, United for Efficiency (U4E); International Institute for Energy Conservation (IIEC); National Energy Efficiency and Conservation Authority (NEECA); project staff and key stakeholders who participated in the Project Steering Committee (PSC)⁵ and Technical Working Group (TWG).

² Previously known as Energy and Climate Branch and Industry and Economy Division

³ <https://www.unenvironment.org/about-un-environment/evaluation-office/policies-and-strategies>

⁴ <https://wecollaborate.unep.org>

⁵ Ministry of Climate Change, Engineering Development Board, Pakistan Standards & Quality Control Authority, Pakistan Council of Scientific & Industrial Research, Pakistan National Accreditation Council and GEF Focal point.

2 EVALUATION METHODS

2.1 Inception Report

6. An Inception Report (IR) was developed, based on a preliminary document review, introductory and kick off meetings, and scoping interviews with UNEP including the Evaluation Manager, Task Manager (TM) and Support, and the NEECA, including Manager/Representative, and Project Manager. The IR contained a preliminary reconstructed Theory of Change (ToC), which was informed by the desk review and feedback from reviewers of the IR.
7. Annex IV presents the Evaluation Framework developed for the IR, which was built around the Evaluation Office's eight evaluation criteria covered by the TE, namely: i) strategic relevance; ii) quality of project design; iii) nature of external context; iv) effectiveness; v) financial management; vi) efficiency; vii) monitoring and reporting; and viii) sustainability. For each criterion, the framework identifies evaluation questions, indicators, means of verification and sources of information.

2.2 Desk Review

8. The evaluator reviewed all project-related documents, including relevant background documents, Project Identification Form (PIF), CEO Endorsement Document, Internal Execution Documents, Project Cooperation Agreements (PCAs), Project Implementation Reports (PIRs), budgets, and Steering Committee meeting minutes. A list of all documents reviewed during the TE is presented in Annex III.

2.3 Data Collection

9. The evaluator conducted data collection by conducting interviews with various stakeholders from 22 August to 26 September 2023. In total, the evaluator conducted in person interviews with 11 stakeholders during the data collection mission in Islamabad, Lahore, and Karachi. The data collection agenda was discussed with the Project Manager of the Executing Agency, and based on that discussion, a list of stakeholders to be met and a schedule for conducting interviews was developed. A full list of people met with is provided in Annex II.
10. The meetings and interviews with stakeholders were conducted in a semi-structured manner, in accordance with the interview tools provided in Annex V. This approach involved engaging a diverse range of respondents, including government officials, officials from the implementing and executing agencies, industry representatives, technical assistance providers, members of the Project Steering Committee and Technical Working Group, and the project beneficiaries. These interviews provided insights about stakeholders' perceptions of the project intervention.
11. Additional exchanges were conducted with UNEP TM and the Evaluation Manager through remote meetings and emails, both prior to and following the mission. Data collection facilitated an in-depth analysis of various aspects surrounding the project,

including its relevance, effectiveness, efficiency, results, sustainability, and the extent of involvement from different stakeholders.

12. After concluding the data collection phase, the evaluator conducted a remote presentation for the Implementing and Executing Agencies to present the preliminary findings of the TE. This ensured that the evaluator had a correct understanding of the situation and provided the project team with an opportunity to offer feedback on the initial evaluation findings and recommendations.

2.4 Data Analysis and Reporting

13. The evaluator prepared this Evaluation Report using the template provided by the UNEP Evaluation Manager. It includes the validation and triangulation of data and findings to establish robust, credible conclusions and lessons learned through incorporating verification from stakeholders and desk review. Furthermore, this report provides practical and achievable recommendations.
14. The data analysis process began by conducting a thematic review of the dataset, categorizing the data based on emerging themes. The evaluator then assessed the depth of evidence within these themes, tracking the frequency of specific themes and cross-referencing them across multiple sources.
15. To evaluate the data, the evaluation criteria including Strategic Relevance, Quality of Project Design, Nature of External Context, Effectiveness, Financial Management, Efficiency, Monitoring and Reporting, and Sustainability was used. Both document reviews and interviews employed the coding method to gather coded data. The subsequent step involved aggregating and organizing the coded data according to evaluation questions and sub-questions.
16. The evaluator also utilized analytical tools to analyse both qualitative and quantitative data according to the key objectives of the assignment, with qualitative data being transcribed and categorized by themes and topics, and clear conclusions drawn. Quantitative analysis included percentages, comparisons, and averages.

2.5 Limitations to the Evaluation

17. As the project had closed in 2022 and the TE was undertaken nearly a year later in 2023, making contact with some stakeholders was foreseen as a potential challenge. To mitigate this, assistance was sought from the ex-Project Manager who proved to be instrumental in arranging the evaluation interviews. Nevertheless, two key stakeholders were not available for interviews, including the representative from Habib Bank Ltd. who engaged with the project (who was not available due to reassignment of his role); and Pakistan Standards and Quality Control Authority (PSQCA) (despite repeated contact efforts).
18. The gender composition of the interviewed stakeholders posed a notable constraint in the Evaluation. The majority of the respondents were male, indicating a gender imbalance. Specifically, out of the 11 stakeholders interviewed, only one was female.

This gender imbalance may have impacted the diversity of the responses and potentially limiting the overall validity of Evaluation findings.

19. Another limitation encountered during the Evaluation pertained to the progress reporting. Key challenges with project reporting included the inconsistent listing of outputs and activities across PIRs, as well as the failure of PIRs to report against outputs/activities as outlined in the PIF.

2.6 Ethics and Human Rights

20. The Project design had a limited focus on human rights and gender. For example, Output 4.1.2 referred to establishing pilot demonstrations for disadvantaged populations. Moreover, Output 4.1.5 referred to gender mainstreaming. As such, the TE found that the project was mostly of a technical nature and had no implications for these aspects.
21. In accordance with ethical considerations, utmost care was taken to safeguard the anonymity and confidentiality of the interview respondents throughout the Evaluation process. This not only ensured that individuals who participated in the evaluation could share their perspectives openly but also contributed to the reliability of the Evaluation findings.

3 THE PROJECT

3.1 Context

22. At the inception of this project, Pakistan's energy crisis continued to pose significant challenges to the country's economic and social growth, with an energy deficit of up to 5,000 MW during the summer season and frequent blackouts lasting up to 20 hours in rural areas.
23. The energy sector in Pakistan is the primary contributor to greenhouse gas (GHG) emissions, accounting for more than 51% of the country's total emissions between 2007 and 2008. As the population is projected to reach 298 million by 2035, and energy demand is expected to increase significantly, without intervention, the energy sector's carbon intensity is likely to rise. By 2050, energy-related emissions are anticipated to represent 64% of the total emissions.
24. Pakistan has a population of 231 million, with a nationwide electrification rate of 97%. According to the project document, there are approximately 300 million light sockets in the country, with an annual market size of around 194 million lamps. Incandescent lamps comprise 62% of annual sales, followed by Compact Fluorescent Lamps (CFLs) at 29%, tubular fluorescent lamps (TFLs) at 5%, LED lighting at 3%, and High-Intensity Discharge (HID) lamps at 1%.
25. To address the energy crisis, the Pakistani government implemented a large-scale distribution project for CFLs, resulting in a decline in incandescent lamp sales and a reduction in load demand by approximately 880 MW. At the inception of this project, minimum energy performance standards (MEPS) and labelling for lighting products

were voluntary. However, the government planned to transition to a mandatory phase in consultation with the industry.

26. The Building Energy Efficiency Project (BRESL) developed MEPS for electronic and electromagnetic ballasts. However, additional MEPS were necessary to phase out inefficient incandescent lamps and other outdated technologies. Inefficient HID lamps were commonly used in outdoor lighting and public spaces, while inefficient TFLs were prevalent in commercial and industrial settings.
27. The enactment of the Energy Efficiency and Conservation (EE&C) Bill 2016 in Pakistan helped in establishing a comprehensive framework for enforcing MEPS and labelling regulations. This legislation also paved the way for the establishment of the Pakistan Energy Efficiency and Conservation Board (PEECB), which serves as a policy-making body dedicated to energy efficiency and conservation in the country.
28. Despite the positive impact of the EE&C Bill, several challenges still hindered the promotion and adoption of energy-efficient lighting in Pakistan. These obstacles included the absence of favourable policies, strategies, and regulatory frameworks specifically designed to support and enforce efficient lighting practices. Moreover, limited public awareness and knowledge about energy efficiency, inadequate in-country resources and capacities, and a lack of innovative financing options to encourage investments in energy-efficient lighting further impeded its widespread adoption in the country.

3.2 Results Framework

29. The project consisted of four components including: (i) Developing a National Efficient Lighting Strategy; (ii) Strengthening monitoring, verification, and enforcement (MVE) capacities in Pakistan to ensure an effective transition to efficient lighting; (iii) Design for a "Lighting Funding Window" in Pakistan's Revolving Loan Fund (RLF); and (iv) Accelerating the use of light emitting diodes (LEDs) and controls.
30. The expected project outcomes and associated 14 outputs, as defined at design stage, are captured below in Table 02.
31. With the successful implementation of these 4 components, the project intended to secure significant global climate change mitigation and environmental benefits by instituting efficient lighting policies and creating a framework for innovative financial mechanisms that promote innovative and high efficiency products. At the time of project development, it was anticipated that transition to energy efficient lighting in residential, commercial, industrial, and outdoor sectors in Pakistan would result in significant direct emission reduction of 13,543 kilotons of CO₂ (ktCO₂). Additionally, the project expected to have direct post-project GHG emissions savings of 3,772 ktCO₂ related to standards and labels policies.

Table 2: Project Expected Outcomes and Outputs

Expected Outcomes	Expected Outputs	Proposed Activities
1.1 National Efficient Lighting Strategy employing an integrated policy approach to phase-out inefficient incandescent lamps and accelerate the transition to light emitting diode (LED) products established.	1.1.1: Draft policies that include minimum energy standards (MEPS) and financial mechanisms developed	1.1.1.1: Preparing a national efficient lighting strategy for Pakistan
	1.1.2: Measuring, Reporting & Verifying (MRV) procedures & methodologies developed	1.1.2.1: Reviewing and developing a detailed measuring, reporting, and verifying MRV strategy for Nationally Appropriate Mitigation Action (NAMA) to attract investors. 1.1.2.2: Supporting the development of an MRV plan that defines the geographical scope, data collection systems, procedures to ensure reliability of data collected, and indicators to track implementation.
	1.1.3: Sources of funding for Pakistan's transition to efficient lighting, such as financing for NAMAs, identified, and solicited	1.1.3.1: Identifying and soliciting potential funders for the NAMA. 1.1.3.2: Disseminating successful results of the pilot demonstration projects to potential funders
2.1 Pakistan's lighting market more compliant with energy efficiency policies and standards developed	2.1.1: Legal and administrative processes to improve compliance with MEPS and labels in Pakistan implemented	2.1.1.1: Establishing a public registry for validating declarations of conformance of lighting products. 2.1.1.2: Strengthening the operational elements to guarantee compliance with lighting MEPS. 2.1.1.3: Enforcing actions against manufacturers, suppliers, or retailers of non-compliant products. 2.1.1.4: Promoting regional cooperation and harmonization of MVE schemes or lighting products.
	2.1.2: Technical training and other support to market control authorities and customs provided	2.1.2.1: Designing and implementing capacity building programme/s of government agencies and practitioners in implementation of MVE activities.
	2.1.3: Capacity of national laboratories to verify compliance with standards including for LEDs and controls strengthened	2.1.3.1: Enhancing capacity of national laboratories in testing CFLs, TFLs, LEDs and controls. 2.1.3.2: Building capacity of laboratory personnel in testing and evaluation of CFLs, TFLs, LEDs and controls according to international standards.

Expected Outcomes	Expected Outputs	Proposed Activities
3.1 Revolving loan fund (RLF) established, and loans disbursed	3.1.1: Existing RLFs, sample application forms and program guidelines analyzed	3.1.1.1: Conducting analysis and preparatory studies to understand operations of the existing RLF. 3.1.1.2: Identifying financial and technological barriers for efficient lighting financing under the existing RLF.
	3.1.2: Administrative and operational procedures for the RLF developed	3.1.2.1: Developing overall framework, strategy, procedures, and eligibility. requirements for "Lighting Funding Window" 3.1.2.2: Recommending the criteria for qualified efficient lighting technologies, and for viable efficient lighting projects. 3.1.2.3: Developing relevant. documentation for loan applications.
	3.1.3: Committee to review loan applications and to determine other administrative needs formed	3.1.3.1: Establishing a committee to support review of loan applications and implementing a capacity development program. 3.1.3.2: Supporting on-lending entities to review and approve loan applications. (e.g., pilot projects under Component 4)
4.1 Greater market penetration of LEDs through increased awareness of the benefits by consumers and key stakeholders (e.g., building managers, lighting designers and policymakers) achieved	4.1.1: Communication campaigns to demonstrate to select audiences the potential of LEDs and controls implemented	4.1.1.1: Identifying appropriate LED products, key target audiences and communication messages, and planning of targeted communication campaigns on LEDs and controls. 4.1.1.2: Based on gender analysis, identifying appropriate gender sensitive communication messages and target groups. 4.1.1.3: Implementing communication campaigns on LED lighting and control systems. (Including disseminating results of pilot demonstration programs)
	4.1.2: Design & evaluation of pilot demonstration program/s for local appropriate LEDs and lighting controls in high profile locations and for disadvantaged populations implemented and supported	4.1.2.1: Identifying and designing efficient lighting demonstration projects including MRV activities. (Identifying at least 9 pilot sites and conducting lighting audits) 4.1.2.2: Supporting development of technical specifications, procurements, and installation of high-quality energy efficient lighting products. 4.1.2.3: Supporting conduct of MRV activities for the pilot projects.

Expected Outcomes	Expected Outputs	Proposed Activities
	4.1.3: Building managers and lighting designers on installation of LED systems and controls trained	4.1.3.1: Designing and implementing capacity building program/s for building managers and lighting designers on implementation of LED systems and controls.
	4.1.4: Pilot demonstration installed and operationalized	4.1.4.1: Procuring, installing, and testing efficient lighting products in the 9 pilot demonstrations. 4.1.4.2: Developing specific guidance on how to properly collect and handle spent LED lamps for local level (i.e., towns/municipalities), according to the National Efficient Lighting Strategy and international best practices and properly communication the guidance to the public.
	4.1.5: Gender analysis & mainstreaming in Outputs 4.1.1, 4.1.2, & 4.1.3 conducted.	4.1.5.1: Gender assessment & formulation of Gender Action Plan.

Source: Project Document

3.3 Stakeholders

32. The project engaged numerous organizations during the implementation of various project activities. These stakeholders have been divided into four groups based on their power to influence and their level of interest. Stakeholders who were more closely involved in implementing the project or its components are identified as 'Main partners' and typically had both high power and high interest in the project. The organizations identified below as 'partners' are organizations that may not be directly managing the project (low power) but whose collaboration was required for specific activities and for whom the project presents a strategic interest. Other organizations were affected by or participated in the project but do not have important stakes in it.

33. The Design also incorporated gender mainstreaming as the Project proposed to track gender of participants in stakeholder groups, workshops, task forces, project oversight committees, and more. Moreover, the design proposed to highlight Gender as a topic in project team and stakeholder meetings. Table 03 shows a list of project stakeholders engaged by the project.

Table 3: Project Stakeholders

Stakeholder	Role in Project	Level of Power	Level of Interest
GEF	Donor Agency	High	High
UNEP: GEF Climate Change Mitigation Unit, Mitigation Branch	Implementing Agency	High	High

Stakeholder	Role in Project	Level of Power	Level of Interest
National Energy Efficiency and Conservation Authority (NEECA)	Lead Executing Agency	High	High
United 4 Efficiency (U4E)	Co-Executing Agency	High	High
International Institute for Energy Conservation (IIEC)	Co-Executing Agency	High	High
Pakistan Standards and Quality Control Authority (PSQCA)	Government Agency	High	High
Ministry of Science and Technology (MOST)	Government Ministry	High	High
Ministry of Climate Change (MOCC)	Government Ministry	High	High
Pakistan Electric Measurement Test Laboratory	Government Agency	High	High
Federal Board of Revenue (FBR)	Government Agency	High	Low
Pakistan Customs	Government Agency	High	Low
Center for Energy Research and Development (CERAD)	Research Institute	Low	High
Pakistan Council of Scientific & Industrial Research (PCSIR)	Research Institute	Low	High
Quaid e Azam University (QAU)	Co-Financer	Low	High
National University of Science and Technology (NUST)	Project Beneficiary	Low	High
Image Pakistan	Borrower of RGF	Low	High
Habib Bank Limited (HBL)	Financial Institution	Low	High
Bank of Punjab (BoP)	Financial Institution	Low	High
Askari Commercial Bank Limited	Financial Institution	Low	High
Faysal Bank Limited (FBL)	Financial Institution	Low	High
ORIX Modaraba	Financial Institution/Lender for RGF	Low	High
Lighting manufacturers, importers, distributors, and retailers		Low	High

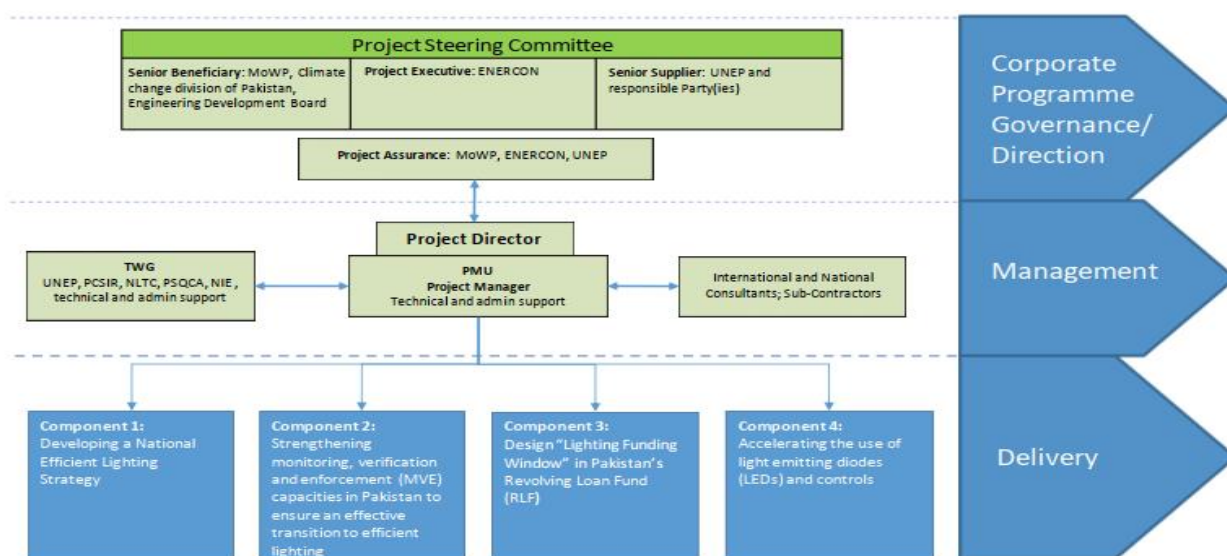
3.4 Project Implementation Structure and Partners

34. The project was implemented by UNEP's GEF Climate Change Mitigation Unit, Mitigation Branch (i.e., the Implementing Agency), within the Climate Change Division. The Unit was tasked with overseeing the successful achievement of the project objectives.
35. The National Energy Efficiency and Conservation Authority (NEECA) was the lead executing agency, whereas the United for Efficiency (U4E) served as the co-executing agency for the project. Their responsibilities included: Proper achievement of the objectives of the project; monitoring of the project outputs and outcomes; effective use of both international and national resources allocated to it; timely availability of financing to support project implementation; proper coordination among all project

stakeholders; in particular national parties; and timely submission of all project reports, including work plans and financial reports.

36. The project implementation arrangements consisted of several key components. Firstly, there was a National Project Director (NPD), a high-ranking official appointed by the Ministry of Water and Power (MoWP), who was responsible for overseeing the Project on behalf of the National Government⁶. Secondly, a Project Steering Committee (PSC) was established, comprising representatives from MoWP, the Government of Pakistan (GoP), the Climate Change Division of Pakistan, NEECA, UNEP, Engineering Development Board (EDB), PCSIR (Pakistan Council of Scientific and Industrial Research), and various stakeholders including industry representatives, NGOs, and others. Thirdly, a Project Implementation Unit (PMU) was formed, which included a Project Manager, Technical Advisors, Professional and support staff, as well as short-term international and national consultants who assisted in implementing project activities. Additionally, NEECA established a Technical Directorate with two Sub-Directorates overseeing the electrical appliances from the product side as well as the industry. Lastly, a Technical Working Group (TWG) was established, composed of government entities participating in the PSC, power distribution utilities, ESCOs Association, private sector representatives (manufacturers, importers/distributors, and retailers), consumer organizations, universities/institutes, and NGOs.

Figure 1: Organogram of the Project with key project key stakeholders



Source: Project Document

3.5 Changes in Design During Implementation

37. The Project underwent some key modifications over the course of implementation. In December 2018, the U4E was brought on as a co-executing agency to strengthen the technical support for the Executing Agency, NEECA, since NEECA at that time was

⁶ The First NPD had joint responsibility. He was secy MOWP and also held Charge of NEECA. When a full time NEECA CMD was recruited the Ministry made him the NPD, as the position reported to the Secy MOWP. Thus, MOWP was indirectly overseeing the project and CMD NEECA was directly responsible.

facing challenges in hiring international consultants. The inclusion of U4E also necessitated a budget reallocation. Accordingly, the budget for NEECA as the Project EA was decreased by USD 580,500, with these funds being redirected to support U4E's involvement.

38. Another major change during implementation was the Project's implementation period. The Project received two no-cost extensions, first in March 2020 and then again in November 2021. In total, the project originally planned implementation period of three years was extended to more than five years. The initial 16-month extension was due to the delay in hiring a Project Manager. Whereas, the subsequent 12-month extension accounted for unforeseen challenges posed by the COVID-19 pandemic, which significantly impacted work activities during the first extension period.

3.6 Project Financing

Table 4: GEF Grant Planned Budget & Expenditure

Project Component	Planned Budget (USD)	Expenditure as of 30 Sep 2022 (USD)
Component 1 (National EE Lighting Strategy)	281,548	266,212
Component 2 (Compliance with EE Policies and Standards)	263,518	173,075
Component 3 (Revolving Loan Fund)	578,586	223,195
Component 4 (Consumer and Stakeholder Awareness)	265,743	212,797
M&E	25,000	
PMC	161,105	150,637
Totals	1,575,500	1,025,916

Table 5: Co Financing

Co-financing (Type/Source)	UNEP own Financing (US\$1,000) ⁷		Government ⁸ (US\$1,000)		Other* (US\$1,000)		Total (US\$1,000)		Total Disbursed (US\$1,000)
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	
In-kind support	25	-	4,611	2,050	1,150	-	5,786	2,050	2,050
Totals	25		4,611	2,050	1,150		5,786	2,050	2,050

⁷ At the time of submission of this report, UNEP had not shared the co-financing letter with the Evaluation.

⁸ ENERCON and Energy Conservation Fund, PCSIR, Ministry of Climate Change, Quaid-i-Azam University, Shaheen Foundation PAF, NUST, and HITEC University.

4 THEORY OF CHANGE AT EVALUATION

39. The ProDoc contained a Theory of Change (ToC) figure; however, it was found to be missing several key elements. After a comprehensive examination and analysis of the provided ToC, the evaluator reconstructed the theory as part of the inception report. This reconstructed ToC not only rectified the shortcomings but also provided a clear and comprehensive overview of the project's impact pathways. The reconstructed ToC is presented in Figure 02.
40. In comparison, the main differences between the ProDOC and reconstructed ToC are as follows:
- a. Revised wording of the outputs and objective as per the UNEP Glossary of Results Definitions;
 - b. Inclusion of assumption related to Pakistan's Revolving Loan Fund under Component 3 and inclusion of assumption under output 4 that the pilot programs are tailored to local context and needs;
 - c. Inclusion of driver related to international market forces impacting the use of energy efficient lighting and contributing to GHG emissions in Pakistan;
 - d. Similarly, under output 3 inclusions of driver on the government support to facilitate lighting-specific financing and demand for EE lighting attracts financing;
 - e. Inclusion of assumption that in addition to energy efficient lighting, energy efficient electronics, adoption of solar energy, etc., etc. can also contribute to reduction of GHG emissions;
 - f. Inclusion of drivers reflecting gender mainstreaming in energy sector by promoting energy efficient lighting to improve women's security and economic conditions and that partnerships with various stakeholders enable LED system pilot demonstrations, driving broader adoption through diverse setting showcases.
 - g. As the Results Framework is reliant on a cascading link between the Components, the reconstructed ToC now includes an assumption that successful implementation is dependent on how effective the preceding component was.
41. The overall causal linkages from outputs to components and intermediate state were clearly defined and coherent, and therefore remain unchanged in the reconstructed ToC. However, outcomes have been included in the reconstructed ToC. Moreover, the reconstructed ToC puts emphasis on results and therefore activity level information is omitted.
42. The output 4.1.2 was split into 2 outputs with their associated activities and deliverables from Annex I in the ProDoc.
43. The project outputs were organized across four components, which led to four expected outcomes, as elaborated below.

44. The reconstructed ToC was developed in column form to reflect the understanding that a select driver and/or assumption could have an impact on more than one intermediate state.

