



## **United Nations Development Programme**

### **Government of the Indonesia**

#### **Mid-Term Review of UNDP/GEF Project: *Advancing Indonesia's Lighting Market to High-Efficient Technologies (ADLIGHT Project)***

(GEF Project ID: 9493; UNDP PIMS ID: 5721)

### **Final Report**

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## TABLE OF CONTENTS

	Page
<b>SYNOPSIS.....</b>	<b>III</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>IV</b>
<b>ABBREVIATIONS .....</b>	<b>IX</b>
<b>1. INTRODUCTION .....</b>	<b>1</b>
1.1 PURPOSE OF THE MID-TERM REVIEW .....	1
1.2 SCOPE AND METHODOLOGY .....	1
1.3 STRUCTURE OF THE MTR REPORT .....	3
<b>2. PROJECT DESCRIPTION AND DEVELOPMENT CONTEXT .....</b>	<b>4</b>
2.1 DEVELOPMENT CONTEXT .....	4
2.2 PROBLEMS THAT THE ADLIGHT PROJECT SEEKS TO ADDRESS .....	5
2.3 ADLIGHT PROJECT DESCRIPTION .....	6
2.4 ADLIGHT PROJECT IMPLEMENTATION ARRANGEMENTS.....	7
2.5 ADLIGHT PROJECT TIMING AND MILESTONES .....	7
2.6 MAIN STAKEHOLDERS .....	8
<b>3. FINDINGS .....</b>	<b>10</b>
3.1 PROJECT STRATEGY .....	10
3.1.1 <i>Original Project Design</i> .....	10
3.1.2 <i>Analysis of Project Results Framework</i> .....	12
3.2 PROGRESS TOWARDS RESULTS .....	12
3.2.1 <i>Progress towards Outcome Analysis</i> .....	12
3.2.2 <i>Remaining Barriers to Achieving Project Objective</i> .....	36
3.3 PROJECT IMPLEMENTATION AND ADAPTIVE MANAGEMENT .....	39
3.3.1 <i>Management Arrangements</i> .....	39
3.3.2 <i>Work Planning</i> .....	40
3.3.3 <i>Finance and Co-Finance</i> .....	41
3.3.4 <i>Project Level Monitoring and Evaluation Systems</i> .....	42
3.3.5 <i>Stakeholder Engagement</i> .....	42
3.3.6 <i>Project Level Monitoring and Evaluation Systems</i> .....	46
3.3.7 <i>Stakeholder Engagement</i> .....	46
3.3.8 <i>Reporting</i> .....	47
3.3.9 <i>Communications</i> .....	47
3.4 SUSTAINABILITY.....	48
<b>4. CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>49</b>
4.1 CONCLUSIONS .....	49
4.2 RECOMMENDATIONS .....	51
<b>APPENDIX A – MISSION TERMS OF REFERENCE FOR ADLIGHT PROJECT MTR.....</b>	<b>55</b>
<b>APPENDIX B – MISSION ITINERARY (FOR APRIL-MAY 2022) .....</b>	<b>60</b>
<b>APPENDIX C – LIST OF PERSONS INTERVIEWED .....</b>	<b>62</b>
<b>APPENDIX D – LIST OF DOCUMENTS REVIEWED .....</b>	<b>63</b>
<b>APPENDIX E – GEF-7 CORE INDICATORS .....</b>	<b>64</b>
<b>APPENDIX F – PROJECT RESULTS FRAMEWORK FOR ADLIGHT INCEPTION WORKSHOP SEPTEMBER 2020 .....</b>	<b>66</b>
<b>APPENDIX G - MIDTERM REVIEW EVALUATIVE MATRIX.....</b>	<b>70</b>

**APPENDIX H - RATING SCALES ..... 80**

**APPENDIX I - EVALUATION CONSULTANT AGREEMENT FORM..... 81**

**APPENDIX J - MTR REPORT CLEARANCE FORM..... 83**

## SYNOPSIS

**Title of UNDP supported GEF financed project:** Advancing Indonesia’s Lighting Market to High-Efficient Technologies (ADLIGHT Project)

**UNDP Project ID:** PIMS 5721

**GEF Project ID:** 9493

**Evaluation time frame:** 18 May 2020 to 30 April 2022

**CEO endorsement date:** 13 February 2020

**Project implementation start date:** 18 May 2020

**Project operational closure:** 18 May 2023

**Date of evaluation report:** 16 June 2022

**Region and Countries included in the project:** Indonesia

**GEF Focal Area Objective:** FA Objectives #1 (Promote innovation and technology transfer for sustainable energy breakthroughs) and #2 (Demonstrate mitigation options with systemic impacts) for GEF 7

**Implementing partner and other strategic partners:** Ministry of Energy and Mineral Resources (MEMR)

**Mid-Term Review team members:** Mr. Roland Wong, International MTR Consultant  
Mr. Asep Suwarna, National MTR Consultant

### Acknowledgements:

The Mid-Term Reviewers wish to acknowledge with gratitude the time and effort expended by all Project participants and stakeholders during the course of the ADLIGHT Mid-Term Review. In particular, we wish to thank UNDP Indonesia, the Project Management Unit of the ADLIGHT Project, and other key Project stakeholders (both from Government agencies and the private sector) for making the efforts to recall details of their time while on the project. In particular, we wish to thank Ms. Aretha Aprilia, Dwi Arisanty, Ms. Verania Andria, and Ms. Tjahjaning Budi Aju of UNDP Indonesia, Dadan Kusdiana PhD, the Director General of New Renewable Energy and Energy Conservation, Ms. L.N Puspa Dewi, Director of Energy Conservation as National Project Director of ADLIGHT project, Coordinators of Directorate Energy Conservation: Mr Qatro Rachmadi, Mr. Supriyadi, Mr. Hendro Gunawan, and Ms. Devi Laksmi Zafillus and to Mr Nasrullah Salim, and the PMU staff. In addition, there were numerous government stakeholders including local governments, and the numerous public and private stakeholders for being generous with their time to provide their passionate opinions on the potential impact of this Project. We sincerely hope that this report on energy efficient lighting contributes towards a greener and lower carbon future for Indonesia.

## EXECUTIVE SUMMARY

E-1. This report summarizes the findings of the Midterm Review conducted via virtual meetings between 6-28 April 2022 for the UNDP-GEF Project: “*Advancing Indonesia’s Lighting Market to High Efficient Technologies*”, (hereby referred to as the *Indonesia ADLIGHT Project*, *ADLIGHT* or the Project) that received a US\$3,895,872 grant from the Global Environment Facility (GEF) in May 2020.

### Project Information Table

Project Title:	<i>Advancing Indonesia’s Lighting Market to High Efficient Technologies (Indonesia ADLIGHT Project)</i>			
GEF Project ID:	9493		<u>at endorsement</u> <u>(Million US\$)</u>	<u>at mid-term</u> <u>(Million US\$)</u>
UNDP Project ID:	5721	GEF financing:	2.633 (UNDP) 1.262 (UNEP)	0.773 (UNDP) 0.372 (UNEP)
Country:	Indonesia	IA/EA own:	0.260	0.084
Region:	Asia and the Pacific	Government:	27.889	17.600
Focal Area:	Climate Change	Other:	8.865	16.068
FA Objectives, (OP/SP):	FA Objective #1 for GEF 7: Promote innovation and technology transfer for sustainable energy breakthroughs FA Objective #2 for GEF 7: Demonstrate mitigation options with systemic impacts	Total co-financing:	37.014	33.752
Implementing Partner:	Directorate General of New Renewable Energy and Energy Conservation (EBTKE) under the Ministry of Energy and Mineral Resources	Total Project Cost:	40.913	0.0
Other Partners involved:	N/A	ProDoc Signature (date project began):		18 May 2020
		(Operational) Closing Date:	<b>Proposed:</b> <b>18 May 2024</b>	Actual: 18 May 2023

### Project Description

E-2. The main objective of the ADLIGHT Project is to “increase the penetration of high-quality energy-efficient lighting technologies in Indonesia through the transformation of the national market, thereby reducing electricity demand and the related greenhouse gas (GHG) emissions”. It was designed to do so by:

- collaborating with Indonesian lamp manufacturing associations to provide support to Indonesian lighting manufacturers the requisite capacity to supply to domestic markets high quality energy efficient lighting that can meet MEPS;

- capitalizing on the initiatives in place and support MEMR to develop and implement MEPS for LEDs in coordination with the Ministry of Industry and the National Standards Agency in regulatory mechanisms; and
- concentrating on ESCO business models as well as develop guidelines for public and private procurement procedures. These will serve as a gateway to higher uptake of LEDs (residential, commercial and outdoor).

## Project Progress Summary

E-3. The ADLIGHT ProDoc was signed on 18 May 2020. Progress was made on:

- “Development of LED Lighting Development Roadmap for Indonesia” has been completed and disseminated to stakeholders as of November 2021;
- business transformation plans to produce high quality energy efficient lighting are in the process of being adopted and implemented by selected local lighting manufacturers;
- MEPS and energy labels regulation were finalized on 31 March 2022;
- round robin and domestic LED products tests by 6 LED national laboratories;
- use of 2 innovative financial models to enable accelerated penetration of LEDs;
- scoping and development of pilot LED projects in streetlighting and buildings with West Lombok, Palu Regency, Banjarmasin and Wonosobo having reached advanced stages of development. The ESCO business model was not used in any of these pilot projects;
- reporting gender balances in management, manufacturing and on pilot projects. However, gender training intensification is needed.

This has resulted in a critical number of pilot LED projects being developed towards meeting GHG emission reduction targets.

E-4. As such, barriers that remain to fully achieving the ADLIGHT targets (Para 103) are:

- COVID-19 which has had the impact of reducing in-person contacts between ADLIGHT, MEMR and stakeholders;
- 11 months remaining to complete a critical number of LED pilot projects (buildings and streetlighting) to meet the targets for energy savings and GHG emission reductions. Delays that could jeopardize meeting this target by 17 May 2023 could be new COVID-19 outbreaks and other issues;
- a moderate risk that there is insufficient time for capacity development for the banking industry that would convince a critical number of banks to finance energy conservation projects by multi-year contracts, PPPs or ESCOs;
- a moderate risk that implementation of 2<sup>nd</sup> and 3<sup>rd</sup> market assessments and consumer surveys cannot be completed with remaining time to EOP;
- a moderate risk that there is insufficient time to prepare business transformation plans for 3 local manufacturers that will allow financial institutions to assess related loan requests;
- timely issuance of MEPS and labeling regulations;
- timely development of government procurement policy on local EEL products in public procurement;
- lower capacities and experience and limited financial resources of ESCOs; and

- some of the outcome level targets are challenging to achieve: cumulative number of lighting manufacturers who received technical assistance to upgrade production facilities, investment grade proposal for business transformation plans submitted by manufacturers and approved by banks, and implementation of pilot demonstrations in commercial building.

## Conclusions

E-5. The ADLIGHT Project is proceeding at a satisfactory rate notwithstanding the delays caused by the COVID-19 pandemic. The satisfactory progress has been facilitated by strong ownership and leadership of the ADLIGHT Project and the Project positioning itself to deliver targeted GHG emission reductions (Para 127). There are only 3 issues which can derail the Project in achieving its objective and outcomes:

- the moderate risk of not meeting GHG emission reduction target with current end-of-project (EOP) date due to unforeseen circumstances that includes unforeseen delays caused by future COVID-19 pandemic outbreaks for which the Project has no control (Para 128);
- issues related to delays in implementing LED pilot projects such as political will of mayors or supply delays (Para 129); and
- low electricity prices that limits LED market penetration (Para 130).

The extension of the ADLIGHT Project seems to be a logical resolution to these issues, to give sufficient time to completing Project activities especially the pilot LED projects to meet and even exceed the GHG emission target. Table A provides a summary of the achievements and the MTR ratings for the ADLIGHT Project.

**Table A: MTR Ratings and Achievement Summary**

Measure	MTR Rating <sup>1</sup>	Achievement Description
<b>Project Formulation</b>		Overall Project design and formulation is rated as <b>highly satisfactory</b> . Design well laid out in PRF complete with SMART indicators (Paras 34 and 35).
	Stakeholder Participation Rating: 5	A wide spectra of stakeholders was consulted during the PPG phase consisting of MEMR, other relevant government agencies, financial institutions, private lighting manufacturers, and lighting associations. GoI ownership of ADLIGHT is strong (Paras 22 to 25).
<b>Progress Towards Results</b>	Objective Achievement Rating: 5	Progress <b>satisfactory</b> (see Paras 37 and 38) with a soon-to-be-achieved mid-term achievement of 13,960 tCO <sub>2eq</sub> direct GHG emissions, 121,760 tCO <sub>2</sub> lifetime direct, and 17.27 GWh of cumulative energy savings (Para 37).
	Outcome 1 Achievement Rating: 5	Progress <b>satisfactory</b> given the Roadmap has been finalized and disseminated to all stakeholders, business transformation plans are in the process of being adopted and implemented by selected local lighting manufacturers, and the banking industry still studying the possibility of financing energy conservation projects (Para 59).
	Outcome 2 Achievement Rating: 5	Progress is <b>satisfactory</b> mainly due to MEPS and energy labels regulation being finalized by legal and technical teams, the policy and guideline for public procurement of LED lighting products being finalized with a TKDN certification program for domestic industrial products, and support for LED lighting MVE with round robin tests of domestic LED products by 6 LED national laboratories (Para 67).
	Outcome 3 Achievement Rating: 5	Progress is <b>satisfactory</b> due to development of innovative financial models to enable accelerated penetration of LEDs, and the scoping and development of pilot LED projects in streetlighting and buildings with West Lombok, Palu Regency, Banjarmasin and Wonosobo all having reached advanced stages of development (Para 102).
<b>Project Implementation &amp; Adaptive Management</b>	Implementation Approach Rating: 5	Project implementation has been <b>satisfactory</b> in consideration of the actual progress notwithstanding the obstacles the COVID-19 pandemic (Para 108/110).
	Monitoring and Evaluation Rating: 5	M&E systems are rated as <b>satisfactory</b> considering the diligent reporting of the progress against the ADLIGHT PRF and the activities of the ADLIGHT (Para 118).
	Stakeholder Engagement Rating: 5	Project has made <b>satisfactory</b> efforts to facilitate partnerships, despite the COVID-19 pandemic including local lighting associations and government agencies in charge of regulations (Para 119).
<b>Sustainability</b>	Sustainability Rating: 3	<b>Moderately likely</b> rating is mainly due subsidized low electricity prices limiting LED market penetration and the need to address the CFL and LED waste streams involving a process for environmentally safe waste disposal of CFLs and LEDs and recycling practices (Paras 123 to 126).
<b>Overall Project Achievement and impact</b>	Rating: 5	<b>Satisfactory</b> notwithstanding the moderate risk of not meeting GHG emission reduction target with current EOP date of 18 May 2023, related to unforeseen circumstances which can include unforeseen delays caused by future COVID-19 pandemic outbreaks for which the Project has no control.

<sup>1</sup> Evaluation rating indices (except sustainability – see Para 70): 6=*Highly Satisfactory (HS)*: The project has no shortcomings in the achievement of its objectives; 5=*Satisfactory (S)*: The project has minor shortcomings in the achievement of its objectives; 4=*Moderately Satisfactory (MS)*: The project has moderate shortcomings in the achievement of its objectives; 3=*Moderately Unsatisfactory (MU)*: The project has significant shortcomings in the achievement of its objectives; 2=*Unsatisfactory (U)*: The project has major shortcomings in the achievement of its objectives; 1=*Highly Unsatisfactory (HU)*: The project has severe shortcomings in the achievement of its objectives.



## Recommendations

Rec #	Recommendation	Entity Responsible
A	<b>Outcome 1:</b> Improved quality, energy efficient and affordable locally-produced EEL products and systems	
A.1	<i>Continue dialogue and training with financial sector.</i>	UNDP/DGNREEC
B	<b>Outcome 2:</b> Improved conditions for fair market competition of EE lighting products informed by robust policy and institutional framework	
B.1	<i>Continual training is required to sustain the capacities of market surveillance personnel to identify a broad range of qualities of LEDs and other electronic devices such as service life and product materials.</i>	UNDP/DGNREEC
B.2	<i>There needs to be sustained resources available for dedicated training of electricians for the installation of lighting systems as well as for updating of best practices.</i>	UNDP/DGNREEC
B.3	<i>Assist the Ministry of Environment in seeking organizations for providing international best practices for managing Waste from Electrical and Electronic Equipment (WEEE) waste streams.</i>	UNDP/DGNREEC
B.4	<i>Focus on commercial banks for financing LED initiatives in commercial and industrial sectors where greater national energy savings and GHG emission reductions can be generated.</i>	UNDP/DGNREEC
C	<b>Outcome 3:</b> Increased market penetration of high quality and efficient lighting	
C.1	<i>Request a 12-month extension to provide the PMU with an appropriate amount of time to reduce their risk of not achieving their incremental GHG emission reduction targets of 62,580 tCO<sub>2</sub>.</i>	UNDP/DGNREEC
D	<b>Project Implementation and Adaptive Management</b>	
D.1	<i>Intensify gender training.</i>	UNDP/DGNREEC
D.2	<i>Prepare Project risk reports under the PARs.</i>	UNDP

## ABBREVIATIONS

Acronym	Meaning
ADLIGHT	Advancing Indonesia’s Lighting Market to High Efficient Technologies Project
<i>AILKI</i> <sup>2</sup>	<i>Asosiasi Industri Luminer &amp; Kelistrikan Indonesia</i> (Association of Indonesia Luminaires and Electricity Industry)
<i>ALINDO</i>	<i>Asosiasi Luminer Indonesia</i> (Indonesia Luminaires Association)
<i>ALINDO</i>	<i>Asosiasi Luminer Indonesia</i> (Indonesian Luminaire Association)
APAEC	ASEAN Plan of Action Energy Cooperation (2016-2025)
<i>APERLINDO</i>	<i>Asosiasi Industri Perlampuan Listrik Indonesia</i> or Indonesian Electrical Lighting Industry Association
APR	Annual Progress Report
ASEAN-SHINE	Association of Southeast Asian Nations - Standards Harmonization Initiative for Energy Efficiency
<i>ASKRINDO</i>	<i>PT Asuransi Kredit Indonesia</i> or Credit Insurance Company
<i>BAPPENAS</i>	<i>Badan Perencanaan Pembangunan Nasional</i> (National Development Planning Agency)
BAU	Business-as-Usual
<i>BLU</i>	<i>Badan Layanan Umum</i> (Public Service agency)
<i>BMP</i>	<i>Bobot Manfaat Perusahaan</i> (Weight-based company benefit)
<i>BPD</i>	<i>Bank Pembangunan Daerah</i> or Regional Development Banks
<i>BPPT</i>	<i>Badan Pengkajian dan Penerapan Teknologi</i> (Research Agency for Technology Development and Implementation)
BRESL	Barrier Removal to the Cost Effective Development and Implementation of Energy Efficiency Standards and Labeling
BRI	Bank Rakyat Indonesia
BSI	Bank Syariah Indonesia
<i>BSN</i>	<i>Badan Standardisasi Nasional</i> (National Standardization Agency)
CFL	Compact Florescent Lamp
DEC	Directorate of Energy Conservation
DGEED	Directorate General of Electricity and Energy Development
DGNREEC	Directorate General of New-Renewable Energy and Energy Conservation
EBTKE	Directorate General of New and Renewable Energy and Energy Conservation of the Ministry of Energy and Mineral Resources
EE	Energy efficiency
EECCHI	Energy Efficiency and Conservation Clearing House Indonesia
EEL	Energy Efficient Lighting
EOP	End of Project
EPC	Energy Performance Contract
ESCO	Energy Service Company
<i>ESDM</i>	<i>Energi Sumber Daya Mineral</i> (Energy and Mineral Resources)
FGDs	Focused group discussions
FSP	Full Sized Project
<i>GAMATRINDO</i>	<i>Gabungan Industri Manufaktur Lampu Terpadu Indonesia</i> (Indonesian Integrated-Lamp Manufacturing Industry Association)
GEF	Global Environment Facility
GEFSEC	Global Environment Facility Secretariat
GHG	Greenhouse gas
GIZ	Die Deutsche Gesellschaft für Internationale Zusammenarbeit (German Agency for International Development)

<sup>2</sup> *Italicized* abbreviations and acronyms and titles are from Indonesian titles with their corresponding English title equivalent

Acronym	Meaning
GLP	Global Leapfrogging Program
Gol	Government of Indonesia
IEC	International Electrotechnical Commission
INR	Indonesian Rupees
IWAPI	Indonesian Business Women Association
KAN	<i>Komite Akreditasi Nasional</i> (National Accreditation Body of Indonesia)
LED	Light-emitting diode
LKPP	<i>Lembaga Kebijakan Pengadaan Barang/Jasa Pemerintah</i> or the National Public Procurement Agency
M&E	Monitoring and Evaluation
MASKEEI	<i>Masyarakat Konservasi dan Efisiensi Energi Indonesia</i> or IECES ( <i>Indonesia Energy Conservation and Efficiency Society</i> )
MEMR	Ministry of Energy and Mineral Resources
MEPS	Minimum Energy Performance Standard
Mol	Ministry of Industry
MoU	Memorandum of Understanding
Mt	Metric tonnes
MTR	Mid-Term Review
MVE	Monitoring, verification and enforcement
NAMA	Nationally Appropriate Mitigation Action
OJK	<b>Otoritas Jasa Keuangan</b> or Financial Services Authority
P3TK EBTKE	MEMR (Research and Development of DG NREEC)
PAR	Project Assurance Report
PB	Project Board
PFAN	Private Financing Advisory Network
PIF	Project Identification Form
PIR	GEF Project Implementation Report
PJU	<i>Penerangan Jalan Umum</i> (Public Street Lighting)
PLN	<i>Perusahaan Listrik Negara</i> (State Electricity Company)
POPP	Programme and Operations Policies and Procedures
PPG	Project Preparation Grant
PPP	Public-Private Partnership
PRF	Project Results Framework
PT SMI	<b>PT Sarana Multi Infrastruktur</b> - Persero (PT SMI)
RAD-GRK	Local Action Plan for Greenhouse Gas Emission Reduction as a supplement to RAN-GRK
RAN-GRK	<i>Rencana Aksi Nasional Penurunan Emisi Gas Rumah Kaca</i> (National Action Plan to Reduce Greenhouse Gases Emission)
SDGs	Sustainable Development Goals
SE4ALL	<b>Sustainable Energy for All</b>
SNI	<i>Standar Nasional Indonesia</i> (Indonesia National Standard)
STAP	GEF Scientific Technical Advisory Panel
TE	Terminal Evaluation
TKDN	<i>Tingkat Kandungan Dalam Negeri</i> (Local Content level)
TWh	Terawatt-hour
U4E	United for Efficiency
UNDP-GEF	UNDP Global Environmental Finance Unit
UNEP	United Nations Environment Program
USAID	United States Agency for International Development
WISTI	Women in Science, Technology and Innovation

# 1. INTRODUCTION

1. This report summarizes the findings of the Midterm Review (MTR) conducted during the 3 April-16 June 2022 period for the UNDP-supported GEF-financed Project entitled: “*Advancing Indonesia’s Lighting Market to High Efficient Technologies*” (hereby referred to as the Indonesia ADLIGHT Project, Project or ADLIGHT). In May 2020, this Project received a US\$ 3,895,872 grant from the Global Environmental Facility (GEF) to “increase the penetration of high-quality energy efficient lighting technologies in Indonesia through the transformation of the national market, thereby reducing electricity demand and the related greenhouse gas (GHG) emissions”.

## 1.1 Purpose of the Mid-Term Review

2. In accordance with UNDP and GEF M&E policies and procedures, all full and medium-sized UNDP-supported GEF-financed projects are required to undergo an MTR at the mid-point of implementation of a project to provide a comprehensive and systematic account of the performance of an ongoing project by reviewing its design, process of implementation and achievements vis-à-vis GEF project objectives and any agreed changes during project implementation. As such, the MTR for this Project serves to:
  - assess early signs of project success or failure with the goal of identifying the necessary changes to be made to set the Project on-track to achieve its intended results;
  - strengthen the adaptive management and monitoring functions of the Project;
  - enhance the likelihood of achievement of Project and GEF objectives through analyzing Project strengths and weaknesses and suggesting measures for improvement;
  - enable informed decision-making;
  - create the basis for replication of successful Project outcomes achieved to date;
  - identify and validate proposed changes to the ProDoc to ensure achievement of all Project objectives; and
  - assess whether it is possible to achieve the objectives in the given timeframe, taking into consideration the pace at which the Project is proceeding.
3. This MTR was prepared to:
  - be undertaken independent of Project management to ensure independent quality assurance;
  - apply UNDP-GEF norms and standards for midterm reviews;
  - assess achievements of outputs and outcomes, likelihood of the sustainability of outcomes, and if the Project met the minimum M&E requirements; and
  - provide recommendations to increase the likelihood of the Project delivering all of its intended outputs and achieving intended outcomes.

## 1.2 Scope and Methodology

4. The scope of the MTR covers the entire UNDP-supported, GEF-financed, Ministry of Energy and Mineral Resources (MEMR) implemented ADLIGHT Project and its components as well as the co-financed components of the Project. This MTR assesses 22 months of Project progress, achievements and implementation taking into account the status of Project activities, outputs and the resource disbursements made up to 31 March 2022. The MTR also reports on the progress against objective,

outcome, output, and impact indicators listed in the latest Project Results Framework (PRF) as provided on Appendix F as to how these outcomes and outputs will be achieved within the Project duration (up to 18 May 2023) or with a Project extension. The MTR report concludes with recommendations, as appropriate, for the key stakeholders of the Project. The MTR will be approached through the criteria of *relevance*, *effectiveness*, *efficiency*, *sustainability*, and *impact*, as defined and explained in the UNDP “Guidance for Conducting Midterm Reviews of UNDP-supported, GEF-financed Projects”, and the GEF M&E policy.

5. The methodology adopted for this MTR includes:

- Review of Project documentation (e.g. APR/PIRs, meeting minutes of Project Steering Committee) and pertinent background information;
- Interviews with key Project personnel including the current National Project Manager, Project coordinators, component leaders, technical advisors, and Project developers;
- Interviews with relevant stakeholders including other government agencies and institutes and private sector entities; and
- Virtual visits to Project sites due to the COVID-19 pandemic substituted by interviews with beneficiaries.

A detailed itinerary of the Mission is shown in Appendix B. A full list of people interviewed and documents reviewed are given in Appendix C and Appendix D respectively. The MTR Team for the UNDP-GEF project was comprised of one international MTR consultant and one national MTR consultant.

6. The Project was reviewed in the context of:

- *Project strategy*: This includes an analysis of the ADLIGHT Project design (and Project Results Framework) as outlined in the ProDoc to identify if the strategy is effective in achieving the desired outcomes;
- *Progress towards results*: This is to include information provided from, amongst others, Project work plans, Project implementation reports (PIRs), relevant Project reports and information provided from various Project stakeholders;
- *Project implementation and adaptive management*: This would be an assessment of the quality of support to the Project from UNDP as well as the Executing Agency of the Project, MEMR. Assessment parameters would include management arrangements, work planning, finance and co-finance, Project level monitoring and evaluation systems, stakeholder engagement, reporting and communications; and
- *Sustainability*: The likely ability of an intervention to continue to deliver benefits for an extended period of time after the end-of-Project (EOP). The MTR sustainability assessment essentially sets the stage for the Terminal Evaluation during which sustainability will be rated under the four GEF categories of sustainability, namely financial, socioeconomic, institutional framework and governance, and environmental.

7. Since this assignment has coincided with the severe global travel restrictions in place due to the COVID-19 pandemic, this MTR has mainly relied on field information gathered by the National MTR Consultant based in Jakarta, supplemented by information from selected interviewees on ADLIGHT activities. With some physical progress achieved, the field visits to Project sites only enhances the

quality of the MTR. However, a limitation of this MTR was the inability of the International MTR Consultant to have face-to-face interviews with all key stakeholders, notwithstanding the presence of the National MTR Consultant in Jakarta. Regardless, the MTR team has made every effort to understand the Project and present a fair and a well-balanced assessment of the Project. Any gross misrepresentation of the Project has been resolved through discussions with the Project team.

### 1.3 Structure of the MTR Report

8. This MTR report is presented as follows:

- An overview of ADLIGHT Project activities from a development context from its commencement of operations in May 2020 to the present;
- An assessment of Project strategy and design;
- An assessment of Project progress towards results;
- An assessment of Project implementation and adaptive management;
- Assessment of sustainability of Project outcomes; and
- Conclusions and recommendations.

9. This MTR report is designed to meet UNDP-GEF’s “Project-level Monitoring: Guidelines for Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects” of 2014:

[http://web.undp.org/evaluation/documents/guidance/GEF/midterm/Guidance\\_Midterm%20Review%20 EN\\_2014.pdf](http://web.undp.org/evaluation/documents/guidance/GEF/midterm/Guidance_Midterm%20Review%20EN_2014.pdf)

## 2. PROJECT DESCRIPTION AND DEVELOPMENT CONTEXT

### 2.1 Development Context

10. With a population of over 250 million and a growth rate of over 3.7% in 2021, Indonesia is facing a high growth rate in its energy demand (4.4% per year). Though the rate of access to electricity has improved to 98.9% of the population, the national electrical generation capacity is failing to keep pace resulting frequent power cuts and brownouts and many others with only restricted electricity. This has a negative impact on entrepreneurship, education, health and safety. Furthermore, Indonesia’s over-reliance on fossil fuels, which accounts for 71% of the country’s energy mix, results in rising greenhouse gas emissions.
11. Energy efficient and affordable lighting is important to Indonesia because of the significance of indoor or outdoor lighting in the lives of women and men, and in all sectors of the economy. As such, access to energy efficient lighting (EEL) products and systems has been very relevant to national development priorities and global environmental issues. The ADLIGHT Project responds to a number of sustainable development goals (SDGs): #7 - Affordable and clean energy; #9 - Industry, innovation and infrastructure; #11 - Sustainable cities and communities; and #12 - Responsible consumption and production.
12. Indonesia’s ratification of the Paris Agreement through Law No.16/2016 was a critical event for global climate action in the country. Indonesia submitted its NDC to UNFCCC in November 2016, outlining its transition to a low-carbon future and committing to an unconditional emissions reduction of 29 percent by 2030 compared to the business-as-usual (BAU) scenario. This was estimated to be approximately 2,869 GtCO<sub>2e</sub> of emission reductions in 2030, and up to 41% emission reductions subject to the availability of international support for finance, technology transfer and capacity building. Under their Paris commitment, Indonesia’s energy sector was targeted to reduce 314 Mt CO<sub>2e</sub> or 11% of total BAU emission by 2030. Within this target, the energy efficiency programme was to achieve a 17% energy efficiency target by 2025 according to the National Energy Plan. Among other efficiency programmes, MEMR targeted to regulate energy consumption levels of 12 home appliances in consideration of residences being one of the highest consumers of energy.
13. In consideration of the aforementioned issues, the Government of Indonesia (GoI) signed off on a project entitled “Advancing Indonesia’s Lighting Market to High Efficient Technologies (ADLIGHT)” funded by the Global Environmental Facility (GEF) through the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP). The ADLIGHT Project aims to promote the increased deployment of high efficiency lighting technologies in Indonesia through the transformation of the national market, thereby reducing electricity demand and the related greenhouse gas (GHG) emissions. The Project is expected to lead to increased market penetration of high efficiency lighting through capacity building for the country’s lighting industry thereby enhancing local manufacturing capability to locally-produce highly quality lighting systems in line with minimum energy performance standard (MEPS), through introducing quality and minimum energy performance regulations, procurement policies and improved customs procedures, and through introduction of new business models and awareness raising.
14. The ADLIGHT Project also receives support through an integrated policy approach (under a multi-country arrangement) under a UNEP-GEF project: “Leapfrogging Markets to High Efficiency Products Program” that is supposed to include lighting appliances and electrical equipment, and another GEF-

supported program “the Global Leapfrogging Program (GLP)”. GLP contributes to the UN Secretary General’s Sustainable Energy for All (SE4ALL) initiative’s “Lighting and Appliance & Equipment Accelerators”. The SE4ALL Global Project has formed a global partnership, “United for Efficiency” (U4E), which is a global effort supporting developing countries and emerging economies to move their markets to energy efficient appliances and equipment. By the end of the SE4ALL project, this project should have the commitment from at least thirty developing countries and emerging economies, including Indonesia, to transform their markets to energy efficient lighting, appliances, and equipment.

## 2.2 Problems that the ADLIGHT Project Seeks to Address

15. Primary barriers to advancing Indonesia’s lighting market to highly efficient technologies such as LEDs are listed:

- Limited capacity of lighting manufacturers: In Indonesia, it was thought that most local manufacturers have limited capacity to meet standards for energy efficiency and quality, and do not have the technical and financial capacity to innovate. This reduces their capabilities to produce lower cost, high-quality LEDs that would meet future MEPS standards. Local businessmen do not seem to be capable of developing business transformation plans for shifting from conventional lighting manufacture to lower-cost high efficiency LED systems. Without such plans in place, financial institutions develop risk-averse perceptions to fund upgraded production lines for local lighting manufacturers;
- Absence of MEPS for LEDs: Indonesia did not have any MEPS in place for lighting products other than CFLs. Indonesian consumers will buy any lamp available in the market which usually leads to purchasing low cost, albeit inefficient lamps. At the same time, there is still limited capacity with the Customs officers and Ministry of Trade staff to curtail the import of inefficient lamps into the country even as the adoption of MEPS for CFLs has already started. As long as the lighting standards are low cost, low quality of lighting standards will continue to be distributed. This discourages local manufacturers to produce high energy efficient lighting products at affordable prices;
- Absence of guidelines for public procurement: Due to a lack of guidelines for public procurement, street lighting is often quite inefficient in Indonesia. By having a standard MEPS requirement available in the guidelines for public procurement, consumers, manufacturers and importers of LED lights in Indonesia will have a reference in complying with standards. Therefore, the quality of LED lighting to be made available in Indonesia can be monitored, verified and enforced (in an MVE system). With the standard minimum quality that is aligned with MEPS and international standards, local LED manufacturers are supposed to have the chance for their products to be included for public procurement as listed in the e-Catalogue;
- Absence of regulatory mechanisms for MVE and lack of capacity of testing laboratories: There were no regulatory mechanisms for efficient MVE in Indonesia. Initial steps were taken towards a measurement, reporting and verification system with a lack of institutional capacity for its implementation<sup>3</sup>. In addition, there was also a reported lack of testing laboratory capacity which combined with the absence of MEPS for LEDs, leading to Indonesian consumers being able to

<sup>3</sup> The Secretariat of RAN-GRK (or the National Action Plan to Reduce Greenhouse Gases Emission) issued a report entitled “Guideline for Monitoring, Evaluation and Reporting under the National and Local Action Plans to Reduce Greenhouse Gases Emission” in 2018 by MEMR with support from GIZ and JICA. With no institutional capacity for its implementation, this was an initial step towards a measurement, reporting and verification (MRV) system.



buy any lamp available in the market which usually leads to the purchase of low cost, inefficient lamps;

- Limited available business models for energy efficient lighting products: This results in a small market share for locally produced EE lighting products. In guidelines for procurement of EEL products, the existence of a standard minimum quality requirement that is aligned with MEPS and other international standards should allow the quality of LEDs in Indonesia to be monitored, verified and enforced within an MVE system. This will benefit consumers, manufacturers and importers of LED lights in Indonesia;
- Lack of gender-analysis on the LED lighting market in Indonesia. This limits gender-sensitive approaches to the lighting market, further limiting LED market penetration.

These barriers serve as the baseline scenario to the ADLIGHT Project.

## 2.3 ADLIGHT Project Description

16. The main objective of the ADLIGHT Project is to *“increase the penetration of high-quality energy efficient lighting technologies in Indonesia through the transformation of the national market, thereby reducing electricity demand and the related greenhouse gas (GHG) emissions”*. Although LED penetration is gradually increasing in Indonesia, these are often low-quality products thereby harming consumer confidence in LEDs. With Indonesia being an archipelago that leads to a situation where it is very easy for low quality products to enter the market, it is challenging to create a market for high quality LED lighting that is affordable to consumers and progresses gender equality. The outputs of the ADLIGHT Project are described below designed to bring about the intended outcomes:

- For Outcome 1: Improved quality, energy efficient and affordable locally-produced EEL products and systems, the following outputs are to be delivered:
  - Output 1.1: Establishment of knowledge center and systems that helps manufacturers in their production planning and policy makers in reviewing enabling environment;
  - Output 1.2: Adopted and implemented business transformation plans of selected local lighting manufacturers to produce high quality energy efficient lighting which meet future MEPS;
  - Output 1.3: Completed capacity development program for banking/financial institutions on the evaluation and financing of lighting industry modernization projects;
- For Outcome 2: Improved conditions for fair market competition of EE lighting products, informed by robust policy and institutional framework:
  - Output 2.1: Minimum Energy Performance Standards (MEPS) and energy labels in place for high energy efficient lighting products in line with the ASEAN regional approach;
  - Output 2.2: Policy and guideline for public procurement of LED lighting products (residential, commercial and outdoor) developed and process for adaptation initiated, including environmentally safe waste disposal and recycling practices;
  - Output 2.3: Regulatory mechanisms for efficient lighting monitoring, verification and enforcement (MVE) including testing standard defined and implemented by relevant agencies at the national and local levels
  - Output 2.4: Completed capacity development for policy makers, enforcement & custom officials and other relevant government agencies on market control procedures;
  - Output 2.5: Completed capacity development program for lamp testing laboratory personnel on LED testing;

- For Outcome 3: Increased penetration of high quality and efficient lighting, the following are to be delivered:
  - Output 3.1: Development of an innovative financial model enabling accelerated penetration of advanced lighting systems, focusing on the development of ESCO business models;
  - Output 3.2: Pilot demonstrations for accelerated LED lamp deployment in buildings and for street lighting in the context of sustainable cities as well as in residential sector;
  - Output 3.3: Implemented awareness and promotion program and information system explaining the benefits of high energy efficient lighting technologies, taking into account gender specific aspects in developing and implementing the programmes.

## 2.4 ADLIGHT Project Implementation Arrangements

17. The ADLIGHT Project is implemented under a national implementation modality (NIM) with UNDP Indonesia. The implementing partner of the ADLIGHT Project is the Directorate General of New and Renewable Energy and Energy Conservation (EBTKE) of the Ministry of Energy and Mineral Resources (MEMR), alongside with other partners some of who are listed in Paras 23 to 25.
18. The ADLIGHT Project Management Unit (PMU) is comprised of a National Project Manager, Component Leads, a Senior Finance Associate, and an Administration Associate who manages the day-to-day operations of ADLIGHT.
19. The ADLIGHT Project Board (PB) have an oversight progress monitoring role, providing feedback and guidance for PMU implementation, and supporting the Project in achieving its overall outputs, outcomes and objective. The PB is chaired by the Director General of New Renewable Energy and Energy Conservation (NREEC) with the deputy chairperson being from UNDP. Decision-making members of the PB includes UNEP, the Ministry of Energy and Mineral Resources, the Ministry of Industry, the Ministry of Trade, the Ministry of Finance, the Ministry of Environment and Forestry, the Ministry of Public Works and Public Housing, the Ministry of Transportation, and the Government Procurement Policy Agency (LKPP). There are also several dialogue partners and observers who do not have decision-making powers.

## 2.5 ADLIGHT Project Timing and Milestones

20. The ADLIGHT Project was designed as a 3-year project that commenced on 18 May 2020 scheduled to end on 17 May 2023. A summary of significant events for the first 24 months of the ADLIGHT Project include:
  - the GoI signing the ADLIGHT ProDoc on 18 May 2020;
  - the Inception Workshop was conducted virtually on 24 August – 2 September 2020 with the participation of national government agencies, NGOs, academia and private sector;
  - the 1<sup>st</sup> Project Board Meeting was conducted on 19 March 2021 to review the 2020 work progress and the Annual Work Plan (AWP) for 2021;
  - Wonosobo signed an MoU on 29 October 2021 to become an ADLIGHT pilot project location for streetlighting;
  - the “LED Lighting Roadmap for Indonesia” was finalized on 2 November 2021;
  - a workshop on “Plans for Implementing Banking Financing Schemes for the LED Industry” was held on 11 November 2021;

- Banjarmasin signed an MoU on 23 November 2021 to become an ADLIGHT pilot project location for streetlighting;
  - MOU for Facilitation and Acceleration of Public Private Partnership (PPP) between local government (Lombok Barat) and a private business entity for streetlighting retrofits on 2 February 2022;
  - the 2<sup>nd</sup> Project Board meeting was conducted 24 December 2021 to review 2021 progress and the AWP for 2022;
  - round robin and domestic LED lamp performance testing was implemented in 6 national testing laboratories in 2021;
  - MEPS and energy labels regulations were finalized on 31 March 2022 at a meeting with stakeholders and technical working group in Bogor;
  - Palu Regency, a municipality, signed a multi-year contract with a commercial bank and a private business entity on January 2022;
  - business transformation plans for selected local lighting manufacturers to produce high quality energy efficient lighting were discussed with lighting associations on meetings on 6 April 2022 in Bandung and 13 April 2022 in Jakarta.
21. In summary, the Project Management Unit was established on 1 August 2020 due to delayed recruitment process of the PMU team organized by the Executing Agency. In addition, the Coordinator for Component 1 started her assignment on 1 September 2021. At the time of writing this MTR report, there is just under one year of time remaining to complete all ADLIGHT activities. Details of the challenges that remain to achieve all ADLIGHT targets and other progress-related issues are provided in Section 3.2 of this report.

## 2.6 Main Stakeholders

22. There are many stakeholders for the ADLIGHT Project with the main stakeholder being the Implementing Partner, MEMR, specifically DGNREEC who are responsible for responsible for the overall management and monitoring of Project implementation and results. To achieve the specific ADLIGHT Project objective of “increase the penetration of high-quality energy-efficient lighting technologies in Indonesia through the transformation of the national market”, the ADLIGHT Project needed to engage a wide range of stakeholders in Indonesia (as specified in the ProDoc) and summarized in the following Paras.
23. Government stakeholders include:
- *The National Standardization Agency has established SNI standards for LED lamps;*
  - *BAPPENAS;*
  - *Ministry of Industry;*
  - *Ministry of Trade;*
  - *Ministry of Finance;*
  - *Ministry of Environment of Forestry;*
  - *Ministry of Public Works and Housing;*
  - *State Procurement Agency;*
  - *National Standardization Agency; and*
  - *Municipal governments.*

24. Private sector stakeholders included the lighting manufacturers who produce LEDs now for the export market:

- PT Osman Indonesia;
- PT. Solarens Ledindo;
- PT. Sarana Karya Solusindo; and
- Supply and installation companies (ESCOs).

25. Stakeholders from academia, CSOs and NGOs include:

- Lighting Industry Associations (GAMATRINDO, ALINDO and APERLINDO)
- Tingkat Kandungan Dalam Negeri (TKDN) or Local Content certifiers
- Masyarakat Konservasi dan Efisiensi Energi Indonesia MASKEEI or IECES (Indonesia Energy Conservation and Efficiency Society).

### 3. FINDINGS

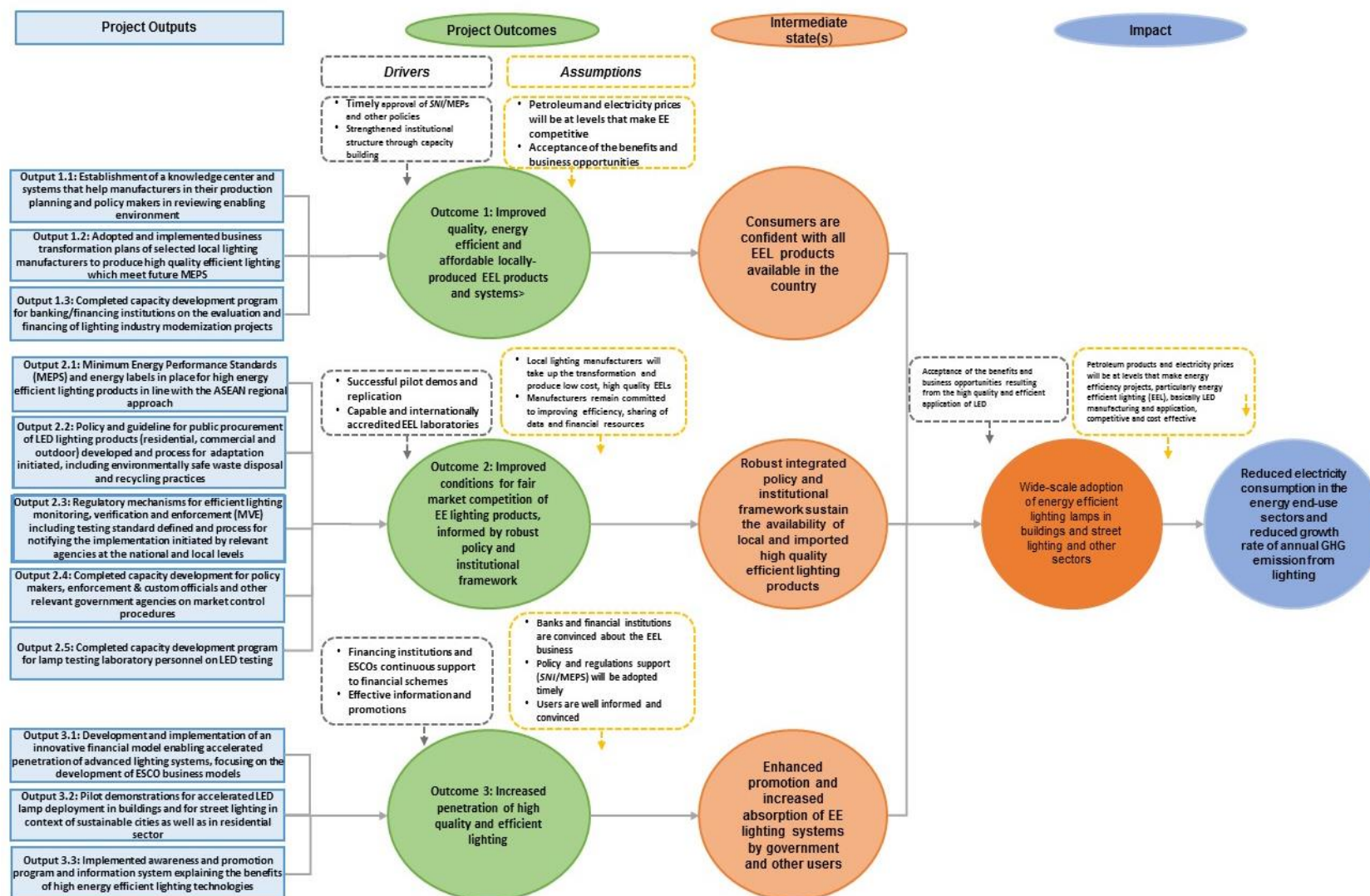
#### 3.1 Project Strategy

26. The ADLIGHT Project is relevant to Indonesia’s Paris commitment responding to sustainable development goals (SDGs) outlined in Paras 11 to 13. The ADLIGHT Project design was formulated in close consultation with government, international organizations, finance institutions, and NGOs. The approach of ADLIGHT sought to create an enabling environment for the sale of domestically manufactured LEDs in Indonesia, followed by LED pilot projects that could demonstrate the potential market penetration of LEDs in Indonesia. The overall concept of ADLIGHT was therefore quite simple.
27. ADLIGHT is coherent in its design that holistically addresses root causes and key barriers identified during the PPG phase, facilitating an enabling investment climate in Indonesia for the sale of domestically produced LEDs. The Project would use available technical assistance from UNDP (Components 1 and 3) and UNEP (Component 2) to remove a variety of barriers (Para 15) identified during the numerous FGDs and bilateral meetings, to advancing Indonesia’s lighting market to high-efficient technologies.
28. There was a Theory of Change (ToC) developed during the design phase of ADLIGHT. A ToC based on the current ADLIGHT design in the ProDoc is illustrated on Figure 1.

##### 3.1.1 Original Project Design

29. The ADLIGHT Project design seeks to create this enabling environment through a close working relationship between the MEMR, the Project Board and the PMU. The low market penetration of LEDs in Indonesia in 2017 was due to a recent shift to CFLs and low public awareness on energy efficiency that has led to absent consumer knowledge on lifetime costs (where consumers choose the cheapest lighting device which is usually not efficient). With ADLIGHT first being conceptualized with a PPG phase implemented in 2017, this close working relationship would remove primary barriers to advancing Indonesia’s lighting market to highly efficient technologies mentioned in Para 15 that form some of the *prominent baseline conditions* and activities of ADLIGHT.
30. These baseline activities were incorporated into the ADLIGHT Project strategy in close consultation with MEMR with Project resources utilized to strengthen many of these baseline situations. For example, ADLIGHT resources were designed to be used to strengthen selected local lighting manufacturers to adopt and implement business transformation plans to produce high quality energy efficient lighting. ADLIGHT was also trying to have MEPS and energy labels in place for high energy efficient lighting products in line with the ASEAN regional approach. As well, there was to be the development of innovative financial models to enable accelerated penetration of advanced lighting systems that is able to provide innovative financing solutions for LED projects.
31. Underlying drivers and assumptions of each baseline activity towards their contribution to achieving the overall Project results was covered in the PRF. This includes assumptions such as “petroleum and electricity prices will be at levels that make EE competitive”, and “policy and regulation support (SNI/MEPS) will be adopted in a timely manner”. Impact drivers included “acceptance of the benefits and business opportunities resulting from high quality and efficient application of LEDs”. There are also 9 project risks in the ProDoc, too many risks for the PMU to monitor; ideally, less than 6 risks should have been listed in the UNDP risk log.

Figure 1: ADLIGHT Theory of Change



32. Considering the satisfactory progress, the primary issue for the MTR team in the context of the ADLIGHT design is the remaining time available to meet the GHG emission reduction targets. A logical developmental pathway of activities would consist of assistance to improve the quality and pricing of locally manufactured LEDs, improving the conditions for market competition of EEL products through robust policies and institutional frameworks, and pilot projects to demonstrate financial models and actual large-scale deployment of LEDs. The impact of pilots and dissemination of information on regulations and the pilots should be sufficient to boost public and investor confidence in ADLIGHT interventions, and eventual LED investments. This is the development pathway of ADLIGHT activities in the ProDoc that was to be followed within the timeframe of the ADLIGHT Project. This could explain the reasons why, after less than 2 year of implementation, there is satisfactory progress on ADLIGHT implementation with sufficient progress to generate mid-term targeted GHG emission reductions.
33. A review of the ADLIGHT ProDoc reveals that gender issues were considered wherever practical on this Project. This included considerations on gender equality in the design of capacity development opportunities, and a collection of LED industry data that is gender disaggregated, allowing for more effective policies and strategies that respond to the entire population, and not just one gender. The ADLIGHT Project was designed to address gender issues through a Gender Mainstreaming consultant.

### 3.1.2 Analysis of Project Results Framework

34. The Project Results Framework (PRF) of the ADLIGHT Project meets the “SMART” criteria<sup>4</sup> that is appropriate to effectively monitor Project progress. Descriptions of the Project objective and outcomes are concise and easily understandable with clear numeric targets and time frames for SMART indicators. The overall Project design and Project results framework was well formulated, exhibiting clear linkages amongst activities, outputs and outcomes. Overall Project objectives and interventions were found to be relevant and consistent with GoI’s policies and priorities for promoting renewable energy and energy efficiency.
35. The overall ADLIGHT Project design and formulation is rated as **highly satisfactory**. However, there is a need for a slightly revised ADLIGHT Project approach to meet the overall GHG emission target of 62,580 tCO<sub>2</sub>, which is rationalized in Sections 3.2 to 3.4 with recommendations provided from Para 132 to 139. Some of these revisions are being made given that some of the outcome level targets may be challenging to achieve (as further discussed in Para 103).