- a. Outputs 1.1.1 to 1.1.3 related to development of policies that include minimum energy standards (MEPS); methodologies developed for measuring, reporting, and verifying (MRV); and sources of funding identified for NAMAs. These outputs would lead to outcome 1 and development of the National Efficient Lighting Strategy which would integrate policies aimed at replacing inefficient incandescent lamps with LED products. For this transition to be effective, key drivers and assumptions must align. A primary driver is the government's commitment to enforcing the MEPS and supporting LED adoption. Whereas primary assumptions are that there are adequate resources for implementing MRV and financial resources are available for NAMAs. Additionally, stakeholder consensus and public support for energy-efficient lighting are essential.
- b. Outputs 2.1.1 to 2.1.3 related to legal tools that ensure compliance with MEPS; delivery of technical trainings; and improved capacities of national laboratories to comply with standards including for LEDs. These outputs would contribute to Outcome 2 which focuses on making Pakistan's lighting market more compliant with energy efficiency policies and standards developed. To transition from Outputs 2.1.1 to 2.1.3 to Outcome 2, key drivers and assumptions include effective implementation and enforcement of MEPS legal tools, stakeholders' alignment with energy efficiency standards, and the assumption that trained personnel and national laboratories will actively apply their enhanced skills and capacities.
- c. Output 3.1.1 to 3.1.3 related to analysis of existing RLFs; developing administrative and operational procedures for RLF; and committee formation to review loan applications. These outputs would relate to Outcome 3, establishing RLF and disbursement of loans. To transition from Outputs 3.1.1-3.1.3 to Outcome 3, key drivers and assumptions must be in place. A crucial driver is the availability of detailed data on existing RLFs, informing the development of effective administrative procedures for the new RLF. The expertise and dedication of the loan application review committee is another essential driver, ensuring decisions align with project goals. Whereas assumptions include a consistent demand for energy-efficient lighting, and the adaptability of the RLF's administrative procedures to market and beneficiary needs. Additionally, we assume ongoing support from government and financial institutions, vital for establishing and running the RLF.
- d. Output 4.1.1 to 4.1.6 highlighted communication campaigns to further the use of LEDs; design and evaluation of pilot demonstration programs; trainings of building managers and lighting designers; installation and operationalization of pilot demonstration programs; and gender mainstreaming. These outputs support Outcome 4, which relates to improved market penetration of LEDs through awareness building activities. To transition from Outputs 4.1.1 to 4.1.5 to Outcome 4, key drivers and assumptions include the government's strong commitment to energy efficiency, sustained private sector interest in energy-efficient lighting, effective gender mainstreaming in lighting projects, tailored and successful pilot demonstration programs, adequate financial incentives,

and robust partnerships with various stakeholders. These factors are essential for the successful adoption of LEDs, ensuring that the communication campaigns, training initiatives, and pilot programs translate into improved market penetration of LEDs, contributing to the reduction of GHG emissions in Pakistan.

45. The project's outcomes, such as the adoption of a national efficient lighting strategy, compliance with energy efficiency policies, establishment of a revolving loan fund, and increased market penetration of LEDs, serve as foundational steps. These outcomes are expected to lead to intermediate states like enhanced market efficiency, improved consumer awareness, and increased access to energy-efficient lighting solutions. This sequence relies on assumptions such as effective policy implementation, market readiness, and consumer willingness to adopt new technologies. The long-term impact intended is a reduction in energy consumption and associated environmental impacts in Pakistan. This impact is driven by widespread adoption of efficient lighting, underpinned by supportive policies, market transformation, and financial mechanisms. The success of this pathway hinges on the continuous engagement of stakeholders, effective policy enforcement, and the sustainability of financial support mechanisms.
46. The evaluator also observed that the original outcome and output statements were not in line with the UNEP Glossary of results definitions. These statements would benefit from clarifying the intended beneficiaries with supporting indicators that clearly demonstrate the contribution i.e., Specific, Measurable, Achievable, Relevant, Time-bound (SMART). Table 06 provides statements reformulated by the evaluator along with the justification for reformulation.

Table 6: Justification for Reformulation of Results Statements by Terminal Evaluation

Formulation in original project document (s)	Formulation for Reconstructed ToC at Evaluation Inception (RTOC)	Justification for Reformulation
LONG TERM IMPACT		
GHG Emissions reduced	No change	
INTERMEDIATE STATES		
Phase-out of the remaining inefficient lighting technology	Inefficient lighting is phased-out	Revised to reflect a change in condition instead of a process.
Phase-in of efficient lighting solutions such as LEDs and lighting controls	Efficient lighting solutions such as LEDs and lighting controls are phased-in	Revised to reflect a change in condition instead of a process.
Transform the lighting market in Pakistan into a market of efficient and quality lighting products	The lighting market in Pakistan is transformed into a market of efficient and quality lighting products.	Revised to reflect a change in condition instead of a process.
PROJECT OUTCOMES		
Outcome 1: National Efficient Lighting Strategy employing an integrated policy approach to phase- out inefficient	Outcome 1: Adoption of a National Efficient Lightning Strategy employing an integrated policy approach to phase out inefficient	Outcome 1 description has been revised to reflect UNEP Glossary of Results Definitions by including the intended beneficiaries.

Formulation in original project document (s)	Formulation for Reconstructed ToC at Evaluation Inception (RTOC)	Justification for Reformulation
incandescent lamps and accelerate the transition to light emitting diode (LED) products established	incandescent lamps and accelerate the transition to light emitting diode (LED) products by public and private sector consumers across Pakistan.	
Outcome 2: Pakistan's lighting market more compliant with energy efficiency policies and standards developed	Outcome 2: Pakistan's lighting market is more compliant with energy efficiency policies and standards developed through strengthening of MVE capacities.	Outcome 2 description has been revised to reflect UNEP Glossary of Results Definitions by including the 'changes in institutions or behaviours, attitude or condition'.
Outcome 3: Revolving loan fund established, and loans disbursed	Outcome 3: Revolving loan fund established, and loans disbursed to enable borrowers, including private sector and national institutions (i.e., government banks, private banks, leasing companies, microfinance institutions) to retrofit or purchase energy efficient lighting and to help address the high initial cost of efficient lighting products.	Outcome 3 description has been revised to reflect UNEP Glossary of Results Definitions by including the beneficiaries and changes in institution, as per the following: 'changes in institutions or behaviours, attitude or condition'. Outcomes are the use (i.e., uptake, adoption, application) of an output by intended beneficiaries, observed as changes in institutions or behavior, attitude or condition.'
Outcome 4: Greater market penetration of LEDs through increased awareness of the benefits by consumers and key stakeholders (e.g., building managers, lighting designers and policymakers) achieved	Outcome 4: Greater market penetration of LEDs through increased awareness of the benefits by consumers and key stakeholders (e.g., building managers, lighting designers and policymakers) achieved in Pakistan.	As this project is being implemented in Pakistan, descriptions of outcome have been revised to be uniform.
OUTPUTS		
1.1.1: Draft policies that include minimum energy standards (MEPS) and financial mechanisms developed	1.1.1: Draft policies that include minimum energy standards (MEPS) and financial mechanisms developed to guide lighting manufacturers, importers, distributors, and retailers; and testing laboratories and technical institutions	Output 1.1.1 descriptions has been revised to adhere with UNEP Glossary of Results Definitions where the 'intended beneficiary/user' is stated.
1.1.2: Measuring, Reporting & Verifying (MRV) procedures &	1.1.2: Measuring, Reporting & Verifying (MRV) procedures &	Output 1.1.2 descriptions has been revised to adhere

Formulation in original project document (s)	Formulation for Reconstructed ToC at Evaluation Inception (RTOC)	Justification for Reformulation
methodologies developed	methodologies developed for Government of Pakistan	with UNEP Glossary of Results Definitions where the ‘intended beneficiary/user’ is stated. “Upon completion of the National Efficient Lighting Strategy, the project will support Pakistan to revise its UNFCCC registered Nationally Appropriate Mitigation Action (NAMA) for efficient lighting. Presently this NAMA lacks a detailed measuring, reporting, and verifying (MRV) strategy, which is essential for a NAMA to attract investors.”
1.1.3: Sources of funding for Pakistan’s transition to efficient lighting, such as financing for NAMAs, identified, and solicited	1.1.3: Sources of funding for Pakistan’s transition to efficient lighting, such as financing for NAMAs, identified, and solicited and made available to investors.	Output 1.1.3 descriptions has been revised to adhere with UNEP Glossary of Results Definitions where the ‘intended beneficiary/user’ is stated. “Upon completion of the National Efficient Lighting Strategy, the project will support Pakistan to revise its UNFCCC registered Nationally Appropriate Mitigation Action (NAMA) for efficient lighting. Presently this NAMA lacks a detailed measuring, reporting, and verifying (MRV) strategy, which is essential for a NAMA to attract investors.” Outputs are not changes to beneficiaries, they are the availability of new products or services made to beneficiaries
2.1.1: Legal and administrative processes to improve compliance with MEPS and	2.1.1: Legal and administrative processes implemented for the Government of Pakistan to	Output 2.1.1 descriptions has been revised to adhere with UNEP Glossary of

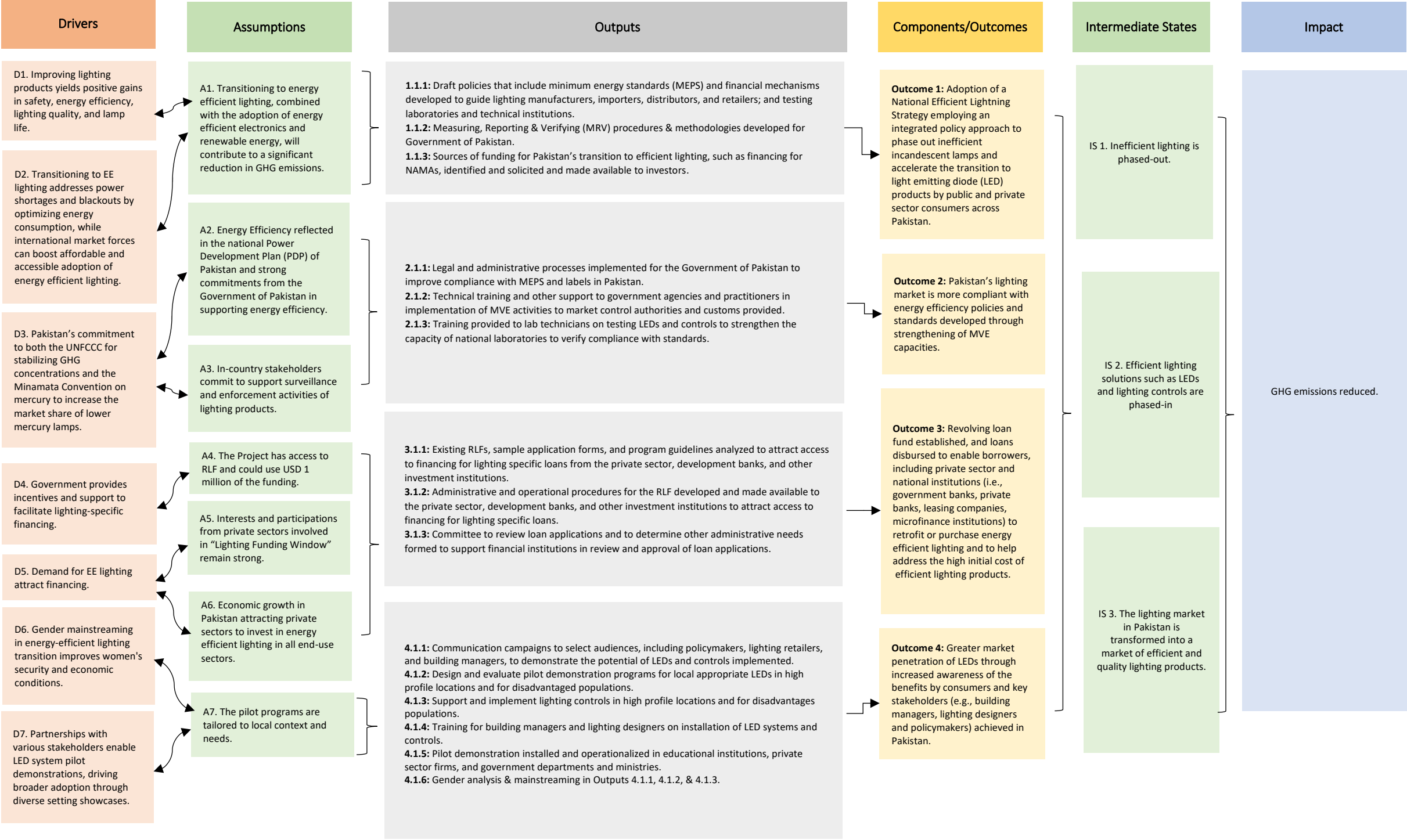
Formulation in original project document (s)	Formulation for Reconstructed ToC at Evaluation Inception (RTOC)	Justification for Reformulation
labels in Pakistan implemented	improve compliance with MEPS and labels in Pakistan	Results Definitions where the ‘intended beneficiary/user’ is stated. Please refer to the following three activities: 2.1.1.2: Strengthening the operational elements to guarantee compliance with lighting MEPS. 2.1.1.3: Enforcing actions against manufacturers, suppliers, or retailers of non-compliant products. 2.1.1.4: Promoting regional cooperation and harmonization of MVE schemes for lighting products. Outputs are not changes to beneficiaries, they are the availability of new products or services made to beneficiaries
2.1.2: Technical training and other support to market control authorities and customs provided	2.1.2: Technical training and other support to government agencies and practitioners in implementation of MVE activities to market control authorities and customs provided	Output 2.1.2 descriptions has been revised to adhere with UNEP Glossary of Results Definitions where the ‘intended beneficiary/user’ is stated. Please refer to Activity 2.1.1.3: Enforcing actions against manufacturers, suppliers, or retailers of non-compliant products.
2.1.3: Capacity of national laboratories to verify compliance with standards including for LEDs and controls strengthened	2.1.3: Training provided to lab technicians on testing LEDs and controls to strengthen the capacity of national laboratories to verify compliance with standards.	Output 2.1.3 descriptions has been revised to adhere with UNEP Glossary of Results Definitions where the ‘intended beneficiary/user’ is stated. Please refer to Activity 2.1.3.1: Enhancing capacity of national laboratories in testing CFLs, TFLs, LEDs and controls. And Activity 2.1.3.2: Building capacity of

Formulation in original project document (s)	Formulation for Reconstructed ToC at Evaluation Inception (RTOC)	Justification for Reformulation
		laboratory personnel in testing and evaluation of CFLs,TFLs, LEDs and controls according to international standards.
3.1.1: Existing RLFs, sample application forms and program guidelines analyzed	3.1.1: Existing RLFs, sample application forms, and program guidelines analyzed to attract access to financing for lighting specific loans from the private sector, development banks, and other investment institutions	Output 3.1.1 descriptions has been revised to adhere with UNEP Glossary of Results Definitions where the ‘intended beneficiary/user’ is stated. Please refer to Component 3 description from CEO ENDORSEMENT DOCUMENT, stating: “The design of the lighting funding window will address those identified barriers, and the objective of the design of the “Lighting Funding Window” of the RLF is to attract access to financing for lighting specific loans from the private sector, development banks and other investment institutions”
3.1.2: Administrative and operational procedures for the RLF developed	3.1.2: Administrative and operational procedures for the RLF developed and made available to the private sector, development banks, and other investment institutions to attract access to financing for lighting specific loans	Output 3.1.2 descriptions has been revised to adhere with UNEP Glossary of Results Definitions where the ‘intended beneficiary/user’ is stated. Please refer to Component 3 description from CEO ENDORSEMENT DOCUMENT, stating: “The design of the lighting funding window will address those identified barriers, and the objective of the design of the “Lighting Funding Window” of the RLF is to attract access to financing for lighting specific loans from the private sector, development banks

Formulation in original project document (s)	Formulation for Reconstructed ToC at Evaluation Inception (RTOC)	Justification for Reformulation
		and other investment institutions". The revision now adheres to the cause-and-effect relationship.
3.1.3: Committee to review loan applications and to determine other administrative needs formed	3.1.3: Committee to review loan applications and to determine other administrative needs formed to support financial institutions in review and approval of loan applications.	Output 3.1.3 descriptions has been revised to adhere with UNEP Glossary of Results Definitions where the 'intended beneficiary/user' is stated. Please refer to Component 3 description from CEO ENDORSEMENT DOCUMENT, stating: "The project will establish a committee to review loan applications, determine other administrative needs, and provide support to the financial institutions in review and approval of loan applications."
4.1.1: Communication campaigns to demonstrate to select audiences the potential of LEDs and controls implemented	4.1.1: Communication campaigns to select audiences, including policymakers, lighting retailers, and building managers, to demonstrate the potential of LEDs and controls implemented	Output 4.1.1 descriptions has been revised to adhere with UNEP Glossary of Results Definitions where the 'intended beneficiary/user' is stated. Please refer to Component 4 description from CEO ENDORSEMENT DOCUMENT, stating: "The campaign will target key groups including policymakers, lighting retailers, and building managers"
4.1.2: Design & evaluation of pilot demonstration program for local appropriate LEDs and lighting controls in high profile locations and for disadvantaged populations implemented and	4.1.2: Design and evaluate pilot demonstration programs for local appropriate LEDs in high profile locations and for disadvantaged populations.	This output could be broken up into 2 outputs with their associated activities and deliverables from Annex I in the ProDoc.

Formulation in original project document (s)	Formulation for Reconstructed ToC at Evaluation Inception (RTOC)	Justification for Reformulation
supported	4.1.3: Support and implement lighting controls in high profile locations and for disadvantages populations.	
4.1.4: Building managers and lighting designers on installation of LED systems and controls trained	4.1.4: Training for building managers and lighting designers on installation of LED systems and controls	
4.1.5: Pilot demonstration installed and operationalized	4.1.5: Pilot demonstration installed and operationalized in educational institutions, private sector firms, and government departments and ministries.	Output 4.1.4 descriptions has been revised to adhere with UNEP Glossary of Results Definitions where the 'intended beneficiary/user' is stated. Please refer to proposed recipients of pilot demonstrations under Component 4 of the CEO ENDORSEMENT DOCUMENT.
4.1.6: Gender analysis & mainstreaming in Outputs 4.1.1, 4.1.2, & 4.1.3.	No Change in reconstructed ToC	

Figure 2: Reconstructed Theory of Change at Evaluation



5 EVALUATION FINDINGS

5.1 Strategic Relevance

5.1.1 Alignment to UNEP MTS, POW, and Strategic Priorities

47. At the time of its design, the Project was in line with the **UNEP Medium-Term Strategy (MTS) and Programme of Work (POW) of 2014- 2017** as it aligned with the strategic focus on Climate Change and Resource Efficiency. More specifically, the Project was found to be consistent with the **second Expected Accomplishment (EA) 2** under Climate Change focus, which stated 'Energy efficiency is improved, and the use of renewable energy is increased in partner countries to help reduce greenhouse gas emissions and other pollutants as part of their low emission development pathways'. Additionally, the Project was also in line with **EA 3** under the Resource Efficiency focus, which aimed to 'create enabling conditions for promoting more sustainable consumption choices and lifestyles.
48. The Project was also found to be in line with **UNEP's MTS 2018-2021 and POW** which focused on several priority areas, including climate change, resource efficiency, and ecosystem management. The Project's aims of promoting energy efficiency and sustainable consumption patterns through the adoption of efficient lighting solutions aligned with UNEP's priority of addressing climate change and promoting resource efficiency. By reducing electricity consumption and greenhouse gas emissions through the phase-out of inefficient incandescent lamps and the promotion of energy-efficient alternatives, the Project contributed to UNEP's goals of mitigating climate change and achieving sustainable development.
49. Furthermore, the Project was found to be consistent with **UNEP's strategic priorities** by addressing multiple areas of concern. Firstly, it contributed to the priority of achieving sustainable consumption and production patterns by promoting energy-efficient lighting solutions. By reducing electricity consumption in various sectors, the Project supported the goal of sustainable and modern energy consumption and production. Secondly, the Project's explicit gender-related outputs aligned with UNEP's priority of achieving gender equality and empowering women and girls.
50. The Project supported **UNEP's strategic priority** of promoting inclusive economic growth through the development of sustainable livelihoods. It contributed to Pakistan One United Nations Programme 2013-2017, "**Outcome 2.2: Industrial development, both urban and rural priorities**" by instituting efficient lighting policies and creating a framework for meeting energy efficiency standards in specific sectors.
51. The Project aligned with UNEP's leadership in the area of advanced lighting and appliance efficiency, as part of the **Sustainable Energy for All (SE4All) initiative**, which focuses on three core goals of 2030: universal access to modern energy; doubling the global rate of improvement in energy efficiency; and increasing renewable energy use worldwide. By advancing lighting and appliance efficiency, the project directly supports SE4All's objective of enhancing energy efficiency. The project's goals are also in congruence with UNEP's goal of doubling the rate of energy efficiency

improvement by 2030 and its role in the **GEF en.lighten initiative** to phase out inefficient incandescent lamps.

Rating for Alignment to UNEP MTS, POW, and Strategic Priorities: Highly Satisfactory

5.1.2 Alignment to GEF/Donor Strategic Priorities

52. The Project also aligned with **GEF's climate change focal area** objectives, particularly Common Carbon Metric (CCM) **CCM-1 and CCM-2**. Objective CCM-1 focuses on the promotion, demonstration, deployment, and transfer of innovative low-carbon technologies, including high-efficiency and usage-controlling lighting technologies. The Project's emphasis on efficient lighting solutions, such as LED lamps and luminaires, was consistent with this objective. The Project's focus on energy-efficient lighting in various sectors and industries also supported Objective CCM-2 which aims to promote market transformation for energy efficiency in industry and buildings.
53. The Project also aligned with strategic objectives of key partners, including NEECA and U4E. For example, NEECA has a focus on energy conservation activities across different sectors of the economy. NEECA places added emphasis on development of technologies and pilot demonstrations to promote specific energy conservation options. Similarly, U4E assists developing countries to move their markets to energy efficient appliances and equipment.

Rating for Alignment to UNEP/GEF/Donor Strategic Priorities: Highly Satisfactory

5.1.3 Relevance to Global, Regional, Sub-regional and National Priorities

54. At the Global level, the Project's objective to improve energy efficiency and reduce CO2 emissions aligned with the goals of the Paris Agreement, which aims to limit global warming by reducing greenhouse gas emissions. The Project also supported Pakistan's Nationally Determined Contributions (NDCs) by focusing on energy efficiency, which are essential to Pakistan's efforts to meet its commitments under the Paris Agreement. Moreover, the Project aimed to promote the transfer of low-carbon technologies and energy efficiency, which are key elements of the Kyoto Protocol.
55. The Project also aligned with various Sustainable Development Goals (SDGs), including Goal 7: Ensure access to affordable, reliable, sustainable, and modern energy for all; Goal 11: Make cities inclusive, safe, resilient, and sustainable" under the theme of sustainable cities and communities; Goal 12: Ensure sustainable consumption and production patterns in terms of responsible consumption and production. Furthermore, due to its explicit focus on gender-related outcomes, the Project had the potential to contribute to the achievement of Goal 5: Achieve gender equality and empower all women and girls.
56. The Project was also found to be in line with Pakistan's key policy frameworks, notably the National Energy Conservation Policy of 2006 and the National Climate Change Policy of 2012, which emphasize energy conservation, efficiency, and CO2 emissions reduction. Additionally, the Project supported the objectives of the EE&C Bill - 2015, National Energy Efficiency & Conservation Act 2016 and National Energy Efficiency and Conservation Policy (2023) a legislative development focusing on energy conservation and efficient use.

57. Pakistan's growing energy demand and its impact on greenhouse gas emissions made this Project particularly relevant and timely in the national context. By promoting energy-efficient lighting solutions, the Project also directly addressed Pakistan's severe energy crisis, which was characterized by substantial energy deficits and frequent blackouts. At the time of the Project design, this transition was expected to reduce the pressure on the national grid and contribute to the reduction of greenhouse gas emissions in the energy sector.
58. The Project also aligned with the United Nations Development Assistance Framework (UNDAF) "One UN Programme II" for Pakistan, contributing to inclusive economic growth, industrial development, and sustainable energy use. It also addressed the critical aspect of gender mainstreaming in the energy sector, acknowledging the challenges faced by women and aiming to integrate strategies that promote gender equality in energy policies and programs.

Rating for Relevance to Global, Regional, Sub-regional and National Priorities: Highly Satisfactory

5.1.4 Complementarity with Existing Interventions/ Coherence

59. The project demonstrated significant alignment and complementarity with the objectives of the en.lighten project and the Energy Conservation Fund (ECF), particularly in its efforts to promote energy-efficient lighting technologies in Pakistan. The project's focus on developing a national efficient lighting strategy, which included phasing out inefficient incandescent lamps and transitioning to LED products, reflected the en.lighten project's goals of promoting environmentally sustainable lighting solutions.
60. One of the key aspects of this project was the establishment of MEPS for LED lamps and other lighting products. This initiative aligned with the en.lighten project's emphasis on global standards and policies for energy-efficient lighting. The project's successful development and implementation of these standards, in cooperation with the PSQCA, contributed to creating a more regulated and efficient lighting market in Pakistan, a goal shared with the en.lighten initiative.
61. Additionally, the project's efforts to engage with financial institutions for the establishment of a RLF and a RGF for energy-efficient lighting projects was based on the ECF fund's objectives. The ECF fund focused on financing energy conservation projects, and the project's efforts to establish financing mechanisms for energy-efficient lighting aligned with this. While the project faced challenges in setting up the RLF, the establishment of the RGF and its pilot transactions, such as the one with Image Pakistan through Orix Modaraba for replacing old lighting with energy-efficient LEDs, demonstrated a contribution to financing energy-efficient lighting in Pakistan.

Rating for Complementarity with Existing Interventions/ Coherence: Satisfactory

Rating for Strategic Relevance: Highly Satisfactory
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5.2 Quality of Project Design

62. The overall design of the project was found to be well-structured and relevant to the goals and objectives of the project. The project design addressed identified hurdles, such as limited public awareness and knowledge, and lack of favourable policies and regulatory frameworks and also employed a sequential approach of the project components that ensured integration, promoting a cohesive implementation process.
63. In particular, the design strategy comprised of policy-level initiatives, including “The National Efficient Lighting Strategy for Pakistan” (Component 1) and enforcing and ensuring compliance with MEPS for all lighting products (Component 2); and facilitating measures in the form of ‘Revolving Loan Fund’ (Component 3) and pilot demonstration projects to replace inefficient lighting in public buildings and spaces accompanied by advocacy to public sector stakeholders to strengthen the capacities towards implementation of policies focused on energy efficiency and renewable energy. (Component 4). Hence, the design effectively addressed identified hurdles at the macro, meso, and micro levels.
64. The Design also identified linkages between Component, output, and activities. Furthermore, the proposed activities were clearly defined against each of the outputs. Similarly, under Component 4, details of pilot projects were shared, including the location, number of lights to be installed, and whether to carry out an MRV. In some instances, specific sections of the location were also identified for the light installation, for example: A) NUST – Install 782 LED tubes, 859 LED bulbs and controls in the campus hostels; B) HITEC – Install 455 LED tubes, 337 LED bulbs and controls at secretariat block, engineering block hostel, library, etc.; C) Housing Society – Install 15 LED street lighting in two (2) housing societies such as Zedem International and Green Field Developer (Pvt) Ltd etc.
65. The involvement of multiple stakeholders, such as LED lighting manufacturers (CREST Lighting), research institutes (QAU), and international experts (IIEC), in the design of the project helped in ensuring a comprehensive and well-informed approach. This collaborative approach fostered a more holistic understanding of the challenges and opportunities related to energy-efficient lighting, leading to a more effective and sustainable project design.
66. The Design also incorporated gender mainstreaming as the Project proposed to track gender of participants in stakeholder groups, workshops, task forces, project oversight committees, and more. Moreover, the design proposed to highlight Gender as a topic in project team and stakeholder meetings.
67. Physically housing the PMU at ENERCON (now known as NEECA) with recommendation by the MoWP ensured strong government level buy in of the project. To further bolster the work of the PMU, the project via GEF funding proposed to staff short-term international and national consultants to support project implementation.
68. However, while the Project’s proposed design initiating a National Efficient Lighting Strategy, developing an MRV Plan, adhering compliance with MEPS through a public registry database, and pilot demonstrations in commercial buildings and public spaces was well thought out and could be effective in accelerating energy efficient

lighting and reducing GHG emissions, the limited time (36 months) and total budget allotted to the project were not in alignment with this ambitious design strategy. Although the project received two no-cost extensions, this was mostly to accommodate for operational issues such as a late start and COVID-19. Whereas no additional budgetary allocations were made to make adjustments for the said complexity.

69. Furthermore, the project design fell short on developing a well thought out approach for generating financing through Pakistan's Revolving Loan Fund (RLF), under Component 3. In this regard, the project did not adequately factor in the challenges posed to the planned financing mechanism, which eventually proved futile. For example, the design did not include a sector assessment of the national financial landscape, including regulations and practices⁹. Accordingly, the design failed to identify potential challenges (such as banking industry regulations, rise in interest rates, and economic downturns, etc.), corresponding risks, and accompanying mitigation strategies. The Design and Logical Framework clearly identifies potential risks such as 'low level participation from the public sector' and 'weak government support leading to inadequate enforcement of policies/regulations. However, these risks were not factored in when developing the ambitious project timeline.

70. In brief, although comprehensive and multi-faceted, the Project design was highly ambitious in comparison to the time and financial resources available to the Project.

Rating for Project Design: Moderately Satisfactory

5.3 Nature of the External Context

71. The project was implemented in a favorable energy landscape and institutional context. At the project's inception, Pakistan was facing a severe energy crisis, experiencing a 5,000-Megawatt shortfall. Additionally, the majority of lighting lamps in Pakistan were incandescent and Compact Fluorescent Lamps (CFLs), with only a 3 percent market share for energy-efficient LEDs. Despite these conducive conditions, the project encountered external challenges during implementation.

72. The project's performance was significantly impacted by the COVID-19 pandemic from late 2019 to mid-2021. Restrictions on meetings and travel hindered multiple activities, leading to unavoidable delays. The project team had to navigate through pandemic-related uncertainties and limitations, adversely affecting the project's overall progress and timeline.

73. The pandemic also had severe economic implications for Pakistan, posing challenges and financial constraints for businesses to invest in upgradations like energy-efficient lighting. For instance, the Hashoo Group, a major hospitality business and potential borrower against the RLF proposed by the project, faced extensive challenges due to the COVID-19 pandemic. These economic challenges were further compounded by a

⁹ One reason for this oversight is that the PPG did not have enough resources to conduct a thorough analysis, and therefore, the detailed assessment was planned to be carried out in the during project implementation phase.

volatile political situation, weakening currency, and skyrocketing global energy prices, further exacerbating financial constraints faced by the public and private sectors.

74. Furthermore, the project encountered significant challenges due to the worsening economic conditions in Pakistan, including restrictions on imports and the absence of Letters of Credit (LCs). These barriers hindered the importation of energy-efficient lighting products. It is noteworthy that all LED lamp parts are imported from China and assembled in Pakistan, and these difficulties further complicated the project's execution.

Rating for Nature of the external context: Moderately Unfavorable
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5.3.1 Effectiveness Availability of Outputs

75. The presentation of this section has been influenced by the nature of some of the project's record keeping practices that posed challenges to easily align activities with outputs. Outputs and activities were inconsistently listed in different reporting documents, and this prevented seamless tracking and analysis of outputs. For example, the PIRs did not report against the outputs/activities as outlined in the PIF. A major reason for the inconsistency and changes was the revisions made in the list of outputs and activities. As a result, this section lists the outputs under each component as they are presented in the TOC and discusses the extent to which the activities that fall under all the different outputs were produced.

Component 1: Developing a National Efficient Lighting Strategy

76. The outputs under this component are:

- 1.1.1: Draft policies that include minimum energy standards (MEPS) and financial mechanisms developed to guide lighting manufacturers, importers, distributors, and retailers; and testing laboratories and technical institutions
- 1.1.2: Measuring, Reporting & Verifying (MRV) procedures & methodologies developed for Government of Pakistan
- 1.1.3: Sources of funding for Pakistan's transition to efficient lighting, such as financing for NAMAs, identified, and solicited and made available to investors.

77. **Output 1.1.1** entailed six activities, including: 1) undertaking market survey for lighting products in Pakistan (Activity 1.1.1); 2) Developing MEPS and integrating them into LED standards; 3) Developing supporting policies and mechanisms for LEDs; 4) MoCC-led regulatory framework for lighting products; 5) Drafting of national efficient lighting policy and strategy; and 6) Undertaking consultative workshops to finalize the draft strategy.

78. The TE learned that the Project worked early on to complete the market survey in the first year of implementation. Following this, a draft of MEPS was developed in January 2020 and sent to the Pakistan Standards and Quality Control Authority (PSQCA) for integration into the Pakistani standards. This process faced some delays due to COVID-19 restrictions on in-person meetings as the Project was unable to undertake

consultative meetings required with various stakeholders. However, despite the challenges to timeliness, MEPS were successfully adopted and notified by PSQCA in January 2021. However, it is to be noted that at the time of this Evaluation, MEPS still awaited approval from the Federal Cabinet.

79. The Evaluation found that successful adoption of MEPS was strongly attributed to the Project's emphasis on consensus building activities that involved a wide range of stakeholders across the value-chain. In parallel to work on MEPS, the Project also focused on developing supporting policies for promoting LEDs. In 2020, a draft report of the "Supporting Policies and Mechanisms for Energy Efficient Lighting in Pakistan" had been developed. In 2021, the draft policy that was in that report was put forward in a policy workshop conducted by the Ministry of Energy, and the finalized policy was endorsed by NEECA Board during its 6th board meeting held in August 2022. At the time of this Terminal Evaluation, the policy on 'EE Lighting in Pakistan' was awaiting ratification from the Federal Cabinet, a process that has been delayed due to prolonged political transition processes in the country.
80. The Project also worked towards developing an environmentally sound management regulatory framework for lighting products. Towards this, in 2019 an Environmental Sound Management (ESM) consultant and a technical expert were recruited who commenced their activities towards the end of the first year of implementation. In 2020, the consultants put forward a report entitled, "Environmental System for the Collection and Recycling of Used Lamps in Pakistan" and was submitted to NEECA for further review and discussion with contributions from multiple government stakeholders. The review process, led by NEECA, resulted in the decision to hand over the policy to Environmental Protection Agency (EPA). In 2022, EPA presented a policy draft on solid waste management which included components from the Environmental Sound Management (ESM) policy developed under the Project, especially activity 1.1.1.d. The Project reported that in 2023, the Solid Waste Management policy had been approved by the Federal Cabinet.
81. In 2022, a policy document on EE appliances was submitted to the Ministry of Science and Technology (MoST) which also included clauses from "National Efficient Lighting Policy and Strategy". The Project reported that a comprehensive policy on EE appliances has been developed which includes MEPS and MVE process for Lighting, Air Conditioners, Refrigerators, Power Transmission Motors, and Electric Fans; and setting up of Energy Tribunals.
82. The Project was able to only partially complete the MRV process (**under Output 1.1.2**) as it was reliant on information sourced from the Public Registry. This is detailed below under Output 2.1 (paragraph 87).
83. **Output 1.1.3** related to identifying sources of funding. This has been elaborated below under Output 3.1 (paragraphs 94 – 95).
84. In summary, the Evaluation found the Project worked well towards successful development of the MEPS and also contributed to the development of other key national policies on Energy Efficiency. However, the policy on 'EE Lighting in Pakistan' was awaiting ratification from the Federal Cabinet.

Component 2: Strengthening monitoring, verification, and enforcement (MVE) capacities in Pakistan to ensure an effective transition to efficient lighting and compliances of the implemented MEPS levels.

85. The outputs under this component are:

- 2.1.1: Legal and administrative processes implemented for the Government of Pakistan to improve compliance with MEPS and labels in Pakistan.
- 2.1.2: Technical training and other support to government agencies and practitioners in implementation of MVE activities to market control authorities and customs provided.
- 2.1.3: Training provided to lab technicians on testing LEDs and controls to strengthen the capacity of national laboratories to verify compliance with standards.

86. **Output 2.1.1** included four activities, including: 1) Establishing public registry system (PRS) (Activity 2.1.1); 2) Developing an MRV based on the PRS and other available data (Activity 2.1.2); 3) Developing enforcement actions for non-compliant products (Activity 2.1.3); and 4) Promoting regional cooperation for Harmonization System) HS tariff code for lighting products (Activity 2.1.4).

87. In 2019, the Project hired an international expert who conducted the first mission in July 2019 aimed at assessing the current situation of lighting in Pakistan. However, following start of activities by the international expert, the Project faced delays in establishing a PRS due to Covid restrictions on travel and in-person meetings. Following this, in May 2022 the Project awarded a contract for completion of the PRS. The PRS was officially launched in December 2022¹⁰ and in 2023 the Project was undertaking trial runs to test the system. Due to the delays faced in establishing the PRS, the Project was able to only partially complete the MRV process as it was reliant on information sourced from the Public Registry. However, the Evaluation understands that moving forward, inputs from the data collected through the PRS will help to generate projections of the overall impact on reduction in electricity consumption, vis a vis, GHG emission reduction.

88. Partial completion of MRV and delays in establishing Energy Tribunals due to slow engagement processes of government entities such as NEECA and MoST contributed to the weak implementation, which also resulted in the project being unable to develop any enforcement actions for non-compliant products. The Project did manage to submit draft regulations to MoST for implementation through NEECA and provincial governments. However, as of 2023 no Energy Tribunals were set up under the project to enforce actions on non-compliant products.

89. Moreover, the Project also faced delays in promoting regional cooperation on Harmonized System (HS) Codes due to COVID restrictions as the international consultant could not travel and the Project was unable to hold in-person consultative meetings. However, the Project was able to kick start initial exchange of data and

¹⁰ www.neers.com.pk

discussions with Ministry of Commerce, Federal Board of Revenue (FBR), and Pakistan Revenue Automation Limited (PRAL). In 2022, the Project reported progress as PRAL had tentatively agreed to adopt the new HS Code regime, which was subject to approval of Chairman FBR. Also, FBR indicated that implementation of uniform HS Codes would also be subject to approval by the lower house of parliament as it affects revenue collection. The Project reported that Chairman FBR also adopted a consultative process by seeking inputs from other related government departments, including Pakistan Customs, on the impact the new HS Codes can have on tax collection, effect on market prices and potential fluctuation in sales volume. However, despite these prolonged efforts, the Project was unable to create harmonization of HS Codes for lighting products.

90. **Output 2.1.2** included one activity focused on delivering capacity building Programmes for government and industry representatives. The Project was faced with challenges posed by COVID-19 restrictions on in-person meetings. However, the Evaluation found the Project to mitigate these challenges by conducting remote training sessions designed around MVE. Also, separate workshops were conducted from January 2019 to March 2020 on Standard Public Procurement Procedures (SPPP) which focused on informing public and private departments on procurement of MEPs compliant lighting materials. The Project also planned for more refresher and reminder sessions which would also be aimed at reaching more participants. However, the Evaluation is uncertain if these follow up sessions were carried out as they were not reflected in the annual project reporting.
91. **Output 2.1.3** entailed one activity that emphasized on improving capacities of national laboratories in testing CFLs, TFLs, LEDs and controls. The Evaluation found the Project undertook multiple capacity building sessions in this regard. For example, U4E conducted training sessions in two labs in 2019 which were aimed to train technical staff on latest testing methods and evaluating lighting products for compliance with MEPs. Following this, in August 2022 a hands-on capacity building and training sessions was organized in Electrical and Electronics Institute in Thailand. Interviewed trainee institutions reported positive feedback from participation in the training activities and exchange visit to Thailand.

Component 3: Design for a “Lighting Funding Window” in Pakistan’s Revolving Loan Fund (RLF)

92. The outputs under this component are:
- 3.1.1: Existing RLFs, sample application forms, and program guidelines analyzed to attract access to financing for lighting specific loans from the private sector, development banks, and other investment institutions.
 - 3.1.2: Administrative and operational procedures for the RLF developed and made available to the private sector, development banks, and other investment institutions to attract access to financing for lighting specific loans.
 - 3.1.3: Committee to review loan applications and to determine other administrative needs formed to support financial institutions in review and approval of loan applications.

93. **Output 3.1.1** entailed three activities, including: 1) market review of financial institutions (Activity 3.1.1); 2) Develop strategy and administrative and operational procedures, and eligibility requirements for establishing “Lighting Funding Window” (Activity 3.1.2); and 3) Developing documents for extending loans for EE Lighting and organizing workshops for capacity building for lending entities (Activity 3.1.3).
94. The Project undertook an initial market review in 2020 by contacting financing entities of various types, including commercial banks such as Habib Bank Ltd., government-funded cash transfer program: Benazir Income Support Programme (BISP), microfinance institutions and banks such as the National Rural Support Programme (NRSP), leasing companies, and Islamabad Electric Supply Company (IESCO). The market review was completed in 2021 and work on recommendations of International Institute for Energy Conservation (IIEC) was carried out. As of 2023, the Project used the market review as the basis on which the RLF facility was proposed through Habib Bank Limited (HBL) as the on-lending entity.
95. The Project faced delays in developing a strategy for the Lighting Funding Window (LFW) as this could only be done after finalization of market review (Activity 3.1.1). Delays due to COVID-19 also impacted timely implementation of project activities. Further delays were caused with the financial expert leaving. Departure of the financial expert also adversely impacted the Project-developed “Strategy, Administrative and Operational Procedures,” developed in 2021, as the responsibility of evaluating loans and carrying out due diligence was shifted to the financial institutions. The Project faced another setback as the 2022 review of ECF mandate detailed that a Lighting Window could not be created within Energy Conservation Fund (ECF) as was planned at project design. Therefore, it was decided that to create a Risk Guarantee Fund (RGF) fund and establish an RLF with a commercial bank. As of 2023, the Project reported that the RGF was established, and one transaction was enabled in the fund. However, despite efforts by the Project, an RLF with a commercial bank could not be established. Major challenges in the development of RLF included creating a joint understanding with banks on the concept of RLF according to the Project’s proposed approach and the limited value of the RLF (USD 250,00), which was too small to interest commercial banks. Nevertheless, it is important to note that the Project was eventually able to secure a letter of assent from HBL, a major national bank.
96. **Output 3.1.2** contained two activities, including: 1) Develop a pipeline of EE Lighting projects to pilot the RLF (Activity 3.2.1); and 2) Support on lending entities to finance the projects.
97. The Project faced challenges in undertaking Output 3.2 because the activities entailed were heavily reliant on successfully establishing the RLF under Output 3.1. Although, the project was able to obtain a letter of assent from the HBL, the economic situation in the country since COVID-19 which prevented organizations from investing in new projects, the small size of RLF which was insufficient to meet the needs of major organizations that showed any interest in utilizing the RLF, and the effects of import restrictions on the lighting industry which is exclusively import reliant, were all factors that prevented the materialization of any on-lending agreements or the establishment of the RLF.

98. **Output 3.1.3** related to three activities, including: 1) Developing a national LED program (Activity 3.3.1); 2) Conducting workshops to disseminate national LED program; and 3) Developing a GCF proposal for funding.

99. In 2022, the Project reported that NEECA was engaging with all provincially designated energy efficiency and conservation agencies to regulate procurement in compliance with MEPS. In this regard, the Punjab Energy Efficiency and Conservation Agency (PEECA) was the only well-defined agency at the provincial level and was reported to have already adopted MEPS in letter and spirit. Whereas agencies in other provinces were following suit. Towards the end of 2021, the Project was able to establish one showcase transaction involving Image Pakistan Pvt. Ltd. As the borrower, whereas the lender was OLP (formerly ORIX Modarba) and NEECA served as the technical evaluator. Under the Project, Image Pakistan replaced all their conventional lighting with EE lighting based on LEDs. This allowed the Project to showcase EE lighting upgradation to other donors. However, the Project was unable to develop a GCF full proposal for funding as discussions with GCF indicated that only loans could be potentially provided. However, as the Project was unable to secure any support from accredited agencies, GCF funding was not pursued.

100. Based on the latest PIR (July 2022 – June 2023), the Evaluation found that no progress was achieved for activities under Output 3.3.

Component 4: Accelerating the use of light emitting diodes (LEDs) and controls.

101. The outputs under this component are:

- 4.1.1: Communication campaigns to select audiences, including policymakers, lighting retailers, and building managers, to demonstrate the potential of LEDs and controls implemented.
- 4.1.2: Design and evaluate pilot demonstration programs for local appropriate LEDs in high profile locations and for disadvantaged populations.
- 4.1.3: Support and implement lighting controls in high profile locations and for disadvantaged populations.
- 4.1.4: Training for building managers and lighting designers on installation of LED systems and controls
- 4.1.5: Pilot demonstration installed and operationalized in educational institutions, private sector firms, and government departments and ministries.
- 4.1.6: Gender analysis & mainstreaming in Outputs 4.1.1, 4.1.2, & 4.1.3.

102. **Output 4.1.1** pertained to three Activities, including: 1) Identification of appropriate LED products (Activity 4.1.1); 2) Identification of gender appropriate communication messages; and 3) Developing communication materials on LED lighting and control systems.

103. The Evaluation found the Project frequently delivered communication messages that supported the overall project objectives. As of 2022, the Project reported that communication campaign was successfully completed, which emphasized on selecting the right products for making the transition to EE lighting. Moreover,

workshops were conducted highlighting energy conservation, with an added focus to target women. Additional workshops on energy efficiency were conducted separately for NEECA technical staff, representatives of PSQCA, Pakistan Customs, and sellers of LED lighting equipment. Furthermore, lectures on Energy Conservation were conducted in various schools and universities from September 2021 to June 2022. The Project also focused on gendered communication targeted to women consumers, as some of the workshops conducted included more than 90% of women participation. Also, the Project reported that in 2019, three gender-oriented meetings were held and messages targeting women were developed and illustrated on NEECA's Facebook page. The Project also conducted a workshop in May 2022 which included building managers, building administrators, and members of the trade chain. The workshop introduced the participants to pilot demonstration and clearly identified the products of choice for making an effective transition to EE Lighting. However, the impact of these messages on change in attitudes and practices towards EE lighting was not tracked.

104. **Output 4.1.2** entailed four activities, including: 1) Pilot projects for LEDs and lighting controls; 2) Development of Measuring, Reporting and Verifying (MRV) to support pilot projects; 3) Support procurement and installation for pilot demos; and 4) Designing and implementing capacity building programs.

105. At the start of the Project, a total of nine pilot initiatives were identified. However, availability of MEPS compliant (or even improved) lighting products was a major challenge in terms of procurement. Resultantly, in 2021 the Project identified five pilot projects with NEECA, Quaid e Azam University (QAU); Ministry of Climate Change (MoCC); and Ministry of Energy – Power Division. The Project reported that of the five pilots identified, four were Implemented successfully, including: 1) Quaid-i-Azam University Central Library; 2) Quaid-i-Azam University Department of Electronics; 3) NEECA Building; and 4) and CDA Hospital. It should be noted that the Pilot in street lighting of Police Lines, Islamabad was only achieved partially due to challenges in availability of streetlights, as only 20 out of proposed 66 lights were installed. The Evaluation found that the Project worked in a timely fashion as completion of the pilot demonstrations also coincided with the technical closure of the Project. Results from the pilot demonstrations were prepared by IIEC and U4E, which were presented in a workshop for building managers, building administrators, and members of the lighting trade chain. The Evaluation determined that these pilot projects were installed in high profile locations that provide high visibility from a wider array of people. Moreover, locations such as QAU and CDA hospital are publicly funded entities which also cater to marginalized communities from low socio-economic segments of the country.

106. The project faced early delays in developing an MRV as it was directly linked to successful implementation of pilot projects. Resultantly, reporting via MRV began in the last quarter of 2021 aligning with implementation of three pilot demonstrations. In 2022, IIEC and U4E jointly presented a report on the current status of the identified pilot projects. This report also provided the basis for designing the pilot demonstrations relating to the MRV parameters. The Evaluation found that procurement of EE lighting products for pilot demonstration sites was done based on the reports, thereby ensuring compliance with MEPS or above. Moreover, the Project also adhered to the Public Procurement and Regulatory Authority (PPRA) rules when purchasing EE lighting

products for demonstration sites. In particular, the PPRA rules stipulated three quotations were to be sought on specific products and final decision was to be taken based on cost and quality. Furthermore, the Project held capacity building workshops and activities on implementation of LED systems and controls during 2021 to 2022. These trainings were aimed at lighting design and building managers and building inspectors with representation from government departments including Capital Development Authority (CDA), Lahore Development Authority (LDA), and Karachi Development Authority (KDA).

107. **Output 4.1.3** included one activity, Gender assessment & formulation of Gender Action Plan. The Project held multiple consultative sessions with a focus on women participation, while ensuring a minimum of 30% female participation from both household and professional women. Feedback from the sessions informed the Gender Action Plan (GAP) which was further used as a tool to improve later sessions and design communication tools targeting female audiences.

Rating for Availability of Outputs: Moderately Satisfactory

5.3.2 Achievement of Project Outcomes

Outcome 1.1: National Efficient Lighting Strategy employing an integrated policy approach to phase- out inefficient incandescent lamps and accelerate the transition to light emitting diode (LED) products established			
Indicator	Baseline	End of Project Target	Results Achieved
National Efficient Lighting Policy and Strategy document developed and approved	0	1 (Yes) by 2017	In 2020, the Report on Policy support was submitted to NEECA for approval. The policy presented in that was subsequently accepted by NEECA in 2022 Indicator Achieved
MEPS for lighting products developed and approved	1 (MEPS for CFLs)	3 (Yes) by 2022 MEPS for TFL • MEPS for LED lamps • MEPS for LED tubes	In 2021, MEPS were adopted by PSQCA. Following which MEPS were included in the new public procurement guidelines by the Government of Punjab. As of 2022, the Federal Government has made declaration to ban the incandescent lamps in Pakistan. Indicator Achieved.
Monitoring, Verification and Enforcement (MVE) regulatory	0 (None)	1 by 2022	A capacity building lab study tour was held in Electrical and Electronics Institute (EEI) of Thailand in August 2022. A Project Registration System

Outcome 1.1: National Efficient Lighting Strategy employing an integrated policy approach to phase- out inefficient incandescent lamps and accelerate the transition to light emitting diode (LED) products established			
Indicator	Baseline	End of Project Target	Results Achieved
framework developed and approved			(PRS), which forms the backbone of MVE was launched in December 2022. Indicator Partially Achieved.
Environmentally sound management regulatory framework for lighting products developed and approved	No	1 by 2022	In 2022, Solid Waste management Policy, including specific clauses for Waste Electrical and Electronic Equipment (WEEE) was finalized and submitted. The policy was subsequently approved by the Federal Cabinet in 2023. Indicator Achieved.
MRV procedures and methodology developed and adopted, including gender aspects	No	Yes	Capacity building of representatives from FBR, Pakistan Customs, and PRAL were conducted in 3rd quarter of 2021. As of 2022, No separate MRV procedure has been prepared or developed. Indicator Partially Achieved.
Funding sources for Pakistan's transition to efficient lighting identified, and fund allocated	No	At least one potential funder to commit funding allocation to the project; At least potential financing for NAMA identified	A proposal for NAMA Facility was prepared but was not successful. Discussions with World Bank, JICA and other development partners were held to finance a large-scale programme to replace existing inefficient lamps. However, no specific source of fund has been identified for upscaling of the financing of EE Lighting Appliances. Indicator Not Achieved.