## 3.2 Progress towards Results

### 3.2.1 Progress towards Outcome Analysis

36. Progress towards results is provided on Tables 1, 3, 4 and 6 against the EOP targets in the ADLIGHT PRF. Comments on some of the ratings are provided in the following paragraphs. For these Tables, the “achievement rating” is color-coded according to the following colour coding scheme:

Green: Completed, indicator shows successful achievements	Yellow: Indicator shows expected completion by the EOP	Red: Indicator shows poor achievement – unlikely to be completed by project closure
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<sup>4</sup> Specific, Measurable, Attainable, Relevant, Time-bound

Project objective level targets:

37. With regards to the target of “13,960 tCO<sub>2eq</sub> direct GHG emissions” at the mid-term point of the Project, the Project has been effective in making progress in the setup and deployment of energy efficient lighting pilots. At the time of writing of this MTR, the Project has several leads for the deployment of LEDs for public streetlighting and public buildings. The mid-term and EOP total electricity saving and CO<sub>2</sub> emissions reduction targets are based on successful and early implementation of the pilots that would accumulate sufficient GHG emission reductions to meet the targets. The streetlighting in Palu and LED lighting in public buildings in Semarang are being implemented at this time with completion scheduled for September 2022, while LED lighting in public building in Semarang City will be implemented in August 2022. Due to their late starting date (much of it due to the COVID-19 pandemic), these deployments should be sufficient to meet the mid-term targets of 13,960 tCO<sub>2eq</sub> direct GHG emissions, 121,760 tCO<sub>2</sub> lifetime direct, and 17.27 GWh of cumulative energy savings, in about 12-months’ time. In addition, gender targets for women and men participating in capacity building trainings on the Project have been met.
38. They will not meet the EOP GHG emission reduction target of 62,580 tCO<sub>2eq</sub> direct GHG emissions as well as other EOP targets unless there is a Project extension and proper follow-up of the LED opportunities in Semarang City, Banjarmasin, Wonosobo and Banda Aceh. Banjarmasin, Wonosobo, and Semarang City are at the “MoU” stage and the other opportunities in the preparation stage. This includes a number of government buildings and commercial buildings and streetlighting projects with municipalities and government agencies that have been approached with initial data obtained for further analysis. However, the timeframe to realize these deployments is uncertain with a number of barriers (as further discussed in Para 103) obstructing progress. Table 1 provides objective-level progress towards results against the EOP targets in the ADLIGHT PRF. Table 2 summarizes all pilot projects. Overall progress on the achievement of the objectives is **satisfactory**.

Outcome 1 targets:

39. To support Outcome 1 targets, a number of Outputs and Activities were to be implemented as detailed in the following Paras.
40. For Output 1.1: Establishment of knowledge centre and systems that help manufacturers in their production planning and policy makers in reviewing enabling environment, there were 4 activities:
- Activity 1.1.1: Identification, design and establishment of an institute to support energy efficient lighting transformation in Indonesia;
  - Activity 1.1.2: Periodic (inception, mid-term and terminal) gender sensitive market surveys of EEL production and application in Indonesia;
  - Activity 1.1.3: Development of LED lighting development roadmap for Indonesia, with gender equality goals included; and
  - Activity 1.1.4: Review and development of recommendations for government policies to provide level playing field to manufacturing of high-quality LEDs.



**Table 1: Progress Towards Results Matrix (Achievement of Objective-Level Indicators against End-of-Project Targets)**

Project Strategy	Indicator	Baseline Level	Mid-Term Target	End-of-Project Target	Midterm Level and Assessment	Achievement Rating	Justification for Rating
<b>Project Objective:</b> To increase the penetration of high-quality energy efficient lighting technologies in Indonesia through the transformation of the national market, thereby reducing electricity demand and the related greenhouse gas (GHG) emissions.	Cumulative electricity savings by EOP, GWh	0	• 17.27 GWh (62,172,000 MJ)	• 77.45 GWh (278,820,000 MJ)	Mid-term target have not yet achieved. However, pilot projects are being setup to meet the mid-term targets of cumulative electricity savings, direct project GHG emission reductions in 12 months time.		See Paras 37-38
	Direct project GHG emissions mitigated by EOP, kt CO <sub>2</sub> (GEF Core Indicator 6.2)	0	• 13.96 kt CO <sub>2</sub> (direct by EOP) • 121.76 kt CO <sub>2</sub> (Lifetime direct by EOP)	• 62.58 kt CO <sub>2</sub> (direct by EOP) • 548.77 kt CO <sub>2</sub> (Lifetime direct by EOP)			
	Number of women and men participating in capacity building trainings throughout the project (GEF Core Indicator 11)	n/a	30/70	60/40			

**Table 2: Pilot Projects**

#	Project Description	Location	Status	Projected Date	Estimated Cost	Estimated GHG Emission Reduction (tCO <sub>2eq</sub> /yr)
1	Streetlighting	Banda Aceh	- Political will of the Mayor is important and further discussion is warranted with formal correspondence from the Ministry of ESDM and ADLIGHT - need to followed up for upcoming year	2023	Rp 551,737,900	4,931
2	Streetlighting	Denpasar	-cost of the feasibility study appears to be the barrier to providing assistance to Denpasar city. ADLIGHT conducted workshop on 3-4 November.	2023	N/A	N/A
3	Ministry of Finance buildings	Jakarta	No lighting inventory data	2023	N/A	N/A
4	Streetlighting	Bali Province	-BPTD can act as a coordinator or facilitator for the regional transportation office and bring in the Transportation Office of the Districts or Cities for negotiations; -Workshop on 15-16 November 2021 to scope project;	2023	N/A	N/A

#	Project Description	Location	Status	Projected Date	Estimated Cost	Estimated GHG Emission Reduction (tCO <sub>2eq</sub> /yr)
			-2nd Workshop on December 2021 with good response. However, Province has not responded yet towards the data ADLIGHT requires; -ADLIGHT and the Directorate of Energy Conservation Team to communicate more intensely with districts and cities that have shown high enthusiasm to cooperate with ADLIGHT.			
5	Streetlighting	Nusa Tenggara Barat Province	-BPTD can act as a coordinator or facilitator for the regional transportation office and bring in the Transportation Office of the Districts or Cities for negotiations; -Workshop on 15-16 November 2021 to scope project. ADLIGHT and the Directorate of Energy Conservation Team will communicate more intensely with districts and cities that have shown high enthusiasm to cooperate with ADLIGHT.	Implemented in West Lombok Regency. West Lombok regency expected to be a replication for success story in NTB (see project no. 11)		
6	Streetlighting	Pangkep Regency	- Vice Regent will provide a report regarding the brief meeting with ADLIGHT and will arrange a meeting with his officials and ADLIGHT in Jakarta; - still waiting for feedback towards the data that ADLIGHT requires.	2023	N/A	N/A
7	Buildings	Bank Rakyat Indonesia (BRI), Jakarta	-BRI team needs a concept note from ADLIGHT regarding the pilot project plan.	2023	N/A	N/A
8	Streetlighting	Banjarmasin	-signing of MoU between Directorate of Energy Conservation and City of Banjarmasin on “Streetlighting Pilot Project in Banjarmasin” on 7 December 2021.	2022	Rp 732,728,000	7,668
9	Streetlighting	Wonosobo	-signing of MoU between Directorate of Energy Conservation and District of Wonosobo on “Streetlighting Pilot Project in Wonosobo” on 29 October 2021.	2022	Rp 551,737,900	2,112
10	Streetlighting	Bangka Tengah	-field visit on 6-7 October 2021 to scope project	2023	N/A	N/A
11	Streetlighting	Lombok Barat	-the project is currently at the Request for Proposal (RfP) stage and the feasibility study needs to be updated.	2022	Rp 1,850,000,000	202
12	Streetlighting	Palu	-streetlighting retrofits are ongoing with completion scheduled for September 2022	2022	no grant	13,241
13	Public Building	Semarang	-it is now scheduled for completion June 2022	2022	Rp 399,000,000	32,737
<b>Total:</b>					<b>Rp 4,085,203,800</b>	<b>60,891</b>

41. For Activity 1.1.1, the establishment of a knowledge centre has been initiated with an LED manufacturers survey during the period of May–September 2021 as detailed in Para 42. The knowledge centre is hosted on a “Microsite” under the platform SINERGI<sup>5</sup> with the objective of exchanging information between stakeholders: manufacturers, associations, and government. This Activity will be continued in 2022 and will be enriched by new features from LED industry surveys.
42. For Activity 1.1.2, a gender-sensitive market survey of LED manufacturers was conducted using Project resources during the period of May–September 2021 to obtain information on the existing conditions of domestic LED industries and the challenges they face in business development; and to obtain information on the number and volume of domestic LED products, production capacity, future production projections, and business development plans. The survey was conducted to determine product types, production capacity, sales data, market segments and marketing strategies, investment and compliance with standardization, incentives and policies, technical specifications and supply chains, number of employees and aspects of gender equality as well as other information related to the local LED lighting manufacturers. The results of this survey were input for the development of the Roadmap for the development of high-efficiency lighting in Indonesia.
43. For Activity 1.1.3, Project resources were used for a kick-off meeting for “Development of LED Lighting Development Roadmap for Indonesia” on 7 May 2021 to obtain information and input from participants and stakeholders regarding a detailed work plan including the methodology, timeline, and the implementation plan for the development of the LED industry in Indonesia. The meeting yielded the following results:
  - BLU P3Tek KEBTKE was appointed by DG NREEC to carry out this activity under the Swakelola Tipe 2 modality;
  - there was agreement on a roadmap period up to 2035;
  - test results for other activities related to ADLIGHT can be used as a benchmark in preparing the roadmap;
  - the data and parameters generated from this roadmap can be included in the e-catalog and used as a reference for public procurement related to LED;
  - the data and information (including the gender survey of Activity 1.1.2) obtained from this work will address the issue of net zero energy and emissions.
44. Project resources were used for an FGD conducted on “Roadmap Finalization” on 1 November 2021 to obtain responses from relevant Ministries and association on the draft of development of LED lighting development roadmap for Indonesia for mutual agreement and commitment to implement the Roadmap. Key takeaways included:
  - the directive on MEPS (also known as SKEM) will prepare the LED lighting industry to comply with MEPS as well as enhance outreach by government agencies to SKEM;
  - the acceleration of replacement of fluorescent lamps in government agency buildings and managing mercury waste will enhance the application of SNI for safety and performance to reduce LED lamps waste in the future;
  - Ministry of Industry's support for the domestic LED lighting industry to achieve 40% local content known as Tingkat Komponen Dalam Negeri (TKDN). This would allow the policy of replacing fluorescent lamps in government buildings to be serviced by the domestic lighting industry;

<sup>5</sup> <https://simebtke.esdm.go.id/sinerigi/>

- the local LED industry is ready to support the prohibition and restriction policy in replacing the reduced supply of imported lamps.
45. Project resources were utilized to conduct the “Roadmap Dissemination Workshop” on 22 November 2021 to disseminate the Roadmap to all relevant stakeholders. Key takeaways from the workshop:
- the action plan of the Roadmap will have an impact on reducing emissions and mercury due to the 2019 – 2035 sale of lamps;
  - total potential for emission reductions for all sectors is 36 million tons of CO<sub>2e</sub>;
  - total cumulative mercury reduction from the action plan from lamp sales is 125 kg;
  - ADLIGHT will coordinate with relevant stakeholders in 2022-2023 to carry out the action plans of the Roadmap;
  - it is hoped that the Government can provide examples of the use of domestically made LED lamps to create a domestic LED market through the government public procurement. This could include many government buildings, state-owned enterprises, hospitals, and universities that do not use LED lamps;
  - local governments may require permits for the use of domestic lights in the construction of malls and new buildings;
  - the government can require retail stores to carry at least 50% of their stock of domestic LEDs.
46. In summary, the “Roadmap for the Development of the LED Industry in Indonesia” has been finalized and disseminated to all stakeholders. The action plan of the Roadmap will have an impact on reducing emissions and mercury due to the 2019-2035 sale of lamps.
47. On Output 1.2: Adopted and implemented business transformation plans of selected local lighting manufacturers to produce high quality energy efficient lighting which meet future MEPS, there were activities implemented:
- Activity 1.2.1 Gender-responsive assessment of needs and development of capacity building to prepare local EEL manufacturers to upgrade production facilities to produce high quality, efficient lighting that can meet future MEPS ;
  - Activity 1.2.2 Development of gender-responsive business transformation plans of local EEL manufacturers to produce high quality LED lamps that can meet future MEPS requirements; and
  - Activity 1.2.3 Organization and conduct of workshops and business forums for local manufacturers for the adoption and implementation of the business transformation plans, with gender-sensitive capacity building components.
48. For Activity 1.2.1, Project resources were used for a gender-sensitive survey of LED manufacturers as mentioned in Para 42. A team consisting of P3Tek, ADLIGHT and DEC surveyed 18 domestic LED industries in several regions in Indonesia including:
- PT Fokus Indo Lighting, Cikarang, West Java;
  - PT Prisled Innovative Lighting Indonesia, Batam;
  - PT Solarens Ledindo, Bandung, West Java (under ALINDO). This company produces LED street lighting with wattages of 60, 90, 120-540 with lumen efficacy of at least 130 lumen/watt. The company now has a supply contract with Palu Local Government for 12,000 street lights

- PT Surya Utama Putra, Bandung, West Java (under ALINDO). This company manufactures LED street lighting for public roads, parking area, housing areas, offices, shopping malls, and public facilities. Street lighting wattages range from 16, 20 to 90, and 100-150 watt with lumen efficacy at least 145 lumen/watt. They had in-country agreements with several private and local government institutions to install street lighting and they are now initiating to export the product within Asia;
- PT Artolite Indah Mediatama, Depok, West Java;
- PT Honoris Industry, Bogor, West Java;
- PT Kingled Indonesia, Jakarta;
- PT Panasonic Gobel Life Solutions, Pasuruan, East Java;
- PT Saka Agung Karya Abadi, Sidoarjo, East Java;
- PT Sarana Karya Solusindo, Sidoarjo, East Java;
- PT Surya Citra Teknik Cemerlang, Bekasi, West Java;
- PT Tjipto Langgeng Abadi, Sidoarjo, East Java;
- CV Sentosa Electric, Bandung, West Java;
- PT Moradon Berlian Sakti, Jakarta;
- PT Sinar Angkasa Rungkut, Surabaya, East Java;
- PT Daya Mandiri Terbarukan, Tangerang, Banten;
- PT Makarim Berjaya, Jakarta;
- PT Santinilestari Energi Indonesia, Pasuruan, East Java.

49. The results of the survey were as follows:

- The P3Tek, ADLIGHT and DEC team surveyed 26 domestic LED industries in several regions in Indonesia;
- Survey results show that Indonesia is capable to produce high quality LED lamps that are exported. This capability represents the potential to reduce LED imports, which are an estimated 70% of the total LED lamps circulating in Indonesia;
- The LED lighting industry has implemented the ISO 9001:2008 quality management system, the ISO 14001:2004 environmental management system and an occupational health and safety management system such as OHSAS 18001 and ISO 45001;
- The majority of industries believe that the MEPS implementation will limit the price range of LED lamps in the market so that the industry can compete fairly. However, the industry is experiencing problems with product certification cost that is costly because certification must be carried out frequently every time there is a new LED lighting technology;
- Domestic lighting industries have sets of complete production equipment to produce high quality products. In the long term, the industries plan to increase investments for increasing production, developing new products, and developing supporting products such as batteries;
- The role of women in the LED lighting industry is substantial with the proportion of female employees ranging from 10% to 70% with an average of 34%;
- The industry expects support from regulators in the form of import barriers and the creation of a domestic market. Import barriers will cause price increases in the short term but will reduce domestic industrial production costs in the long term.

50. Project resources were also used for one-on-one meetings with relevant LED Development Stakeholders during the period of 23-27 August 2021 to obtain responses from relevant Ministries on the results of a survey of the domestic LED lighting industry, to obtain current policies and work

plans related to the use of local LED lights, and to formulate policy options for increased use of high efficiency local LED lighting. Key takeaways:

- Ministry of Industry supports domestic LED industry policies for mandatory standard related to safety and TKDN;
- Ministry of Trade supports LED lighting import restriction policies and LED lighting trade data in Indonesia (imported and local);
- Ministry of Finance supports LED lighting policies on import tariffs and other import measures, as well as tax reductions of import duty on imported lighting components;
- Ministry for Maritime Affairs and Investment has an obligation to use domestic LED lights for Public Street Lighting (PJU) through a PPP scheme;
- Ministry of Public Works and Public Housing has an obligation to use domestic LED lights for the housing sector and PJU on toll roads;
- Ministry of Transportation has an obligation to use domestic LED lights for streetlighting;
- MEMR has an obligation to use domestic LED lights for new renewable energy infrastructure and energy conservation;
- Ministry of Home Affairs has an obligation to use of domestic LED lights in local government buildings; and
- Government Goods/Services Procurement Policy Institute (LKPP) have SNI and TKDN policies in the streetlighting e-catalogue.

51. A meeting was also conducted in Bandung, West Java on 6 April 2022 using Project resources with lighting associations and manufacturer. Discussions centred around:

- Gamatrindo Association mentioning that they now have 8 manufacturer members (7 manufacturers with production lines, and 1 manufacturer is for assembly only) producing 170 million LED. They are having difficulties competing with imported LED bubs which are cheaper in price;
- ASEAN and Government MEPS are set to 80 lumen/watt for LED bulbs despite efforts by Gamatrindo to set it to 50 lumen/watts;
- market surveillance needs to be strengthened to allow local manufacturers to sell LEDs;
- the ALINDO association proposed to Government the restructuring of rules and regulations on marketing aspects and certification for LED street lighting;
- manufacturers requested the Government to review the acknowledgment system of TKDN local content to have more access to the LED lighting market. LKPP (the Public Procurement Agency) should receive assistance to review and upgrade the public procurement monitoring report for LED lights;
- laboratory testing on locally-produced LED street lighting has shown they are good quality products that can compete with imported LED street light; and
- manufacturers mentioned that 36-40% of employees in the production area were female.

52. Project resources were utilized to conduct a meeting with APERLINDO on the 13 April 2022. With 40 company members (17 manufacturers and 23 importers or assemblers), APERLINDO was involved in the roadmap development for Indonesia Lighting Industries, and was concerned with gender mainstreaming where 40% of their workers are female. Some of their member companies have shown good business transformation plans to produce LEDs, and are able to develop bankable proposals to local commercial finance institutions. Plans for the remainder of 2022 are to:

- implement Ministry of Industry regulation No: 22 – 2020 concerning local content calculation;
  - implement the Roadmap for lighting industries developed with ADLIGHT assistance; and
  - comply with lighting regulations in Indonesia.
53. A study was also conducted in 2021 with Project resources to protect the domestic LED industry through the application of TKDN. With low demand for local LED products, local manufacturers have difficulty competing price-wise, unable to reduce production costs. The study attempts to apply TKDN to improve the competitiveness of the local LED light industry (which is a part of the national electronics industry) by transforming the industry to one that applies TKDN to reduce costs on the production of high-quality energy efficient lights. With LEDs being considered electronic products, the TKDN policy for electronic equipment is in MoI’s Regulation No. 22 of 2020 on “Provisions and Procedures for Calculating the Value of Domestic Component Levels of Electronic and Telematic Products”.
54. For Activity 1.2.2, there were Project-financed activities by a consulting firm to support “Capacity Building Assessment and Implementation of Business Transformation Plan for Selected Domestic LED Manufacturers” from July-October 2021 to obtain an overview of the problems and challenges faced by the domestic LED lighting industry in an effort to transform business and become more competitive, and to determine which domestic LED lighting manufacturers will receive assistance. The report contained a needs assessment for domestic LED manufacturers related to development business transformation plans, preparing bankable investment proposals for selected LED light manufacturers, and provide inputs to government institutions to make regulations related to the LED industry. Business transformation plans of local LED manufacturers will be continued in 2022 to convert their production lines to the production of high-quality LED and meet MEPS requirements. The Project will provide technical assistance so that financial institutions will be able to process loan requests. The LED associations mentioned that incentives and regulations deemed necessary for local LED business transformation include:
- reduction in product certification cost;
  - regulations obligating local governments to use local products;
  - encouraging mechanical and electrical standardization to allow industrial products to be compatible;
  - the obligation to use of domestic LED lamps in government buildings and state-owned enterprises;
  - PPP financing schemes for high value projects; and
  - provision of supply of domestic LED lighting components to substitute imported LED lamps that allows the prices of domestic LED lamps to be competitive.
55. A Project-financed study on the “Development and Implementation of Business Transformation Plan for Selected Domestic LED Manufacturers” was completed in 2021. The study sets examples of bankable project proposals from simulation results using life cycle cost analysis methodology or material flow analysis. The LED manufacturers were then selected by initial assessment that used agreed criteria such as financial performance, market demand, business potential, technology performance, commitment to the LED lighting development roadmap and human resources.

56. In summary, the business transformation plans to produce high quality energy efficient lighting which meet future MEPS are in the process of being adopted and implemented by selected local lighting manufacturers.
57. For Output 1.3: Completed capacity development program for banking/financing institutions on the evaluation and financing of lighting industry modernization projects, specifically Activity 1.3.1: “Design, planning and conduct of training for financing institution officials on assessment of financial proposals on energy efficiency, focusing on production upgrades of lighting manufacturers, while specifically addressing gender-gaps in the market”, an FGD was conducted using Project resources for the “Development and Implementation of Business Transformation for Domestic LED Lighting Manufacturers with Financial Services Institutions” on 11 November 2021 to obtain an overview of requirements and procedures for financing proposals from financial institutions. Key takeaways:
- Bank Syariah Indonesia and Bank Rakyat Indonesia conveyed their commitments to support energy conservation projects including streetlighting retrofit projects. However, their understanding on the business model for LED projects is still very limited to the extent that their bank do not yet have special products for financing such projects;
  - Sources from LKPP explained that there is significant market potential for the domestic LED industry, namely projects to convert conventional SL to energy-efficient SL lights as part of the Indonesian government's commitment to reduce carbon emissions. This project will be carried out by district and city governments throughout Indonesia;
  - A representative from ALINDO explained that SL projects require huge financing. For example, the Palu City project required financing up to IDR 80 billion. Such large financing is unlikely to be covered by the collateral of the domestic LED industry with the hope that banks develop non-collateral financing models where payment guarantees come from the government;
  - BRI and BSI are open to cooperate with ADLIGHT and the EBTKE in creating business models and business processes of energy conservation projects in Indonesia, opening the door for Bank Rakyat Indonesia to finance the domestic LED industry.
58. An additional Project-financed activity to support Output 1.3 was an FGD organized for a “Workshop on Plans for Implementing Banking Financing Schemes for the LED Industry” conducted on 15 November 2021 to facilitate financing from banks on the domestic LED lighting industry. Key takeaways from the FGD:
- the banking industry are still studying the possibility of financing energy conservation projects through financing upgraded production lines for local LED manufacturers;
  - one of the requirements for a financing proposal of >INR 10 billion is a feasibility study which can actually be carried out by the LED lighting industry without involving a third party;
  - a market place, JD.ID, is committed to supporting the Government's program to encourage the domestic LED industry through a number of financing programs with B2B solutions;
  - the PMU have created the ToR for consultant recruitment for developing a training module;
  - a letter has been sent to OJK for training support to this activity. Capacity building will involve dissemination trainings from Indonesia First Movers on Sustainable Banking and related Regional Development Banks, and Bank Pembangunan Daerah of Smart Cities Streetlighting pilots.
59. Overall, the Project has been effective in achieving progress on Outcome 1. The rating for Outcome 1 is **satisfactory** given the Roadmap has been finalized and disseminated to all stakeholders and will



have an impact on reducing emissions, business transformation plans for domestically-produced high quality energy efficient lighting are in the process of being adopted and implemented by selected local lighting manufacturers, and the banking industry are still studying the possibility of financing energy conservation projects. Table 3 provides Outcome 1 progress towards results against the EOP targets in the ADLIGHT PRF.

Outcome 2 targets:

60. There are 5 outputs under this UNEP-supported Outcome:

- Output 2.1: Minimum Energy Performance Standards (MEPS) and energy labels in place for high energy efficient lighting products in line with the ASEAN regional approach. This will involve formulation of legal draft for MEPS label followed by development of procedure and MEPS label certification for LED lamps;
- Output 2.2: Policy and guideline for public procurement of LED lighting products (residential, commercial and outdoor) developed and process for adaptation initiated, including environmentally safe waste disposal and recycling practices. This will development of public procurement guidelines for LED lamps that address MEPS development of guidelines, and strategies and training for waste management of lighting products and systems;
- Output 2.3: Regulatory mechanisms for efficient lighting monitoring, verification and enforcement (MVE) including testing standard defined and implemented by relevant agencies at the national and local levels. This will involve integration of MVE systems for LEDs and development of market control procedures, and assessment of TKDN of local LED products;
- Output 2.4: Completed capacity development for policy makers, enforcement & custom officials and other relevant government agencies on market control procedures. This will involve training in comparative studies for policy strengthening and LED industrial development;
- Output 2.5 Completed capacity development program for lamp testing laboratory personnel on LED testing. This will involve laboratory capacity strengthening involving policymakers, practitioners and laboratories.

61. The PCA between UNEP and the MEMR- DGNREEC was finalized on 6 January 2021 due to the required legal clearance of GoI. In 2021, the main activities under Component 2 were:

- round robin tests and laboratory tests for LED lamps;
- formulation of a National Industry Development Strategy with local content improvement; and
- updating a website on MEPS and an MVE system integration plan.

62. Preliminary activities for Output 2.1 were implemented in 2020 using government budgets<sup>6</sup>. The draft MEPS and energy labels regulation, specifically Activities 2.1.2 and 2.1.3, were finalized on 31 March 2022 at a meeting in Bogor by legal and technical working groups. The meeting in Bogor was attended by 28 persons (21 male and 7 female) from the legal bureau of the Ministry of Energy, Energy Conservation Directorate, PMU, National Standardization Agency, Ministry of Transportation, lighting associations, and manufacturers. Results of the meeting were:

<sup>6</sup> Since the Project had started with the overall approval of GoI, it was agreed that Outcome 2 costs incurred under the Government budget in 2020 would be refunded by the Outcome 2 budget once the agreement was signed between UNEP and the Ministry. This was done to ensure there was no lag in Outcome 2 activities with other components.