108. The Evaluation found that success of MEPS development was largely attributed to the Project's emphasis on consultative sessions with various private and public sector stakeholders. This was reflected in an interview with private sector lighting

manufacturers, who shared that for MEPS development process the Project-hired consultants educated the lighting manufacturers on the MEPS parameters and also held consultative workshops that were aimed at bringing the industry onboard and create strong buy-in among the lighting industry. Moreover, UNEP's GEF Climate Change Mitigation team also highlighted that the PMU and the Project Manager in particular was instrumental in positively engaging private sector representatives to generate wider acceptance on the regulations from the lighting industry. Similarly, despite challenges associated with inter-governmental agency collaboration, while the Project faced delays due to involvement of red tape, the Evaluation found that the Project worked was able to facilitate dialogue and collaboration with various key stakeholder agencies towards the successful development of MEPS guidelines. Thus far, the provincial Government of Punjab extended the guidelines to public procurement under PPRA. It should be noted that at the time of the Evaluation, MEPS were still under review and had not been approved by the Federal Government, an activity that has been pending due to the governance instability in the country as well as prioritization of activities at the Federal Cabinet, etc.

109. Hence, based on the interviews with representatives of the lighting industry and government departments, the Evaluation found while MEPS were successfully developed, in the absence of any binding laws and enforcement mechanisms, there is limited adherence to MEPS across the lighting industry. In fact, the Evaluation found that large scale EE lighting producers and assemblers were already following a relatively higher standard for quality lighting, in an effort to meet market demand from quality conscious consumers and therefore their operations have not been widely altered since the establishment of MEPS. However, medium-to-small scale industry players continue to produce and flood the market with in-efficient lighting products with no government-led restrictions that could potentially be backed by the MEPS framework.

110. Furthermore, interviews with leading lighting manufacturers/importers also reported that while the MEPS developed by the Project are generally achievable, some elements are highly ambitious for the context of Pakistan and therefore will prove to be counterproductive, if approved and enforced by the Government. For instance, while top lighting brands in the country reported maximum lumens of 95-96 per Watt, the MEPS require lumens of 106, a standard which will not only be difficult to achieve but also costly, with implications for higher consumer product prices in a highly price sensitive market.

111. Moreover, the Evaluation also noted that although MEPS are poised to eliminate sub-standard products in the market, this will invariably favor the large-scale lighting industry players as it would diminish competition from the numerous small to medium scale producers as the latter would have difficulty in meeting MEPS guidelines, thereby having socio-economic implications such as job losses, etc.

112. The Evaluation found that Outcome 1.1 was only **partially achieved** as MVE and MVR were not fully achieved.

Outcome 2.1: Pakistan's Light Market more compliant with energy efficiency policies and standards developed.
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Indicator	Baseline	End of Project Target	Results Achieved
Monitoring, Verification and Enforcement (MVE) regulatory framework enforced	0	1 (yes) by 2022	A Project Registration System (PRS), which forms the backbone of MVE, was developed under the project and was launched in December 2022 (after the technical completion of the project) Indicator Partially Achieved
Number of training programs implemented for control authorities, Customs, and testing labs that are engaged in MVE	0	Yes	In 2020, two capacity building sessions were held with PSQCA and PCSIR. Similarly, workshops for Pakistan Customs, PSQCA, and various labs (EMTL, CERAD & NIE) have been completed. In addition, a capacity building activity was held at EEI Thailand, between 8th - 11th August 2022 Indicator Achieved
A public registration system (PRS) for lighting products established and operational	0	1 (yes) by 2022	PRS was developed under the project and was launched in December 2022 (after the technical completion of the project) Indicator Achieved
Decrease of % noncompliance according to the MVE regulatory framework	N/A	80%	The Project was unable to establish an MVE and therefore, it was not possible to monitor the compliance. Due to political instability in the country and economic distress the implementation of the MVE has been affected. At the time of the Evaluation, it was expected that systems need another year for the MVE to be operational. Indicator Not Achieved

113. The Evaluation found that success under Outcome 1.1 in establishing MEPS also contributed to compliance and development of MRV under Outcome 2.1. Also, the Evaluation noted that the Project engaged several stakeholders, especially PSQCA, and

undertook several activities to significantly build their technical capacity through workshops and other activities to test lighting products.

114. However, while the developed MEPS provide a comprehensive list of indicators, interviews with representatives from the lighting industry, academia, and testing laboratories all highlighted that existing testing facilities in the country are not capable of testing the lighting products against all the criteria laid out in the MEPS framework. This is expected to create challenges for broader compliance with EE lighting standards. For example, CERAD which undertakes testing of EE lighting products shared that current testing facilities are not available to test against coloration, biological risk, and lifetime test of up to 8,000 hours. Furthermore, interviewed representatives of the lighting industry also reported that since PSQCA verification is not accredited from the international community, those exporting products to other countries have to rely on testing facilities outside of Pakistan (mostly China). In some instances, it was also reported that the cost of testing lights in Pakistan could be more costly as compared to China, thereby further discouraging the lighting industry of testing their lights domestically.

115. The Evaluation found that Outcome 2.1 was only **partially achieved** mainly because an MVE was not established (under Outcome 1.1) and therefore, the Project could not enforce the MVE nor monitor the compliance under this outcome.

Outcome 3.1: Revolving Loan Fund (RLF) established, and loans disbursed.			
Indicator	Baseline	End of Project Target	Results Achieved
"Lighting Funding Window" established with administrative and operational frameworks, and guidelines	0	1 (yes) by 2022	As of 2022, A Risk Guarantee Fund (RGF) was established. However, the Project was unable to establish an RLF. It should be noted, the project received a letter of assent from HBL to act as the on-lending entity, a major step for establishment of the RLF. Indicator Not Achieved
Committee to review loan applications established and the committee's administrative needs	0	1 (yes) by 2022	This was not completed, as in 2021 the Project determined that NEECA did not possess the expertise for disbursement of loans, therefore the responsibility of due diligence should be shifted to the commercial banks. Also, in the absence of an established RLF, the establishment of the committee was not required. Indicator Not Achieved

No. of loan applications approved under the "Lighting Funding Window"	0	6 by 2022	Only one loan was guaranteed through RGF with OLP (formerly ORIX Modarba), with a partial guarantee provided by ECF. The agreement was signed on 13th November 2021 after approval of the ECF Board of Directors (BoD). The projected reduction in CO2 emissions was 69,975 kg. The project was not able to establish an RLF. Indicator Not Achieved
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116. The Evaluation found that multiple challenges were faced in establishing the RLF. In 2022, the Project determined that ECF did not possess the financial capacity or functional capability, such as carrying out financial due diligence and payment disbursements, to set up an RLF. Resultantly, the Project focused on bringing a commercial bank/lender onboard. Among these, the Project reported that multiple meetings with HBL were held in the period from March to September 2022. However, the bank was reluctant to take on the RLF for multiple reasons. At the onset, the RLF model was a new product for the bank, and it had no previous experience in managing such a fund. HBL was further discouraged by the proposed amount of USD 250,000, which was deemed by the bank to be small and were therefore not attracted enough to create a special financing entity for EE lighting. Moreover, the Bank was unwilling to act as a guarantor and conversely demanded a guarantee from NEECA for all loans extended for transition to EE lighting. Through continuous engagement, the Project successfully negotiated that the Bank would be responsible for recovery of loans issued under the RLF for EE lighting. Resultantly, the Project received a letter of assent from HBL to act as the on-lending entity. It should be noted that the letter of assent was a sub-step of the entire process as there were no formal agreements between HBL and NEECA. However, the Project was unable to attract any borrowers due to multiple reasons, as elaborated earlier, including the small size of RLF that was insufficient to meet the demands of large borrowers as well as the economic downturn in the country that affected business sentiment and also led to import restrictions thereby limiting the availability of required quantities of quality EE lighting products.

117. It should be noted that UNEP's GEF Climate Change Mitigation team were not in a position to accept the letter of assent as proof of establishing an RLF, as they required a formal agreement between NEECA and HBL. Due to significant delays in establishing the RLF, as detailed above, negotiations with HBL only materialized towards the end of the Project. Eventually the Project timeline concluded in September 2022 without establishing an RLF. Resultantly, USD 250,000 was never disbursed to the Project/NEECA.

118. The Evaluation found that Outcome 3.1 was **not achieved** because the Project was unable to establish an RLF.

Outcome 4.1: Greater market penetration of LEDs through increased awareness of the benefits by consumers and key stakeholders (e.g., building managers, lighting designers and policy makers) achieved			
Indicator	Baseline	End of Project Target	Results Achieved
% Awareness of lighting designers, building managers and building practitioners nationwide on LED design and control techniques	100%	100% by 2022	Lighting designers, architects were involved in various capacity building workshops and meetings on MEPS and Standard Public Procurement. Also, a workshop was held on Standard Public Procurement Procedures (SPP) to apprise relevant personnel in public and private departments responsible for procurement to ensure purchasing lighting material compliant with MEPS. Although awareness was achieved at a large scale, the Evaluation cannot determine if it was done 100%. Indicator Partially Achieved
No. of demonstration projects that adopted locally appropriate LEDs and lighting controls, and which include waste management	0	5 by 2022	Pilot projects implemented by the local project team included: 1) Central Library, QAU University, (Completed in July 2022); 2) Department of Electronics, QAU University (Completed in August 2022); 3) CDA Hospital (Gynaecology Ward) (Completed in May/June 2022); and 4) NEECA Building (Completed in 2 phases – in 2020 and 2021). In addition, another pilot project - Police Line Street Lighting was partially completed in 2021. Indicator Achieved
% of building managers and lighting designers that adopt efficient lighting design concepts	0%	100%	As of 2022, the Project reported that Building Managers from Capital Development Authority (CDA), Lahore Development

Outcome 4.1: Greater market penetration of LEDs through increased awareness of the benefits by consumers and key stakeholders (e.g., building managers, lighting designers and policy makers) achieved			
Indicator	Baseline	End of Project Target	Results Achieved
			Authority (LDA), Punjab Energy Efficiency & Conservation Agency (PEECA) and other departments had initiated the process of including the MEPS into their designs. Similarly, PEECA on-line tenders now included the new MEPS. Indicator Partially Achieved
Number of male & female beneficiaries of the above mentioned outcome determined	0	30% Gender involvement ensured	Gender Mainstreaming Sessions were conducted during the period August 2019 to February 2020. A session with senior and relevant female staff of commercial banks and leasing companies was conducted. As of 2022, Gender Action Plan (GAP) was developed through regular Gender Mainstreaming Sessions. As of 2022, the Project reported that a minimum of 30% female participation was achieved in all sessions held by the EE Lighting Project Indicator Achieved

119. The Evaluation found that the Project established the demonstration units under Outcome 4.1. At the site selected for Evaluation visit (QAU), the Project undertook two demos with 100 lights installed in the main library and an additional 100 lights in the administrative blocks of the university. Interview with the QAU Department of Electronics shared that pilot projects carried out at a large scale in a university such as the QAU that enrolls students from across Pakistan had great visibility to the student population on campus, thereby enhancing consumer awareness. By replacing 300-Watt incandescent bulbs with EE lighting, the Project estimated that 50% of energy cost was achieved. Other benefits of greater ambiance and improved lighting to support student activities in the library were also highly appreciated. Pilots undertaken at the QAU also

allowed selected students from the Department of Electronics to closely observe NEECA's work in the design, installation, and monitoring phases of the demonstration. On the other hand, the demonstrations could have further benefited from on campus awareness campaigns on EE lighting to educate students across the university on the benefits of EE lighting for consumers.

120. Furthermore, establishment of the demonstration sites was slow as the Project had to procure the lighting equipment using the government procurement rules (PPRA).

121. Moreover, the Evaluation found that there was an overall weaker emphasis on monitoring and verification. Particularly, while the demonstrations were set up successfully, there was no concrete Project output in terms of verification and hence could not trace the results of the pilots. Also, in at least one case, the Evaluation observed that the monitoring system at the QAU had been shut down and unattended for several months.

122. Although awareness among target groups has increased following Project led activities, the Evaluation found that Outcome 4.1 was only **partially achieved** primarily because awareness sessions did not meet the EoP targets.

Rating for Achievement of Project Outcomes: Moderately Satisfactory

5.3.3 Achievement of Likelihood of Impact

123. This section presents the likelihood of impact. This was assessed based on whether the most important direct outcomes were achieved, intermediate states materialised, assumptions on the causal links between direct outcomes, intermediate states and impacts hold, and drivers are in place. The revised Theory of Change lists one impact, "GHG Emissions Reduced." Accordingly, the full causal pathways for each of the four outcomes are discussed below.

124. **Outcome 1** "Adoption of a National Efficient Lightning Strategy employing an integrated policy approach to phase out inefficient incandescent lamps and accelerate the transition to light emitting diode (LED) products by public and private sector consumers across Pakistan" was supported by three outputs, including developing the draft policies for MEPS (1.1.1); developing MRV procedures and methodologies (1.1.2); and identifying sources of funding to promote energy efficient lighting, including NAMAs (1.1.3). The Evaluation found that while MEPS were established, the other two outputs relating to MRV and NAMAs faced challenges and were not completed.

125. Assessment of Drivers that both **Driver 1** "Improving lighting products yields positive gains in safety, energy efficiency, lighting quality, and lamp life" and **Driver 2** "Transitioning to EE lighting addresses power shortages and blackouts by optimizing energy consumption, while international market forces can boost affordable and accessible adoption of energy efficient lighting" held up as various benefits of EE lighting products were made evident and EE lighting in Pakistan was strongly influenced by international market forces. Similarly, the Evaluation found that **Assumption 1** "Transitioning to energy efficient lighting, combined with the adoption of energy efficient electronics and renewable energy, will contribute to a significant reduction in GHG emissions" also supported the Outcome.

126. In assessing the likelihood of impact, the Evaluation found that the Project partially achieved Outcome 1 as MVE and MRV were not nationally adopted.
127. **Outcome 2** “Pakistan’s lighting market is more compliant with energy efficiency policies and standards developed through strengthening of MVE capacities” was supported by three outputs, including legal processes implemented to improve MEPS compliance (2.1.1); delivery of technical training to public sector for MVE implementation (2.1.2); and training lab technicians on testing LEDs (2.1.3). The Evaluation found that all three outputs strongly contributed towards achieving Outcome 2, as MEPS was successfully developed, and extensive trainings were undertaken for public officials and lab technicians.
128. **Driver 3** “Pakistan’s commitment to both the UNFCCC for stabilizing GHG concentrations and the Minamata Convention on mercury to increase the market share of lower mercury lamps” held up as government followed up with its commitment to Minamata Convention and supported the establishment of the MEPS. This also contributed towards **Assumption 2** “Energy Efficiency reflected in the national Power Development Plan (PDP) of Pakistan and strong commitments from the Government of Pakistan in supporting energy efficiency.” On the other hand, **Assumption 3** “In-country stakeholders commit to support surveillance and enforcement activities of lighting products” did not hold in the absence of binding laws to undertake surveillance and enforcement of inefficient lighting products.
129. In assessing the likelihood of impact, the Evaluation found that the Project partially achieved Outcome 2, primarily because Assumption 3 was not held.
130. **Outcome 3** “Revolving loan fund established, and loans disbursed to enable borrowers, including private sector and national institutions (i.e., government banks, private banks, leasing companies, microfinance institutions) to retrofit or purchase energy efficient lighting and to help address the high initial cost of efficient lighting products” further included three outputs, including analysis of existing RLFs (3.1.1); Development of administrative and operational procedures for the RLF (3.1.2); and Formation of a committee to review loan applications (3.1.3). As the RLF was not developed, neither of the three outputs delivered any impact.
131. Similarly, both Drivers including **Driver 4** “Government provides incentives and support to facilitate lighting-specific financing” and **Driver 5** “Demand for EE lighting attract financing” did not hold up as the government did not lend support to any financing mechanisms. Furthermore, neither of the three assumptions made any impact. For example, **Assumption 5** “Interests and participations from private sectors involved in Lighting Funding Window remain strong” and Assumption 6 “Economic growth in Pakistan attracting private sector to invest in energy efficient lighting in all end use sectors” and Assumption 5 “did not hold up as during the project implementation period, Pakistan was facing extreme economic challenges that also had an adverse effect on private sector investments. Similarly, **Assumption 4** “The Project has access to RLF and could use USD 1 million of the funding” did not hold up either.
132. Overall, the Evaluation found that Outcome 3 was not realized during project implementation and had no contribution to the likelihood of impact.

133. **Outcome 4** “Outcome 4: Greater market penetration of LEDs through increased awareness of the benefits by consumers and key stakeholders (e.g., building managers, lighting designers and policymakers) achieved in Pakistan” included five outputs relating to communication campaigns (4.1.1); design of pilot demonstrations programs (4.1.2); implementation of lighting controls (4.1.3); training for building managers and lighting designers (4.1.4); and installation of pilot demonstrations (4.1.5). Through development of communication programs, operationalization of pilot demonstrations and delivery of trainings, the outputs supported Outcome 4.
134. **Driver 6** “Gender mainstreaming in energy-efficient lighting transition improves women’s security and economic conditions” was not fully analyzed as Project implementation and reporting did not highlight impact of EE lighting on women’s security and economic conditions”. However, **Driver 7** “Partnerships with various stakeholders enable LED system pilot demonstrations, driving broader adoption through diverse setting showcases” and **Assumption 7** “The pilot programs are tailored to local context and needs” were both sustained and supported the Outcome as pilot demonstrations were established across different locations through partnerships with various stakeholders across different sectors, including health, education, housing and others.
135. In assessing the likelihood of impact, the Evaluation found that the Project made significant achievements under Outcome 4.
136. Overall, the Evaluation found that **Intermediate State (IS) 2** “Efficient lighting solutions such as LEDs and lighting controls are phased-in” holds to some extent. Although that large scale EE lighting producers and assemblers were already following a relatively higher standard for quality lighting, the Project did make a positive impact through formalization of MEPS and capacity building of various public and private sector stakeholders. On the other hand, **Intermediate State 1** “Inefficient lighting is phased out” was not achieved as the is continued presence of in-efficient lighting products in the markets. Moreover, **Intermediate State 3** “The lighting market in Pakistan is transformed into a market of efficient and quality lighting products” did not hold. The biggest challenge to IS 3 has been the Project’s limited funding and timeframe, and therefore its limited capacity to influence a transformation towards energy efficient lighting. While it is too soon to determine the impact of IS 3, progress under IS 1 and IS 2 led the Evaluation to deem the impact “GHG emissions reduced.”
137. The Evaluation determined that the Project has no unintended negative effects, and none are foreseen in the future.
138. **Rating for Achievement of Likelihood of Impact:** Therefore, according to the “Criterion rating description matrix” used by the UNEP EO to evaluate projects, the likelihood of impacts can only be deemed “Moderately Unlikely.”

Rating for Effectiveness:	Moderately Satisfactory
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5.4 Financial Management

5.4.1 Adherence to UNEP’s Financial Policies and Procedures

139. To the TE's understanding, UNEP's financial policies and procedures were adhered to by the project. However, there were some discrepancies, as elaborated in section 7.5.3 'Communication between Finance and Project Management staff'.

Rating for Adherence for UNEP's Financial Policies and Procedures: Not Rated¹¹

5.4.2 Completeness of Financial Information

140. The following elements were made available for the evaluation:

- Project budget (costs);
- Project expenditure sheet (to date);
- Project cooperation agreements;
- Partner legal agreements and documentation;
- Budget revisions and re-approved project budget for project extension; and
- Audit reports.

141. Financial documents made available with the evaluator were generally complete, updated, and clear. Additional elements were requested by the evaluator to update some of the financial information presented in the table below. The project team was able to share this information diligently. Six out of the twelve financial documents described in the "Criterion rating description matrix" provided by the UNEP Evaluation Office to rate projects were shared with the evaluator, leading to the rating below.

Rating for Completeness of Financial Management: Satisfactory

142. The Project was allocated a USD 1,576,500 GEF grant. This financial support was distributed across various Project components, with the highest allocation of 36.7 percent directed to Component 3, as shown in table below. Component 1 followed with 17.9 percent, Component 4 with 16.9 percent, Component 2 with 16.7 percent, while the remaining funds were split between Project Management Costs at 10.2 percent and M&E at 1.6 percent.

Table 7: GEF Grant – 3rd Revision Plan & Expenditure

Components	Donor Fund Allocation (USD)	Expenditure (USD)	Percent of Expenditure	Percent of Total Allocation Spent
Component 1: Developing A National Efficient Lighting Strategy	281,548.19	266,212.88	25.9%	94.6%
Component 2: Strengthening MVE Capacities in Pakistan to Ensure an Effective Transition to Efficient Lighting	263,517.86	173,074.71	16.9%	65.7%

¹¹ Detailed information has not been provided by the Project Management to enable an Evaluative analysis.

Components	Donor Fund Allocation (USD)	Expenditure (USD)	Percent of Expenditure	Percent of Total Allocation Spent
Component 3: Design for A “Lighting Funding Window” in Pakistan’s Revolving Loan Fund (RLF)	578,586.09	223,194.68	21.8%	38.6%
Component 4: Accelerating The use of Light Emitting Diodes (LEDs) And Controls	265,742.54	212,797.36	20.7%	80.1%
M & E¹²	25,000.00		0.0%	0.0%
Project Management Cost	161,105.32	150,636.74	14.7%	93.5%
Total	1,575,500.00	1,025,916.37	100.0%	65.1%

143. As of September 30, 2023, the Project utilized only a portion of its GEF-allocated budget, with a total expenditure of USD 1,025,916, accounting for 65.10 percent of the USD 1,575,500 allocation. Delving into the component-wise expenditure, based on the original Project Document budget, Component 1 stands out with the highest (94.6 percent) utilization of its allocated funds. This is closely followed by the project management costs, which have utilized 93.5 percent of their allocation. Notably, the component with the lowest expenditure relative to its allocation is Component 3, with only 38.6 percent of its funds spent. Components 2 and 4, which focus on strengthening MVE capacities and accelerating the use of LEDs and controls respectively, have spent 65.7 percent and 80.1 percent of their allocations. Additionally, the overspend on the PMC was mostly a result of the two extensions given to the Project.

144. In addition, the Project document outlined a planned total co-financing of USD 5,786,700 from multiple partners. However, over the course of its implementation, the actual cumulative co-financing amounted to USD 2,050,000.00, which is approximately 35.42 percent of the initially committed amount. Among the co-financing partners, NEECA was the largest contributor, providing the full amount of their planned in-kind contribution of USD 2,000,000. This was followed by Quaid-i-Azam University (QAU) and the IIEC, each meeting their commitments with contributions of USD 50,000 and USD 10,000, respectively. Other partners, including Philips, UNEP, China National Light Testing Centre (NLTC), PCSIR, Ministry of Climate Change, and several others, had planned contributions but did not contribute.

¹² M&E budget is allocated for the purpose of TE and handled by the UNEP.

Table 8: GEF Grant – 3rd Revision Plan & Expenditure

Name of Co-Financier	Amount (USD)	Percent of Total	<u>Amount Materialized (USD)</u>	Percentage of Allocated Amount Materialized
Philips	1,000,000	17.28%	-	0.00%
UNEP	25,000	0.43%	-	0.00%
China National Light Testing Centre (NLTC)	100,000	1.73%	-	0.00%
ENERCON and Energy Conservation Fund	2,000,000	34.56%	-	0.00%
PCSIR	500,000	8.64%	-	0.00%
Ministry of Climate Change	2,000,000	34.56%	2,000,000	100.00%
International Institute for Energy Conservation	10,000	0.17%	-	0.00%
Quaid-i-Azam University	50,000	0.86%	50,000	100.00%
Shaheen Foundation PAF	3,700	0.06%	-	0.00%
NUST	8,000	0.14%	-	0.00%
HITEC University	50,000	0.86%	-	0.00%
Pakistan Poultry Association	10,000	0.17%	-	0.00%
Zedem International (Pvt) Ltd	20,000	0.35%	-	0.00%
Green Field Developer (Pvt) Ltd	10,000	0.17%	2,050,000	

5.4.3 Communication Between Finance and Project Management Staff

145. The evaluation found that the Project team (i.e., EA Manager/Representative, EA Project Manager and EA Finance Manager), UNEP Portfolio Manager, UNEP Budget/Finance Officer, and UNEP TM are aware of the financial status of the Project. However, the Project faced some issues during the implementation in terms of communication on financial matters between the operational Project team and the NEECA Project team. A critical issue was that despite the availability of unutilized funds (USD 430,000) amounting to 27.3% of the total GEF grand value, including the USD 250,000 left for establishment of RLF on which the Project has made significant progress, the Project was not given an extension to establish the RLF, leading to termination of the Project despite having substantial funding and progress available for establishing RLF.

Rating for Communication Between Finance and Project Management Staff: Moderately Unsatisfactory

Rating for Financial Management: Moderately Satisfactory

5.5 Efficiency

146. The Project was implemented by UNEP's GEF Climate Change Mitigation Unit, Mitigation Branch, (i.e., the Implementing Agency), within the Climate Change Division. The Unit was tasked with overseeing the successful achievement of the Project objectives.
147. Implemented through a public-private collaboration between NEECA as the lead executing agency and the U4E as the co-executing agency, the Project was supported by a large number of other public and private sector partners, including international organizations such as U4E and IIEC; government ministries/agencies such as MoST, MOCC, PSQCA, Pakistan Customs, FBR, PCSIR, CERAD among others; Financial institutions including Habib Bank Ltd., Bank of Punjab, Askari Bank, Faysal Bank, OLP Modaraba (formerly ORIX Modaraba); and lighting manufacturers, importers, distributors, and retailers including Crest LED, Uni Lux Lighting, and Signify.
148. The TE ascertained that the Project's implementation strategy was effective and adaptable, overcoming numerous challenges. Notably, the Project demonstrated adaptability by engaging U4E as a co-executing agency. This decision was crucial as the lead EA lacked the necessary technical expertise and was unable to hire international consultants.
149. The Project also faced staffing challenges initially, including the hiring of a Project manager and adapting to frequent changes in the EA head. However, integrating the PMU within the government agency, rather than establishing it as a separate entity, facilitated some independent functioning. This arrangement, with the PMU based in the NEECA, was instrumental in securing strong government support, which was vital for successful implementation. Additionally, the decision to recruit a Project Manager from the private lighting sector proved pivotal, as it not only accelerated the relationship building within the private sector, but also significantly contributed to the development of the MEPS.
150. The Project was also found to be adaptive to external challenges such as political instability and economic crisis. For instance, when establishing the Risk Guarantee Fund (RGF), the Project shifted to grants when loan financing through a Revolving Loan Fund (RLF) was proved unfeasible. Moreover, the Project efforts to partner with financial institutions, like HBL, for the Lighting Funding Window, exhibited the Project's adaptability in seeking cost-effective solutions, although it faced hurdles due to the limited amount for RLF (USD 250,000) available through the GEF fund.
151. Similarly, the Project was also found to be efficient in engaging multiple stakeholders. The Project leveraged contributions from various partners, which not only enhanced the budget but also ensured a broader resource base. The Project received contributions from several partners, including, NEECA, QAU, and IIEC. These contributions were made through in-kind support, demonstrating the Project leveraged resources from multiple partners to enhance its cost-effectiveness.
152. The Project also significantly benefited from the involvement of private stakeholders and academia in executing its activities and some of these, e.g., QAU, were also engaged in the Project design. Evaluation interviews with other private sector stakeholders

highlighted their participation in awareness workshops and consultations, such as those held for the development of MEPS/MERV, demonstrating a comprehensive approach to stakeholder engagement. Additionally, Project stakeholders reported benefits from their involvement in the Project. For instance, CERAD emphasized the substantial gains from the support of UNEP consultant, whereas those participating in MEPS consultations shared their appreciation for the unique contribution of the Project to bring numerous stakeholders on the same page who would otherwise not have collaborated on these issues.

153. Operationally, the Project encountered significant challenges which led to implementation delays. Initially approved in August 2016, the Project faced procedural setbacks caused by the postponement in signing the PCA, which was only finalized in April 2017. Further delays arose from the absence of a head for the EA, hindering the establishment of PMU until July 2018. This delay in recruitment and approval processes consequently pushed the actual commencement of Project execution to two years after the CEO's endorsement. Moreover, the inception meeting was only conducted in September 2018 following the appointment of a Project Manager. Additionally, the frequent changes in leadership at the head of NEECA contributed to delays in obtaining necessary approvals and in the signing of documents, further impacting the Project timeline.
154. Furthermore, during the implementation, the Project encountered challenges owing to the bureaucratic processes within the NEECA. The centralized management approach that required approval for all project aspects from the Managing Director of NEECA contributed to increased delays, slowing down Project activities.
155. Moreover, while the PMU received strong backing from the Ministry of Power, it struggled to garner similar support from other ministries and agencies. For instance, there was a lack of coordination between NEECA, which developed the MEPS, and the PSQCA, the agency responsible for implementing these standards. Similarly, NEECA faced challenges in authority over issues falling under the purview of other ministries, such as the Ministry of Climate Change (MOCC).
156. Another major challenge was the limited experience of the PMU staff in handling donor-funded Projects, particularly in aspects like monitoring, reporting, budget management, and extensions. This necessitated heavy reliance on guidance from the UNEP's GEF Climate Change Mitigation Unit, Energy & Climate Branch, the Project's Implementing Agency and also put the PMU at a disadvantage in terms of clear understanding of management approaches to donor-assisted projects. The situation was worsened by the lack of a close working relationship between NEECA and the office of the GEF Focal Point at the MOCC.
157. In fact, the Project faced several delays due to external factors such as political instability and economic distress and the COVID-19 pandemic. These delays impacted the implementation schedule and the timely achievement of objectives.
158. To make up for these delays, the Project was granted two no-cost extensions in March 2020 (16 months) and November 2021 (12 months). However, despite availability of unutilized funds of USD 430,000 (27.29% of project budget), the Project could not secure a further extension and was consequently terminated.

Rating for Efficiency: Moderately Satisfactory

5.6 Monitoring and Reporting

5.6.1 Monitoring Design and Budgeting

159. A generic monitoring plan was outlined in the ProDoc, including various activities and allocated resources for monitoring and evaluation throughout the Project lifecycle. The M&E activities, including the Terminal Evaluation, audits, the final Project report, and publication of lessons learned, were allocated a total budget of USD 67,000. The Terminal Evaluation itself was allocated USD 25,000 from the GEF fund, underscoring the importance placed on a comprehensive final assessment.
160. The proposed monitoring plan was found to demonstrate a comprehensive approach focusing on strong monitoring design, effective budgeting, and adherence to SMART (Specific, Measurable, Achievable, Relevant, Time-bound) objectives.
161. The Project log frame detailed various components of the Project, each with specific objectives, outcome indicators, baselines, targets, monitoring milestones, means of verification, and assumptions & risks. For instance, under "Component 1: Developing a National Efficient Lighting Strategy", the Project aimed to establish a national efficient lighting strategy, develop MEPS for lighting products, and develop an MVE regulatory framework. The specific outcomes and their indicators, such as the development and approval of policy documents, market shares of high-efficiency lighting, and energy savings, provide measurable benchmarks. These outcomes are further supported by distinct targets, like achieving a certain market size by a specified year or attaining specific percentages in energy savings. Means of verification, such as official government journals, publications, and Project reports, offer tangible methods for measuring progress.
162. On the other hand, some indicators in the results framework did not adhere to the SMART criteria. For example, the indicator for outcome 2.1 "Number of training programs implemented for control authorities Customs and testing lab that are engaged in MVE," is somewhat specific but lacks clear targets or measures of effectiveness. It does not specify the expected outcome or impact of these training programs, making it less measurable in terms of Project success. While activities such as awareness raising lacked impact-oriented indicators.
163. Moreover, while specific and measurable, some indicators and targets faced achievability issues due to external factors, like economic growth rates or government support. The risks and assumptions section duly acknowledged such potential obstacles, e.g. weak government support, delayed implementation, or low private sector participation, which could impact the achievement of objectives.
164. On the other hand, the monitoring plan's approach towards the collection of disaggregated data, while implied through stakeholder involvement and transparent sharing of evaluation reports, was not explicitly detailed.

Rating for Monitoring Design and Budgeting: Moderately Satisfactory

5.6.2 Monitoring of Project Implementation

165. The project results framework, as provided in the ProDoc, served as the foundational element for monitoring project activities in the past. It established clear starting points for future progress measurement, which included data on existing energy consumption, efficiency levels, and market penetration of energy-efficient lighting. The significance of this baseline data was evident, as it offered a necessary reference point for assessing the project's impact over time. Similarly, the indicator data was designed to measure the outcomes and impact of the project. These indicators comprised quantitative targets for energy savings, reduction in greenhouse gas emissions, and increased market share of energy-efficient lighting products. Their relevance was significant, aligning directly with the project's objectives to enhance energy efficiency and mitigate environmental impact. However, the framework lacked clarity in defining the methodologies for collecting baseline data. For instance, it is unclear how the existence of baseline MEPS for CFLs (Outcome Indicator 1.1) was established. Similarly, no details are provided on how the nationwide survey to measure awareness of LED design techniques (Outcome Indicator 4.1) would be conducted. Furthermore, while the indicators were identified, there was an absence of specificity in their quantification and in determining the sources for the baseline values. For example, the baseline of zero loan applications approved for the Lighting Funding Window (Outcome Indicator 3.1) lacks context. Additionally, the baseline of 0% adoption of efficient lighting design concepts (Outcome Indicator 4.1) is not specific.
166. The M&E plan for the Project incorporated several key components to ensure monitoring of Project implementation. It began with the inception meeting and report, followed by Project Steering Committee (PSC) meetings, which were planned to be conducted periodically (at least annually), to provide oversight and strategic direction. However, over the course of the implementation only three PSC meetings were held, thereby limiting strategic support to the Project.
167. The annual Project Implementation Reports (PIR) also played a pivotal role in assessing ongoing performance and making necessary adjustments, with participation from PMU, UNEP, and government counterparts. In parallel, to ensure financial integrity and compliance with standards, annual audits were planned to be carried out by the PMU and independent consultants. However, an audit planned for 2019 was not conducted due to low level of funds utilization. Only one audit was conducted in 2020. Subsequently, a final audit was conducted in 2022, but it remained incomplete due to pending actions by the EA.
168. The project reporting also incorporated gender considerations in various components. These include gender mainstreaming activities, such as regular sessions aimed at raising awareness among women on energy conservation and efficient electrical appliance usage. For example, the project held multiple consultative sessions with a focus on women participation and ensured a minimum of 30% female participation from both household and professional women. Additionally, the project ensured female participation in all activities, with a focus on involving women from government departments, commercial banks, and various walks of life.

169. In addition, the Project workplan underwent three revisions, with some changes in its activities. Some of the key additions included “Activity 1.1.6: Undertake feedback and organize consultative workshop to finalize the Draft Strategy,” introduced in 2020. Conversely, some activities were omitted, like “Activity 4.2.5: Supporting conduct of MRV activities for the pilot Projects,” which was introduced in 2019 but subsequently dropped. Additionally, there were changes in the wording of certain activities. For example, “Activity 2.1.2” initially focused on developing a detailed MRV system for lighting at the national level, based on the public registry system and existing data resources (Customs/FBR). In 2019 and 2021, this was changed to ‘Develop process and procedures to ensure compliance with lighting MEPS and labeling. However, in 2022 and 2023, the activity reverted to its original description. Although these changes in the workplans were reflected in the corresponding PIRs, this inconsistency made it difficult to track activity-level progress across the years.

170. While the ProDoc specified that a mid-term review or evaluation (MTR/MTE) would be conducted to assess the Project's progress at mid-term, it was found that no MTR/MTE was undertaken as planned. This omission represents a gap in the monitoring and evaluation framework as MTR/MTEs are critical for identifying early successes, challenges, and necessary adjustments in Project strategy. The Project planned to undertake a Terminal Evaluation (TE) by an independent consultant of the Project within six months of the end of the Project implementation. However, due to changes in the UNEP Evaluation function, the TE was commissioned nearly one year after the project end.

Rating for Monitoring of Project Implementation: Moderately Satisfactory

5.6.3 Project Reporting

171. The Evaluation determined that the Project consistently provided comprehensive annual Project Implementation Reports (PIRs) as required by the Project document. In total the Project developed 5 annual PIRs that contained detailed documentation on annual progress towards achieving the Project results, the implementation progress, and the risks and associated mitigation measures. The evaluation process involved a collaborative approach in rating the reports. Initially, the Project Manager provided inputs for the first two components (annual progress and implementation progress), on which the UNEP Task Manager then based their overall assessment and ratings. For the third component (Risks), the Project Manager first conducted an assessment and rating, which was subsequently reviewed and finalized by the UNEP Task Manager.

172. Additionally, the PIRs also reported the progress on stakeholder engagement, gender mainstreaming, environmental and social safeguards management, and Knowledge activities and products.

Rating for Project Reporting: Satisfactory

Rating for Monitoring and Reporting: *Satisfactory*

5.7 Sustainability

5.7.1 Socio-political Sustainability

173. The Evaluation found that the Project's efforts towards socio-political aspects greatly enhanced the overall sustainability, especially with regard to the development of MEPS and successfully undertaking the pilot demonstrations. However, although successful development of MEPS has laid the policy foundation for future initiatives on EE lighting adoption and adherence, the Evaluation found that strong implementation of MEPS in the future can only be sustainable with strong political backing and public sector ownership, at both provincial and federal levels. For example, at the provincial level the Government of Punjab has extended the guidelines to public procurement under PPRA and MEPS have been made compulsory by PSQCA. This reflects positively on the provincial government's high level of interest towards energy efficient lighting. However, at the national level the MEPS guidelines have yet to be approved by the Federal Cabinet. Resultantly, the absence of any binding laws and effective enforcement poses risk of limited adherence to MEPS across the lighting industry. Similarly, the MRV guidelines were developed but have not been institutionalized. Therefore, the Evaluation found that while a strong policy framework via MEPS has been developed, the Project's sustainability relies on strong government buy-in and enforcement of MEPS guidelines.
174. Secondly, pilot demonstrations undertaken in Outcome 4.1 can contribute to long term sustainability as large-scale initiatives with high level of visibility can enhance consumer awareness on EE Lighting. Interview with QAU also shared that the pilot projects done at a large scale had great visibility to the student population on campus, thereby enhancing consumer awareness. However, the Evaluation finds that such pilot demonstrations should be coupled with ongoing efforts to educate the consumer on EE lighting and brand awareness to ensure widespread adoption of EE lighting.
175. The Evaluation also determined that development of PRS can contribute to sustainability as future inputs from data collection through PRS will help to generate projections of the overall impact on reductions in electricity consumption, vis a vis, GHG emissions reduction.
176. Conversely, import restrictions pose serious challenges for sustainability. To restrict outflow of USD and avoid a balance of payments crisis, the Government of Pakistan in 2022 placed wide ranging restrictions on imports, which also affects the EE lighting industry. These restrictions have invariably allowed the illegal/grey market for lighting products to flourish through smuggling of shipping containers via the porous and hard to regulate Pak-Afghan border. Since these illegal imports can avoid any quality controls/regulations, inefficient lighting products continue to flood the market. Therefore, government policies on imports pose a challenge to sustainability as it is creating barriers for high quality EE lighting products to both enter the market.

Rating for Socio-political Sustainability: Moderately Likely

5.7.2 Financial Sustainability

177. The Evaluation found that limited financing available for the Project was the biggest challenge to ensuring sustainability in the long run. In particular, the RLF fund of USD 250,000 was deemed by the financial institutions to be small and therefore the banks were not attracted enough to create a special financing entity for EE lighting. However, it should be noted that the Project was able to secure a letter of assent from Habib Bank

Limited (HBL) to develop the RLF, which can be a possible future channel for funding EE lighting projects as envisioned in the Project design.

178. Furthermore, based on interviews held with stakeholders, it was determined that the Project's GEF grant of USD 1.5 million was largely insufficient to generate a transition towards widespread usage of EE lighting products. Similarly, a number of project outcomes, such as MEPs and MRV implementation and expansion of RLF are subject to financial constraints, especially as no additional funding sources for Pakistan's EE transition were identified and solicited under Outcome 1. Nevertheless, NEECA has reported efforts to attract some funding from institutional donors. Hence, the financial sustainability of these outcomes will be greatly subject to the availability of any future funding and its proposed uses.

179. Another challenge to Project sustainability is that the vast majority of the lighting consumers in Pakistan are highly price sensitive. And as adherence to MEPS would increase product pricing, this has the potential to hamper sustainability of transitioning to EE lighting as consumers are reluctant to transition away from low efficient products that are available at more competitive prices.

180. Furthermore, the non-achievement of RLF establishment will also affect the financial sustainability of the Project's outcomes.

Rating for Financial Sustainability: Unlikely

5.7.3 Institutional Sustainability

181. The Project's emphasis on creating strong linkages with stakeholders across the public and private sector greatly contributed to the sustainability. In particular, the Project successfully engaged private sector representatives to generate wider acceptance and buy-in on the guidelines from the lighting industry, which directly contributed to the development of MEPS. This has been a very important achievement as the lighting industry in the country is very fragmented and therefore very difficult to create a consensus and standardize. Therefore, development of MEPS was a great way forward towards transitioning to EE lighting. Similarly, the Project developed strong relationships with the implementing partners. This is evident as U4E respondents shared their intention of working with NEECA on further developing the MVE process.

182. Conversely, a challenge to sustainability is the limited capacity of testing EE lighting products against the MEPS. For instance, while MEPS provide a comprehensive list of indicators, interviews with representatives from the lighting industry, academia and testing laboratories all highlighted that existing testing facilities are not capable of testing the lighting products against all the criteria laid out in the MEPS framework. Therefore, sustainable implementation of MEPS would be reliant on comprehensive testing facilities that are available in the country at affordable prices.

Rating for Institutional Sustainability: Moderately Unlikely

Rating for Sustainability:	<i>Unlikely</i>
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5.8 Factors Affecting Performance and Cross-Cutting Issues

183. All cross-cutting issues pertaining to the Project, including Preparation and Readiness, Quality of Project Management and Supervision, Stakeholder Participation and Cooperation, Responsiveness to Human Rights and Gender Equality, Country Ownership and Direness, and Communication and Public Awareness have already been discussed across several other sections of the report.

Rating for Factors Affecting Performance and Cross-Cutting Issues:	Moderately Satisfactory
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6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

184. The project aligns with UNEP's Medium-Term Strategies, GEF objectives, and national priorities of Pakistan, particularly in addressing climate change, promoting sustainable consumption patterns, and enhancing gender equality in the energy sector. Moreover, its coherence with existing interventions such as the en.lighten project and the Energy Conservation Fund highlights its strategic significance in advancing energy-efficient lighting solutions and fostering a more sustainable and regulated lighting market in Pakistan. Overall, the project's profound relevance to global, regional, and national priorities, coupled with its synergies with key initiatives, marks it as a highly impactful endeavor with significant potential for long-term sustainable development.
185. In terms of design, the project exhibits a well-structured and relevant design addressing challenges at various levels, including policy initiatives and stakeholder engagement, but its ambition outstripped the allocated time and budget. Despite comprehensive efforts, shortcomings in financial planning and risk assessment, particularly regarding the RLF, hindered its effectiveness. Nonetheless, the collaborative approach and stakeholder involvement fostered a holistic understanding, emphasizing the need for future projects to align ambitions with realistic resource allocations for sustainable outcomes.
186. The project's components and outcomes underscored both notable achievements and persistent challenges. Despite facing challenges such as inconsistent reporting practices and delays due to COVID-19 restrictions, significant progress was made across key areas. The successful development of MEPS and supporting policies under Component 1 contributed to advancing national energy efficiency goals. Component 2's efforts to strengthen monitoring and enforcement capacities, though hindered by establishment challenges, marked progress in compliance measures. Similarly, Component 3 faced obstacles in establishing a Lighting Funding Window but had success in analyzing financial institutions and formulating strategies. Component 4 showcased successful communication campaigns and pilot projects, albeit with procurement challenges and delays in monitoring and verification implementation.
187. Similarly, the project's likelihood of impact is mixed. While some outcomes, such as the adoption of efficient lighting strategies and market penetration of LEDs,

demonstrated significant progress and alignment with assumptions and drivers, others, like the establishment of a revolving loan fund and full phasing out of inefficient lighting, fell short due to various challenges including incomplete outputs and unmet assumptions. Despite these limitations, the project has managed to contribute to the reduction of greenhouse gas emissions, though the full transformation of the lighting market remains a challenge due to funding constraints and limited timeframe.

188. The project's financial management indicated a generally satisfactory adherence to UNEP's financial policies and procedures, with some discrepancies highlighted in communication between finance and project management staff. Despite these challenges, the completeness of financial information provided for evaluation was satisfactory, with detailed breakdowns of budget allocations and expenditures. While the project utilized a significant portion of its GEF-allocated budget, issues regarding communication and fund allocation arose during implementation, particularly concerning the establishment of the RLF. Nonetheless, the evaluation found no unintended negative effects resulting from the project's financial management, and no future foreseen implications were identified.

189. Despite facing numerous challenges, the project demonstrated notable efficiency in its implementation strategy, adaptability to external constraints, and engagement of diverse stakeholders from both public and private sectors. While facing operational challenges and delays due to bureaucratic processes and staffing issues, the project exhibited resilience through its ability to secure two no-cost extensions and leverage resources from various partners.

190. The monitoring and reporting aspects of the project demonstrated a mixed performance. While the monitoring plan showcased a comprehensive approach with SMART objectives and budget allocation, certain indicators lacked specificity and achievability. Implementation monitoring showed gaps in meeting scheduled PSC meetings and audits, along with inconsistencies in workplan revisions. Despite comprehensive annual reporting providing detailed progress documentation, delays in conducting mid-term evaluations and the Terminal Evaluation were notable.

191. The project sustainability underscores both successes and challenges across socio-political, financial, and institutional dimensions. Efforts towards policy development and stakeholder engagement have supported sustainability prospects, yet challenges such as limited financing and institutional capacity remain significant.

192. Overall, the project demonstrates a rating of '3.60 (Moderately Satisfactory).

Table 9. Summary of project findings and ratings

Criterion	Summary assessment	Rating
Strategic Relevance		HS
1. Alignment to UNEP MTS, POW, and Strategic Priorities	Relevant to several strategic priorities	HS
2. Alignment to UNEP Donor/GEF/Partner strategic priorities	Relevant to several strategic priorities	HS

Criterion	Summary assessment	Rating
3. Relevance to global, regional, sub-regional and national environmental priorities	Relevant to several strategic priorities	HS
4. Complementarity with existing interventions/ Coherence	Complimentary with key existing interventions	S
Quality of Project Design	Well documented design but highly ambitious	MS
Nature of External Context	Challenges due to COVID-19, global and national economy, and national political situation	MU
Effectiveness	Delayed yet significant progress towards some planned outputs and outcomes. Project could have benefited from a no cost extension to finalize remaining tasks, especially RLF	MS
1. Availability of outputs	Delayed yet significant progress towards some planned outputs and outcomes. Project could have benefited from a no cost extension to finalize remaining tasks, especially RLF	MS
2. Achievement of project outcomes	Delayed yet significant progress towards some planned outputs and outcomes. Project could have benefited from a no cost extension to finalize remaining tasks, especially RLF	MS
3. Likelihood of impact	Impact due to development of MEPS, but these have yet to be ratified. Also, RLF has yet to be established.	MU
Financial Management	Project ended despite having substantial remaining funding and progress on for establishing RLF.	MS
1. Adherence to UNEP's financial policies and procedures	In accordance with UNEP-GEF guidelines	NR
2. Completeness of project financial information	Financial documents made available with the evaluator were generally complete, updated, and clear.	S
3. Communication between finance and project management staff	Lack of clear communication has deprived project of a third no cost extension despite significant progress on RLF and leftover funds of USD 430,000	MU
Efficiency	Centralized management at Executing Agency. Procedural delays in project start. Human resource challenges, etc.	MS
Monitoring and Reporting		S
1. Monitoring design and budgeting		MS
2. Monitoring of project implementation	Frequent changes in project work plans at activity level made it difficult to track progress across years consistently	MS
3. Project reporting	Detailed PIRs developed and approved	S
Sustainability		U
1. Socio-political sustainability	The project's goals are aligned with those of the Government and leading private sector lighting suppliers	ML
2. Financial sustainability	Future financial support from donors will be required to continue building on project's outcomes	U

Criterion	Summary assessment	Rating
3. Institutional sustainability	Lack of testing facilities in the country. Lack of implementation capacity.	MU
Factors Affecting Performance		MS
1. Preparation and readiness	Please see above	MS
2. Quality of project management and supervision	Please see above	MS
<i>2.1 UNEP/Implementing Agency:</i>	Please see above	<i>MS</i>
<i>2.2 Partners/Executing Agency:</i>	Please see above	<i>MS</i>
3. Stakeholders' participation and cooperation	Please see above	MS
4. Responsiveness to human rights and gender equality	Please see above	NR
5. Environmental and social safeguards	Please see above	NR
6. Country ownership and driven-ness	Please see above	MS
7. Communication and public awareness	Please see above	MS
Overall Project Performance Rating		MS

6.2 Lessons Learned

Lesson Learned #1:	Development of financial mechanisms is a complicated and time-consuming process that requires in-depth understanding of the financial landscape in the country, sufficient funding to attract borrowers, and time to convince stakeholders and generate a pipeline of borrowers. Also, financial Institutions are discouraged by small amounts of funding and are therefore not incentivized enough to create a special financing entity for EE lighting.
Context/comment:	Component 3 - RLF

Lesson Learned #2:	Large scale pilot/demonstration projects have greater visibility than small projects and have the potential to influence consumer behavior. However, these need to be accompanied by broader consumer awareness raising campaigns.
Context/comment:	Component 4

Lesson Learned #3:	If existing testing facilities are not capable of testing lighting products against all the criteria laid out in a MEPS framework, this will create challenges for widespread compliance with EE lighting standards.
Context/comment:	Component 1

Lesson Learned #4:	Transition to EE lighting is subject to economic stability in the country.
Context/comment:	Demand in the country has suffered to a large extent due to the global and national economic downturn prompted by COVID-19, Ukraine war, and political uncertainty, etc.

Lesson Learned #5:	Partnership between government agencies and technical energy expert organizations (such as that between NEECA and U4E) can yield beneficial results, especially in areas of technical cooperation.
Context/comment:	Sustainability. U4E has specialized technical expertise in EE, strong relations with donors, and a global network. While NEECA has the authority on behalf of the GOP and also knowhow of the local institutional, political, technological, and market understanding.