**Table 3: Progress Towards Results Matrix (Achievement of Outcome 1 against End-of-Project Targets)**

Project Strategy	Indicator	Baseline Level	Mid-Term Target	End-of-Project Target	Midterm Level and Assessment	Achievement Rating	Justification for Rating
<b>Outcome 1:</b> Improved quality, energy efficient and affordable locally-produced EEL products and systems	Efficiency of locally produced lighting systems increased, (lm/W) and Production cost decreased from baseline level (%)				Data from the testing of the local LED products in the Component 2 indicates output indicators are partially achieved and expected to be fully achieved by the end of 2022.		See Paras 48, 51
	<ul style="list-style-type: none"> <li>Indoor Type</li> </ul>	<ul style="list-style-type: none"> <li>Eff: <b>100</b> lm/W;</li> <li>Supply chain cost: 100 % (Baseline supply chain cost to be determined at project inception)</li> </ul>	<ul style="list-style-type: none"> <li>Eff: <b>120</b> lm/W;</li> <li>Supply chain cost: <b>80%</b> of Baseline</li> </ul>	<ul style="list-style-type: none"> <li>Eff: <b>150</b> lm/W;</li> <li>Supply chain cost: <b>80%</b> of Baseline</li> </ul>	<ul style="list-style-type: none"> <li>Eff: 80 lm/W (LED bulb), and 100 lm/W (LED tubes);</li> </ul>		
	<ul style="list-style-type: none"> <li>Outdoor Type</li> </ul>	<ul style="list-style-type: none"> <li>Eff: <b>130</b> lm/W;</li> <li>Supply chain cost: 100% (at project inception)</li> </ul>	<ul style="list-style-type: none"> <li>Eff: <b>150</b> lm/W;</li> <li>Supply chain Cost: <b>80%</b> of Baseline</li> </ul>	<ul style="list-style-type: none"> <li>Eff: <b>180</b> lm/W;</li> <li>Supply chain cost: <b>80%</b> of Baseline</li> </ul>	<ul style="list-style-type: none"> <li>Eff: <b>120</b> lm/W</li> </ul>		
	Cumulative number of lighting manufacturers who received technical assistance to upgrade production facilities	0	3 manufacturers (1 for each association)	6	Zero. Still to be determined		See Paras 49, 52,
	Investment grade proposal for business transformation plans						See Para 52, 54, 55, 57 and 5851
	<ul style="list-style-type: none"> <li>Submitted by manufacturers</li> <li>Approved by banks.</li> </ul>	<ul style="list-style-type: none"> <li>0</li> <li>0</li> </ul>	<ul style="list-style-type: none"> <li>3</li> <li>3</li> </ul>	<ul style="list-style-type: none"> <li>6</li> <li>6</li> </ul>	<ul style="list-style-type: none"> <li>1</li> <li>0</li> </ul>		
	Ratio of women and men employees in relevant government institutions who believe they have the capacity to monitor verify and enforce high quality efficiency lighting systems	N/A	<ul style="list-style-type: none"> <li>30/70</li> </ul>	<ul style="list-style-type: none"> <li>30/70</li> </ul>	Assessment on women's capacity to submit and approve proposal has not been conducted		See Paras 42, 49, 51 and 52

- the GoI has responsibility to abide by ASEAN commitments on the harmonization of EE lighting;
  - the GoI will use the lowest value of lumen efficacy (80 lumen/watt for LED bulb, 100 lumen/watt for LED tube, and 120 lumen/watt for LED luminaire);
  - the draft of the MEPS regulation and label on EEL for LED was approved and underwent a further review by a legal expert that was completed 31 March 2022.
63. For Output 2.2, the policy and guideline for public procurement of LED lighting products (residential, commercial and outdoor) is being prepared in 2022 with Project resources to provide a TKDN certification program for domestic industrial products, specifically for LED bulbs and tubes in order to include them in the government procurement system managed by LKPP. The LKPP system will require local content value (or TKDN) and an SNI luminaires certification mostly for streetlights, not building or housing lights. This will become a government procurement requirement with the enactment of the Ministerial Decree of MEPS. Knowing that these policies and guidelines are not yet complete, the process for their adaptation has not yet been initiated. In addition, discussion of environmentally safe waste disposal and recycling practices has not yet been commenced.
64. For Output 2.3, the Project initiated activities to support MVE for LED lighting in coordination with the MoT, MoF, MoI, MEMR, and other law enforcement officials (police). This included round robin and domestic LED products tests by 6 LED national laboratories including:
- round robin and LED lamp performance testing that was implemented to provide information on testing laboratory proficiency by comparing their testing ability, and to benchmark the performance of domestic LED lighting products. Strategies and procedures to implement LED standards for production of LED products has been formulated in the draft of ministerial decree for MEPS;
  - the P3 Tek KEBTKE laboratory which is a government-owned laboratory with good cooperation with ADLIGHT. The lab had assisted in implementing testing of a first batch LED bulbs for market survey in 2021. The P3 TEK lab has procured new laboratory equipment such as goniometry for lighting, lux light meter, and luminous meter. This lab has the capacity to support LED lighting tests once the LED MEPS is enacted. The P3TEK co-financing budget for ADLIGHT has disbursed more than USD 4,167,300, spent on building construction and laboratory equipment.
  - PT. QUALIS Laboratory which is a private laboratory setup to meet the growing demand for testing lighting technology in accordance with applicable standards. It also serves as a Product Certification Institution, authorized to issue the SNI (Indonesian National Standard) and providing one-stop service for its customer. They are capable of testing streetlights (up to 1500 watt using goniometry which may not be available in other labs) and self-ballasted LED lamps.
65. For Output 2.4, market control procedures for the customs office and other relevant government agencies has not been well coordinated to strengthen the market for local EEL products. Studies to increase TKDN have been carried out in 2021. In 2022, there has been technical guidance carried out for calculating TKDN involving 18 domestic companies. In addition, a first Gender Analysis and Refined Gender Action Plan was formulated to provide an overview of the state of gender equality and identify gender gaps, challenges, and opportunities. The Project will start conducting FGDs in June 2022 on market control capacity development. More assessment needs to be conducted to illustrate how women and men interact with the local economy differently to advance gender equality. Gender training for government staff and other ADLIGHT stakeholders should strengthen

understanding of women and men in different LED markets in Indonesia, sufficient to strengthen women’s participation in the energy efficient lighting sector.

66. For Output 2.5, capacity development in the form of virtual training for lamp testing laboratory personnel on LED testing has taken place with personnel from 6 laboratories including P3Tek KEBTKE under U4E program. This has led to round robin and LED lamp performance testing for implementing MEPS testing for LED products mentioned in Para 64.
67. With Component 2 expenditures around 15%, the Project will have difficulties to use the entire budget by EOP in June 2023. The Project will need to extend its capacity building activities (Outputs 2.4 and 2.5), likely with a no-cost extension another 12 months. Though much of the work done in Component 2 is to support energy performance contracting for LED lighting, most local governments are preparing their contracts using a PPP scheme due to more favorable regulations (see Paras 73 and 74). This may also include activities related to Output 2.4 where actions can be taken to improve local content (TKDN) for local LED manufacturers (Para 63), and to involve the lighting industry in overseas technical training (possibly in 2022 in Thailand) linked with UNEP’s Leapfrogging Project. Despite the late start, the Project has been moderately effective. Overall progress with Outcome 2 is **satisfactory** mainly due to MEPS and energy labels regulation being finalized by legal and technical teams, the policy and guideline for public procurement of LED lighting products being finalized with a TKDN certification program for domestic industrial products, and support for LED lighting MVE with round robin tests of domestic LED products by 6 LED national laboratories. Table 4 provides Outcome 2 progress towards results against the EOP targets in the ADLIGHT PRF.

Outcome 3 targets:

68. For Output 3.1 (Development of an innovative financial model enabling accelerated penetration of advanced lighting systems, focusing on the development of ESCO business models), there were activities implemented:
  - Activity 3.1.1: Comparative evaluation of international best practices of financial support schemes for EEL financing;
  - Activity 3.1.2: Development of ESCO business models to be demonstrated in the pilot projects; and
  - Activity 3.1.3: Mainstreaming of the existing national policies and regulations for the banking sector to accelerate penetration of EEL.
69. Activities 3.1.1 and 3.1.2 started with a Project-financed discussion on the planned “Study on Comparative Evaluation of International Best Practices of Financial Support Schemes for EEL Financing” on 18 November 2020, online and offline. With the objective of obtaining inputs and comments from EBTKE colleagues, key results achieved from the discussion were:
  - a flow chart diagram of the study framework needs to be designed;
  - targeted sectors such as buildings, residences, public streetlighting, needs elaboration;
  - there is a need to identify more innovative financial model options; and
  - there is a need to make policy simulations related to energy-efficient lighting investment scenarios (using modelling tools such as dynamic systems).

**Table 4: Progress Towards Results Matrix (Achievement of Outcome 2 against End-of-Project Targets)**

Project Strategy	Indicator	Baseline Level	Mid-Term Target	End-of-Project Target	Midterm Level and Assessment	Achievement Rating	Justification for Rating
<b>Outcome 2:</b> Improved conditions for fair market competition of EE lighting products informed by robust policy and institutional framework	No. of policy documents at the national level, including Standard Minimum Quality and MEPS on LED and other relevant guidelines, developed and approved	0	2 (1 SNI and 1 Draft MEPS and labelling)	3 (SNI updated and Implemented MEPS and labelling endorsed)	The draft MEPS and energy labels regulation, were finalized by legal and technical teams		See Para 63
	No. of policy and guideline on LED procurement developed and implemented in E-catalogue and regular public procurement system	0	1 (policy adapting SNI)	2 (policy adapting SNI and MEPS)	Policy and guideline for public procurement of LED lighting products (residential, commercial and outdoor) is being prepared.		See Para 63
	No. of comprehensive MVE Guideline and required implementing rules and regulations for including resolving custom dispute and legality of products developed and implemented	0	1 (software by BSN)	1	initiated activities to support LED lighting MVE in coordination with the MoT, MoF, MoI, MEMR, and other law enforcement officials (police) including round robin tests of domestic LED products by 6 (2?) LED national laboratories.		See Para 64
	Ratio of women and men employees in relevant government institutions who believe they have the capacity to monitor verify and enforce high quality efficiency lighting systems	N/A	30/70	30/70	No data yet has been taken on this indicator		See Para 65

70. A consulting company recruited for the “Study on Comparative Evaluation of International Best Practices of Financial Support Schemes for EEL Financing” did not perform and had their contract cancelled in November 2021. This assignment will be re-tendered again in 2022.
71. With Activity 3.1.2, key results from the 18 November 2020 discussion resulted in the GoI arriving at the following conclusions:
- the government building sub-sector is not attractive for ESCO. The payback period for retrofitting works at government buildings is too long due to minimal cost savings obtained while the payback period for non-government buildings is much shorter. The electricity tariff for government buildings is regulated and very low. The local lighting industry has the capability to produce high quality LEDs but selling it requires regulations that support locally produced LEDs. This issue should be addressed by the policy and guideline for public procurement of LED lighting products;
  - payment for ESCO services for retrofitting government buildings is difficult due to the nature of the government budgeting process;
  - good opportunities are available for ESCOs in streetlighting. The works of Solarens in street lighting retrofitting in Solo resulted in significant electricity savings for the city. However, the company had to use its assets as the collateral as the bank was unwilling to finance such a project without collateral;
  - local banks have no incentives to finance low-value retrofitting building projects;
  - OJK is very supportive to green industry movement and has published a guide to financing energy efficiency projects for the financial sector. However, risk is the key consideration in financing approvals, and alternative financing schemes (such as on-bill financing, loan purchasing program, energy saving insurance) that are attractive to the financial sector should be explored and developed.
72. The result of these conclusions was development of innovative financial models to enable accelerated penetration of LEDs. The limitation of both the state budget (Anggaran Pendapatan dan Belanja Negara or APBN) and local government budget (Anggaran Pendapatan dan Belanja Daerah or APBD) in financing infrastructure development (as stipulated in the National Mid-Term Development Plan) caused a change in financing model schemes for pilot projects for LED market acceleration for Output 3.1. There have been several efforts to develop these schemes as provided on Table 5.
73. Public Private Partnership (PPP) (Kerjasama Pemerintah dan Badan Usaha or KPBU). A project to facilitate and accelerate streetlighting is being done to demonstrate PPP between local government (West Lombok Regency) with business entities (Badan Usaha Pemrakarsa (BUP) and PT Surya Energi Indotama serving as partners. The process is still being carried out with the progress reportedly being at 75%. West Lombok Regency has initiated cooperation between the Government and business entities (KPBU) since 2019, much of the time being used to apportion the share of risk between the parties. The PPP process was unsolicited with feasibility studies done by the BUP. The project is now at the RfP stage and targeted for completion in September 2022. The Project provided technical assistance including review of the initial feasibility study, detailed engineering design, mentoring at the bid submission stage, mentoring at the project planning stage, and financial and legal advice for the local government technical team.

**Table 5: Financing schemes for pilot projects**

Scheme	Pilot Demonstration	Progress	Remarks	Status
PPP	West Lombok Regency	75%	In the midst of an RfP process	In progress
Multi-year contract	Palu	100%	It was signed and contracted in January 2022	Completed
ESCO	BRI & Danamon Building	0%	Barriers of equity, long duration and regulation	Failed

74. *Banking financing scheme with multi-year contract.* This pilot streetlighting project is being done in Palu, Central Sulawesi to demonstrate multi-year contracts between Bank BRI West Java Area, PT Solarens Ledindo and Palu Regency. Palu Regency signed a multi-year contract on January 2022 with a loan period of 3 years with a return in the 1<sup>st</sup> year of 30%, 2<sup>nd</sup> year of 40% and 3<sup>rd</sup> year of 30%. Initially in 2021, Palu had a retrofit plan of 11,468 streetlights but with limited funding to finance the procurement for the street lighting infrastructure. The project owner, PT Solarens Ledindo, carried out a multi-year contract with financial support from commercial banks. With multi-year contract financing, both parties, Palu Regency and PT Solarens Ledindo have managed to conduct retrofit projects to support emission reduction. The Project team is providing technical assistance during this retrofit period until the final measurements are made to obtain emission reduction figures.

75. *Energy Performance Contracts (EPC) through ESCOs.* EPCs were supposed to be demonstrated at Bank Rakyat Indonesia (BRI) and Bank Danamon buildings. The Project team conducted FGDs in February and March 2021 with 28 business entities who could serve as ESCOs. FGDs were also conducted in early 2022 on the buildings with both BRI and Danamon teams taking a long time to grasp ESCO concepts and conduct internal discussions. Unfortunately, the Project had no benchmark scheme from which to learn from in Indonesia<sup>7</sup> that included the “Guaranteed Saving Performance Contract”. Barriers to EPCs include:

- the concept of EPCs being relatively new in Indonesia such that a knowledge gap between banking and industry still exists;
- business entities applying for loans or financing for EE projects is complicated by collateral requirements and regulations;
- ESCOs have limited financial resources and assets and experience long payback periods;
- low confidence level of financial institutions regarding EPCs.

76. On Output 3.2: “Pilot demonstrations for accelerated LED lamp deployment in buildings and for street lighting in context of sustainable cities as well as in residential sector”, activities were implemented but not according to the ProDoc. For example, Activity 3.2.1: “Design, approval, capacity development and implementation of pilot demonstrations using ESCO business model”, was implemented but not using the ESCO model, primarily due to the poor cash flow generated by low electricity prices. The process for cities to become involved with LED pilots included the establishment of cooperation between the City and DGNREEC, and the implementation of the following stages:

<sup>7</sup> The closest one was an ESCO scheme between MTRE3- UNDP project on the Graha Niaga Building, PT Signify which could not be implemented.

- i. scoping the lighting project;
- ii. developing criteria for site selection;
- iii. determination of selected pilot city;
- iv. regency or city lighting data collection;
- v. discussion with concerned technical offices regarding data;
- vi. data verification;
- vii. assess investment potential;
- viii. cooperation with ADLIGHT and Directorate of Energy Conservation;
- ix. preparation of the cooperation scheme;
- x. signing of cooperation agreements;
- xi. procurement and installation of LEDs;
- xii. strengthening the capacity of related human resources in energy management; and
- xiii. other necessary assistance in accordance with the agreement made.

West Lombok and Palu Regencies have reached stage xi with LED streetlights being installed. Banjarmasin and Wonosobo have reached stage x with signing of a cooperation agreement with LED installation planned for September 2022. Semarang is at stage vi and ix with the preparation of the cooperation scheme and data verification to be carried out in September 2022.

77. Several meetings using Project resources have been conducted to scope other LED pilots. The following Paras describe these meetings.
78. A meeting was conducted on 29 September 2020 with Surakarta City (Solo) on a streetlighting PPP project to identify areas where ADLIGHT could be involved. Key takeaways include:
  - Surakarta city has received technical assistance (technique, legal, financial and environmental assistance) from other parties as there was uncertainty about the ADLIGHT starting date. PT Sarana Multi Infrastructure has finished preparing the final business case for Surakarta City in July 2020;
  - Surakarta City issued Regional Regulation No. 4/2020 concerning “Government Cooperation with Business Entities in Providing Public Street Lighting Services for the City of Surakarta” on 31 August 2020;
  - a meeting was held on the “Procurement of Business Entities Executing the Government Cooperation Projects with the Surakarta City Public Street Lighting Business Entity” on 12 October 2020;
  - local budget allocation for the implementation of streetlighting to a business entity is expected in 2023; and
  - the possibility of ADLIGHT involvement in the Surakarta Streetlighting PPP scheme is very low.
79. An introductory meeting was held on 8 December 2020 with BAPPEDA to scope the potential and interest of the City of Banda Aceh to host an LED streetlighting pilot project with the support of ADLIGHT. Key findings include:
  - many of the streetlights in Banda Aceh are mercury-based. Replacing these lights with LEDs has the potential to result in significant cost saving for the city;
  - the BAPPEDA city planner has a strong interest to host the pilot project;
  - political will of the Mayor is important and will be gauged in further discussion with city officials;



- further discussion will require formal correspondence from MEMR and ADLIGHT.
80. A meeting was held on 28 January 2021 in Bogor on “Pilot Project in the Buildings, Public Street Lighting and Residential”, held virtually and on-site. The objectives were to collect information from several energy users, especially in the building sector, residential areas in DKI Jakarta and public streetlighting within the purview of the Bogor city government, and to obtain input from participants regarding the design of the pilot project. Key findings included:
- the November 2019 electricity monitoring of 20 regional government buildings from energy audits by DKI Jakarta found that government buildings were still consuming energy inefficiently;
  - 258,555 streetlights have been replaced from a total of 312,000 streetlights;
  - there are some flats (rumah susun) still not implementing energy conservation;
  - the responsibility of public streetlighting has been moved in 2020 to the Transport Department in Bogor;
  - public streetlighting profile in Bogor consists of 35,947 LED lights and 32,689 non-LED lights.
81. A meeting was conducted virtually on 17 February 2021 with the National Development Planning Agency (Badan Perencanaan Pembangunan Nasional/BAPPENAS of Denpasar) to collect information on cities that have plans for LED streetlighting. Key findings include:
- Bappenas providing assistance in preparing a final business case in 2020 for Madiun regency with budget allocations for 2021. However, Bappenas needs to discuss with the EBTKE how fast ADLIGHT and EBTKE can facilitate the assistance;
  - the final business documents for Denpasar city do not yet exist. Moreover, there is no preliminary study provided, even though it is doable. Cost of the study appears to be the barrier to providing assistance to Denpasar city.
82. A meeting was conducted on 20 April 2021 virtually with the Regional Government of Sijunjung to collect information on existing condition of public streetlighting. Key findings included:
- a local lamp manufacturer has initiated an unsolicited PPP proposal for Public Streetlighting (PJU) in Sijunjung;
  - a local lamp manufacturer claims that the current payment of electricity bills to PLN with a total of 2,843 public street lighting points is IDR 533 million/month. The estimated savings in payments to PLN after the installation of LED lights from the PPP for 6,043 public streetlights is IDR 300 million/month.
83. Meetings were held on 28 April (virtual) and 6 May 2021 (on-site visit) with Pusat Penelitian dan Pengembangan Teknologi Mineral dan Batubara (Puslitbang TEKMIRA) to collect information on the existing lighting condition of the Ministry of Finance Buildings in Jakarta. Key findings included:
- there is one meter monitoring electricity consumption for 9 buildings;
  - the main building consists of 90% LED lights;
  - there is no lighting inventory data.

84. A virtual meeting was held on 31 May 2021 with PT Sarana Multi Infrastructure (SMI) to collect information on the experience of SMI in supporting a public streetlighting project under a PPP scheme and to explore prospective cities that can be approached by ADLIGHT. Key findings included:
- several pipeline projects are related to public streetlighting in Madiun Regency, West Lombok, using an unsolicited PPP scheme from a state-owned enterprise;
  - Bappenas has completed a final business case document for the Madiun Regency public streetlighting investment;
  - the PPP process for the Surakarta public streetlighting entered the tendering process during 2021 with 3 consortiums that passed the pre-qualification;
  - challenges for PPP scheme for public streetlighting schemes are financial commitment from local government and coordination with local parliament for budget allocation.
85. Meetings were conducted on 2 February 2021 (virtual) and 10 June 2021 (on-site) with the Office of Transport, Bogor to collect information from them on existing conditions of public streetlighting in Bogor. Key findings included:
- based on data in January 2021, there are about 70,000 public streetlights in Bogor City with the number of non-LED streetlights estimated to be 32,000;
  - Bogor Transport Office is still waiting for the plans for public streetlighting needs and was to prepare a master plan for public streetlighting in cooperation with Bappeda that includes a retrofit plan from HPS lamps to LEDs;
  - almost all of the public streetlighting developments in 2014 have been metered with a survey needed on which streetlighting meters are still functioning.
86. A virtual meeting was conducted on 14 June 2021 with Simpul KPBU to engage their PPP team with Madiun Regency in the collection of information on existing conditions of public streetlighting. Key findings included:
- there are 20,000 streetlights in Madiun Regency where with 10,000 streetlights to come under the PPP scheme with grants to cover the remaining streetlights;
  - the Regency has recruited their own experts with ADLIGHT collaboration if the role is well defined.
87. A virtual meeting was conducted on 21 June 2021 with the Office of Land Transport (Balai Pengelola Transportasi Darat or BPTD) Regional XII Bali and West Nusa Tenggara (Nusa Tenggara Barat/NTB). Key findings included:
- BPTD Regional XII supports the ADLIGHT pilot project and recommends that ADLIGHT install LEDs in areas that are prone to accidents;
  - BPTD is only able to install public streetlighting gradually in Bali and NTB due to BPTD budget constraints;
  - most public street lighting is managed by the district, city or provincial governments. BPTD can only act as a coordinator or facilitator for the regional transportation office and bring in the Transportation Office of the Districts or Cities for negotiations.

88. An on-site meeting was conducted on 23 June 2021 with the Vice Regent of Pangkep Regency to collect information on the existing public street lighting condition. Key findings included:
- the Vice Regent conveyed a plan to make Pangkep streets brighter;
  - the next meeting requires the presence of the relevant Local Government Work Unit (Satuan Kerja Perangkat Daerah/SKPD) in Pangkep;
  - the Vice Regent planned to arrange another meeting with his officials and ADLIGHT in Jakarta.
89. Meetings were conducted on 1 April, 21 June, and 8 July 2021 (virtual) with the Bank Rakyat Indonesia (BRI) to explore the potential for a pilot project in the BRI building, and to collect information on the existing condition on LED light utilization. Key findings included:
- BRI team needing a concept note from ADLIGHT regarding the pilot project plan;
  - the discussion needing to involve other divisions within BRI;
  - BRI team needing more time to fully grasp ADLIGHT concepts with regards to BRI locations that can be used as pilot projects;
  - the Procurement & Logistic Operation (PLO) Division within BRI would be responsible for LED installation in the BRI building. With the PLO Division acting as an executor, it will procure according to recommendations from users in the relevant divisions at BRI;
  - the BRI Makassar building is the only BRI building owned by the BRI Pension Fund Foundation. BRI rents to the Foundation.
90. A field visit was conducted on 6-7 October 2021 in Bangka Tengah to assess their existing streetlighting conditions and becoming a pilot streetlighting project location for ADLIGHT. Key findings included:
- amidst budget reductions, the Central Bangka Regency Government are having elections that will have an impact of delaying a pilot project;
  - there are still deliberations on the most appropriate type of multi-year financial scheme for an SL pilot project, whether it is a pure local government budget, PPP scheme, or special budget allocation from central to local government (DAK).
91. A meeting was conducted during the period of 17-20 October 2021 in Bali with Bappeda and DPRD Denpasar to discuss a pilot streetlighting project location for ADLIGHT in Denpasar City. Key findings included:
- there has been progress in the “Streetlighting PPP Project” in Denpasar city initiated by ADB. Currently, Bappeda has options for business entities to express interest in a streetlighting investment and conduct studies that would include support from EBTKE and ADLIGHT;
  - ADLIGHT supported workshops on 3-4 November 2021 in collaboration with the Regional Land Transportation Management Agency (BPTD) XII involving representatives from cities and districts from Bali and NTB provinces on the management of streetlighting.
92. A field visit on 27-30 September and 29 October 2021 was conducted to Wonosobo to scope arrangements for a streetlighting PPP and becoming a pilot streetlighting project location for ADLIGHT. Key findings included:

- 30% are already LEDs while 70% are still high-pressure gas lamps (mercury);
  - the streetlighting poles are approximately 20 years old and have experienced a lot of erosion due to weather factors;
  - the district is plagued with a high number of non-metered street lightings which has created issues for district government. There is a need to find agreement with PLN to reduce the bill by converting the non-metered street lightings to metered connections;
  - signing of an MoU on 29 October 2021 for a streetlighting pilot project.
93. A field visit was conducted on 6-9 September and 7 December 2021 in Banjarmasin to collect information on the condition of streetlighting in the city and becoming a pilot streetlighting project location for ADLIGHT. Key findings included:
- the pilot project is expected to provide benefits for the City of Banjarmasin and have a positive impact on the community, especially in terms of road user safety and the use of environmentally friendly energy;
  - the pilot project plan is expected to support the aspirations of the City of Banjarmasin to become a sustainable city;
  - this collaboration is expected to reduce the city government's electricity bill, a burden to the APBD. The budget savings that arise can thus be used by the city government to finance other public services;
  - signing of an MoU on 7 December 2021 for a streetlighting pilot project.
94. A workshop was conducted on 15-16 November 2021 in Denpasar on “Konservasi Energi Pada Sub-Sektor Alat Penerangan Jalan (APJ) di Wilayah Provinsi Bali dan Nusa Tenggara Barat” in collaboration with BPTD. The objectives were to gather information and insights on the condition of streetlighting in Bali and West Nusa Tenggara provinces, share information with local governments regarding the opportunities and challenges, and scoping the potential district and cities for streetlighting pilot projects. Key findings included:
- districts and cities in the province of Bali have the potential conduct public streetlighting retrofits and along with strong fiscal capacity;
  - there are still many PLN lump sum bills because many public street lights were installed without meters;
  - several districts and cities in NTB have their own public streetlighting conditions that are quite complex, with more than 20% of districts in Indonesia needing attention from the central and provincial governments and reducing the availability of the budget for road maintenance and repairs;
  - much of the data submitted by Bali and NTB are incomplete, requiring that additional data be submitted from the regencies and cities;
  - districts and cities of Bali and NTB have interest in collaborating with ADLIGHT to accelerate public streetlighting retrofits. Experiences and lessons-learned from the City of Surakarta (government PPP Initiative, the Palu City multi-year contracts, and the private PPP initiative in West Lombok Regency) need to be taken into consideration before choosing a financing scheme;
  - ADLIGHT and EBTKE teams are to communicate more intensely with a number of districts and cities that have shown high enthusiasm to cooperate with ADLIGHT;
  - ADLIGHT needs to identify the support that can be provided to districts and cities that have the potential for LED pilot projects.