Lesson Learned #6:	Creating consumer awareness on quality EE lighting to exert pressure on lighting manufacturers/importers/suppliers is paramount in facilitating transition to EE lighting
Context/comment:	Considering the challenges associated with implementation of MEPS, an informed consumer base can work as a pull factor for transitioning to EE lighting.

Lesson Learned #7:	An EE lighting sector that is highly fragmented and characterized by small scale importers and assemblers (such as that in Pakistan), can hinder capacity building and enforcement of standards.
Context/comment:	Implications for effectiveness and sustainability

Lesson Learned #8:	Future project design should include input from various relevant technical entities based on their lessons learned from similar programming, such as U4E in order to result in realistic project strategy that is aligned with the available budget and time.
Context/comment:	This will promote sustainability of future initiatives

6.3 Recommendations

Recommendation #1:	To cater for the accelerated advancements in technology, it is recommended that the Ministry of Energy undertake at least annual revisions of MEPS. The UNEP project staff should pass this recommendation to the Ministry of Energy (Power Division) within the Government of Pakistan in an effective manner.
Challenge/problem to be addressed by the recommendation:	The current MEPS framework does not stipulate revisions to the standards established. As such, the MEPS may be unaligned with the latest technology.
Priority Level:	Critical
Type of Recommendation	Partners recommendation

Responsibility:	Government of Pakistan/Ministry of Energy (Power Division)
Proposed implementation timeframe:	Medium (6 – 12 months)

Recommendation #2:	It is recommended that NEECA push for cabinet approval of MEPS. The UNEP project staff should pass this recommendation to NEECA in an effective manner.
Challenge/problem to be addressed by the recommendation:	The MEPS guidelines have yet to be approved by the Federal Cabinet. Resultantly, while the MEPS await approval by the Federal Cabinet, absence of any binding laws and effective enforcement pose risk of limited adherence to MEPS across the lighting industry.
Priority Level:	Critical
Type of Recommendation	Partners recommendation
Responsibility:	NEECA, Government of Pakistan
Proposed implementation timeframe:	Immediate (3-6 months)

Recommendation #3:	It is recommended that NEECA work toward the development of a future EE project in Pakistan be focused on light testing and MRV. The UNEP project staff should pass this recommendation to NEECA in an effective manner.
Challenge/problem to be addressed by the recommendation:	
Priority Level:	Important
Type of Recommendation	Project level recommendation
Responsibility:	NEECA
Proposed implementation timeframe:	Short to Medium Term (6-12 months)

Recommendation #4:	It is recommended that the government of Pakistan promote EE lighting policies and standards which further encourage wider industry compliance with MEPS through knowledge sharing events, including conferences and seminars. The UNEP project staff should pass this recommendation to NEECA in an effective manner.
Challenge/problem to be addressed by the recommendation:	As the lighting sector in Pakistan is highly fragmented and characterized by small scale importers and assemblers, it is critical to engage these businesses in activities on improving EE lighting quality. Similarly, since the GOP has started encouraging local manufacturing of lighting products, future projects must also engage this segment of suppliers.
Priority Level:	Important
Type of Recommendation	Partners recommendation
Responsibility:	NEECA
Proposed implementation time-frame:	Medium term (6 – 12 months)

Recommendation #5:	Considering the importance of EE lighting, it is recommended that NEECA set up an EE lighting directorate that is staffed by experienced staff with capacities in public sector management and private sector
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	linkages, etc. The UNEP project staff should pass this recommendation to NEECA in an effective manner.
Challenge/problem to be addressed by the recommendation:	Another major challenge was the limited experience of the PMU staff in handling donor-funded Projects, particularly in aspects like monitoring, reporting, budget management, and extensions.
Priority Level:	Critical
Type of Recommendation	Partners recommendation
Responsibility:	NEECA
Proposed implementation time-frame:	Short to Medium Term (3-6 months)

Recommendation #6:	The Evaluation Office to review the documented process for extending/prematurely closing projects with a particular focus on those with a) a substantive element that the project has not been able to implement or b) where significant funds are remaining. The Evaluation Office to confirm adequate senior involvement/approval is incorporated in the current systems.
Challenge/problem to be addressed by the recommendation¹³:	The project was closed after two no-cost extension despite the availability of unutilized funds (USD 430,000) amounting to 27.3% of the total GEF grand value, including the USD 250,000 left for establishment of RLF. The Executive Agency did not request a third extension. However, it is important to note that the Project was able to secure a letter of assent from HBL, based on which an RLF could very well have been established and there were substantial funds left in the Project at time of Project ending.
Priority Level¹⁴:	High
Type of Recommendation¹⁵	UNEP-wide
Responsibility:	UNEP
Proposed implementation timeframe:	12 months

¹³ The same challenge/problem can lead to a recommendation of more than one type, i.e. one or more of the following: Project Level, UNEP-wide or Partners recommendation.

¹⁴ Critical, Important or Opportunity for Improvement.

¹⁵ Project Level, UNEP-Wide or Partners recommendation.

ANNEX I. RESPONSE TO STAKEHOLDER COMMENTS

Response to stakeholder comments received but not (fully) accepted by the reviewers, where appropriate

Page Ref	Stakeholder comment	Evaluator(s) Response	UNEP Evaluation Office Response
16 (rec 6)	Terminal Evaluation is the independent and final evaluation. Unlimited no. of extensions is also a cost to the IA and GEF. The previous two extensions and limited results in the RF establishment reflect the lack of capacity or will at the EA's side. Hence it was unrealistic to have expected any other outcome for any continuation.	This is the evaluator's conclusion based on in depth assessment of this project as well as prior experience with GEF projects	
24	The project started in April 2017 and ended in Sept 2022 which meant the project was executed for a period of 5+ years. Hence we are not clear on the term "limited time". Further as mentioned in earlier sections, there was an extensive delays in recruiting the PM leading to a conclusion of lack of political / EA willingness. Further the project was approved 2 no cost extensions primarily for setting up. But despite this, this was not leveraged to reap the benefits out of the available funds.	Please note, this section provides an analysis of the Project Design. The extensions, etc. are elaborated in the findings section of this evaluation report.	
30	The latest PIR is for the period July to Sept 2022. May kindly check and update this section.	The project progress covered in the PIRs are from July to June. And the latest PIR shared with us covered the period from July 2022 to June 2023. However, no progress for this output was reported	

Page Ref	Stakeholder comment	Evaluator(s) Response	UNEP Evaluation Office Response
32	It would be useful to link up with the EoP targets which was MEPS for TFL, LED lamps and LED tubes	Not clear from project reporting	
37	This is factually incorrect. As per the details available with TE, it may be clearly noted that USD 750,000 is the quantum of funds available with NEECA whereas the approved expenditure until June 2022 was far less than this available. This meant the excess funds was available with NEECA. As highlighted earlier, NEECA has stopped its correspondence after the project closure.	Please review the section on financial management on detailed financial analysis, including details on allocations and expenditures, etc. This analysis highlights the limited progress on establishing the RLF and the subsequent closure of the project in Sept 2022, resulted in the amount of USD 250,000 earmarked for the RLF not being disbursed.	
44	As mentioned earlier, there was no formal requests from the EA to extend the project. Further, the 2 nd extension for 12 months, was entirely on the basis of establishment of the RLF.	The 4th PIR mentions the second extension, but it states that the extension was granted due to the extended period of the pandemic and does not mention establishment of the RLF as the reason	The Evaluation Office notes that the Executing Agency did not formally request a third extension to continue pursuit of the RFL.
48	M&E is allocated for the TE. Hence no expenditure has been made till Sept. As this was a MSP, resources were available only a TE. UNEP used PIRs for its monitoring purposes.	As specified in the ProDoc the MTE would be conducted	
48	Kindly refer to earlier comments.	Please note that the MTR was specified in the ProDoc, as specified here.	

ANNEX II. PEOPLE CONSULTED DURING THE EVALUATION

Organisation	Name	Position	Gender
NEECA	Mr. Hasnain Ahmad	Project Manager	Male
UNEP	Mr. Sudhir Sharma	Task Manager with UNEP's GEF Climate Change Mitigation	Male
UNEP	Mr. Manoj Kumar Muthumanickam	Project Specialist	Male
U4E	Ms. Rocio Soledad Garcia	Project Coordinator	Female
U4E	Mr. Paul Kellett	Project Manager	Male
IIEC	Mr. Sommai Phon-Amnuaisuk	Vice President – Asia Pacific	Male
Ministry of Climate Change	Mr. Asif Shahibzada	Director General (Environment & Climate Change)	Male
Quaid-i-Azam University, Department of Electronics	Mr. Aqeel Ashraf	Professor	Male
Quaid-i-Azam University	Anwar Ejaz	Chief Librarian	Male
CERAD	Mr. Imran Ali Shah	Manager Alternate Energy Research and Innovation Lab	Male
CERAD	Mr. Waqas Khalid	Research Officer	Male
Signify	Mr. Asad Jafar	Chairman & CEO	Male
Uni Lux	Mr. Sohail Chandna	Unilux	Male

ANNEX III. KEY DOCUMENTS CONSULTED

Project planning and reporting documents

- Project Identification Form (PIF) Request For CEO Approval Document
- Project Implementation Reports
- Project Cooperation Agreements Project Financial Reporting
- Project Workplans
- Project Logframe
- Gender Action Plan

Project outputs – Overall

- PSC Meeting Minutes
- Towards a System for the Collection and Recycling of Used Lamps in Pakistan
- Supporting Policies and Mechanisms for Energy Efficient Lighting in Pakistan
- Minimum Energy Performance Standards (MEPS) for LED Bulbs, LED Downlights, LED Tubes, & LED Outdoor Lighting in Pakistan
- National Efficient Lighting Policy and Strategy Report
- Successful Implementation of First Ever Minimum Energy Performance Standards (MEPS) And Labels for Energy Efficient LED Lighting in Pakistan
- National Product Testing Laboratories Drive Eco-Efficiency: Capacity Building Study Tour in Thailand
- Next Generation of Brighter 'Eco-Efficient' Lighting Delivers Big Savings, Pilot Demonstration Projects Successfully Completed in Pakistan
- Identification of Financial Institutions and Optimal Transaction Structure

Reference documents

UNEP Glossary of Results Definitions

ANNEX IV. EVALUATION FRAMEWORK

S. No.	Main Evaluation Questions	Evaluation Indicators	Sources of Verification
Key Strategic Questions			
1	How successful has the project been in promoting the adoption of energy-efficient lighting in the residential, commercial, industrial, and outdoor sectors in Pakistan?	Energy Savings, Costs Saving, GHG emissions reductions, No. of govt. Policies adopted	Interviews with the project staff, executing agencies, and other govt. ministries/agencies.
2	In light of the project's activities to introduce energy-efficient lighting solutions and overcome barriers to their technological and economic viability in Pakistan, what opportunities are present or already in motion that have the potential to scale up the project's outcomes within Pakistan and potentially catalyze similar initiatives in other countries within the region?	Qualitative. Any indication of utilization beyond the project's initial scope and/or expansion beyond the initial geographical limits.	Interviews with all stakeholders. Any evidence of broader reach, interest, scaling and/or adoption e.g., discussions, forums and/or processes set in motion.
3	Based on the analysis of the ToC at evaluation, what factors still present the highest risks to the success of the project, in achieving the transition to energy-efficient lighting and reducing greenhouse gas emissions in Pakistan?	Policy and Regulatory Environment; Market Availability and Affordability; Stakeholder Engagement and Collaboration; and Awareness and Capacity Building.	Interviews with project stakeholders (government officials, project staff, private sector representatives, international organization staff, etc.).
4	Has the evaluation identified any unintended results (positive or negative) deriving from the project's implementation, and if so, what was it and how might it affect the intended project Impact?	Any evidence found of unintended consequences (positive or negative) was not anticipated by the project. E.g., energy and costs saving beyond the projected targets, positive or negative environmental impacts, job losses in traditional lighting industry, technical challenges.	Interviews with project staff and key stakeholders; review of project documentation (progress reports, workshop reports, etc.).

S. No.	Main Evaluation Questions	Evaluation Indicators	Sources of Verification
Strategic Relevance: The extent to which the activity is suited to the priorities and policies of the target group, recipient, and donor?			
5	Alignment to Donor/GEF/Partner Strategic Priorities Alignment with the sponsoring parties' priorities? Bali Strategic Plan? South-South Cooperation? GEF? What was the scale and scope of the contributions to any of these?	Confirmation against past and updated priorities and strategies; Evidence of cooperation / networking / information sharing with region and other similar climatic regions – most notably related GEF-UNEP projects.	Desk review. Project documentation and all relevant frameworks and reports; interviews with donors, project staff, execution agencies, and other govt. ministries/agencies.
6	Relevance to Global, Regional, Sub-regional and National Environmental Priorities. Assess alignment with (i) SDGs and Agenda 2030, (ii) stated environmental concerns and needs of the country, (iii) Nationally Appropriate Mitigation Action (NAMA) plans or regional agreements; and (iv) current policy priority to leave no one behind.	Confirm alignment with (i) SDGs and Agenda 2030, (ii) stated environmental concerns and needs of the country, (iii) Nationally Appropriate Mitigation Action (NAMA) plans or regional agreements; and any other govt. strategies	Desk review; Project documentation and all relevant frameworks and reports; interviews stakeholders; interviews with relevant UNEP and project staff.
7	Complementary with existing Interventions?	Confirm against past and recently introduced interventions for synergies and alignment.	Desk review; Interviews with donors, govt. stakeholders and project staff.
Quality of Project Design			
8	How satisfactory was the project design? Were any GEFSEC and PRC responses (if any) adequately addressed, or did concerns materialize?	Assessment / rating template completed. Any further insights gained during the evaluation with specific consideration of: - Stakeholder participation and cooperation; - Responsiveness to human rights and gender equity.	Project documentation and all relevant frameworks and reports; interviews with project staff.
Nature of External Context			

S. No.	Main Evaluation Questions	Evaluation Indicators	Sources of Verification
9	Were there any unforeseen developments that impacted the project success?	Any evidence due to pandemic, natural disasters, political instability, or social unrest etc.	Interviews with project team, Verification through interviews with stakeholder and supporting information available in public domain, as relevant.
Effectiveness: To what extent have the expected outcomes and objectives of the project been achieved?			
10	How successful was the project in producing the programmed outputs and delivery targets / milestones. Where there any formal modifications / revisions made during the project implementation phase?	Evidence of programmed activities such as draft & adopted policies, reports, publications, trainings, demonstration projects as per the indicators defined for the project outputs. - Challenges identified with completing deliverables and measures taken to mitigate. - Evidence of agility shown by PM and team to navigate challenges. - Impact of challenges with recruiting and retaining a PM. - Occurrence of change in project design/ implementation approach (i.e., restructuring) when needed to improve project efficiency	Interviews with project staff, executing agency, donors, and other partners; Review of related project documentation
11	Achievement of Project Outcomes – How successful was the project interventions and implementation in achieving the intended outcomes not within the control of the team. What evidence supports the attribution of success to UNEP's interventions?	Adoption of National Efficient Lighting Strategy [Y/N]. Evidence of an uptake and investment in energy efficient lighting in Pakistan MVE capacities built. Evidence of learnings integrated into various spheres of policy, planning, academic teaching, and research programmes. Evidence of knowledge	Interviews with project staff and partners / PSC and TWG members, govt. agencies, private sector stakeholders Review of all related documentation and PIRs.

S. No.	Main Evaluation Questions	Evaluation Indicators	Sources of Verification
		management, information sharing, learning, and collaboration network embedded among key stakeholders e.g., community of practice or other forum or platform for knowledge exchange of collaboration established; sub-committee or regular slot on pre-existing platform; annual conference initiated; cross border work groups; etc.	
12	Likelihood of Impact - How likely are the positive, intended impacts to occur? To what extent did the project catalyse, scale up or replicate positive impacts, such that they would have a long-term effect?	The extent to which energy-efficient lighting technologies have been adopted and scaled up; Assess the actual energy savings achieved through the project implementation; Evaluate the project's influence on shaping energy efficiency policies and regulations; Evidence of market growth for energy efficient lighting products; Cost of available solutions (whether competitive) and cost trends;	Interviews with project staff and partners; Review of all related documentation and annual, and MTR reports.
Financial Management: Completeness of information and communication between financial and project management staff			
13	ADHERENCE, COMPLETENESS & COMMUNICATION – Are all records available. How much of the funds (from each source) were spent, and for which outputs? Compared to budget? How was co-funding released? Were the funds administered cost-effectively? How effectively did the Project & Task Managers & Fund Management Officer exchange information and adapt as	Availability and quality of financial and progress reports; Timelines and adequacy of reporting provided; Level of discrepancy between planned and utilized financial expenditures; Planned vs. actual funds leveraged; Agility in responding to delays; Timing of advances and expenditure; Quality and regularity of reporting and	Audits, Progress Reports, financial reports, Interviews with PM and financial team members

S. No.	Main Evaluation Questions	Evaluation Indicators	Sources of Verification
	needed to change? Did any communication issues affect the quality of the project performance?	communication; and Efficiency of communication and processing of funding reallocations for activities.	
Efficiency: Extent to which the project delivered maximum results from the given resources			
14	How cost effective was the project? Was it executed in a timely manner? How were delays managed to minimize impacts? Were events sequenced efficiently? Could the project extensions have been avoided? What was its cost impact? Were any cost-saving measures introduced? Were any efforts made during project implementation to make use of/build upon pre-existing institutions, agreements and partnerships, data sources, synergies and complementarities with other initiatives, programmes, and projects etc. to increase project efficiency. Were any measures taken to reduce the UNEP's environmental impact? What was the impact of no-cost extensions on partners / implementing parties?	Cost-effectiveness, timeliness, delay management, sequencing efficiency, cost impact, and cost-saving measures are key indicators to evaluate project's execution and financial performance. Assessment of leveraging pre-existing resources, reducing UNEP's environmental impact, and analyzing the impact of no-cost extensions on partners/implementing parties are additional crucial aspects for evaluating the project's efficiency and sustainability.	Progress Reports, financial reports, comparative project, and carbon costs. Interviews with PM and financial team members.
Monitoring and Reporting			
15	Monitoring design and budgeting – Was the M&E plan clear, SMART, adequate. Was there a budget allocation made for M&E?	Monitoring plan; Effective tracking tool progress; adequacy of budget allocation; budget spend;	Monitoring reports, Interviews with PM and financial team members

S. No.	Main Evaluation Questions	Evaluation Indicators	Sources of Verification
		challenges with plan and/or budget.	
16	Monitoring of project implementation - Was the monitoring system operational and efficient in facilitating timely tracking? Were the allocated funds utilized for monitoring purposes?	Timely and comprehensive submission of reports, adhering to the requirements stated in the respective monitoring plans. Expenditures and payments are in line with the approved budgets.	ProDoc, all relevant reporting, GEF tracking tool, Interviews with project team
17	Project reporting - To what extent were project reports and tracking tools consistently completed and submitted?	Quality of results-based management reporting (progress reporting, monitoring, and evaluation) Quality of project documentation and records Timelines and adequacy of reporting provided Dated reports; signed (or email) acknowledgements of receipt of reports. Completeness of reports, per agreed-upon requirements.	Reports, budgets, financial statements, and correspondence. interviews with relevant project staff.
Sustainability: Probability of direct outcomes being maintained and developed after close of intervention			
18	SOCIO-POLITICAL SUSTAINABILITY – How do social and political factors contribute to the sustainability and advancement of outcomes in terms of (a) ownership, interest, and commitment to drive the project forward, and (b) the likelihood of sustaining individual capacity development efforts?	Energy efficient lighting strategy/policy implemented and likely to be implemented (confirm extent of commitment). Quality / level of commitment (i.e., level and resource allocation) Evidence of any innovative financial measures or incentives introduced.	Interviews with project staff, executing agency, govt. ministries and agencies, pilot project beneficiaries; Review of all related documentation and annual, quarterly, and final project reports.

S. No.	Main Evaluation Questions	Evaluation Indicators	Sources of Verification
19	FINANCIAL – Are there any outcomes that necessitate additional funding for sustainability? Have proposals and plans thoroughly assessed and addressed potential financial risks?	Identified outcomes requiring additional funding to be sustained	Interviews with project staff, executing agency, and other govt. stakeholders; Budgets and reports
20	INSTITUTIONAL – To what extent does sustainability rely on institutional frameworks and governance?	Adequacy of capacity to pursue, implement and enforce new policies across all areas. Quality / evidence of commitment (i.e., level and resource allocation) to the above. Structures created or in place to support this implementation e.g., workgroup, forum? Any additional institutional capacity established to drive Energy efficient lighting.	Interviews with project staff, executing agency, country partners; Review of all related documentation and annual, quarterly, and final project reports.

ANNEX V. DATA COLLECTION TOOLS

Question	Implementing Agency	Executing Agency	Stakeholder Group Targeted			Beneficiaries
			Technical Assistance Providers	Project Steering Committee	Technical Working Group	
			Context			
Involvement described (open ended).	x	x	x	x	x	x
General perception of the project.	x	x	x	x	x	x
Project Alignment with Strategic Direction and Organizational Goals	x	x	x	x	x	x
Are you aware of any other similar projects/activities being implemented relating to energy efficiency in Pakistan?	-	x	x	x	x	x
Why did your organization agree to participate in the project activities? Please elaborate the reasons.	-	x	-	-	x	x
Overall Impact						
Does the project make a periodic assessment of the impact? E.g., tracer studies, impact assessment, etc.	x	x	-	-	-	-
In your opinion, which project activities have had the highest potential for impact? Why?	x	x	-	-	-	-
Also, which project activities do you think have had the lowest potential for impact? Why?	x	x	-	-	-	-
How can the potential impact of these activities be enhanced?	x	x	x	x	x	-
Has the project influenced any broader adoption/integration into various spheres of policy, planning, academic teaching, and research programmes?	x	x	-	x	x	-

Question	Stakeholder Group Targeted					
	Implementing Agency	Executing Agency	Technical Assistance Providers	Project Steering Committee	Technical Working Group	Beneficiaries
In your opinion, how effective are the MEPS/Labeling for lighting products and electrical appliances and equipment in phasing out the inefficient lighting?	x	x	-	x	x	-
Have you noted any particular gender or social benefits / impacts resulting from the implementation?	x	x	x	x	x	-
Have you noted any unintended consequences (positive or negative) not anticipated by the project?	x	x	x	x	x	x
Strategic Relevance						
Alignment with donor/partner priorities	x	x	-	-	-	-
Alignment with (i) SDGs and Agenda 2030, (ii) stated environmental concerns and needs of the countries, sub-regions, or regions where it is being implemented, (iii) Nationally Appropriate Mitigation Action (NAMA) plans or regional agreements; and (iv) current policy priority to leave no one behind.	x	x	-	x	x	-
How has the project complemented other existing Interventions?	x	x	x	x	x	x
Design						
Has your organization been involved in the design of this project? If yes, please provide details, e.g., design process, stakeholders identification etc.	x	x	x	x	x	x

Question	Stakeholder Group Targeted					
	Implementing Agency	Executing Agency	Technical Assistance Providers	Project Steering Committee	Technical Working Group	Beneficiaries
If no, in your opinion, how did this lack of involvement affect your role with regards to project implementation?	x	x	x	x	x	x
If yes, have you faced any challenges in designing the project activities? Please elaborate	x	x	x	x	x	x
Do you believe that the project design reflects the priorities of your organization? Please elaborate.	-	x	x	x	x	x
Please provide an overview of the design process, including the timeframe, process, and stakeholders involved.	x	x	-	-	-	-
What was the process of project design, such as consultations, studies, and meetings?	x	x	-	-	-	-
How were different stakeholders engaged in the project design, and what were the outcomes?	x	x	-	-	-	-
Were any key staff currently working on the project involved in the design? If yes, who were they and what roles did they have?	x	x	-	-	-	-
What challenges were faced during the design phase, such as limited information or lack of stakeholder consensus?	x	x	-	-	-	-
Based on your experience, what are the major positive elements of the project design, such as flexibility and inclusion of specific activities?	x	x	-	-	-	-

Question	Stakeholder Group Targeted					
	Implementing Agency	Executing Agency	Technical Assistance Providers	Project Steering Committee	Technical Working Group	Beneficiaries
What design elements are causing implementation problems, such as a large number of activities or ambitious targets?	x	x	-	-	-	-
Have any measures been taken to address these issues? If yes, please explain the measures and their outcomes.	x	x	-	-	-	-
Have there been any changes to project activities or the logical framework since the project started? If yes, what are these changes, why were they made, and how have they affected project delivery?	x	x	-	-	-	-
External Context						
Were there any unforeseen developments that impacted the project success?	x	x	-	x	x	-
How has COVID-19 affected project implementation at the activity level? Please provide details.	x	x	x	x	x	-
What trends have you seen with regards to negative trends on women's involvement in the project during the COVID-19 pandemic?	x	x	x	x	x	-
What challenges has your organization faced in responding to these challenges during the COVID-19 pandemic?	x	x	x	x	x	-
Did your organization have sufficient resources to effectively	x	x	-	-	-	-

Question	Stakeholder Group Targeted					
	Implementing Agency	Executing Agency	Technical Assistance Providers	Project Steering Committee	Technical Working Group	Beneficiaries
respond to these challenges during COVID-19?						
Effectiveness						
Which project targets have been achieved and overachieved so far?	x	x	-	-	-	-
What were the supporting factors responsible for meeting or exceeding these targets?	x	x	-	-	-	-
Which project outputs/activities were/are delayed? And what were /are the reasons for these delays?	x	x	-	x	x	-
How did these delays affect progress of other project outputs and what is the effect on overall project?	x	x	-	-	-	-
What mitigation measures have been undertaken to bring these activities back on track?	x	x	-	-	-	-
Were any delays ascribed to internal challenges e.g., financial management or administration?	x	x	-	x	x	-
How were synergies with other projects / programmes explored and leveraged – both locally and more broadly?	x	x	-	x	x	-
Outcomes						
Have you seen any evidence of an uptake of adoption of LEDs in the country?	x	x	x	x	x	x
Evidence of increased investment in energy efficient lighting supported by any data	x	x	-	x	x	-

Question	Stakeholder Group Targeted					
	Implementing Agency	Executing Agency	Technical Assistance Providers	Project Steering Committee	Technical Working Group	Beneficiaries
e.g., market trends, sales growth, increased number of active suppliers etc.						
Are the test facilities and quality supervision system functional and have they contributed to credibility / sustainability?	x	x	x	x	x	-
Has the project facilitated knowledge management, information sharing, and embedded a learning, and collaboration network among key stakeholders?	x	x	x	x	x	-
Knowledge Management						
Has the project conducted any research studies that are based on evidence, and are those studies publicly available?	x	x	-	x	x	-
What mechanisms and tools does the project have in place to organize and store knowledge gathered and generated during the course of project implementation? E.g., knowledge management strategy, development of newsletter, etc.	x	x	-	-	-	-
Who are the intended recipients/beneficiaries of this information/data?	x	x	-	x	x	-
What methods of dissemination is the project using to share this information with beneficiaries and various stakeholders?	x	x	-	x	x	-
How have knowledge management and dissemination activities	x	x	-	x	x	-

Question	Stakeholder Group Targeted					
	Implementing Agency	Executing Agency	Technical Assistance Providers	Project Steering Committee	Technical Working Group	Beneficiaries
undertaken by the project been effective? Please provide examples.						
How can the knowledge management and dissemination activities of the project be improved?	x	x	-	x	x	-
Financial Management						
Have the available finances been sufficient to meet project needs? If no what has been the major challenges?	x	x	x	-	-	-
What strategies have been utilized thus far to overcome these challenges? E.g., joint programming, donor appeals, etc.	x	x	-	-	-	-
Has the project faced any administrative problems with financing? E.g., late approvals, difficult reporting processes, unrealistic budgeting at design or AWP stage, etc.?	x	x	x	-	-	-
Summary overview of money spent relative to budget?	x	x	-	-	-	-
What happened to the remaining budget? If any? Could an arrangement be made to secure the funding for accreditation or was it returned to GEF?	x	x	-	-	-	-
How was co-funding released, tracked, accounted for?	x	x	-	-	-	-
Were funds administered cost-effectively? Any benchmarks or evidence to support?	x	x	-	-	-	-

Question	Implementing Agency	Executing Agency	Stakeholder Group Targeted			Beneficiaries
			Technical Assistance Providers	Project Steering Committee	Technical Working Group	
			Efficiency			
Were there any formal changes made to the project scope?	x	x	-	x	-	-
What challenges and opportunities has your organization faced in project implementation? Please provide an overview of each project output.	x	x	x	x	x	-
Where any revisions or tweaks decided in consultation with the project steering committee or technical working group?	x	x	x	x	x	-
How cost effective was the project? USD / ton of CO2 emission reductions?	x	x	-	x	x	-
Was it executed in a timely manner? How were delays managed to minimize impacts? Were events sequenced efficiently?	x	x	-	x	x	-
Could the project extensions have been avoided? What were its cost impacts? Were any cost-saving measures introduced?	x	x	-	x	x	-
What was the impact of no-cost extensions on partners / implementing parties?	x	x	x	-	-	-
Was anything done to minimise the UNEPs environmental footprint?	x	x	-	-	-	-
PARTNERSHIPS AND COORDINATION						
Who are the major project partners and stakeholders?	x	x	-	x	x	-
What is the process of partner/sub-contractor selection?	x	x	-	-	-	-

Question	Stakeholder Group Targeted					
	Implementing Agency	Executing Agency	Technical Assistance Providers	Project Steering Committee	Technical Working Group	Beneficiaries
How are activities of partners monitored? E.g., through signed agreements, field monitoring, reporting, etc.	x	x	-	-	-	-
Which of the stakeholders played a key role in ensuring that the project objectives are met? How? Please elaborate.	x	x	-	-	-	-
How do implementing partners and stakeholders collaborate/coordinate? And how often? E.g., quarterly planning meetings, stakeholder workshops, etc.	x	x	-	-	-	-
What have been major challenges faced by the project in collaborating with its partners and stakeholders? E.g., lack of buy in, limited capacity, etc.	x	x	-	-	-	-
What measures have been taken to overcome some of these challenges? E.g., training of partner staff, consultative planning, etc.	x	x	-	-	-	-
STAKEHOLDER COORDINATION						
What are the major methods used for coordination of various stakeholders? E.g., face to face meetings, periodic workshops, etc.	x	x	-	-	-	-
How has the project benefitted from coordination among stakeholders? E.g., synergies and complementarities lead to efficiency, etc.	x	x	x	x	x	-

Question	Stakeholder Group Targeted					
	Implementing Agency	Executing Agency	Technical Assistance Providers	Project Steering Committee	Technical Working Group	Beneficiaries
What are the key challenges with stakeholder coordination? E.g., lack of responsiveness/interest, limited capacity, too many stakeholders, etc.	x	x	-	x	x	-
How can partner and stakeholder collaboration be improved for better project results?	x	x	-	x	x	-
ORGANIZATIONAL COLLABORATION						
Are there any other international development agencies/projects which have delivered the same or similar activities as that of the project?	x	x	-	x	x	-
If yes, how has the project collaborated with these for synergistic implementation?	x	x	-	x	x	-
What problems has the project faced in collaborating with these other initiatives?	x	x	-	x	x	-
Which of these have significantly helped to contribute to the project outcomes? How?	x	x	-	x	x	-
COORDINATION WITH GEF & CO-FINANCERS						
What has been the major role played by the donor in project design and implementation?	x	x	-	-	-	x
What is the mechanism of coordination with the donors?	x	x	-	-	-	x
Did the UNEP face any challenges when collaborating with the donors? E.g., delayed decision making, etc.	x	x	-	-	-	-

Question	Stakeholder Group Targeted					
	Implementing Agency	Executing Agency	Technical Assistance Providers	Project Steering Committee	Technical Working Group	Beneficiaries
How were these resolved?						
COLLABORATION WITH UNEP						
Has your agency/organization received any support/assistance from UNEP for implementation of the project activities?	-	x	x	x	x	x
If yes, please elaborate how this support/assistance has helped in effective implementation of project activities?	-	x	x	x	x	x
If no, in your opinion how did lack of support affect the implementation process?	-	x	x	x	x	x
What challenges have you faced in your relationship with the UNEP? E.g., delayed fund transfers, limited technical support, difficult monitoring, and reporting processes, etc.	-	x	x	x	x	x
Does your organization partner with any other organizations similar to this project? If yes, what have been the comparative challenges and opportunities of partnering with UNEP?	-	x	x	x	x	x
ROLE OF PSC/TWG						
When was the PSC/TWG formed?	x	x	-	x	x	-
What is the role of the PSC/TWG in implementation of project activities?	x	x	-	x	x	-
What are some of the key activities undertaken by the PSC/TWG?	x	x	-	x	x	-

Question	Stakeholder Group Targeted					
	Implementing Agency	Executing Agency	Technical Assistance Providers	Project Steering Committee	Technical Working Group	Beneficiaries
What were some of the major decisions taken by the PSC/TWG that were instrumental in either helping the project achieve its intended outcomes or changing the course of the project/selected activities?	X	X	-	X	X	-
What is the frequency of PSC/TWG meetings?	X	X	-	X	X	-
How are these meetings held? E.g., face to face, virtually etc.	X	X	-	X	X	-
Did all PSC/TWG meetings take place on time?	X	X	-	X	X	-
Had the proceedings of PSC/TWGs continued as usual despite the COVID-19 pandemic? If yes, please provide a list of activities.	X	X	-	X	X	-
What support has your PSC/TWG received from the UNEP in implementing the project activities? E.g., linkage development, capacity building etc.	X	X	-	X	X	-
Were there any challenges faced by your country PSC/TWG when collaborating with the UNEP? E.g., delayed approvals, difficult reporting procedures, etc.	X	X	-	X	X	-
STAFFING						
Has this staff been sufficient for managing the project? If no, why not?	X	X	-	X	X	-
If not, what measures are being taken to bolster staffing	X	X	-	-	-	-

Question	Stakeholder Group Targeted					
	Implementing Agency	Executing Agency	Technical Assistance Providers	Project Steering Committee	Technical Working Group	Beneficiaries
capacity? E.g., hiring of short-term experts						
Please provide a list of the short-term experts/consultants hired by the project.	x	x	-	-	-	-
Have there been any major changes in staffing during the period of implementation? E.g., staff turnover, or addition/elimination of positions, etc.	x	x	-	-	-	-
What are some of the staffing challenges faced by the project? E.g., limited availability of local staff, difficult to engage field staff, high turnover, etc.	x	x	-	-	-	-
What are the major challenges faced by the project during the course of the implementation? Please elaborate.	x	x	-	x	x	-
How were/can some of these challenges mitigated? Please provide details.	x	x	-	x	x	-
TIMELINESS						
Were all project activities delivered on time and according to the planned timeline in the Project Document and the AWP?	x	x	-	-	-	-
If not, what were the factors responsible for these delays and how did these affect the project? Please elaborate.	x	x	-	-	-	-
How have these delays affected overall project implementation	x	x	-	-	-	-

Question	Stakeholder Group Targeted					
	Implementing Agency	Executing Agency	Technical Assistance Providers	Project Steering Committee	Technical Working Group	Beneficiaries
Monitoring and Evaluation						
Was the monitoring plan implemented?	x	x	-	x	x	-
Was there a budget allocation made for M&E? Was this realistic? Was the money spent as budgeted? Who funded this?	x	x	-	x	x	-
How is the project's Logical Framework and Theory of Change used to monitor progress?	x	x	-	-	-	-
What challenges are faced when using the framework? E.g., ambitious, or non-SMART indicators, long list of activities to be monitored, etc.?	x	x	-	-	-	-
In what format is the monitoring data stored and analyzed? E.g., MS Excel, Access Database, Word, etc.	x	x	-	-	-	-
Are results of the M&E implementation / indicator tracking available for review?	x	x	-	-	-	-
Why wasn't the mid-term review done?	x	x	-	-	-	-
How regularly and completely were project reports and tracking tools completed and submitted?	x	x	-	-	-	-
Does the monitoring process incorporate beneficiary feedback? If yes, how?	x	x	-	-	-	-
What special efforts were made to collect gender-segregated data?	x	x	x	x	x	-
Has the project made any major changes in implementation based on the results of the	x	x	-	x	x	-

Question	Stakeholder Group Targeted					
	Implementing Agency	Executing Agency	Technical Assistance Providers	Project Steering Committee	Technical Working Group	Beneficiaries
monitoring activities? If yes, please provide examples						
Sustainability						
Are you aware of energy efficiency initiative being adopted or planned for adoption outside the initial scope (e.g., other areas of government or development)	x	x	-	x	x	-
On a scale of 1 – 5 with 1 highly unlikely and highly likely, how would you rate the following:	-	-	-	-	-	-
Likelihood of compliance with new codes, standards, and legislation?	x	x	x	x	x	-
Integration of learnings into other areas of government / adoption and backing by other ministries?	x	x	-	x	x	-
That the learnings in Pakistan will be replicated by other countries in the region?	x	x	-	-	-	-
Public demand will start to drive the adoption of LEDs and other energy efficient electronics?	x	x	-	x	x	-
Government recognizes the value of and is fully supportive of energy efficient lighting and other electronics and will continue to advance the legislative environment?	x	x	-	x	x	-
Knowledge sharing and demonstrated benefits from the project will lead to large scale adoption in the country?	x	x	-	x	x	-
Knowledge sharing and demonstrated benefits	x	x	x	-	-	-

Question	Stakeholder Group Targeted					
	Implementing Agency	Executing Agency	Technical Assistance Providers	Project Steering Committee	Technical Working Group	Beneficiaries
from the project will lead to large scale adoption in the region?						
Demonstrated benefits will overcome initial capital investment hurdle?	x	x	-	x	x	-
Credible test facilities and quality supervision system will overcome the concerns about longevity and savings being realized as promised against the larger upfront investment?	x	x	x	x	-	-
Are there any other hurdles you foresee to large scale adoption of energy efficient lighting in the country?	x	x	x	x	x	-
Based on your experience which of the project activities implemented thus far, are the most sustainable? Why?	x	x	x	x	x	x
Similarly, which project activities are the least sustainable? Why?	x	x	x	x	x	x
What are the actual or potential threats to the sustainability of the implemented or planned activities by the project?	x	x	x	x	x	x
Has the project devised an exit strategy with regard to the interventions under the four outputs? If yes, what are the main features of this strategy? And is this strategy documented?	x	x	-	-	-	-
What are your recommendations for improving the likelihood of sustainability of	x	x	x	x	x	x

Question	Stakeholder Group Targeted					
	Implementing Agency	Executing Agency	Technical Assistance Providers	Project Steering Committee	Technical Working Group	Beneficiaries
project current or planned outputs?						
Are there any government initiatives / developments that have integrated EE lighting (e.g., bylaws, housing schemes, public buildings, etc.)	x	x	-	x	x	-
Any other incentive mechanisms, or any other measures introduced to enable / accelerate adoption of EE lighting in the country?	x	x	-	x	x	-
Are you aware of any other evidence that the project contribution will be sustainable?	x	x	x	x	x	x
Gender						
What measurement have been taken to ensure inclusion/mainstreaming of women in the project activities?	x	x	x	x	x	-
What have been the major challenges and opportunities regarding gender integration into project activities?	x	x	x	x	x	-
How were these dealt with to ensure the achievement of project outcomes?	x	x	x	-	x	-

ANNEX VI. BRIEF CV OF THE EVALUATOR

Name	Umm e Zia
Profession	International Evaluation Expert
Nationality	Pakistani
Country experience	- Europe: Austria, Switzerland, United Kingdom - Africa: Benin, Cameroon, Egypt, Eritrea, Guinea, Kenya, Liberia, Libya, Madagascar, Morocco, Mozambique, Namibia, Nigeria, Senegal, Sierra Leone, Somalia, South Africa, Tunisia - Americas: Brazil, Colombia, Guyana, Canada, United States - Asia: Afghanistan, Bangladesh, Bhutan, Cambodia, China, Indonesia, Iraq, Jordan, Lebanon, Lao PDR, Myanmar, Nepal, Pakistan, Philippines, Thailand, Timor Leste, Vietnam - Oceania: Australia - Oceania: Australia
Education	- Institution: University of District of Columbia, Washington DC, USA Date: 1997 to 1998 Degree(s) obtained: Master of Business Administration (GPA: 4.0) - Institution: George Washington University, Washington DC, USA Date: 1996 to 1997 Degree(s) obtained: Studies in Management Information Systems & Finance applied to MBA (GPA: 3.9) - Institution: Kinnaird College for Women, Lahore, Pakistan Date: 1991 to 1995 Degree(s) obtained: Bachelor of Science: Economics, Statistics, and Mathematics

Short biography

Ms. Umm e Zia is a seasoned International Evaluation Expert with nearly 25 years of experience. She has undertaken the evaluation of approximately 70 multisectoral programmes and projects at the national, regional, and global levels. In addition to her extensive experience in undertaking evaluations of donor-funded projects, Ms. Umm e Zia has also undertaken several high-level and strategic organization-wide assessments for diverse organizations such as the ILO, the International Civil Aviation Organization (ICAO), Sustainable Energy for All (SEforALL) and the Commonwealth Secretariat. These high-level evaluations focused on the various organizations' managerial, governance, operational, technical, and strategic functions.

Key clients served by her in this regard include UN/multilateral/bilateral institutions such as: UNICEF, USAID, UN Women, UNDP, FAO, IFAD, UNIDO, ILO, World Bank, Commonwealth Secretariat, SIDA, JICA, GIZ, and GEF, etc. In addition to her work on development cooperation, Ms. Umm e Zia also showcases significant experience working with various humanitarian agencies and organizations such as: Save the Children, The World Food Programme (WFP), Care International, Mercy Corps, Oxfam GB, Oxfam Germany, Oxfam Novib, Catholic Relief Services, World Vision International, etc. With a robust background in designing and leading complex evaluations in nearly 40 countries across Asia, Africa, South America, and the Middle

East, she has also showcased her skills in managing diverse teams as the team leader, overseeing project activities, conducting field missions, and producing high-quality reports.

Umm e holds a Master of Business Administration (MBA) from the University of District of Columbia, Washington DC, USA, and a bachelor's in Economics, Statistics, and Mathematics. She is fluent in English and Urdu and also enjoys intermediate proficiency in French. Umm e is also the Managing Director of Cynosure.

Key specialties and capabilities cover:

- **Sectoral Experience** Climate Change, Environmental Governance, Circular Economy, Marine Plastics, Natural Resource Management, Biodiversity Conservation, Blue Economy, Energy Efficiency, Renewable Energy, Resource Efficient and Cleaner Production (RECP), Persistent Organic Pollutants, Climate Smart Agriculture, Urban Planning, Integrated Water Resource Management, Solid Waste Management
- Decent Work, Job Creation, Economic Growth, Access to Finance, Social Protection, Micro, Small and Medium Enterprises (MSMEs), Value Chains, Livelihoods and Food Security, Rural Infrastructure, Institutional Development & Capacity Building, Gender Equality, Youth, Partnership and Resource Mobilization, Governance, Policy and Legislation, Food Security, Market Competitiveness, Trade Development, Human Security.
- **Competencies/ Expertise**
 - Evaluation:** Strategy Evaluation; Mid-Term and Terminal Evaluation; Global, Regional, and Terminal Evaluation; Impact Evaluation
 - Assessments:** Value Chain Assessment, Situation Assessment, Training Needs Assessment, Institutional Assessment, Sectoral Profiles
 - Data:** Data Collection Design, Statistical Analysis, and Representation
 - Partnership:** Proposal Development, Partnership Review and Evaluation

Selected assignments and experiences

- UNDP/GEF - Terminal Evaluation of the Energy Efficiency Improvement in Public Sector Buildings in China (PSBEE) – International Team Leader
- UNDP/GEF - Terminal Evaluation of the “Enabling Solid State Lighting Market Transformation and Promotion of Light Emitting Diode (LED) Lighting” Project – International Evaluator
- UNDP/GEF - Terminal Evaluation of the “Promoting Energy Efficient Room Air Conditioners (PEERAC)” – International Team Leader
- UNIDO/GEF - Terminal Evaluation of “Promoting Biomass Power Plants in Rural Thailand for Sustainable Renewable Energy” – International Team Leader
- UNDP/GEF - Terminal Evaluation of the “Barrier Removal to Energy Efficient Standards and Labelling (BRESL)” project – International Team Leader
- UNDP/GEF - Terminal Evaluation of the “Market Transformation of Energy Efficient Bricks and Rural Building” project - International Team Leader

ILO - High Level Evaluation of the ILO's Strategies and Actions for Promoting Decent Work in the Rural Economy (With a Focus on Rural Employment), 2016-2023 – International Team Leader

ANNEX VII. EVALUATION TORS (WITHOUT ANNEXES)

UNITED

NATIONS



NATIONS UNIES

Terms of reference

<i>Job Opening number</i>	:	23-United Nations Environment Programme-202349-Consultant
<i>Job Title</i>	:	Evaluation Consultant for Terminal Evaluation of the UNEP/GEF project
		"Delivering the Transition to Energy Efficient Lighting in Residential, Commercial, Industrial and Outdoor Sectors in Pakistan".
<i>General Expertise</i>	:	Environmental Affairs
<i>Category</i>	:	Evaluation
<i>Department/ Office</i>	:	United Nations Environment Programme
<i>Organizational Unit</i>	:	

Purpose

To assess project performance in terms of relevance, effectiveness and efficiency and determine outcomes and impacts stemming from the project including sustainability.

This is one of the evaluations planned for the Biennium 2022-2023.

Duties and Responsibilities

The United Nations Environment Programme (UNEP) is the United Nations systems designated entity for addressing environmental issues at the global and regional level. Its mandate is to coordinate the development of environmental policy consensus by keeping the global environment under review and bringing emerging issues to the attention of governments and the international community for action. This consultancy is located at Headquarters in the Evaluation Office which reports directly to the Executive Director. The consultant reports to the Evaluation Manager (Janet Wildish) and the Director of the Evaluation Office (Michael Spilsbury). The Evaluation In line with the UNEP Evaluation Policy and the UNEP Programme Manual, the Terminal Evaluation is undertaken at operational completion of the project to assess project performance (in terms of relevance, effectiveness, and efficiency), and determine outcomes and impacts (actual and potential) stemming from the project, including their sustainability. The Evaluation has two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote operational improvement, learning and knowledge sharing through results and lessons learned among UNEP and NEECA, U4E, the Ministry of Science & Technology, and the International Institute for Energy Conservation (IIEC). Therefore, the Evaluation will identify lessons of operational relevance for future project formulation and implementation, especially where a second phase of the project is being considered. Recommendations relevant to the whole house

may also be identified during the evaluation process. The Project The project objective was to secure significant global climate change mitigation and environmental benefits by instituting efficient lighting policies and creating a framework for innovative financial mechanisms that promote innovative and high efficiency products. The Evaluation Team For this Evaluation, the Evaluation Consultant will work under the overall responsibility of the Evaluation Office represented by an Evaluation Manager, in consultation with the UNEP Task Manager, Fund Management Officer and the Sub-programme Coordinator of the Climate Action UNEP Sub-programme. Specific Responsibilities In close consultation with the Evaluation Manager, the Evaluation Consultant will be responsible for the overall management of the Evaluation and timely provision of its outputs, data collection and analysis and report-writing. More specifically: Inception phase of the Evaluation, including: • preliminary desk review and introductory interviews with project staff; • draft the reconstructed Theory of Change of the project; • prepare the evaluation framework; • develop the desk review and interview protocols; • draft the survey protocols (if relevant); • develop and present criteria for country and/or site selection for the evaluation mission; • plan the evaluation schedule; • prepare the Inception Report, incorporating comments until approved by the Evaluation Manager Data collection and analysis phase of the Evaluation, including: • conduct further desk review and in-depth interviews with project implementing and executing agencies, project partners and project stakeholders; • (where appropriate and agreed) conduct an evaluation mission(s) to selected countries, visit the project locations, interview project partners and stakeholders, including a good representation of local communities. Ensure independence of the Evaluation and confidentiality of evaluation interviews. • regularly report back to the Evaluation Manager on progress and inform of any possible problems or issues encountered and • keep the Project/Task Manager informed of the evaluation progress. Reporting phase, including: • draft the Main Evaluation Report, ensuring that the evaluation report is complete, coherent and consistent with the Evaluation Manager guidelines both in substance and style; • liaise with the Evaluation Manager on comments received and finalize the Main Evaluation Report, ensuring that comments are taken into account until approved by the Evaluation Manager • prepare a Response to Comments annex for the main report, listing those comments not accepted by the Evaluation Consultant and indicating the reason for the rejection; and • (where agreed with the Evaluation Manager) prepare an Evaluation Brief (2-page summary of the evaluand and the key evaluation findings and lessons) Managing relations, including: • maintain a positive relationship with evaluation stakeholders, ensuring that the evaluation process is as participatory as possible but at the same time maintains its independence; • communicate in a timely manner with the Evaluation Manager on any issues requiring its attention and intervention. The Evaluation Consultant shall have had no prior involvement in the formulation or implementation of the project and will be independent from the participating institutions. The consultant will sign the Evaluation Consultant Code of Conduct Agreement Form. The evaluation Consultant will be selected and recruited by the UNEP Evaluation Office through a Special Service Agreement (SSA) contract. Comprehensive terms of reference will be shared with the consultant separately.

Ultimate result of service

The consultant will submit a concise evaluation report.

Travel Details

The work is home-based with field visits.

Travel	Per Diem	Other	Total
0	0	0	0

Output/Work Assignments

Deliverables and corresponding Special Service Agreement fee:

1st and 2nd Outputs will be delivered within the period 15/04/2023 to 15/08/2023 as stated below:

1. Approved Inception Report - 30% (US\$6600) Approved
 2. Draft Main Evaluation Report - 30% (US\$6600)
- The 3rd output below, will be delivered within the period 01/10/2023 to 30/11/2023

3. Approved Final Main Evaluation Report 40%(US\$8800)

Contract Duration

Overall Contract Duration: 6 months Estimated amount of actual

time to worked (days, weeks, months): 88 Days

Regular Working Hours

(if applicable): PART-TIME

Total Remuneration: US\$ 22000

Payment Terms: Deliverable-Based

Qualification Requirements/Evaluation Criteria*Education:*

A university degree in environmental sciences, international development or other relevant political or social sciences area is required and an advanced degree in the same areas is desirable

Language:

English and French are the working languages of the United Nations Secretariat. For this consultancy fluency in oral and written English is a requirement.

JFQ/JSQ:

A minimum of 5 years of technical / evaluation experience is required, preferably including evaluating large, regional, or global programmes and using a Theory of Change approach

A good/broad understanding of Energy Efficiency and in particular appliance energy efficiency, financing of energy efficiency measures and EE policy design are desired.

Working knowledge of the UN system and specifically the work of UNEP, and experiences in Pakistan are an added advantage.