95. A field visit was conducted on 23 November 2021 and 7-9 April 2022 to Lombok Barat by the ADLIGHT team. Key findings included:
- West Lombok Regency has received technical assistance from ADLIGHT to facilitate and expedite PPP scheme with 552 LED street light lamps installed on main roads of the downtown core;
  - Head of the District (Bupati) was keen to have a PPP contract in place and requested the Project to continuously provide technical assistance in the PPP process. He also mentioned that gender mainstreaming in the West Lombok local government has been a priority policy to be improved. The streetlighting program in 11 tourist villages will create more jobs for women;
  - West Lombok Regency has identified 11 tourist villages with the objective to improve their economical and environmental conditions and to provide more benefits for local people with a gender responsive approach. The Head of the Tourist Office and Economic Secretary of Local Government have requested ADLIGHT to assist these pilot village tourists with LED streetlights;
  - site visit to Tembolak to a pilot streetlight site to view the retrofitted 90 watt streetlights funded by ADLIGHT. These LED streetlights were compared to the 120-150 watt streetlights on other road sections. Energy saving needs to be analysed using 2019 baseline data;
  - the project is currently at the Request for Proposal (RfP) stage (to be finalized by September 2022) and the feasibility study needs to be updated. The feasibility should give direction and encouragement to accelerate the process. The ADLIGHT team is to provide legal assistance on the draft PPP agreement. As such, the electricity bill for streetlighting will be based on real power usage instead of lumpsum contracts with PLN.
96. In summary, results of the scoping study on location and modality of streetlighting pilots originally was with 23 cities. Using a questionnaire and selection criteria resulted in 4 cities (West Lombok (Mataram), Wonosobo, Banjarmasin and Palu) being implemented now for streetlighting retrofits. Another 11 cities are still in development for LED streetlighting retrofits and LED in commercial or public buildings:
- Kota Banda Aceh;
  - Kota Bontang;
  - Kabupaten Bangka Tengah;
  - Kabupaten Wonosobo;
  - Kabupaten Pangkajene;
  - Kota Bogor;
  - Kabupaten Madiun;
  - Kota Banjarmasin;
  - Kabupaten Sijunjung;
  - Donggala;
  - Semarang.
97. On Output 3.3: “Implemented awareness and promotion program and information system explaining the benefits of high energy efficient lighting technologies, taking into account gender specific aspects in developing and implementing the programmes”, there were several programmes, workshops and webinars conducted.
98. Project resources were used to conduct webinars with University of Multimedia Nusantara on 1 December 2020 (online and on-site) and with the University of Andalas (West Sumatera) on the 15 December 2020 (online and on site) on “Energy Conservation in Lighting System”. Objectives were

to inform the audiences regarding the MEMR priorities in energy conservation including energy efficiency programs, to inform the audiences on new energy efficient lighting technology (LED), to encourage behavioural change towards more energy efficient lifestyle (with a focus on saving energy from lightings) and to introduce local LED products to the audiences. Key results included 83% of respondents say that they will disseminate information to others on the importance of using energy efficient lighting and 55% will take action to replace conventional lamps with LED. The participants were from Indonesian ministries and agencies, academia and students (238), and the private sector (lighting industry).

99. A Project-financed virtual workshop was conducted on 16 February and 22 April 2021 on “Women Roles in Energy Efficiency: Utilization of LED” in collaboration with the Indonesia Women Coalition, attended by PMU ADLIGHT, DEC staff, Women in Science, Technology and Innovation (WISTI) & the Indonesian Business Women Association (IWAPI), Gamatrindo, the private sector, academia and youth (a total of 69 persons: male=28, female=41). Objectives were to provide information on energy-efficient lighting technology and local LED lighting products to women’s groups, and to encourage behavioural changes of consumers. One of the key results from the Household Energy Consumption Survey showed that rice cookers, refrigerators and lighting had the highest energy consumption of all appliances. However, the most important aspects of energy for women are availability, affordability (cheap), easy and safe, simple and familiar. Energy efficient education by the Government should be more frequent and disseminated to save energy in households. Key results from the workshops included:

- Women play an important role in decision making in their environment to control and manage electrical energy consumption and can become agents of change to encourage energy efficiency activities that can be started with the use of LED lamps;
- The founders of WISTI and IWAPI said that they really support the socialization of the use of LED lamps. Saving energy and electricity is very important to support life as well as business ventures, especially under pandemic conditions. This local wisdom from generation to generation in designing houses or buildings that maximize natural light sources in daily life;
- The Chairperson of IWAPI said that IWAPI strongly supports this socialization so that entrepreneurs and households can also save energy. IWAPI currently has 30,000 members in 34 provinces, and 98% of its members are micro, small, and medium enterprises. In the period before the pandemic, MSMEs were the backbone of the country's economy, absorbing a large number of workers. Approximately 60% of MSME owners are women. Changing energy saving behaviors to using LED lamps can greatly influence business development. IWAPI encourages similar activities with outreach being performed in regions where IWAPI operates;
- MSMEs can actually assemble LED lamps since most components can be imported. This sets up the necessity of ensuring that LED lamps produced are tested for quality and meet national SNI standards to be able to be sold on the market.

100. The workshops concluded that the challenges in energy efficiency include:

- the knowledge and understanding are still limited for level of energy saving awareness;
- energy prices are still relatively cheap due to subsidies;
- the purchasing power of efficient equipment is still low;
- most of the efficient technological equipment is still imported;
- incentives are not sufficient.

101. Workshops were held on 12 October 2021 in Yogyakarta and on 9 November 2021 at the Politeknik Energi dan Mineral (PEM) Akamigas, Cepu in Central Java on “Energy Conservation Goes to Campus” in UGM. The workshops were attended by 529 persons (319 male, 210 females). The objective was to provide information to energy users about the importance of creating energy efficient behaviour habits, and using energy-saving equipment (especially energy-saving lamps) to allow participants to share information and transmit energy-saving habits to their environment. Key results included:

- MEMR carries out activities to promote energy-saving behaviour that contributes to reducing carbon emissions including encouraging the public to use equipment with an energy efficient label;
- Energy savings in buildings can be done with simple technology and techniques such as those examples of buildings in Indonesia that have implemented energy-efficient building designs. However, the need for AC usage in Indonesia will continue to increase making it important to design buildings with low cooling loads. Inappropriate designs will usually increase the cooling load such as the use of glass on building walls which can increase the cooling load by more than 10 times. Indonesia still has a lot of potential to save energy;
- There are 5 main programs in energy conservation in MEMR: Energy Management, Energy Efficiency Standards and Labels, Utilization of Energy Efficiency Technology, Business Development and Energy Conservation Services, Raising Awareness and Awards;
- Local governments in office buildings are energy consumers for air conditioning systems (60% - 80%), lighting systems (15% - 20%), and the rest in other equipment systems (water pumps, computers and printers, audio and video, photocopier, etc.). Raising awareness of energy saving is an essential part of an energy conservation program.

102. Despite the pandemic restrictions, the activities of Outcome 3 have been effective in developing pilot LED project. The progress of Outcome 3 is rated **satisfactory** mainly due to development of innovative financial models to enable accelerated penetration of LEDs, and the scoping and development of pilot LED projects in streetlighting and buildings (with West Lombok, Palu Regency, Banjarmasin and Wonosobo, and Semarang city having reached advanced stages of development). Table 6 provides Outcome 3 progress towards results against the EOP targets in the ADLIGHT PRF.

### 3.2.2 Remaining Barriers to Achieving Project Objective

103. There are barriers to the full achievement of targets in the ADLIGHT Project, especially considering the current EOP is 17 May 2023, 11 months from the time of writing of this report. These barriers include:

- COVID-19 which has had the impact of reducing in-person contacts between ADLIGHT, MEMR and stakeholders;
- 11 months remaining to complete a critical number of LED pilot projects (buildings and streetlighting) to meet the targets for energy savings and GHG emission reductions. Delays that could jeopardize meeting this target by 17 May 2023 could be new COVID-19 outbreaks and other issues;
- a moderate risk that there is insufficient time for capacity development to the banking industry that would convince a critical number of banks to finance energy conservation projects by multi-year contracts, PPPs or ESCOs;
- a moderate risk that implementation of 2<sup>nd</sup> and 3<sup>rd</sup> market assessments and consumer surveys cannot be completed with remaining time to EOP;

**Table 6: Progress Towards Results Matrix (Achievement of Outcome 3 against End-of-Project Targets)**

Project Strategy	Indicator	Baseline Level	Mid-Term Target	End-of-Project Target	Midterm Level and Assessment	Achievement Rating	Justification for Rating
<b>Outcome 3:</b> Increased market penetration of high quality and efficient lighting	Cumulative no. of innovative financial support schemes developed to accelerate penetration of EE lighting systems	0	2	4 <sup>8</sup>	2 financial support schemes delivered		See Paras 69 to 75
	Cumulative no. of pilot demonstrations <sup>9</sup> completed and replication plans developed and approved for implementation <sup>10</sup>	0	3 (1 cities and 2 buildings)	5 (2 cities, 2 buildings and a residential area) with possible replication in 2 cities and 7 buildings.	2 pilot cities are being implemented 2 cities signed cooperation agreements 1 city preparing cooperation agreements 10 cities still being scoped for pilot projects		See Paras 76 to 96
	Number of stakeholders engaged: • Municipalities  • clients (project developers/ building owners)  • technology providers • financial institutions	• 0  • 0  • 0 • 0	• 2  • 3  • 3 • 1	• 4  • 6  • 5 • 2	• 23 (Madiun, Banda Aceh, Sijunjung, Bogor, Bangka Tengah, Banjarmasin, Wonosobo, Pekalongan, Bontang and 14 more cities/districts in Bali and NTB provinces) • 6 (BRI, BCA, Danamon, MEMR units, Ministry of Finance units, Ministry of Industry) • 0 • 2 (Bank BRI, BSI)		See Paras 73, 74, 76, 90, 95 to 96

<sup>8</sup> Proposed innovative financial support schemes to accelerate penetration of advanced lighting systems, may include: (a) PPP mechanism for smart city(ies) LED street lighting projects; (b) ESCO model Feasibility Study (FS) Template and Financial Modeling Software; (c) Credit Guarantee Facility for Energy Efficiency LED lighting investment; and (d) Bundling LED lighting projects as accepted collateral for banking sector

<sup>9</sup> Initially identified pilot demonstrations during the PPG stage include the following: (a) smart lighting and smart monitoring system LED, (b) ESCO model for state-owned bank building, (c) ESCO model for LKPP (Public Procurement Agency) for government LED implementation, and (d) public-private partnership scheme model for LED projects.

<sup>10</sup> Assistance in completing the pending existing ESCO model in Smart Cities in Solo and Bandung as the 2 cities which have on-going project development, being assisted by Bappenas and LKPP, but it requires next stage of mobilization towards final financial arrangement



Project Strategy	Indicator	Baseline Level	Mid-Term Target	End-of-Project Target	Midterm Level and Assessment	Achievement Rating	Justification for Rating
	Women’s and men’s level of satisfaction with EEL systems provided (reliability, affordability, convenience, efficiency)	N/A	At least 60 % of women and men beneficiaries are highly satisfied with the EEL systems provided (minimum score 7/10)	At least 70 % of women and men beneficiaries are highly satisfied with the EEL systems provided (minimum score 7/10)	No data taken yet on this indicator		See Paras 97 to 101

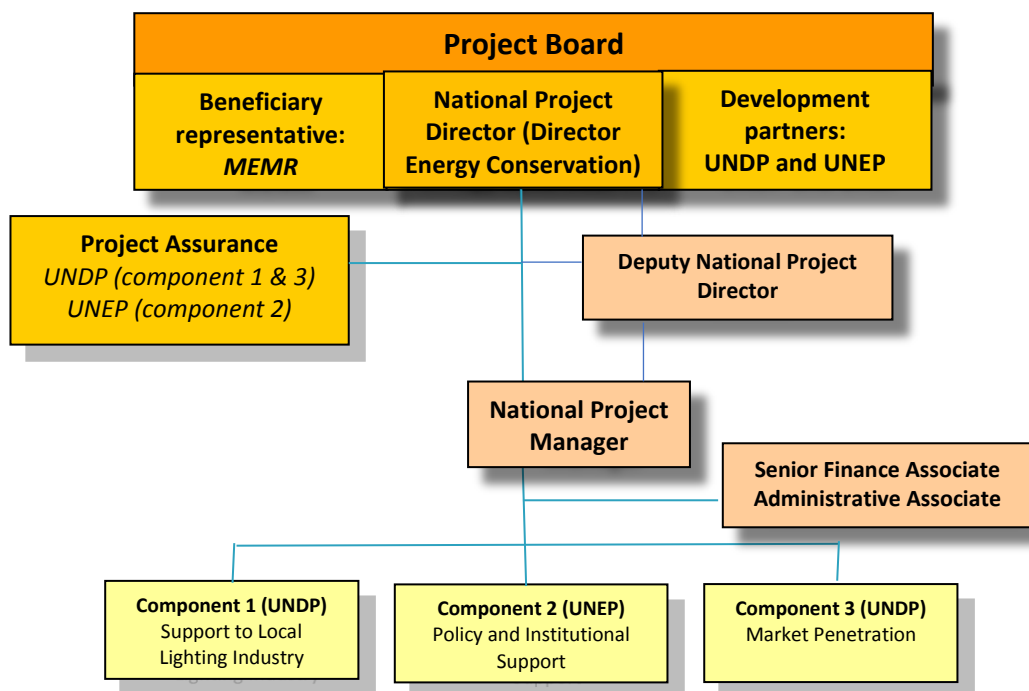
- a moderate risk that there is insufficient time to prepare business transformation plans for 3 local manufacturers that will allow financial institutions to assess related loan requests;
- timely issuance of MEPS and labeling regulations;
- timely development of government procurement policy on local EEL products in public procurement. This should include the issue of long payback periods for retrofitting works in government buildings due subsidized electricity costs leading to minimal cost savings (while the payback period for non-government buildings is much shorter);
- lower capacities and experience and limited financial resources of ESCOs; and
- some of the outcome level targets are challenging to achieve such as “cumulative number of lighting manufacturers who received technical assistance to upgrade production facilities”, “investment grade proposal for business transformation plans submitted by manufacturers and approved by banks” and “implementation of pilot demonstrations in commercial buildings”.

### 3.3 Project Implementation and Adaptive Management

#### 3.3.1 Management Arrangements

104. The ADLIGHT Project is under national implementation (NIM) with recent changes made to the Project’s management arrangements as depicted on Figure 2. While the ADLIGHT Project has had a slow start, the Project has been under the leadership of Director of Energy Conservation of EBTKE through the National Project Director position. The tenure of the 1<sup>st</sup> NPD was from July 2020 to March 2021 during which time the Inception Workshop was held in September 2020. The tenure of the current and 2<sup>nd</sup> NPD was from March 2021.

**Figure 2: Current management arrangements for the UNDP-GEF Project “Advancing Indonesia’s Lighting Market to High Efficient Technologies (Indonesia ADLIGHT Project)”**



105. The implementation of the Project started effectively in August 2020 with the establishment of a Project Management Unit (although the Leader for Component 1 was formally on-board by 1 September 2020). Delay in receiving a cash transfer from UNDP (due to delay in SOP approval by the Executing Agency) delayed some of the planned activities until the November-December 2020 period (such as the tendering process for some of the consultancies). There were also delays in signing the UNEP PCA until 6 January 2021. However, work done in 2020 in Component 2 was paid by the UNEP-GEF budget. Otherwise, there have been no issues with UNDP and UNEP collaboration on ADLIGHT.
106. A 3-day Inception Workshop was held in late August and early September 2020 with the objectives of reorienting stakeholders about Project goals, outputs, and result frameworks; ensuring a common understanding between UNDP, UNEP, PMU and EBTKE regarding the roles and responsibilities of each partner; and to identify necessary adjustments to the Project Document. Subsequent FGDs for the Component 1 and 3 were also held to sharpen the understanding of the current conditions in the local EEL market, the ESCO market, and options for financing EEL penetration in Indonesia. The Project conducted a number of additional FGDs to define the scope of the works to be undertaken by consultants. As a precursor to webinars with the University of Multimedia Nusantara (Para 98), a number of awareness raising programs targeting youth, were conducted where post-activity surveys indicated a significant number of audiences willing to replace old lighting product with LED are willing to pass their knowledge of EEL (LED) and its energy saving potential to others and even.
107. As a project under the Full *National Implementation Modality* (NIM) where DGNREEC serves as the Executing Agency with full responsibility to implement the Project effectively and ensure that its objectives and targets are achieved, the ownership of the Project has been very strong from the start. The NPD (Director of Energy Conservation) has assigned a focal point for each component, in addition to designating a Deputy NPD for the Project.
108. From an adaptive management perspective, ADLIGHT progress to date can be attributed to 3 factors:
- the loss of 4 months (from August to November 2020) when ADLIGHT was getting ready for its Inception Workshop. A virtual workshop was conducted;
  - the start-up of discussions with potential pilot project cities in September 2020 continuing steadily throughout 2021 and 2022;
  - the slowdowns caused by the COVID-19 pandemic with virtual meetings held with some potential pilot cities. This had the effect of slowing down the selection of pilot project cities to the point where GHG emission reductions were not realized by the mid-point of the Project. However, with the steady implementation of meetings with potential pilot sites, the Project is in a good position now at the mid-point of the Project and at the EOP, to realize these GHG emission reductions.
109. Overall, Project implementation has been **satisfactory** in consideration of actual progress, the effectiveness of adaptive management, clear reporting lines and transparent and timely decision-making, notwithstanding the obstacles the COVID-19 pandemic presented to the Project.

### 3.3.2 Work Planning

110. The MTR team was provided evidence of the Project's work planning through Inception Workshop report and the minutes of the Project Board Meetings (PBMs). Work planning for 2020 as well as 2021 to 2023 was presented in the Inception Report for ADLIGHT. The 2020 work plan was presented

in detail with schedules of activities and budget lines corresponding to ATLAS codes for all components. The 2021 and 2022 AWP were presented in the PBM minutes as activities without the bar charts. However, the process of work planning was results-based with the use of the PRF as a management tool to monitor how Project activities are progressing towards the targets.

111. In conclusion, work planning for the ADLIGHT Project is **satisfactory**, appearing to be well organized with broad and thoughtful inputs of all Project Board members. While effective work planning has been made all the more difficult by the pandemic, the minutes from the 3 PBMs within 2 years provides evidence of the efforts being made by the Project Board to ensure optimal use of the GEF funds as written in the ProDoc. This included delays in signing the PCA between UNEP and EBTKE. The PMU with less time remaining in ADLIGHT will need to screen its work plans to focus on efforts to meet GHG emission reductions.

### 3.3.3 Finance and Co-Finance

112. After 24 months of Project disbursements, only US\$913,059 or 23% of the ADLIGHT grant of US\$3,895,872, has been expended or committed as of 30 April 2022. The expenditure of ADLIGHT GEF budget up to 30 April 2022 can be characterized as follows:

- Delay in Project implementation as the result of delay in recruitment of PMU team and SOP approval (which led to delay in cash transfer request), and COVID-19 pandemic has resulted in lower budget absorption in 2020. A few ADLIGHT activities were also financed by the DGNREEC budget in September and October;
- Outcome 2 costs incurred under the Government budget in 2020 were refunded by the Outcome 2 budget once the agreement was signed between UNEP and EBTKE;
- A budget revision was conducted to adjust downward the 2020 budget and carry forward unspent budget of US\$110,998 to 2021;
- Most of the funds were spent on contractual services, training workshops, conferences and travel.

113. Despite the low rates of disbursement, the Project has demonstrated that appropriate financial controls are in place, notably through the detailed Project budget reports made available to the MTR team. Moreover, these reports provide evidence that expenditures of activities were made through informed decisions that closely follow the plans in the ProDoc and cleared by the Project Board. One of the indications of Project cost control is the involvement of UNDP’s Procurement Department at the CO, and ensuring all UNDP and related rules procurement are complied with, most notably with in the procurement of contractual services.

114. The Project is positioned well to spend on pilot projects on Component 3 that meet GHG emission reduction targets. However, with 15% of the Component 2 (UNEP) budget has been expended, there may be issues to expend the entire UNEP budget before the EOP. In conclusion, the cost effectiveness of the use of the ADLIGHT Project budget to date has been **satisfactory**, notwithstanding the lack of delivery of Component 2 within the first 23 months of the Project. Disbursement of the ADLIGHT GEF resources are provided in Table 7. Disbursement of the ADLIGHT GEF resources to date according to ATLAS codes is provided on Table 8.

115. Co-financing commitments for the ADLIGHT Project by the EOP was to have been US\$37.094 million. At the mid-point of the ADLIGHT, the co-financing reportedly has been substantial: there has been a

US\$13.277 million investment on solar PV LED streetlights from MEMR and substantial co-financing investment from private sector partners such as GAMATRINDO, APERLINDO and Solarens. Co-financing of the ADLIGHT Project to date has been **highly satisfactory**. Co-financing is summarized on Table 9 with co-financing details on Table 10.

### 3.3.4 Project Level Monitoring and Evaluation Systems

116. The MTR team has had access to the 2021 PIR as well as Project Assurance Reports from 2020 (2<sup>nd</sup> half), 2021 (1<sup>st</sup> half) and 2021 (2<sup>nd</sup> half). These reports provide evidence of monitoring and evaluation to the activity level of the Project, detailing the meetings conducted and the results. The information provided in these reports provides appropriate information for undertaking adaptive management and managing critical risks. The slowdown in activities in 2020 due to the COVID-19 pandemic hampered progress, especially in scoping pilot demonstration projects for streetlighting and buildings. Data collection of baseline energy consumption was delayed. Notwithstanding, the ADLIGHT Project continued implementation through virtual meetings and on-line workshops wherever appropriate. Before the Project commenced operations in April 2020, the ADLIGHT Project also provided a "Vertical Fund COVID survey" which was prepared for the purposes of informing the Bangkok Regional Hub of how the ADLIGHT Project was going to manage itself during the pandemic, and what would be the projected impacts of the pandemic on achieving its overall objectives and targets. Overall, the M&E systems of the ADLIGHT Project are rated as **satisfactory** considering the diligent progress reporting of ADLIGHT activities against the ADLIGHT PRF.

### 3.3.5 Stakeholder Engagement

117. The Project has made **satisfactory** efforts to facilitate partnerships, despite the COVID-19 pandemic. This satisfactory effort to engage stakeholder led to effective collaboration between institutions and private companies for implementing the Project. This also led to appropriate and timely technical assistance and support from Project partners and stakeholders. Stakeholder engagement can be characterized as follows:

- In 2020, ADLIGHT successfully engaged the local lighting associations, ALINDO, GAMATRINDO, and APERLINDO, and their members representing the local EEL industry. Their engagement was designed to address the institutional, awareness, technical and business model barriers to promote the EEL products in Indonesia and to assist in creating a level playing field in the market. They have been actively participating in ADLIGHT activities and have contributed ideas and insights to the Project;
- In 2020, ADLIGHT successfully engaged the regulators of the lighting industry, the Ministry of Trade, LKPP, Ministry of Industry, Ministry of Finance, MEMR, and OJK. Their engagement was designed to address regulatory issues to improve market conditions for EELs. These agencies have been strong participants on the Project despite the UNEP partnership under Component 2 not being fully operational (the Project Cooperation Agreement (PCA) was not signed by UNEP and EBTKE until 6 January 2021);
- In September 2020, the ADLIGHT Project started to engage local governments and municipalities for pilot LED projects. The early start to this activity was a key to positioning the Project to achieve its mid-term objectives for GHG emission reductions and energy savings and likely the EOP objectives.