Supervisor Name: _____

Title: _____

ANNEX VIII. GEF PORTAL INPUTS

Question: What was the performance at the project's completion against Core Indicator Targets? (For projects approved prior to GEF-7¹⁶, these indicators will be identified retrospectively and comments on performance provided¹⁷).
Response: (Might be drawn from Monitoring and Reporting section) N/A
Question: What were the progress, challenges, and outcomes regarding engagement of stakeholders in the project/program as evolved from the time of the MTR? (This should be based on the description included in the Stakeholder Engagement Plan or equivalent documentation submitted at CEO Endorsement/Approval)
Response: (Might be drawn from Factors Affecting Performance section) The involvement of diverse stakeholders, including LED manufacturers, research institutes, and international experts, aimed to ensure a comprehensive approach. The project also incorporated gender mainstreaming and aimed to secure strong government buy-in through the placement and staffing of the PMU. However, the project faced challenges in stakeholder coordination due to the fragmented nature of the lighting industry in Pakistan, making it difficult to achieve consensus and standardization. Additionally, the project encountered delays in obtaining necessary approvals and signing documents due to frequent changes in leadership at NEECA and bureaucratic processes within the organization. The PMU also struggled to garner support from certain ministries and agencies, highlighting challenges in inter-agency coordination.
Question: What were the completed gender-responsive measures and, if applicable, actual gender result areas? (This should be based on the documentation at CEO Endorsement/Approval, including gender-sensitive indicators contained in the project results framework or gender action plan or equivalent)
Response: (Might be drawn from Factors Affecting Performance section) The project implemented several gender-responsive measures, primarily focusing on ensuring female participation and tailoring communication strategies. The project aimed for at least 30% female representation in stakeholder meetings, workshops, and training sessions. This was largely successful, with the project reporting that this target was met or exceeded in all its activities. The project also developed gender-oriented communication materials and messages, specifically targeting women consumers. These efforts aimed to raise awareness about energy-efficient lighting among women and promote their involvement in the transition to sustainable energy practices. The actual gender result areas, as evidenced by the evaluation, indicate a positive impact on female participation and awareness. The project's emphasis on gender mainstreaming led to increased involvement of women in various project activities, contributing to a more inclusive and equitable approach. The gender-oriented communication campaigns also proved effective in reaching women consumers and raising their awareness about the benefits of energy-efficient lighting. The project's

¹⁶ The GEF is currently operating under the seventh replenishment period of the GEF Trust Fund covering the period July 1, 2018 to June 30, 2022. The GEF Portal Reporting Guide for FY20 Reporting Process indicates that GEF-6 projects that have yet to map existing indicators to GEF-7 Core Indicators need to do so at MTR stage or (if already there) at the time of the TE.(i.e. not GEF projects approved before GEF-6)

¹⁷ This is not applicable for Enabling Activities

efforts in this regard can be considered successful in promoting gender equality and empowering women in the context of sustainable energy initiatives.

Question: What was the progress made in the implementation of the management measures against the Safeguards Plan submitted at CEO Approval? The risk classifications reported in the latest PIR report should be verified and the findings of the effectiveness of any measures or lessons learned taken to address identified risks assessed. *(Any supporting documents gathered by the Consultant during this review should be shared with the Task Manager for uploading in the GEF Portal)*

Response: *(Might be drawn from Factors Affecting Performance section)*

N/A

Question: What were the challenges and outcomes regarding the project's completed Knowledge Management Approach, including: Knowledge and Learning Deliverables (e.g. website/platform development); Knowledge Products/Events; Communication Strategy; Lessons Learned and Good Practice; Adaptive Management Actions? *(This should be based on the documentation approved at CEO Endorsement/Approval)*

Response: *(Might be drawn from Factors Affecting Performance section)*

The challenges and outcomes regarding the project's completed Knowledge Management Approach included difficulties in timely development and procurement for monitoring, reporting, and verification processes, partly due to product availability issues. Despite these challenges, the project made significant progress in policy development, capacity building, and pilot implementation for efficient lighting adoption. Knowledge and learning deliverables, such as awareness initiatives, faced partial accomplishment due to these challenges. The communication strategy, including successful campaigns and pilot demonstrations, demonstrated significant progress. Lessons learned emphasized the need for a deep understanding of the financial landscape and significant funding to attract borrowers for energy-efficient lighting, and the importance of large-scale pilot projects in influencing consumer behavior, although these require accompanying awareness campaigns. Adaptive management actions highlighted the need for strong stakeholder engagement and the challenges in establishing specialized financing entities.

Question: *What are the main findings of the evaluation? (Draw from the Conclusions of the report, with a strong focus on findings related to effectiveness and sustainability).*

Response:

The project was successful in creating substantial awareness about energy-efficient lighting among stakeholders, achieving significant penetration of LED lighting in various sectors. However, it faced challenges in establishing a RLF due to economic downturns and limited borrower interest. This resulted in the non-disbursement of USD 250,000. Despite these setbacks, pilot projects demonstrated successful adoption of energy-efficient practices, and partnerships between government agencies and technical organizations were fruitful. The project's approach to sustainability included recommendations for annual revisions of MEPS and promoting energy-efficient lighting policies through knowledge-sharing events. Overall, the project made considerable progress in promoting energy efficiency, although economic conditions and initial delays presented notable challenges.

ANNEX IX. QUALITY ASSESSMENT OF THE EVALUATION REPORT

Terminal Evaluation: UNEP/GEF Project "Delivering the Transition to Energy Efficient Lighting in Residential, Commercial, Industrial and Outdoor Sectors in Pakistan" GEF ID 5799 (2018–2022)

All UNEP evaluations are subject to a quality assessment by the Evaluation Office. This is an assessment of the quality of the evaluation product (i.e. evaluation report) and is dependent on more than just the consultant's efforts and skills.

	UNEP Evaluation Office Comments	Draft Report Rating
Report Quality Criteria		
Quality of the Executive Summary <u>Purpose:</u> acts as a stand alone and accurate <u>summary</u> of the main evaluation product, especially for senior management. To include: • concise overview of the evaluation object • clear summary of the evaluation objectives and scope • overall evaluation rating of the project and key features of performance (strengths and weaknesses) against exceptional criteria • reference to where the evaluation ratings table can be found within the report • summary response to key strategic evaluation questions • summary of the main findings of the exercise/synthesis of main conclusions • summary of lessons learned and recommendations.	Final report (coverage/omissions): The executive summary is missing reference to the location of the evaluation ratings table and a synthesis of the evaluation's main conclusions. Final report (strengths/weaknesses): The executive summary clearly and concisely describes the evaluand and key findings against key evaluation criteria.	5
Quality of the 'Introduction' Section <u>Purpose:</u> introduces/<u>situates</u> the evaluand in its institutional context, establishes its main parameters (time, value, results, geography) and the purpose of the evaluation itself. To include: • institutional context of the project (sub-programme, Division, Branch etc) • date of PRC approval, project duration and start/end dates • number of project phases (where appropriate) • results frameworks to which it contributes (e.g. POW Direct Outcome) • coverage of the evaluation (regions/countries where implemented) • implementing and funding partners • total secured budget • whether the project has been evaluated in the past (e.g. mid-term, external agency etc.) • concise statement of the purpose of the evaluation and the key intended audience for the findings.	Final report (coverage/omissions): The section addresses all required elements Final report (strengths/weaknesses): The Introduction clearly and concisely describes the key aspects of the evaluand and its context.	6

	UNEP Evaluation Office Comments	Draft Report Rating
Report Quality Criteria		
Quality of the 'Evaluation Methods' Section <u>Purpose:</u> provides reader with clear and comprehensive description of evaluation methods, demonstrates the <u>credibility</u> of the findings and performance ratings. To include: • description of evaluation data collection methods and information sources • justification for methods used (e.g. qualitative/quantitative; electronic/face-to-face) • number and type of respondents (<i>see table template</i>) • selection criteria used to identify respondents, case studies or sites/countries visited • strategies used to increase stakeholder engagement and consultation • methods to include the voices/experiences of different and potentially excluded groups (e.g. vulnerable, gender, marginalised etc) • details of how data were verified (e.g. triangulation, review by stakeholders etc.) • methods used to analyse data (scoring, coding, thematic analysis etc) • evaluation limitations (e.g. low/ imbalanced response rates across different groups; gaps in documentation; language barriers etc) • ethics and human rights issues should be highlighted including: how anonymity and confidentiality were protected. Is there an ethics statement? E.g. <i>'Throughout the evaluation process and in the compilation of the Final Evaluation Report efforts have been made to represent the views of both mainstream and more marginalised groups. All efforts to provide respondents with anonymity have been made.'</i>	Final report (coverage/omissions): The section addresses all required elements except, it is missing a table with the number and types of respondents. Draft report (strengths/weaknesses): The Evaluation Methods section is clear and concisely written. It effectively describes the limitations that the evaluation faced.	5
Quality of the 'Project' Section <u>Purpose:</u> describes and <u>verifies</u> key dimensions of the evaluand relevant to assessing its performance. To include: • <i>Context:</i> overview of the main issue that the project is trying to address, its root causes and consequences on the environment and human well-being (i.e. synopsis of the problem and situational analyses) • <i>Results framework:</i> summary of the project's results hierarchy as stated in the ProDoc (or as officially revised) • <i>Stakeholders:</i> description of groups of targeted stakeholders organised according to relevant common characteristics • <i>Project implementation structure and partners:</i> description of the implementation structure with diagram and a list of key project partners • <i>Changes in design during implementation:</i> any key events that affected the project's scope or parameters should be described in brief in chronological order	Final report (coverage/omissions): The section addresses all required elements. Final report (strengths/weaknesses): The Project Section adequately describes the key elements of the evaluand. The Project Stakeholders table could have been improved by labelling the stakeholders as either "main partners", "partners", or "other", as discussed in the body of the report.	6

	UNEP Evaluation Office Comments	Draft Report Rating
Report Quality Criteria		
<i>Project financing:</i> completed tables of: (a) budget at design and expenditure by components (b) planned and actual sources of funding/co-financing		
Quality of the Theory of Change <u>Purpose:</u> to set out the TOC at Evaluation in diagrammatic and narrative forms to support consistent project performance; to articulate the causal pathways with drivers and assumptions and justify any reconstruction necessary to assess the project's performance. To include: - description of how the <i>TOC at Evaluation</i>¹⁸ was designed (who was involved etc) - confirmation/reconstruction of results in accordance with UNEP definitions - articulation of causal pathways - identification of drivers and assumptions - identification of key actors in the change process - summary of the reconstruction/results re-formulation in tabular form. <i>The two results hierarchies (original/formal revision and reconstructed) should be presented as a two-column table to show clearly that, although wording and placement may have changed, the results 'goal posts' have not been 'moved'. This table may have initially been presented in the Inception Report and should appear somewhere in the Main Evaluation report.</i>	Final report (coverage/omissions): The section addresses all required elements, except for the process of TOC reconstruction at evaluation. It describes the reconstruction of the TOC at inception, but does not articulate how, if at all, it was modified during the evaluation, including who was involved in that process. Final report (strengths/weaknesses): The section clearly describes de causal pathways between outputs and outcomes, including key assumptions and drivers. However, in the narrative, it could have better articulated the connection between the outcomes and specific intermediate states. In the diagram, the drivers and assumptions could have been better placed to illustrate which specific results levels they were expected to affect.	4

¹⁸ During the Inception Phase of the evaluation process a *TOC at Evaluation Inception* is created based on the information contained in the approved project documents (these may include either logical framework or a TOC or narrative descriptions), formal revisions and annual reports etc. During the evaluation process this TOC is revised based on changes made during project intervention and becomes the *TOC at Evaluation*.

	UNEP Evaluation Office Comments	Draft Report Rating
Report Quality Criteria		
Quality of Key Findings within the Report <u>Presentation of evidence:</u> nature of evidence should be clear (interview, document, survey, observation, online resources etc) and evidence should be explicitly triangulated unless noted as having a single source. <u>Consistency within the report:</u> all parts of the report should form consistent support for findings and performance ratings, which should be in line with UNEP's Criteria Ratings Matrix. <u>Findings Statements (where applicable):</u> The frame of reference for a finding should be an individual evaluation criterion or a strategic question from the TOR. A finding should go beyond description and uses analysis to provide insights that aid learning specific to the evaluand. In some cases a findings statement may articulate a key element that has determined the performance rating of a criterion. Findings will frequently provide insight into 'how' and/or 'why' questions.	Final report (strengths/weaknesses): The nature of the evidence provided is mostly clear throughout the report. The key findings and ratings are also consistent throughout the report.	5
Quality of 'Strategic Relevance' Section <u>Purpose:</u> to present evidence and analysis of project strategic relevance with respect to UNEP, partner and geographic policies and strategies at the time of project approval. To include: Assessment of the evaluand's relevance vis-à-vis: • Alignment to the UNEP Medium Term Strategy (MTS), Programme of Work (POW) and Strategic Priorities • Alignment to Donor/GEF/Partners Strategic Priorities • Relevance to Regional, Sub-regional and National Environmental Priorities • Complementarity with Existing Interventions: complementarity of the project at design (or during inception/mobilisation¹⁹), with other interventions addressing the needs of the same target groups.	Final report (coverage/omissions): The section addresses all required elements. Final report (strengths/weaknesses): The Strategic Relevance section effectively assesses the project's alignment with the various relevant organizations and policies, including providing evidence and examples.	6
Quality of the 'Quality of Project Design' Section <u>Purpose:</u> to present a summary of the strengths and weaknesses of the project design, on the basis that the detailed assessment was presented in the Inception Report.	Final report (coverage/omissions): The section addresses all required elements. Final report (strengths/weaknesses): The section adequately highlights the project design's key strengths and weaknesses.	5

¹⁹ A project's inception or mobilization period is understood as the time between project approval and first disbursement. Complementarity during project implementation is considered under Efficiency, see below.

	UNEP Evaluation Office Comments	Draft Report Rating
Report Quality Criteria		
	However, it could have benefitted from including the project design ratings summary table created during inception.	
Quality of the 'Nature of the External Context' Section <u>Purpose:</u> to describe and recognise, when appropriate, key <u>external</u> features of the project's implementing context that limited the project's performance (e.g. conflict, natural disaster, political upheaval²⁰), and how they affected performance. While additional details of the implementing context may be informative, this section should clearly record whether or not a major and unexpected disrupting event took place during the project's life in the implementing sites.	Final report (coverage/omissions): The section addresses all required elements. Final report (strengths/weaknesses): The section adequately describes external security factors (e.g., COVID-19 and political volatility) and economic conditions that negatively affected project implementation.	6
Quality of 'Effectiveness' Section (i) Availability of Outputs: <u>Purpose:</u> to present a well-reasoned, complete and evidence-based assessment of the outputs made available to the intended beneficiaries. To include: - a convincing, evidence-supported and clear presentation of the outputs made available by the project compared to its approved plans and budget - assessment of the nature and scale of outputs versus the project indicators and targets - assessment of the timeliness, quality and utility of outputs to intended beneficiaries - identification of positive or negative effects of the project on disadvantaged groups, including those with specific needs due to gender, vulnerability or marginalisation (e.g. through disability).	Final report (coverage/omissions): The section addresses most required elements, but it does not include an assessment of effects on disadvantaged populations, although outputs 4.1.2 and 4.1.3 target disadvantaged populations. Final report (strengths/weaknesses): The section adequately describes the unusual presentation of the outputs upfront (using the related activities, not output indicator targets) as there were some inconsistencies in project reporting that made tracking the outputs difficult. The section describes the nature and scale of output delivery well, through a discussion of their associated activities, citing evidence. The assessment of output quality and utility could have been improved for some outputs, perhaps by referencing evidence obtained through stakeholder consultations. Moreover, it is missing a clearly identified assessment of outputs 4.1.4, 4.1.5, and 4.1.6, but this understandable given the difficulty in tracking project outputs, and delivery of these outputs are discussed through other outputs.	5
ii) Achievement of Project Outcomes: <u>Purpose:</u> to present a well-reasoned, complete and evidence-based assessment of the uptake, adoption and/or implementation of outputs by the intended beneficiaries. This may include behaviour changes at an individual or collective level. To include:	Final report (coverage/omissions): The section addresses all required elements, except effects on disadvantaged populations. Final report (strengths/weaknesses):	5

²⁰ Note that 'political upheaval' does not include regular national election cycles, but unanticipated unrest or prolonged disruption. The potential delays or changes in political support that are often associated with the regular national election cycle should be part of the project's design and addressed through adaptive management of the project team.

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- a convincing and evidence-supported analysis of the uptake of outputs by intended beneficiaries - assessment of the nature, depth and scale of outcomes versus the project indicators and targets - discussion of the contribution, credible association and/or attribution of outcome level changes to the work of the project itself - any constraints to attributing effects to the projects' work - identification of positive or negative effects of the project on disadvantaged groups, including those with specific needs due to gender, vulnerability or marginalisation (e.g. through disability).	The section clearly and effectively presents achievement of outcomes against indicator targets in an organized table. The scale and depth of achievement and supporting evidence (e.g., interviews or documentation) is further articulated in the narrative. It provides enough evidence for project attribution for the outcome level changes.	
(iii) Likelihood of Impact: <u>Purpose:</u> to present an integrated analysis, guided by the causal pathways represented by the TOC, of all evidence relating to likelihood of impact, including an assessment of the extent to which drivers and assumptions necessary for change to happen, were seen to be holding. To include: - an explanation of how causal pathways emerged and change processes can be shown - an explanation of the roles played by key actors and change agents - explicit discussion of how drivers and assumptions played out - identification of any unintended negative effects of the project, especially on disadvantaged groups, including those with specific needs due to gender, vulnerability or marginalisation (e.g. through disability).	Final report (coverage/omissions): The section addresses all required elements. Final report (strengths/weaknesses): The section provides a clear explanation of the emergence of the causal pathways, including detailed discussion of assumptions and drivers. It could have benefitted from a more precise connection between the outcomes and achievement of intermediate states.	5
Quality of 'Financial Management' Section <u>Purpose:</u> to present an integrated analysis of all dimensions evaluated under financial management and include a completed 'financial management' table (may be annexed). Consider how well the report addresses the following: <i>adherence</i> to UNEP's financial policies and procedures <i>completeness</i> of financial information, including the actual project costs (total and per activity) and actual co-financing used <i>communication</i> between financial and project management staff	Final report (coverage/omissions): The section is missing an assessment of the project's adherence to UNEP's financial policies and procedures, because it was awaiting detail information from the project team which it did not receive. It is also missing the Financial Management Table. Final report (strengths/weaknesses): The Financial Management section adequately assesses and describes the completeness of financial information. It provides some information on the communication between finance and project management staff, but it could have further elaborated on a "critical issue" mentioned to provide a fuller understanding of the gap in communication identified.	4

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Quality of 'Efficiency' Section <u>Purpose:</u> to present an integrated analysis of all dimensions evaluated under efficiency (i.e. the primary categories of cost-effectiveness and timeliness). To include: - time-saving measures put in place to maximise results within the secured budget and agreed project timeframe - discussion of making use, during project implementation, of/building on pre-existing institutions, agreements and partnerships, data sources, synergies and complementarities with other initiatives, programmes and projects etc. - implications of any delays and no cost extensions - the extent to which the management of the project minimised UNEP's environmental footprint.	Final report (coverage/omissions): The section addresses all required elements. Final report (strengths/weaknesses): The Efficiency section effectively presents an integrated analysis of some of the project's key cost-efficiency and timesaving efforts and features, while also discussing various factors that negatively affected project efficiency.	5
Quality of 'Monitoring and Reporting' Section <u>Purpose:</u> to present well-reasoned, complete and evidence-based assessment of the evaluand's monitoring and reporting. Consider how well the report addresses the following: - quality of the monitoring design and budgeting (including SMART results with measurable indicators, resources for MTE/R etc.) - quality of monitoring of project implementation (including use of monitoring data for adaptive management) - quality of project reporting (e.g. PIMS and donor reports)	Final report (coverage/omissions): The section addresses all required elements. Final report (strengths/weaknesses): The Section presents a well-reasoned assessment of the three aspects of monitoring and report, highlighting the project's strengths and weaknesses in this area.	5
Quality of 'Sustainability' Section <u>Purpose:</u> to present an integrated analysis of all dimensions evaluated under sustainability (i.e. the endurance of benefits achieved at outcome level). Consider how well the report addresses the following: - socio-political sustainability - financial sustainability - institutional sustainability	Final report (coverage/omissions): The section addresses all required elements. Final report (strengths/weaknesses): The section presents an integrated analysis of the three dimensions of sustainability, highlighting strengths and weaknesses.	5
Quality of Factors Affecting Performance Section <u>Purpose:</u> These factors are not always discussed in stand-alone sections and may be integrated in the other performance criteria as appropriate. However, if not addressed substantively in this section, a cross reference must be given to where the topic is addressed and that entry must be sufficient to justify the performance rating for these factors. Consider how well the evaluation report, either in this section or in cross-referenced sections, covers the following cross-cutting themes: preparation and readiness	Final report (coverage/omissions): The section does not address any of the required elements. It notes that all the cross-cutting issues are discussed in the previous sections of the report.	3

	UNEP Evaluation Office Comments	Draft Report Rating
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- quality of project management and supervision²¹ - stakeholder participation and co-operation - responsiveness to human rights and gender equality - environmental and social safeguards - country ownership and driven-ness - communication and public awareness		
Quality of the Conclusions Section (i) Conclusions Narrative: <u>Purpose:</u> to present summative statements reflecting on prominent aspects of the <u>performance of the evaluand as a whole</u>, they should be derived from the synthesized analysis of evidence gathered during the evaluation process. To include: - compelling narrative providing an integrated summary of the strengths and weakness in overall performance (achievements and limitations) of the project - clear and succinct response to the key strategic questions - human rights and gender dimensions of the intervention should be discussed explicitly (e.g. how these dimensions were considered, addressed or impacted on)	Final report (coverage/omissions): The Conclusions section is missing responses to the key strategic questions and addressing the gender and human rights dimensions of the project. Final report (strengths/weaknesses): The Conclusions section provides clear statements that encapsulate key findings presented in the report, highlighting the project's strengths and weaknesses via a vis the various criteria. However, it could have benefitted from overarching statements about the overall performance of the evaluand, based on key findings from each criterion.	4
ii) Utility of the Lessons: <u>Purpose:</u> to present both positive and negative lessons that have potential for wider application and use (replication and generalization) Consider how well the lessons achieve the following: - are rooted in real project experiences (i.e. derived from explicit evaluation findings or from problems encountered and mistakes made that should be avoided in the future) - briefly describe the context from which they are derived and those contexts in which they may be useful - do not duplicate recommendations	Final report (coverage/omissions): Some of the lessons learned are missing a description of the context from which they are derived. Final report (strengths/weaknesses): The lessons learned represent positive and negative observations from the evaluation's findings, most of which have wide application and use in future energy efficiency project. The lessons do not duplicate the recommendations.	5
(iii) Utility and Actionability of the Recommendations: <u>Purpose:</u> to present proposals for specific action to be taken by identified people/position-holders to resolve concrete problems affecting the project or the sustainability of its results. Consider how well the lessons achieve the following:	Final report (coverage/omissions): The are no recommendations related to the strengthening of human rights or gender in UNEP interventions.	5

²¹ In some cases 'project management and supervision' will refer to the supervision and guidance provided by UNEP to implementing partners and national governments while in others, specifically for GEF funded projects, it will refer to the project management performance of the executing agency and the technical backstopping provided by UNEP. This includes providing the answers to the questions on Core Indicator Targets, stakeholder engagement, gender responsiveness, safeguards and knowledge management, required for the GEF portal.

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- are feasible to implement within the timeframe and resources available (including local capacities) and specific in terms of who would do what and when - include at least one recommendation relating to strengthening the human rights and gender dimensions of UNEP interventions - represent a measurable performance target in order that the Evaluation Office can monitor and assess compliance with the recommendations. NOTES: (i) In cases where the recommendation is addressed to a third party, compliance can only be monitored and assessed where a contractual/legal agreement remains in place. Without such an agreement, the recommendation should be formulated to say that UNEP project staff should pass on the recommendation to the relevant third party in an effective or substantive manner. The effective transmission by UNEP of the recommendation will then be monitored for compliance. (ii) Where a new project phase is already under discussion or in preparation with the same third party, a recommendation can be made to address the issue in the next phase.	Final report (strengths/weaknesses): Most recommendations represent a measurable performance target that the Evaluation Office can monitor and assess compliance with. However, some timeframes may be too short to accomplish certain targets (e.g., the passage of policies or establishment of a directorate within 6 months).	
Quality of Report Structure and Presentation (i) Structure and completeness of the report: To what extent does the report follow the Evaluation Office structure and formatting guidelines? Are all requested Annexes included and complete?	Final report (strengths/weaknesses): The report mostly follows the Evaluation Office structure and formatting guidelines, including the required Annexes.	6
(ii) Writing and formatting: Consider whether the report is well written (clear English language and grammar) with language that is adequate in quality and tone for an official document? Do visual aids, such as maps and graphs convey key information?	Final report (strengths/weaknesses): The report is grammatically well written, clear and adequate in quality and tone. However, there are no visual aids to help convey the key aspects of the evaluand or the evaluation findings.	5
OVERALL REPORT QUALITY RATING		5

A number rating 1-6 is used for each criterion: Highly Satisfactory = 6, Satisfactory = 5, Moderately Satisfactory = 4, Moderately Unsatisfactory = 3, Unsatisfactory = 2, Highly Unsatisfactory = 1. The overall quality of the evaluation report is calculated by taking the mean score of all rated quality criteria.