**Table 7: GEF Project Budget and Expenditures for the ADLIGHT Project (in USD as of 30 April 2022)**

Outcome	Budget (from ProDoc)	2020 <sup>23</sup>	2021	2022 <sup>24</sup>	Total Disbursed	Total to be expended in 2022	Total remaining
Outcome 1: Improved quality, energy efficient and affordable locally-produced EE Lighting (EEL) products and systems	1,055,355	40,216	250,916	32,970	324,103	276,542	454,710
Outcome 2: Improved conditions for fair market competition of EE lighting products informed by robust policy and institutional framework .	1,262,500	0	170,927	37,329	208,256	371,607	682,637
Outcome 3: Increased penetration of high quality and efficient lighting	1,392,500	52,147	170,247	103,654	326,048	453,779	612,673
Project Management	185,517	7,672	37,087	9,893	54,653	42,568	88,297
<b>Total (Actual)</b>	<b>3,665,348</b>	<b>100,036</b>	<b>729,213</b>	<b>913,059</b>	<b>913,059</b>	<b>1,144,496</b>	<b>1,838,317</b>
Total (Cumulative Actual)	3,665,348	898,252	1,588,407	1,178,689			
Annual Planned Disbursement (from ProDoc)***		<b>11%</b>	<b>40%</b>	<b>16%</b>			
<b>% Expended of Planned Disbursement</b>	<b>3,665,348</b>	<b>100,036</b>	<b>729,213</b>	<b>913,059</b>			

<sup>23</sup> Expenditures from May-December 2020<sup>24</sup> Expenditures from January-April 2022

**Table 8: GEF Project Expenditures for the Indonesia ADLIGHT Project against ATLAS codes (in USD as of 30 April 2022)**

ATLAS Code	Expenditure Description	US\$
71200	International Consultants	2,720
71300	Local Consultants	753
71400	Contractual Services - Individual	16,856
71800	Contractual Services - IP	189,917
71600	Travel	34,932
72200	Equipment and Furniture	
72300	Materials & Goods	
72400	Communication & Audio Visual Equip	429
73400	Rental & Maintenance of Other Equip	1,942
74100	Professional Services	5,907
74200	Audio Visual & Print Prod Costs	
74500	Miscellaneous Expenses	2,215
76100	Realized loss	-1,910
75700	Training, Workshops and Conference	168,666
72100a	Contractual Services - Companies / Nat	250,996
72100b	Contractual Services - Companies / Int	
72800	Information Technology Equipment	30,740
64397	Services to projects -CO staff	
74596	Services to projects	
72500	Supplies	640
73100	Rental & Maintenance-Premises	
74100b	Professional Services - Int	
<b>Total</b>		<b>704,803</b>

**Table 9: ADLIGHT Co-Financing Summary (as of 30 April 2022)**

Co-financing (type/source)	UNDP-UNEP own financing (million USD)		Government (million USD)		Partner Agency (million USD)		Private Sector (million USD)		Total (million USD)	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Grants <sup>25</sup>									0.000	0
Loans/Concessions									0.000	0
• In-kind support									0.000	0
• Other	0.140	0.084	27.889	17.600			9.065	16.068	37.094	33.752
<b>Totals</b>	0.140	0.084	27.889	17.600	0.000	0.000	9.065	16.068	37.094	33.752

**Table 10: Actual ADLIGHT Co-Financing (as of 30 April 2022)**

Type of partner	Co-Financing Partner	Type of Co-Finance	Investment Mobilized or Recurrent Expenditures	Planned (US\$)	Actual (US\$)
Government	MEMR	In-kind	Recurrent expenditures	268,000	155,605
		Cash	Investment mobilized	13,277,000	13,277,000
Government	Ministry of Energy and Mineral Resource (P3TEK – R&D Dept)	In-kind and cash (for lab)	Investment mobilized	4,167,300	4,167,300
Government	City of Solo/Surakarta (Mayor) Government	In-kind (Pilot EE Street light)		10,015,037	N/A
Government	National Standardization Agency (Badan Standardisasi Nasional, BSN)	In-kind		112,000	N/A
		Cash		50,000	
Private Sector	Indonesian Lighting Manufacturers Association – GAMATRINDO	cash	Investment mobilized	750,000	2,800,000
Private Sector	Indonesian Lighting Manufactures Association - APERLINDO	Equity	Investment mobilized	5,000,000	1,892,857
Private Sector	Solarens (local LED manufacture)	Equity	Investment mobilized	1,115,000	3,565,116
		Cash	Investment mobilized		7,809,870
Private Sector	Adyawinsa (local LED manufacture)	Equity			
Partner Agency	Global Efficient Lighting Centre	Equity		2,000,000	
Implementing Agency	UNEP	In-kind		200,000	
Implementing Agency	UNDP	In-kind	Recurrent expenditures	60,000	84,193
<b>Total Co-financing</b>					<b>33,751,941</b>

<sup>25</sup> Includes all cash contributions



### 3.3.6 Project Level Monitoring and Evaluation Systems

118. The MTR team has had access to the 2021 PIR as well as Project Assurance Reports from 2020 (2<sup>nd</sup> half), 2021 (1<sup>st</sup> half) and 2021 (2<sup>nd</sup> half). These reports provide evidence of monitoring and evaluation to the activity level of the Project, detailing the meetings conducted and the results. The information provided in these reports provides appropriate information for undertaking adaptive management and managing critical risks. The 2021 PIR covers the monitoring of Safeguards. The fact that monitoring of Project activities was well executed indicates sufficient resources are being allocated to M&E. The slowdown in activities in 2020 due to the COVID-19 pandemic hampered progress, especially in scoping pilot demonstration projects for streetlighting and buildings. Data collection of baseline energy consumption was delayed. Notwithstanding, the ADLIGHT Project continued implementation through virtual meetings and on-line workshops wherever appropriate. Before the Project commenced operations in April 2020, the ADLIGHT Project also provided a "Vertical Fund COVID survey" which was prepared for the purposes of informing the Bangkok Regional Hub of how the ADLIGHT Project was going to manage itself during the pandemic, and what would be the projected impacts of the pandemic on achieving its overall objectives and targets. Overall, the M&E systems of the ADLIGHT Project are rated as **satisfactory** considering the diligent progress reporting of ADLIGHT activities against the ADLIGHT PRF.

### 3.3.7 Stakeholder Engagement

119. The Project has made **satisfactory** efforts to develop and leverage the necessary and appropriate partnerships with stakeholders facilitate to partnerships, despite the COVID-19 pandemic. This satisfactory effort to engage stakeholder led to effective collaboration between local and national governments and private companies for implementing and supporting the objectives of the Project. Their active role in Project decision-making supported efficient and effective implementation that led to appropriate and timely technical assistance and support. The Project stakeholder engagement can be detailed as follows:

- In 2020, ADLIGHT successfully engaged the local lighting associations, ALINDO, GAMATRINDO, and APERLINDO, and their members representing the local EEL industry. Their engagement was designed to address the institutional, awareness, technical and business model barriers to promote the EEL products in Indonesia and to assist in creating a level playing field in the market. They have been actively participating in ADLIGHT activities and have contributed ideas and insights to the Project;
- In 2020, ADLIGHT successfully engaged the regulators of the lighting industry, the Ministry of Trade, LKPP, Ministry of Industry, Ministry of Finance, MEMR, and OJK. Their engagement was designed to address regulatory issues to improve market conditions for EELs. These agencies have been strong participants on the Project despite the UNEP partnership under Component 2 not being fully operational (the Project Cooperation Agreement (PCA) was not signed by UNEP and EBTKE until 6 January 2021);
- In September 2020, the ADLIGHT Project started to engage local governments and municipalities for pilot LED projects. The early start to this activity was a key to positioning the Project to achieve its mid-term objectives for GHG emission reductions and energy savings and likely the EOP objectives;
- With regards to engaging the public on raising awareness, there were press clippings that communicated to the general public about ADLIGHT as detailed in Section 3.3.9.

### 3.3.8 Reporting

120. ADLIGHT progress reporting has been **satisfactory** in the context of providing PMU and UNDP CO personnel with sufficient information to adaptively manage the Project, and to provide adequate budget allocations. The Project has well-written PIRs and PARs (from 2020 and 2021) to provide progress to the activity level against each outcome and indicator to a fair level of detail. For example, PARs detail progress on human rights, Project activity results (with details of each meeting that took place), Project level development results analysis, priorities for the next 6 months, budget delivery, monitoring co-finance, and specific monitoring of CPD and Project output indicators. The 2021 PIR also details progress on an annual basis (from July 2020 to July 2021) with specific comments from the Project Manager, the CO Programme Officer and the NCE RTA. The only issue is the reporting of risk which is not on the PARs. The 2021 PIR does cover a “Review of Risks outlined in Risk Register and PIMS+ risk tab” prepared by the NCE-RTA. Since PARs are one of the primary reports for the Project, risk should be covered under a separate section.

### 3.3.9 Communications

121. With regards to Project communications with stakeholders, the ADLIGHT Project does not have a specific website for its Project activities. Instead, the ADLIGHT Project is profiled on the U4E website<sup>26</sup> and UNDP’s website<sup>27</sup>, which made the program to disseminate information more effective. There were also press clippings that communicated with the general public about ADLIGHT:

- <http://www.gamatrindo.or.id/?p=1859>
- <https://ebtke.esdm.go.id/post/2020/12/03/2718/berbagi.ilmu.konservasi.energi.di.kampus.umn?lang=en>
- <https://industri.kontan.co.id/news/kementerian-esdm-gelar-konservasi-energi-goes-to-kampus-ke-umn>
- <https://ebtke.esdm.go.id/post/2020/12/17/2735/berbagi.ilmu.konservasi.energi.sistem.tata.cahaya.bersama.mahasiswa.universitas.andalas>
- <https://www.ruangenergi.com/kementerian-esdm-sedang-susun-roadmap-pencahayaan-lampu-led/>
- <https://th-th.facebook.com/djebtkc/posts/direktorat-konservasi-energi-melalui-program-adlight-bekerja-sama-dengan-koalisi/1165871323838071/>
- <https://dkabari.com/roadmap-kementerian-esdm-susun-illuminasi-lampu-led/>
- <http://ketikketik.com/18812/kementerian-esdm-siapkan-roadmap-penerangan-led.html>
- <https://www.telaah.id/2021/06/11/kementerian-esdm-susun-roadmap-pencahayaan-lampu-led/>
- <https://www.dunia-energi.com/kementerian-esdm-susun-roadmap-pengembangan-lampu-led/>
- <https://industri.kontan.co.id/news/kementerian-esdm-gelar-konservasi-energi-goes-to-kampus-ke-umn>
- <https://www.facebook.com/JurusanTeknikElektroUniversitasAndalas/>
- <https://ebtke.esdm.go.id/post/2021/10/13/2987/sharing.knowledge.penerapan.teknologi.pencahayaan.efisiensi.tinggi?lang=en>

<sup>26</sup> <https://united4efficiency.org/advancing-indonesias-lighting-market-to-high-efficient-technologies-adlight/>

<sup>27</sup> [https://www.undpopenplanet.org/projects/Advancing\\_Indonesias\\_Lighting\\_Market\\_to\\_High\\_Efficient\\_Technologies\\_Child\\_Project\\_-\\_ADLIGHT\\_Name\\_of\\_Program\\_Leapfrogging\\_Markets\\_to\\_High\\_Efficiency\\_Products\\_Appliances\\_including\\_Lighting\\_and\\_Electricals/](https://www.undpopenplanet.org/projects/Advancing_Indonesias_Lighting_Market_to_High_Efficient_Technologies_Child_Project_-_ADLIGHT_Name_of_Program_Leapfrogging_Markets_to_High_Efficiency_Products_Appliances_including_Lighting_and_Electricals/)

### 3.4 Sustainability

122. In assessing sustainability of the ADLIGHT Project, the mid-term reviewers asked “how likely will the Project outcomes be sustained beyond Project termination?” Sustainability of these objectives was evaluated in the dimensions of financial resources, socio-political risks, institutional framework and governance, and environmental factors, using a simple ranking scheme:

- 4 = *Likely (L)*: negligible risks to sustainability;
- 3 = *Moderately Likely (ML)*: moderate risks to sustainability;
- 2 = *Moderately Unlikely (MU)*: significant risks to sustainability; and
- 1 = *Unlikely (U)*: severe risks to sustainability; and
- U/A = *unable to assess*.

Overall rating is equivalent to the lowest sustainability ranking score of the 4 dimensions.

123. Financial risks to sustainability: Current financial risks to the sustainability of the ADLIGHT Project are related to the availability of co-financing from the city regencies and banking institutions. Some city regencies have the budgets to move forward with streetlighting while some do not have the budgetary allocations. On that note, the Project is about to reach a critical number of pilot projects to meet the GHG emission reduction targets, both mid-term and EOP. However, subsidized low electricity prices are limiting the market penetration of LEDs and other energy efficient devices. There is just no urgency for commercial, industrial and residential consumers to switch to LEDs or energy efficient devices though mandatory MEPS may help with market penetration of LEDs to a certain extent. For these reasons, the rating for financial risks to sustainability is moderately likely (ML).

124. Socioeconomic risks to sustainability: The ADLIGHT Project appears to have cordial relationships with all stakeholders that are mentioned in Section 3.3.5. The COVID-19 pandemic limited contact with some stakeholders. As such, many of the stakeholder meetings were conducted virtually though this is now gradually lifting. However, low electricity prices also dampens the enthusiasm for LED retrofits by commercial, industrial and residential consumers though mandatory MEPS may force some consumers to convert to LEDs. Socioeconomic risks to sustainability are rated as moderately likely (ML).

125. Institutional framework and governance risks: The GoI has been clear on its regulatory directives for MEPS and other regulatory measures, placing pressure on the industry and the general public to comply with the new measures. However, the capacities of market surveillance personnel may not be sufficient to sustain confidence of Indonesia’s consumers on the quality of energy efficient equipment. As such, institutional framework and governance risks to sustainability is rated as moderately likely (ML).

126. Environmental risks to sustainability: Despite the impact of LEDs to reduce energy consumption and GHG emissions, environmentally safe waste disposal of CFLs and LEDs and recycling practices need to be addressed. There is an activity in Component 2 to address the CFL and LED waste streams from “Waste from Electrical and Electronic Equipment” or WEEE. This would involve a process for environmentally safe waste disposal WEEE including CFLs and LEDs. Environmental risks to sustainability is rated as moderately likely (ML).

## 4. CONCLUSIONS AND RECOMMENDATIONS

### 4.1 Conclusions

127. The ADLIGHT Project is proceeding at a satisfactory rate notwithstanding the delays caused by the COVID-19 pandemic. The satisfactory progress has been facilitated by strong ownership and leadership of the ADLIGHT Project and the Project positioning itself to deliver targeted GHG emission reductions. There are only 3 issues which can derail the Project in achieving its objective and outcomes:

- the moderate risk of not meeting GHG emission reduction target with current EOP date due to unforeseen circumstances;
- issues related to delays in implementing LED pilot projects such as political will of mayors or supply delays; and
- low electricity prices that limits LED market penetration.

128. The moderate risk of not meeting GHG emission reduction target with current EOP date of 18 May 2023, is related to unforeseen circumstances which can delay the deployment of LEDs for streetlights and buildings, and insufficient time for capacity development to the banking industry to convince a critical number of banks to finance energy conservation projects by multi-year contracts, PPPs or ESCOs (Para **Error! Reference source not found.**). This would include unforeseen delays caused by future COVID-19 pandemic outbreaks for which the Project has no control. With these additional issues and delays, the period of 11 months can be seen as barely sufficient time to complete a critical number of pilot projects to meet GHG emission reduction targets and to monitor energy savings.

129. There could also be issues related to getting the political will of the mayor of Banda Aceh for streetlighting or supply delays in deploying streetlighting for Banjarmasin or Wonosobo. As contingency measures for meeting GHG emission reduction targets, completing streetlighting feasibility studies and the subsequent plans for deployment of LEDs for pilot streetlighting projects for Bali Province, Denpasar, and Pangkep Regency and a concept note, feasibility study and plans for deployment of LEDs for BRI building pilot projects, will also require time. Deployment of LEDs for these pilot projects will only enhance achievement of the Project objective and Outcome 3.

130. There is also concern over low electricity prices and its effect on LED market penetration. Through low electricity prices, there is not as much urgency of saving electricity through deployment of LEDs with commercial, industrial and residential consumers though mandatory MEPS for LEDs can somewhat mitigate this issue depending on how well the market is surveyed. To further increase market penetration of LEDs into Indonesia, the GoI needs to take actions on subsidized electricity prices to incentivize commercial, industrial and residential consumers though it is understood this could take some time.

131. The Project is making progress towards sustainable development benefits as outlined in Para 11 as well as global environmental benefits in the form of GHG emission reductions. However, an extension of the ADLIGHT Project seems to be a logical resolution to these issues, to give sufficient time to completing Project activities especially the pilot LED projects to meet and even exceed the global environmental benefit targets. Table 8 provides a summary of the achievements and the MTR ratings for the ADLIGHT Project.

**Table 8: MTR Ratings & Achievement Summary Table for “ADLIGHT” in Indonesia**

Measure	MTR Rating <sup>28</sup>	Achievement Description
<b>Project Formulation</b>		Overall Project design and formulation is rated as <b>highly satisfactory</b> . Design well laid out in PRF complete with SMART indicators (Paras 34 and 35).
	Stakeholder Participation Rating: 5	A wide spectra of stakeholders was consulted during the PPG phase consisting of MEMR, other relevant government agencies, financial institutions, private lighting manufacturers, and lighting associations. GoI ownership of ADLIGHT is strong (Paras 22 to 25).
<b>Progress Towards Results</b>	Objective Achievement Rating: 5	Progress <b>satisfactory</b> (see Paras 37 and 38) with a soon-to-be-achieved mid-term achievement of 13,960 tCO <sub>2e</sub> q direct GHG emissions, 121,760 tCO <sub>2</sub> lifetime direct, and 17.27 GWh of cumulative energy savings (Para 37).
	Outcome 1 Achievement Rating: 5	Progress <b>satisfactory</b> given the Roadmap has been finalized and disseminated to all stakeholders, business transformation plans are in the process of being adopted and implemented by selected local lighting manufacturers, and the banking industry still studying the possibility of financing energy conservation projects (Para 59).
	Outcome 2 Achievement Rating: 5	Progress is <b>satisfactory</b> mainly due to MEPS and energy labels regulation being finalized by legal and technical teams, the policy and guideline for public procurement of LED lighting products being finalized with a TKDN certification program for domestic industrial products, and support for LED lighting MVE with round robin tests of domestic LED products by 6 LED national laboratories (Para 67).
	Outcome 3 Achievement Rating: 5	Progress is <b>satisfactory</b> due to development of innovative financial models to enable accelerated penetration of LEDs, and the scoping and development of pilot LED projects in streetlighting and buildings with West Lombok, Palu Regency, Banjarmasin and Wonosobo all having reached advanced stages of development (Para 102).
<b>Project Implementation &amp; Adaptive Management</b>	Implementation Approach Rating: 5	Project implementation has been <b>satisfactory</b> in consideration of the actual progress notwithstanding the obstacles the COVID-19 pandemic (Para 108/110).
	Monitoring and Evaluation Rating: 5	M&E systems are rated as <b>satisfactory</b> considering the diligent reporting of the progress against the ADLIGHT PRF and the activities of the ADLIGHT (Para 118).
	Stakeholder Engagement Rating: 5	Project has made <b>satisfactory</b> efforts to facilitate partnerships, despite the COVID-19 pandemic including local lighting associations and government agencies in charge of regulations (Para 119).
<b>Sustainability</b>	Sustainability Rating: 3	<b>Moderately likely</b> rating is mainly due subsidized low electricity prices limiting LED market penetration and the need to address the CFL and LED waste streams involving a process for environmentally safe waste disposal of CFLs and LEDs and recycling practices (Paras 123 to 126).
<b>Overall Project Achievement and impact</b>	Rating: 5	<b>Satisfactory</b> notwithstanding the moderate risk of not meeting GHG emission reduction target with current EOP date of 18 May 2023, related to unforeseen circumstances which can include unforeseen delays caused by future COVID-19 pandemic outbreaks for which the Project has no control.

<sup>28</sup> Evaluation rating indices (except sustainability – see Para 70): 6=*Highly Satisfactory (HS)*: The project has no shortcomings in the achievement of its objectives; 5=*Satisfactory (S)*: The project has minor shortcomings in the achievement of its objectives; 4=*Moderately Satisfactory (MS)*: The project has moderate shortcomings in the achievement of its objectives; 3=*Moderately Unsatisfactory (MU)*: The project has significant shortcomings in the achievement of its objectives; 2=*Unsatisfactory (U)*: The project has major shortcomings in the achievement of its objectives; 1=*Highly Unsatisfactory (HU)*: The project has severe shortcomings in the achievement of its objectives.

## 4.2 Recommendations

Rec #	Recommendation	Entity Responsible
A	<b>Outcome 1:</b> Improved quality, energy efficient and affordable locally-produced EEL products and systems	
132. A.1	<i>Continue dialogue and training with financial sector.</i> The continued dialogue and training with the financial sector is needed especially with the number of LED pilots that are in the pipeline (see Recommendation C.1, Para 137 <b>Error! Reference source not found.</b> ) and the uncertainty of how these will be financed.	UNDP/DGNREEC
B	<b>Outcome 2:</b> Improved conditions for fair market competition of EE lighting products informed by robust policy and institutional framework	
133. B.1	<i>Continual training is required to sustain the capacities of market surveillance personnel to identify a broad range of qualities of LEDs and other electronic devices such as service life and product materials.</i> This will require sustained resourcing of the training of market surveillance personnel to apply these skills to other LED products and other electronic devices and appliances such as air conditioners, refrigerators, pumps and other high energy consuming equipment. Having rated product claims that are truthful, and having competent MVE personnel capable of interpreting verification test results and accessing the registration system during market surveillance activities are keys to sustaining the confidence of Indonesia’s consumers on the quality of energy efficient equipment.	UNDP/DGNREEC
134. B.2	<i>There needs to be sustained resources available for dedicated training of electricians for the installation of lighting systems as well as for updating of best practices.</i> This is important for the country if there is a strong transition to energy efficient lighting as well as other energy efficient appliances that fall under Indonesia’s NDCs and National Energy Plan. The reason for bringing this up is that there is a possible shortage of electricians in Indonesia with a high degree of vocational skill to identify appropriate LED lighting technologies (and other energy efficient technologies) that provide the best qualities of maximize energy savings and service life of the appliances. This high degree of skill, for example, involves the identification of the different types of LEDs available in the Indonesian market that are appropriate for a specific installation. With many different types of LEDs available in Indonesia (as mentioned in the previous Recommendation), these electricians should have the knowledge of the LEDs that they are installing to ensure not only maximum energy savings but also service life of the appliance.	UNDP/DGNREEC
135. B.3	<i>Assist the Ministry of Environment in seeking organizations for providing international best practices for managing Waste from Electrical and Electronic Equipment (WEEE) waste streams.</i> With discussion of environmentally safe waste disposal and recycling practices not yet commenced (Para 63), the Ministry of Environment should seek organizations for the provision of international best practices for managing Waste from Electrical and Electronic Equipment (WEEE) waste streams as a part of Activity 2.2. With local knowledge needed for WEEE management for waste from lighting devices, the Ministries of Environment could help the focus on the management of WEEE waste streams that are high in volume such as lighting devices. In addition to providing assistance towards improving the capacities of Ministry of Environment to enact the environmental laws, especially in dealing with spent CFLs, there is a need to ramp up interest in the management of WEEE waste	UNDP/DGNREEC

Rec #	Recommendation	Entity Responsible
	streams in an integrated manner involving several waste streams such as lighting devices, solar panels, air conditioners and refrigerators.	
136. B.4	<p><u><i>Focus on commercial banks for financing LED initiatives in commercial and industrial sectors where greater national energy savings and GHG emission reductions can be generated.</i></u> This would mean commercial banks offering concessional energy efficiency financing in Indonesia. There is a strong likelihood of not achieving energy performance contracting through ESCOs. This is due to the ESCO model in Indonesia not being successful due to the lack of streamlined ESCO legislation where rules and regulations with regards to the determination of energy baselines has not been well defined, and low electricity prices<sup>29</sup>. Non-collateral financing with a government guarantee could possibly allow ESCOs to take on streetlighting or LEDs on buildings projects. Lessons from deployment models in the public sector financed by the selected commercial banks can be considered where appropriate.</p> <p>However, time will be required to develop approaches to interest commercial and industrial sectors. One of these approaches could be removing subsidies from the electricity price though this will take enormous political pressure. It is also likely that personnel in commercial and industrial entities consider that the time spent in sales or on their production lines is more valuable than spending time searching for energy efficiency measures. Thus, there will be a demand for services required to make energy efficient lighting investments not disruptive to their business operations, which can only possibly involve ESCOs. The transaction of converting to energy efficient lighting systems for a commercial or industrial establishment could involve a business-to-business transaction that would minimize the down-time of a commercial or industrial entity.</p> <p>The ADLIGHT Project has focused mainly on the public sector for energy efficient lighting measures. MEMR is taking care of energy in Indonesia and is positioned well to promote energy efficient lighting systems as well as EE and RE investments to the commercial and industrial sectors where greater national energy savings and GHG emission reductions can be generated. Work has to be initiated to engage commercial banks in Indonesia in financing LED systems as well as other RE and EE initiatives, and to align the government budgeting process with ESCO payments for ESCO services for retrofitting government buildings. Moreover, a number of ADLIGHT interventions using the LED lighting in demonstration buildings and public street lighting can be replicated.</p>	UNDP/DGNREEC
C	<b>Outcome 3:</b> Increased market penetration of high quality and efficient lighting	
137. C.1	<p><u><i>Request a 12-month extension to provide the PMU with an appropriate amount of time to reduce their risk of not achieving their incremental GHG emission reduction targets of 62,580 tCO<sub>2</sub>.</i></u> This plan is to extend the end-of-Project to 17 May 2024 to provide sufficient time for deploying LED streetlights in Banjarmasin or Wonosobo, getting the political will of the mayor of Banda Aceh for LED streetlights, and completing streetlighting feasibility studies and plans for the deployment of streetlight LEDs for Donggala District, Denpasar, and Pangkep Regency and a concept note, feasibility study and deployment of LEDs for BRI buildings (Paras 32, 128-129). Figure 3 provides a bar chart of ADLIGHT outputs extended to 2024.</p>	UNDP/DGNREEC

<sup>29</sup> Electricity prices are Rp.1,035.78/kWh for industry and Rp. 1,444.70/kWh for commercial establishments.

Rec #	Recommendation	Entity Responsible
D	<b>Project Implementation and Adaptive Management</b>	
138. D.1	<u>Intensify gender training.</u> This may include additional assessments to be conducted to improve understanding of how women and men interact with their local economies in different locations throughout Indonesia (Para 65). Gender training should be extended to government staff as well as other ADLIGHT stakeholders	UNDP/DGNREEC
139. D.2	<u>Prepare Project risk reports under the PARs.</u> As mentioned in Para 120, the 2021 PIR does cover a “Review of Risks outlined in Risk Register and PIMS+ risk tab” prepared by the NCE-RTA. However, with PARs being one of the primary reports for the Project, risk should be covered under a separate section.	UNDP



Figure 3: ADLIGHT Activities (assuming a 12-month extension)

Outcomes and Outputs	Agency	2022				2023				2024		Remarks
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	
<b>Outcome 1: Improved quality, energy efficient and affordable locally-produced EEL products and systems</b>	<b>DGNREEC, UNDP</b>											
1.1 Establishment of knowledge center and systems that helps manufacturers in their production planning and policy makers in reviewing enabling environment												Nearing completion
1.2: Adopted and implemented business transformation plans of selected local lighting manufacturers to produce high quality energy efficient lighting which meet future MEPS												Nearing completion
1.3: Completed capacity development program for banking/financing institutions on the evaluation and financing of lighting industry modernization projects												See Recommendations A.1 and B.4
<b>Outcome 2: Improved conditions for fair market competition of EE lighting products, informed by robust policy and institutional framework</b>	<b>DGNREEC, UNEP</b>											
2.1: Minimum Energy Performance Standards (MEPS) and energy labels in place for high energy efficient lighting products in line with the ASEAN regional approach												Completed
2.2: Policy and guideline for public procurement of LED lighting products (residential, commercial and outdoor) developed and process for adaptation initiated, including environmentally safe waste disposal and recycling practices												See Recommendation B.3
2.3: Regulatory mechanisms for efficient lighting monitoring, verification and enforcement (MVE) including testing standard defined and implemented by relevant agencies at the national and local levels												See Recommendation B.1
2.4: Completed capacity development for policy makers, enforcement & custom officials and other relevant government agencies on market control procedures												See Recommendations B.1, B.2 and D.1
2.5: Completed capacity development program for lamp testing laboratory personnel on LED testing												See Recommendation B.1 and B.4
<b>Outcome 3: Increased penetration of high quality and efficient lighting</b>	<b>DGNREEC, UNDP</b>											
3.1: Development of an innovative financial model enabling accelerated penetration of advanced lighting systems, focusing on the development of ESCO business models												See Recommendation A.1
3.2: Pilot demonstrations for accelerated LED lamp deployment in buildings and for street lighting in context of sustainable cities as well as in residential sector												See Recommendation C.1
3.3: Implemented awareness and promotion program and information system explaining the benefits of high energy efficient lighting technologies, taking into account gender specific aspects in developing and implementing the programmes												Ongoing

Intense Activity

Intermittent Activity

## APPENDIX A – MISSION TERMS OF REFERENCE FOR ADLIGHT PROJECT MTR

### Services/Work Description:

The International Consultant (with support of one National Consultant expert) is expected to conduct Midterm Review (MTR) process of the full-size UNDP-supported GEF-financed project titled *Advancing Indonesia’s Lighting Market to High Efficient Technologies* (ADLIGHT) (PIMS#5721) implemented through the Indonesia Ministry of Energy and Mineral Resources (MEMR). The project started on the 1 June 2020 and is in its third year of implementation. This ToR sets out the expectations for this MTR. The MTR process must follow the guidance outlined in the document Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects:

[http://web.undp.org/evaluation/documents/guidance/GEF/mid-term/Guidance\\_Midterm%20Review%20 EN 2014.pdf](http://web.undp.org/evaluation/documents/guidance/GEF/mid-term/Guidance_Midterm%20Review%20 EN 2014.pdf).

### Project/Programme Title:

Advancing Indonesia’s Lighting Market to High Efficient Technologies (ADLIGHT)

### Consultancy Title:

Midterm Review (MTR) International Consultant for GEF Project

### Duty Station:

Home based

### Duration:

21 March – 31 April 2022 (25 working days)

### Expected start date:

21 March 2022

## 1. BACKGROUND

The project was designed to promote the increased deployment of high efficiency lighting technologies in Indonesia through the transformation of the national market, thereby reducing electricity demand and the related greenhouse gas (GHG) emissions.

Indonesia, with a population of over 250 million and a growth rate of over 5.8% in 2013, is facing several interconnected problems. The country is witnessing a high growth in its energy demand (7% per year) and the national electrical generation capacity is failing to keep pace, resulting in underserved areas and frequent power cuts and brownouts. In 2014, 20% of the population did not have access to electricity, and many others only had restricted supplies. This has a negative impact on entrepreneurship, education, health and safety. In addition, Indonesia’s over-reliance on fossil fuels, which accounts for 71% of the country’s energy mix, results in rising greenhouse gas emissions.

The proliferation of energy efficient and affordable lighting is important to human development because of the significance of lighting in the life of women and men, whether indoor or outdoor in all

sectors of the economy. Access to energy efficient lighting (EEL) products and systems is very relevant to national development priorities, global environment and adaptation issues.

ADLIGHT project which is expected to lead increased market penetration of high efficiency lighting through capacity building for the country's lighting industry is arranged around three components: (1) Support to local lighting industry to transform the market for high quality, high efficient lighting systems, (2) Regulatory mechanisms and market monitoring, verification, and enforcement, and (3) New business models and awareness raising for high efficiency lighting technology penetration. The project will bring about cumulative electricity savings of 310 GWh and cumulative GHG emissions reduction of 250 kt CO<sub>2</sub> by year 3 of the project and increase the impact as the selected demonstrations to enhance market penetration will catalyze more replication of these EE lighting technologies for the coming years and beyond to have a total potential of 1,646 kt CO<sub>2</sub> emission reduction.

ADLIGHT project is implemented by UNDP and United Nations Environment Program (UNEP) for 3 (three) years (1 June 2020 1 June 2023) and consists of three Components, namely, (1) Support to local lighting industry to transform the market for high quality and efficient lighting systems, (2) Regulatory mechanisms and market monitoring, verification, and enforcement, and (3) New business models and awareness raising for high efficiency lighting technology penetration. UNDP is responsible for the project

implementation and results in relation to Component 1 and 3, pursuant to the terms set out in this Project Document, and UNEP is responsible in relation to Component 2, pursuant to the terms set out in the Project Cooperation Agreement.

The Ministry of Energy and Mineral Resources (MEMR) is Implementing Partner (IP) of ADLIGHT project which implement the project in close coordination with the Ministry of Environment and Forestry, Ministry of Industry, Ministry of Trade, Ministry of Finance, Ministry of Transportation, and LKPP. Local governments and the private sector are other key partners in implementing the project activities.

During the implementation, in addition to the GEF fund of USD 3,895,872 that is registered at the Ministry of Finance as grant to the government of Indonesia, co-financing for parallel activities is provided by UN Environment (UNEP) to an amount of USD 60,000, UNDP USD 80,000, from the government (MEMR, BSN and City Government) to an amount of USD 27,889,337 and from private lighting manufacturers to an amount of USD 9,065,000. The total co-financing of USD 37,094,337 will not be registered as part of grant to the government of Indonesia as it will be used directly by each of co-financier to conduct parallel activities complementary to ADLIGHT.

Furthermore, the COVID pandemic has affected project activities, particularly in conducting site visit to potential city partners for demonstration, direct surveys to LED manufacturers, and socialization/awareness raising/capacity building activities that originally planned to involve wide participants. Online method, limited travel and meeting activities have been conducted by the project in accordance with CARE level regulation and COVID protocol. It caused lengthy process for coordination and collaboration process and also impact effectiveness of the meetings in data collection and in reaching common agreement.

## 2. SCOPE OF WORK, RESPONSIBILITIES AND DESCRIPTION OF THE PROPOSED WORK

### Scope of Work

The MTR team will assess the following four categories of project progress.

See the *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects* for extended descriptions([http://web.undp.org/evaluation/documents/guidance/GEF/mid-term/Guidance\\_Midterm%20Review%20\\_EN\\_2014.pdf](http://web.undp.org/evaluation/documents/guidance/GEF/mid-term/Guidance_Midterm%20Review%20_EN_2014.pdf)).

#### i. Project Strategy

Project design:

Results Framework/Logframe:

#### ii. Progress Towards Results

Progress Towards Outcomes Analysis:

#### iii. Project Implementation and Adaptive Management

Management Arrangements:

Work Planning:

Finance and co-finance:

Project-level Monitoring and Evaluation Systems:

Stakeholder Engagement:

Social and Environmental Standards (Safeguards)

Reporting:

Communications & Knowledge Management:

#### iv. Sustainability

Financial risks to sustainability:

Socio-economic risks to sustainability:

Institutional Framework and Governance risks to sustainability:

**Conclusions & Recommendations (max 15 recommendations total)**

**Ratings & Achievement Summary**

## 3. Expected Outputs and deliverables

Deliverables/Outputs	Estimated number of working days and completion date	Review and Approvals required (indicate designation of person who will review output and confirm acceptance)
Document review and preparing MTR Inception Report (MTR Inception Report due no later than 2 weeks before the MTR mission)	4 days 25 March 2022	Head of Quality Assurance and Results Unit (QARE) UNDP and

MTR mission: stakeholder meetings, interviews, field visits to <i>West Lombok region and Jabodetabek</i> . (field visit conducted by National Consultant)	10 days 7 April 2022	Head of Environment Unit UNDP
Presentation of initial findings- last day of the MTR mission	1 day 8 April 2022	
Preparing draft report (due within 3 weeks of the MTR mission)	5 days 18 April 2022	
Finalization of MTR report/ Incorporating audit trail from feedback on draft report (due within 1 week of receiving UNDP comments on the draft)	5 days 29 April 2022	

#### 4. Institutional arrangements/reporting lines

The principal responsibility for managing this MTR resides with the Head of Quality Assurance and Results Unit (QARE) and Head of Environment Unit UNDP.

The QARE Unit will contract the consultants and ensure the timely provision of per diems and travel arrangements within the country for the MTR team (if applicable) and will provide an updated stakeholder list with contact details (phone and email). The Project Team will be responsible for liaising with the MTR team to provide all relevant documents, set up stakeholder interviews, and arrange field visits.

#### 5. Experience and qualifications

##### I. Academic Qualifications:

- A Master's degree in a field related to Environment, Energy, Climate Change, or other closely related field from an accredited college or university

##### II. Experience:

- Experience in relevant technical areas for at least 10 years;
- Relevant experience with result-based management evaluation methodologies;
- Experience applying SMART indicators and reconstructing or validating baseline scenarios;
- Competence in adaptive management, as applied to GEF – Climate Change Mitigation focal area;
- Experience in evaluating projects;
- Experience working with climate change related projects in Indonesia or Southeast Asia;
- Demonstrated understanding of issues related to gender and climate change mitigation and/or promotion of sustainable and modern energy services in communities; experience in gender sensitive evaluation and analysis.
- Excellent communication skills;
- Demonstrable analytical skills;
- Project evaluation/review experiences within United Nations system will be considered an asset;
- Experience with implementing evaluations remotely will be considered an asset.

##### III. Language:

- Fluency in written and spoken English.

**IV. Competencies:**

- Demonstrated understanding of issues related to gender and climate change mitigation and/or promotion of sustainable and modern energy services in communities; experience in gender sensitive evaluation and analysis;
- Excellent communication skills;
- Demonstrated analytical skills;
- Strong knowledge of government policies and strategies, particularly related to RE/EE projects development and financing;
- Understanding well Indonesia’s economic, energy and environment situation;
- Strong existing relationships with energy/climate change mitigation institutions as well as a ready-network of international experts is an added advantage;
- Strong coordinative capability with international and domestic experts;
- Familiarity with projects supported by UNDP/GEF would be an advantage.

**6. Payment Modality**

- 20% payment upon satisfactory delivery of the final MTR Inception Report and approval by the Commissioning Unit
  - 40% payment upon satisfactory delivery of the draft MTR report to the Commissioning Unit
  - 40% payment upon satisfactory delivery of the final MTR report and approval by the Commissioning Unit and UNDP Regional Technical Advisor/RTA (via signatures on the MTR Report Clearance Form) and delivery of completed MTR Audit Trail
- Criteria for issuing the final payment of 40%<sup>30</sup>:
- The final MTR report includes all requirements outlined in the MTR TOR and is in accordance with the MTR guidance.
  - The final MTR report is clearly written, logically organized, and is specific for this project (i.e. text has not been cut & pasted from other MTR reports).
  - The Audit Trail includes responses to and justification for each comment listed.

<sup>30</sup> The Commissioning Unit is obligated to issue payments to the MTR team as soon as the terms under the ToR are fulfilled. If there is an ongoing discussion regarding the quality and completeness of the final deliverables that cannot be resolved between the Commissioning Unit and the MTR team, the Regional M&E Advisor and Vertical Fund Directorate will be consulted. If needed, the Commissioning Unit’s senior management, Procurement Services Unit and Legal Support Office will be notified as well so that a decision can be made about whether or not to withhold payment of any amounts that may be due to the evaluator(s), suspend or terminate the contract and/or remove the individual contractor from any applicable rosters.

## APPENDIX B – MISSION ITINERARY (FOR APRIL-MAY 2022)

#	Activity	Stakeholder involved	Place
<b>30 March 2022 (Wednesday)</b>			
1	Participate on MEPS online meeting in Bogor	Project team, MEMR, Manufacturers, Association, Ministry of Industry	Virtual via Zoom meeting
<b>1 April 2022 (Friday)</b>			
2	Meeting with ADLIGHT Project Management	Director of Energy Conservation as National Project Director, National Project Manager of ADLIGHT	DGNREEC office in Jakarta
<b>4 April 2022 (Monday)</b>			
3	ADLIGHT Kick-Off Meeting with International Evaluator	UNDP, National Project Director, National Project Manager of ADLIGHT	Virtual via Zoom meeting
4	Meeting on Component 2	Component 2 Leader and NPM of ADLIGHT	Project Office in Jakarta
<b>5 April 2022 (Tuesday)</b>			
	Traveling to Bandung – West Java (By Train)		
<b>6 April 2022 (Wednesday)</b>			
5	Site visit to LED manufacturers	Management of PT. SUP, and PT. Solaren, UNDP, DEC, NPM, component leaders	Bandung, West Java
6	Meeting with Associations on objectives of MTR	ALINDO, GAMATRINDO, Deputy NPD, UNDP, NPM, component leaders, DEC	Bandung, West Java
<b>7 April 2022 (Thursday)</b>			
	Travel to West Lombok (by Plane)		
7	Meeting with the Local Government of West Lombok on purpose of MTR	Bupati (Regent) of West Lombok, Secretary, Assistant of local government, head of housing office, NPM, DEC, component 3 leader, project consultant.	Mataram City, West Lombok – West Nusa Tenggara
8	Site visit to Street Lighting Pilot project in West Lombok	NPM, DEC, Component 3 leader, project consultant	Mataram City, West Lombok
<b>8 April 2022 (Friday)</b>			
9	Meeting on PPP street lighting scheme in West Lombok Local Government	Assistant II Local Government and related offices representative involved in the PPP Street lighting, NPM, DEC, Project consultant	Office of Local Government in West Lombok
10	Meeting on street lighting in the tourist village program	12 Head of villages, Head of Tourist Office and his staffs, MPM, DEC, component 3, Project consultant	Tourist Office in West Lombok
11	Site visit to one of the Tourist village area	Assistant II, Head of Sub District, Head of Village and rep of community in the village	Village of West Lombok
<b>11 April 2022 (Monday)</b>			
12	Meeting on Component 1	Component 1 Leader and NPM of ADLIGHT, Coordinator of DEC	Project Office in Jakarta

#	Activity	Stakeholder involved	Place
<b>12 April 2022 (Tuesday)</b>			
13	Discussion on Project disbursement	Senior Finance Associate of ADLIGHT	Project Office in Jakarta
<b>13 April 2022 (Wednesday)</b>			
14	Participate in Biweekly meeting of Component 2	UNEP, NPM, Component 2 leader	Virtual via Zoom Meeting
<b>14 April 2022 (Thursday)</b>			
15	Site visit to LED Certified Laboratory - P3Tek KEBTKE (Government)	P3 Tek KEBTKE deputy director, technical staffs, NPM, comp 2 leader	Serpong - Tangerang
16	Site visit to LED Certified Laboratory – PT.QUALIS (private)	Director of PT. QUALIS, Chief of LED lab, Technical staffs, NPM, Comp 2 leader	Tangerang - Banten
<b>18 April 2022 (Monday)</b>			
17	Meeting with APERLINDO on LED EEEL program	Chairman APERLINDO association, comp 2 leader, NPM	Virtual via Zoom Meeting
<b>19 April 2022 (Tuesday)</b>			
18	Meeting on Local content and LED manufacture supervision	Ministry of Industry, Comp 1 leader	Virtual via Zoom Meeting
<b>20 April 2022 (Wednesday)</b>			
19	Meeting on Co Finance from GAMATRINDO	Secretary of GAMATRINDO, comp 2 leader	Project Office in Jakarta
<b>21 April 2022 (Thursday)</b>			
20	Meeting on Component 3	Component 3 leader, NPM	Project Office in Jakarta
<b>25 April 2022 (Monday)</b>			
21	Discussion on Co Finance from DGNREEC	NPM, Deputy DEC	Project Office in Jakarta
<b>26 April 2022 (Tuesday)</b>			
22	Discussion on Co Finance from ALINDO, and APERLINDO	NPM, Chairman of Associations	Project Office in Jakarta
<b>25 May 2022 (Wednesday)</b>			
23	Preliminary finding of MTR	UNDP, NPD, NPM, Coordinators, Comp leaders	Virtual via Zoom Meeting

Total number of meetings conducted: 23



## APPENDIX C – LIST OF PERSONS INTERVIEWED

This is a listing of persons contacted in Indonesia (unless otherwise noted) during the Mid-Term Review Period only. The Evaluation Team regrets any omissions to this list.

Name	Designation	Agency/Organization
Ms.L.N. Puspa Dewi	Director of Energy Conservation	
Qatro Romandhi	Coordinator in DEC	
Mustofa Said	Coordinator in DEC (deputy NPD)	
Supriyadi	Coordinator in DEC	
Ms.Devi Laksmi Zafillus	Coordinator in DEC	
FF Hendro Gunawan	Coordinator in DEC	
Irwan W	Sub coordinator in DEC	
Catur Wahyu P	Sub coordinator in DEC	DGNREEC - MEMR
Haris Askari	Sub coordinator in DEC	DGNREEC - MEMR
Ms.Verania Andria	Senior Advisor for Sustainable Energy	UNDP CO Jakarta
Ms.Tjahyaning Budi Ayu	UNDP Env Unit staff	UNDP CO Jakarta
Ms. Rizki Tiara Putri	Directorate of Electronic and Telematic	Ministry of Industry
Patrick Blake	Program Officer	UNEP
Steve Coyne	Program Officer	UNEP
Ihsan Andika Lubis	Directorate of Electronic and Telematic	Ministry of Industry
John Manopo	Chairman of APERLINDO	Association of Lighting
Erri Krishnadi	Secretary of GAMATRINDO	Association of Lighting
Irvin E Busser	Chairman of Alindo	Association of lighting
Budiman Setiawan	Director of Manufacture	PT. SUP Bandung
Tri Anggono	P3Tek KEBTKE	DGNREEC - MEMR
Paber Sinaga	P3Tek KEBTKE	DGNREEC - MEMR
Teguh Ibrahim	Manager of Laboratory	PT. Qualis Laboratory
Santoso Sie	Director Of Laboratory	PT.Qualis Laboratory
Fauzan Khalid	Regent ( Bupati)	West Lombok Local Gov
Bultali	Secretary to Regency	West Lomnok Local Gov
Lalu Ratnawi	Head of Industry Office	West Lombok Local Gov
Rusditah	Assistant for Economics	West Lombok Local Gov
Kadarusman	Deputy chief Housing Office	West Lombok Local Gov
Romiadi Kurniawan	Head of Tourist Office	West Lombok Local Gov
Mardjuki	Head of Subdistrict	West Lombok Local Gov
Eriel Nasrullah Salim	National Project Manager	ADLIGHT Project
Edi Sartono	Component 2 leader	ADLIGHT Project
Ms. Renyta	Component 1 leader	ADLIGHT Project
Ms. Amanda	Component 3 leader	ADLIGHT Project
Ms. Feiby Albertina Moeda	Admin Associate	ADLIGHT Project
Ari Prasutyawan	Senior Finance Associate	ADLIGHT Project

## **APPENDIX D – LIST OF DOCUMENTS REVIEWED**

1. UNDP Project Document (ADLIGHT ProDoc);
2. UNDP Indonesia Country Program Document;
3. ADLIGHT Project Identification Form;
4. UNDP Evaluation Guidance During COVID 2019;
5. ADLIGHT Project Inception Report, September 2020 ;
6. ADLIGHT Project Implementation Review, 2021;
7. ADLIGHT Project Board Meeting Minutes:
  - First PB Meeting - 7 December 2020;
  - Second PB Meeting – 19 March 2021;
  - Third PB Meeting - 24 December 2021.
8. ADLIGHT Project Assurance Reports for 2H 2020, 1H 2021 and 2H 2021;
9. UNDP-GEF ADLIGHT, “Pengembangan Industri Nasoinal Lampu LED dengan Peningkatan Nilai TKDN”, 2021;
10. UNDP-GEF ADLIGHT, “Roadmap, Pengembangan Pencahayaan Efisiensi Tinggi Untuk Indonesia”, Bogor 2021;
11. UNDP-GEF ADLIGHT, “Implementation of Business Transformation Plan for Selected Domestic LED Manufacturers”, 2021;
12. UNDP-GEF ADLIGHT, “Report of LED Lamp Performance and Round Robin Testing”, 2021;
13. UNDP-GEF ADLIGHT, ‘Gender Analysis and Refined Gender Action Plan”, 2021;
14. UNDP-GEF ADLIGHT, “Report of LED lamp Industries”, 2021;
15. UNDP-GEF ADLIGHT, “Pemutakhiran dan Pengembangan Website Monitoring, Verifikasi dan Penegakan Peraturan (MVE) Dalam Penerapan Standar Kinerja Energi Minimum (SKEM)”, 2021;
16. UNDP-GEF ADLIGHT, “Pengujian dan Penerimaan Lampu dari Penyedia, Pendampingan, Sosialisasi dan Peresmian LED-APJ di kabupaten Lombok Barat”, 2022;
17. UNDP-GEF ADLIGHT, “Penjajagan Kabupaten / Kota”, 2021;
18. UNDP-GEF ADLIGHT, “Agreed Upon Procedures on Internal Control and Expenditure”, 2021;
19. UNDP-GEF ADLIGHT, “Laporan tahunan 2021 Proyek Adlight”, 2021.

## APPENDIX E – GEF-7 CORE INDICATORS

### Core Indicator 6: Greenhouse gas emissions mitigated (metric tons of carbon dioxide equivalent)

GHG emission type	Metric tons CO <sub>2</sub> -eq (expected at PIF)	Metric tons CO <sub>2</sub> -eq (expected at CEO ER)	Metric tons CO <sub>2</sub> -eq (expected at MTR)	Metric tons CO <sub>2</sub> -eq (expected at TE)
Lifetime direct project GHG emissions mitigated	n/a	548,776	0	
Lifetime direct post-project emissions mitigated		N/A (no financial mechanisms)	0	
Lifetime indirect GHG emissions mitigated		1,097,533	0	

Figure at a given stage must be the sum of all figures reported under the first two sub-indicators (6.1 and 6.2) for that stage.

#### 6.1 Carbon sequestered or emissions avoided in the sector of Agriculture, Forestry and Other Land Use

GHG emission type	Ha (expected at PIF)	Metric tons CO <sub>2</sub> -eq (baseline at PIF)	Ha (expected at CEO ER)	Metric tons CO <sub>2</sub> -eq (baseline at CEO ER)	Ha (expected at MTR)	Metric tons CO <sub>2</sub> -eq (above baseline at MTR)	Ha (expected at TE)	Metric tons CO <sub>2</sub> -eq (above baseline at TE)
Lifetime direct project GHG emissions mitigated	n/a							
Lifetime direct post-project emissions mitigated								
Lifetime indirect GHG emissions mitigated								
Anticipated year	---		---		---		---	

#### 6.2 Emissions avoided

GHG emission type	Metric tons CO <sub>2</sub> -eq (baseline at PIF)	Metric tons CO <sub>2</sub> -eq (baseline at CEO ER)	Metric tons CO <sub>2</sub> -eq (above baseline at MTR)	Metric tons CO <sub>2</sub> -eq (above baseline at TE)
Lifetime direct project GHG emissions mitigated	n/a	548,776	0	
Lifetime direct post-project emissions mitigated		N/A (no financial mechanisms)	0	
Lifetime indirect GHG emissions mitigated		1,097,533	0	
Anticipated year		2020	2022	

#### 6.3 Energy saved (megajoules)

Type of Intervention	MJ (expected at PIF)	MJ (expected at CEO Endorsement)	MJ (achieved at MTR)	MJ (achieved at TE)
Cumulative electricity savings by EOP	n/a	278,820,000 (77.45 GWh)	0	

**6.4 Increase in installed renewable energy capacity per technology (megawatts).**

Type of Renewable Energy	MW (entered at PIF)	MW (entered at CEO Endorsement)	MW (entered at MTR)	MW (entered at TE)
[biomass, geothermal, ocean, small hydro, solar photovoltaic, solar thermal, wind power, and storage]	n/a			

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

	Total number (expected at PIF)	Total number (expected at CEO Endorsement)	Total number (achieved at MTR)	Total number (achieved at TE)
<b>Women</b>	n/a	60	829	
<b>Men</b>		140	1,775	
<b>Total</b>		200	2,604	

## APPENDIX F – PROJECT RESULTS FRAMEWORK FOR ADLIGHT INCEPTION WORKSHOP SEPTEMBER 2020

Changes were made in this PRF with the assumption of a Project extension of 12 months to enable to the PMU to work towards closer achievement of the objective level targets.

<b>This project will contribute to the following Sustainable Development Goal (s):</b> UNPDF/CPD Outcome 3 -- By 2020, Indonesia is sustainably managing its natural resources, on land and at sea, with an increased resilience to the effects of climate change, disaster and other shocks
<b>This project will contribute to the following country outcome included in the UNDAF/Country Program Document:</b> CPD Indicative Outputs -- 2.2.1. National energy policies and guideline developed and integrated into sub- national development plans; 2.2. Sub-national authorities and key partners are able to implement programmes, mobilize resources and develop public-private partnership for RE/EE, which will contribute to the reduction of national greenhouse gases emission.
<b>This project will be linked to the following output of the UNDP Strategic Plan:</b> Output 1.4: Scaled up action on climate change adaptation and mitigation cross sectors which is funded and implemented. Output 1.5: Inclusive and sustainable solutions adopted to achieve increased energy efficiency and universal modern energy access (especially off-grid sources of renewable energy)

Strategy	Objectively Verifiable Indicator				Critical Assumptions
	Objective and Outcome Indicators	Baseline	Mid-term Target (2020)	End of Project (EOP) Target (2022)	
<b>Project Objective:</b> To increase the penetration of high-quality energy efficient lighting technologies in Indonesia through the transformation of the national market, thereby reducing electricity demand and the related greenhouse gas (GHG) emissions.	Cumulative electricity savings by EOP, GWh	• 0	• 17.27 GW (62,172,000 MJ)	• 77.45 GWh (278,820,000 MJ)	<ul style="list-style-type: none"> <li>Petroleum products and electricity prices will be at levels that make energy efficiency projects, particularly energy efficient lighting (EEL), basically LED manufacturing and application, competitive and cost effective</li> <li>Acceptance of the benefits and business opportunities resulting from the local manufacture and application of LED</li> <li>Women's active participation in trainings is requested and encouraged</li> </ul>
	Direct project GHG emissions mitigated by EOP, kt CO <sub>2</sub> (GEF Core Indicator 6.2)	• 0	<ul style="list-style-type: none"> <li>13.96 kt CO<sub>2</sub> (direct by EOP)</li> <li>121.76 kt CO<sub>2</sub> (Lifetime direct by EOP)</li> </ul>	<ul style="list-style-type: none"> <li>62.58 kt CO<sub>2</sub> (direct by EOP)</li> <li>548.77 kt CO<sub>2</sub> (Lifetime direct by EOP)</li> </ul>	
	Number of women and men participating in capacity building trainings throughout the project (GEF Core Indicator 11)	• N.A.	• 30/70	• 60/140	
<b>Outcome 1:</b> Improved quality, energy efficient and affordable locally-produced EEL products and systems	<ul style="list-style-type: none"> <li>Efficiency of locally produced lighting systems increased, (lm/W) and Production cost decreased from baseline level (%)</li> <li>Indoor Type</li> </ul>	<ul style="list-style-type: none"> <li>Eff: <b>100</b> lm/W;</li> <li>Supply chain cost: 100 %</li> </ul>	<ul style="list-style-type: none"> <li>Eff: <b>120</b> lm/W;</li> </ul>	<ul style="list-style-type: none"> <li>Eff: <b>150</b> lm/W;</li> <li>Supply chain cost: <b>80%</b> of Baseline</li> </ul>	<ul style="list-style-type: none"> <li>Local lighting manufacturers will take up the transformation of their facilities as viable investment in production techniques for affordable and highly efficient lighting products</li> <li>Manufacturers remain committed to improving the energy-efficiency and quality of products.</li> </ul>

Strategy	Objectively Verifiable Indicator				Critical Assumptions
	Objective and Outcome Indicators	Baseline	Mid-term Target (2020)	End of Project (EOP) Target (2022)	
	<ul style="list-style-type: none"> <li>○ Outdoor Type</li> </ul>	(Baseline supply chain cost to be determined at project inception) <ul style="list-style-type: none"> <li>• Eff: <b>130</b> lm/W;</li> <li>• Supply chain cost: 100% (at project inception)</li> </ul>	<ul style="list-style-type: none"> <li>• Supply chain cost: <b>80%</b> of Baseline</li> <li>• Eff: <b>150</b> lm/W;</li> <li>• Supply chain Cost: <b>80%</b> of Baseline</li> </ul>	<ul style="list-style-type: none"> <li>• <b>180</b> lm/W;</li> <li>• Supply chain cost: <b>80%</b> of Baseline</li> </ul>	<ul style="list-style-type: none"> <li>• Manufacturers remain willing to share data.</li> </ul>
	<ul style="list-style-type: none"> <li>• Cumulative number of lighting manufacturers who received technical assistance to upgrade production facilities</li> </ul>	<ul style="list-style-type: none"> <li>• 0</li> </ul>	<ul style="list-style-type: none"> <li>• 3 manufacturers (1 for each association)</li> </ul>	<ul style="list-style-type: none"> <li>• 6</li> </ul>	Commitment and active participation of manufacturers and associations with adequate financial resources to participate in the program.
	<ul style="list-style-type: none"> <li>• Investment grade proposal for business transformation plans               <ul style="list-style-type: none"> <li>○ Submitted by manufacturers</li> <li>○ Approved by banks.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• 0</li> <li>• 0</li> </ul>	<ul style="list-style-type: none"> <li>• 3</li> <li>• 3</li> </ul>	<ul style="list-style-type: none"> <li>• 6</li> <li>• 6</li> </ul>	Banks and financial institutions <sup>31</sup> are convinced about the business potential of manufacturing and market for LED systems.
	<ul style="list-style-type: none"> <li>• Ratio of women and men who believe they have the capacity to               <ul style="list-style-type: none"> <li>○ Submit (local manufacturers)</li> <li>○ Approve (banks)</li> </ul> </li> <li>investment grade proposal for business transformation plans</li> </ul>	<ul style="list-style-type: none"> <li>• 0</li> <li>• 0</li> </ul>	<ul style="list-style-type: none"> <li>• 30/70</li> <li>• 30/70</li> </ul>	<ul style="list-style-type: none"> <li>• 30/70</li> <li>• 30/70</li> </ul>	Women's active participation in trainings has been requested and encouraged and women and men employees from relevant government institutions have actively participated in the capacity building activities on business transformation plans
<b>Outcome 2:</b> Improved conditions for fair market competition of EE lighting products informed by robust	<ul style="list-style-type: none"> <li>• No. of policy documents at the national level, including Standard Minimum Quality and MEPS on LED and other relevant guidelines, developed and approved</li> </ul>	<ul style="list-style-type: none"> <li>• 0</li> </ul>	<ul style="list-style-type: none"> <li>• 2 (1 SNI and 1 Draft MEPS and labelling)</li> </ul>	<ul style="list-style-type: none"> <li>• 3 (SNI updated and Implemented MEPS and labelling endorsed)</li> </ul>	<ul style="list-style-type: none"> <li>• Overall policy to cover MEPS, SNI guideline, market control MVE mechanisms and laboratory testing procedures can be developed and facilitated by the project for approval by the BSN and other authorized</li> </ul>

<sup>31</sup>Various banks and financing institutions in Indonesia, including Bank Mandiri, BRI, BNI, BCA, Bank Muamalat, BRI Syariah, BJB and Bank Artha Graha are mobilized and introduced by OJK on financing EEL business opportunities

Strategy	Objectively Verifiable Indicator				Critical Assumptions
	Objective and Outcome Indicators	Baseline	Mid-term Target (2020)	End of Project (EOP) Target (2022)	
policy and institutional framework					agencies within the timeframe of the project.
	• No. of policy and guideline on LED procurement developed and implemented in E-catalogue and regular public procurement system	• 0	• 1 (policy adapting SNI)	• 2 (policy adapting SNI and MEPS)	• SNI and MEPS for LED lights both indoor and outdoor is a priority for the MEMR.
	• No. of comprehensive MVE Guideline and required implementing rules and regulations for including resolving custom dispute and legality of products developed and implemented	• 0	• 1 (software by BSN)	• 1	<ul style="list-style-type: none"> <li>Indonesia is committed to abide to the ASEAN Plan of Action Energy Cooperation 2016-2025 (APAEC) which highlights regional harmonization of LED lighting standard (Activity 4.1 of the APAEC)</li> <li>Assuming the MEPS is approved before the EOP.</li> </ul>
	• Ratio of women and men employees in relevant government institutions who believe they have the capacity to monitor verify and enforce high quality efficiency lighting systems	• N/A	• 30/70	• 30/70	• Women's and men's active participation in trainings has been requested and encouraged and women and men employees from relevant government institutions have actively participated in the capacity building activities on monitoring verifying and enforcing high quality efficiency lighting systems
<b>Outcome 3:</b> Increased market penetration of high quality and efficient lighting	• Cumulative no. of innovative financial support schemes developed to accelerate penetration of EE lighting systems	• 0	• 2	• 4 <sup>32</sup>	Targeted users and key stakeholders of EEL (basically LED) products and systems are well informed about the long-term benefits and costs and are convinced to invest in such efficient technology application projects

<sup>32</sup> Proposed innovative financial support schemes to accelerate penetration of advanced lighting systems, may include: (a) PPP mechanism for smart city(ies) LED street lighting projects; (b) ESCO model Feasibility Study (FS) Template and Financial Modeling Software; (c) Credit Guarantee Facility for Energy Efficiency LED lighting investment; and (d) Bundling LED lighting projects as accepted collateral for banking sector

Strategy	Objectively Verifiable Indicator				Critical Assumptions
	Objective and Outcome Indicators	Baseline	Mid-term Target (2020)	End of Project (EOP) Target (2022)	
	<ul style="list-style-type: none"> <li>Cumulative no. of pilot demonstrations<sup>33</sup> completed and replication plans developed and approved for implementation<sup>34</sup></li> </ul>	<ul style="list-style-type: none"> <li>0</li> </ul>	<ul style="list-style-type: none"> <li>3 (1 cities and 2 buildings)</li> </ul>	<ul style="list-style-type: none"> <li>5 (2 cities, 2 buildings and a residential area) With possible replication in 2 cities and 7 buildings.</li> </ul>	<ul style="list-style-type: none"> <li>Policy framework would allow private investments to invest in energy efficiency street lighting projects.</li> <li>Local EEL producers can meet all technical standard specifications and ESCOs can develop investment-grade proposals that will convince banks to finance the EEL projects within acceptable insurance and guarantee provisions required by banks for sustainability.</li> </ul>
	<ul style="list-style-type: none"> <li>Number of stakeholders engaged               <ul style="list-style-type: none"> <li>municipalities</li> <li>clients (project developers/ building owners)</li> <li>technology providers</li> <li>financial institutions</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>0</li> <li>0</li> <li>0</li> <li>0</li> </ul>	<ul style="list-style-type: none"> <li>2</li> <li>3</li> <li>3</li> <li>1</li> </ul>	<ul style="list-style-type: none"> <li>4</li> <li>6</li> <li>5</li> <li>2</li> <li>.</li> </ul>	<ul style="list-style-type: none"> <li>Pilot demonstrations will use production from local manufacturers</li> <li>.</li> </ul>
	Women's and men's level of satisfaction with EEL systems provided (reliability, affordability, convenience, efficiency)	<ul style="list-style-type: none"> <li>N.A.</li> <li>.</li> </ul>	<ul style="list-style-type: none"> <li>At least 60 % of women and men beneficiaries are highly satisfied with the EEL systems provided (minimum score 7/10)</li> </ul>	<ul style="list-style-type: none"> <li>At least 70 % of women and men beneficiaries are highly satisfied with the EEL systems provided (minimum score 7/10)</li> </ul>	<ul style="list-style-type: none"> <li>The design and installation of the EEL systems is well informed on women's and men's needs, preferences and habits in requirement, consumption and disposal of EEL technologies</li> </ul>

<sup>33</sup> Initially identified pilot demonstrations during the PPG stage include the following: (a) smart lighting and smart monitoring system LED, (b) ESCO model for state-owned bank building, (c) ESCO model for LKPP (Public Procurement Agency) for government LED implementation, and (d) public-private partnership scheme model for LED projects.

<sup>34</sup> Assistance in completing the pending existing ESCO model in Smart Cities in Solo and Bandung as the 2 cities which have on-going project development, being assisted by Bappenas and LKPP, but it requires next stage of mobilization towards final financial arrangement



## APPENDIX G - MIDTERM REVIEW EVALUATIVE MATRIX

Evaluative Questions	Indicators	Data Sources/Methods	Methods for Data Analysis
<b>Project Strategy: To what extent is the project strategy relevant to country priorities, country ownership, and the best route towards expected results?</b>			
<ul style="list-style-type: none"> <li>Is the project design and strategy adequate and technically feasible to address the problems and underlying assumptions?</li> <li>What is the overall relevance of the project strategy and how successful it is in providing the most effective route towards expected/intended results?</li> <li>How the project addresses country priorities and what is the level of country ownership for the project?</li> <li>Is the project concept in line with the national sector development priorities and plans of Indonesia?</li> <li>Were perspectives of those who would be affected by project decisions, those who could affect the outcomes, and those who could contribute information or other resources to the process, taken into account during project design processes?</li> <li>To what extent relevant gender issues were raised and incorporated into the project design.</li> </ul>	<ul style="list-style-type: none"> <li>- Alignment with National developmental policies and plans</li> <li>- Alignment with global development and environmental agenda</li> <li>- Alignment with needs of the target communities especially women and vulnerable groups</li> </ul>	<ul style="list-style-type: none"> <li>Review of documents including secondary sources</li> <li>Key informant interviews</li> <li>Focus group discussion</li> <li>Physical observation of interventions</li> </ul>	<ul style="list-style-type: none"> <li>Qualitative methods</li> <li>- Triangulation</li> <li>- Validations</li> <li>- Interpretations</li> <li>- Abstractions</li> </ul>
<b>Progress Towards Results: To what extent have the expected outcomes and objectives of the project been achieved thus far?</b>			
<ul style="list-style-type: none"> <li>What are project achievements so far, against the end-of-project targets as outlined in the log-frame?</li> <li>What is the quality of the results? How do the stakeholders perceive them?</li> <li>Can the project attain its objectives within the remaining period? Is the project on or off track to achieve its final targets?</li> <li>What are the remaining barriers and challenges to achieving the project objectives?</li> <li>How economically the project resources/inputs (in terms of funding, expertise, time) are being used to produce results?</li> <li>Will the expected results be achieved within the original budget or the budget need to be revised?</li> <li>How timely is the project in producing outputs and initial outcomes? Are there implementation delays and why?</li> </ul>	<ul style="list-style-type: none"> <li>- Objective, Outcome level indicators from the project results and resources framework</li> </ul>	<ul style="list-style-type: none"> <li>Review of documents</li> <li>Key informant interviews</li> <li>Focus group discussion</li> <li>Physical observation of interventions in the field</li> </ul>	<ul style="list-style-type: none"> <li>Qualitative methods</li> <li>- Triangulation</li> <li>- Validations</li> <li>- Interpretations</li> <li>- Abstractions</li> <li>Quantitative methods</li> <li>- Progress and trend analysis</li> </ul>

<b>Project Implementation and Adaptive Management: Has the project been implemented efficiently, cost-effectively, and been able to adapt to any changing conditions thus far?</b>			
<ul style="list-style-type: none"> <li>• How is project being organized originally and have changes been made during implementation and are they effective?</li> <li>• What are the overall partnership and coordination mechanisms and have they been efficient and effective? Did each partner fulfil its role and responsibilities?</li> <li>• Were there any delays in project start-up and implementation?</li> <li>• Are work-planning processes results-based?</li> <li>• Is the M&amp;E system in place and has facilitated timely tracking of progress?</li> <li>• Did promised co-financing materialize, if not why, if yes how much?</li> <li>• Has the project developed and leveraged the necessary and appropriate partnerships with stakeholders?</li> <li>• Is communication with stakeholders regular and effective?</li> </ul>	<ul style="list-style-type: none"> <li>- Changes made in the resource framework or project design, if any</li> <li>- Level of stakeholder involvement and coordination mechanisms</li> <li>- Availability of work plans and M&amp;E system</li> <li>- Amount of co-financing realized</li> <li>- Availability and effectiveness of communication mechanisms</li> <li>- Efficient and timely use of financial resources</li> </ul>	<ul style="list-style-type: none"> <li>• Review of documents including financial statements</li> <li>• Key informant interviews</li> <li>• Focus group discussion</li> <li>• Field observations</li> </ul>	<ul style="list-style-type: none"> <li>Qualitative methods</li> <li>- Triangulation</li> <li>- Validations</li> <li>Quantitative methods</li> <li>- Progress and trend analysis</li> </ul>
<b>Sustainability: To what extent are there financial, institutional, socio-economic, and/or environmental risks to sustaining long-term project results?</b>			
<ul style="list-style-type: none"> <li>• What is the likelihood of availability of required financial resources once the project ends?</li> <li>• Is the project socially and politically sustainable?</li> <li>• Are the project outcomes environmentally sustainable?</li> <li>• Are the necessary legal frameworks, policies, and governance structures available to sustain project benefits?</li> <li>• What is the level of ownership of the project with partners?</li> </ul>	<ul style="list-style-type: none"> <li>- Financial, Social, Institutional and Environmental risks to sustainability of interventions and benefits</li> </ul>	<ul style="list-style-type: none"> <li>• Review of documents</li> <li>• Key informant interviews</li> <li>• Focus group discussion</li> <li>• Physical observation of interventions in the field</li> </ul>	<ul style="list-style-type: none"> <li>Qualitative methods</li> <li>- Triangulation</li> <li>- Validations</li> <li>- Interpretations</li> <li>- Abstractions</li> </ul>

## APPENDIX H - RATING SCALES

<b>Ratings for Progress Towards Results: (one rating for each outcome and for the objective)</b>		
6	Highly Satisfactory (HS)	The objective/outcome is expected to achieve or exceed all its end-of-project targets, without major shortcomings. The progress towards the objective/outcome can be presented as “good practice”.
5	Satisfactory (S)	The objective/outcome is expected to achieve most of its end-of-project targets, with only minor shortcomings.
4	Moderately Satisfactory (MS)	The objective/outcome is expected to achieve most of its end-of-project targets but with significant shortcomings.
3	Moderately Unsatisfactory (HU)	The objective/outcome is expected to achieve its end-of-project targets with major shortcomings.
2	Unsatisfactory (U)	The objective/outcome is expected not to achieve most of its end-of-project targets.
1	Highly Unsatisfactory (HU)	The objective/outcome has failed to achieve its midterm targets, and is not expected to achieve any of its end-of-project targets.
<b>Ratings for Project Implementation &amp; Adaptive Management: (one overall rating)</b>		
6	Highly Satisfactory (HS)	Implementation of all seven components – management arrangements, work planning, finance and co-finance, project-level monitoring and evaluation systems, stakeholder engagement, reporting, and communications – is leading to efficient and effective project implementation and adaptive management. The project can be presented as “good practice”.
5	Satisfactory (S)	Implementation of most of the seven components is leading to efficient and effective project implementation and adaptive management except for only few that are subject to remedial action.
4	Moderately Satisfactory (MS)	Implementation of some of the seven components is leading to efficient and effective project implementation and adaptive management, with some components requiring remedial action.
3	Moderately Unsatisfactory (MU)	Implementation of some of the seven components is not leading to efficient and effective project implementation and adaptive, with most components requiring remedial action.
2	Unsatisfactory (U)	Implementation of most of the seven components is not leading to efficient and effective project implementation and adaptive management.
1	Highly Unsatisfactory (HU)	Implementation of none of the seven components is leading to efficient and effective project implementation and adaptive management.
<b>Ratings for Sustainability: (one overall rating)</b>		
4	Likely (L)	Negligible risks to sustainability, with key outcomes on track to be achieved by the project's closure and expected to continue into the foreseeable future
3	Moderately Likely (ML)	Moderate risks, but expectations that at least some outcomes will be sustained due to the progress towards results on outcomes at the Midterm Review
2	Moderately Unlikely (MU)	Significant risk that key outcomes will not carry on after project closure, although some outputs and activities should carry on
1	Unlikely (U)	Severe risks that project outcomes as well as key outputs will not be sustained

## APPENDIX I - EVALUATION CONSULTANT AGREEMENT FORM

### Evaluator 1:

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

### Evaluation Consultant Agreement Form<sup>23</sup>

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

Name of Consultant: Roland Wong

Name of Consultancy Organization (where relevant): \_\_\_\_\_

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

Signed at Surrey, BC, Canada on 26 June 2022



<sup>23</sup> [www.unevaluation.org/unegcodeofconduct](http://www.unevaluation.org/unegcodeofconduct)

**Evaluator 2:**

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

**Evaluation Consultant Agreement Form<sup>24</sup>****Agreement to abide by the Code of Conduct for Evaluation in the UN System**

**Name of Consultant:** Asep Suwarna

**Name of Consultancy Organization (where relevant):** \_\_\_\_\_

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

Signed at *Jakarta, Indonesia* on *26 June 2022*



<sup>24</sup> [www.unevaluation.org/unegcodeofconduct](http://www.unevaluation.org/unegcodeofconduct)

## APPENDIX J - MTR REPORT CLEARANCE FORM

**Midterm Review Report Reviewed and Cleared By:  
Commissioning Unit**

Name: Dikot Harahap

DocuSigned by:

Signature: \_\_\_\_\_

*dikot harahap*

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Date: 12-Jul-2022

**UNDP-GEF Regional Technical Advisor**

Name: Milou Beerepoot

DocuSigned by:

Signature: \_\_\_\_\_

*Milou Beerepoot*

038CCED0372D48F...

Date: 14-Jul-2022

## Management response

[Roland Wong and Asep Suwarna] Date: June 20, 2022

Prepared by: Nasrullah Salim

Position: NPM

Unit/Bureau: ADLIGHT Project / MEMR

Cleared by: Verania Andria

Position: Senior Advisor for Sustainable Energy

Unit/Bureau: EU / UNDP

Cleared by: Aretha Aprilia

Position: Head of Environment Unit

Unit/Bureau: EU / UNDP

Input into and update in ERC: Dikot Harahap

Position: Head of QARE Unit

Unit/Bureau: QARE / UNDP

### **Recommendation 1: Continue dialogue and training with financial sector. See Para 133**

**Management response:** The continued dialogue and training with the financial sector is needed especially with the number of LED pilots that are in the pipeline.

Key action(s) Note: The key action is about moving towards	Completion date	Responsible unit(s)	Tracking	
			Comments	Status (initiated, completed or no due date)
- Undertake series of FGD and training with financial sector and related stakeholders	Dec. 2022	Component 1 and 3		Initiated

### **Recommendation 2: Continual training is required to sustain the capacities of market surveillance personnel to identify a broad range of qualities of LEDs and other electronic devices such as service life and product materials. See Para 131**

**Management response:** This will require sustained resourcing of the training of market surveillance personnel to apply these skills to other LED products and other electronic devices and appliances.

Key action(s) Note: The key action is about moving towards	Completion date	Responsible unit(s)	Tracking	
			Comments	Status (initiated, completed or no due date)
- Ensure that the continual training to sustain the capacities of market surveillance personnel to identify a broad range of qualities of LEDs and other electronic devices such as service life and product materials is planned and undertaken.	Oct. 2022	Component 2		Initiated

### **Recommendation 3: There needs to be sustained resources available for dedicated training of**

*electricians for the installation of lighting systems as well as for updating of best practices. See Para 132*

**Management response:** Training of electricians for the installation of lighting systems as well as for updating of best practices in Q3-2022

Key action(s) Note: The key action is about moving towards	Completion date	Responsible unit(s)	Tracking	
			Comments	Status (initiated, completed or no due date)
- Ensure training of electricians for the installation of lighting systems as well as for updating of best practices is planned and undertaken	Sep. 2022	Component 3		Initiated

*Recommendation 4: Assist the Ministry of Environment in seeking organizations for providing international best practices for managing Waste from Electrical and Electronic Equipment (WEEE) waste streams. See Para 139*

**Management response:** ADLIGHT assists the Ministry of Environment in seeking organizations for providing international best practices for managing Waste from Electrical and Electronic Equipment (WEEE) waste streams.

Key action(s) Note: The key action is about moving towards	Completion date	Responsible unit(s)	Tracking	
			Comments	Status (initiated, completed or no due date)
- ADLIGHT already contracted a national expert on Waste from Electrical and Electronic Equipment (WEEE) in order to assist Ministry of Environment and Forestry for managing waste as well as to support mercury phase out program.	Dec. 2022	Component 2		Initiated

*Recommendation 5: Focus on commercial banks for financing LED initiatives in commercial and industrial sectors where greater national energy savings and GHG emission reductions can be generated. See Para 136*

**Management response:** ADLIGHT focuses on commercial banks for financing LED initiatives not only in commercial and industrial sectors but also residential and public street lighting lead to achieve national energy savings program and GHG emission reductions.

Key action(s) Note: The key action is about moving towards	Completion date	Responsible unit(s)	Tracking	
			Comments	Status (initiated, completed or no due date)
- Develop at least 4 financing modules that banks will use to attract investors or local governments to carry out credit mechanisms offered to retrofit from non-energy efficient lamps or old technology LEDs to more	Nov. 2022	Component 3		Initiated



efficient ones.				
<b>Recommendation 6: Request a 1-year extension to provide the PMU with an appropriate amount of time to reduce their risk of not achieving their incremental GHG emission reduction targets of 62,580 tCO<sub>2</sub>. See Para 130</b>				
<b>Management response:</b> The proposed no-cost extension will be addressed and asked for approval at the Project Board Meeting in August 2022 while the workplan 2023 will be proposed and approved at the Project Board Meeting in December 2022.				
Key action(s) Note: The key action is about moving towards	Completion date	Responsible unit(s)	Tracking	
			Comments	Status (initiated, completed or no due date)
- Make an update of the workplan 2023 of all components so that the proposed one-year no-cost extension can meet the framework results.	Nov. 2022	All components (particularly Component 3 for pilot demonstration in commercial buildings and residential)		Initiated
<b>Recommendation 7: Intensify gender training. See Para 134</b>				
<b>Management response:</b> Gender energy training is planned to be taken by gender expert in Q3-2022				
Key action(s) Note: The key action is about moving towards	Completion date	Responsible unit(s)	Tracking	
			Comments	Status (initiated, completed or no due date)
- ADLIGHT already contracted a national expert on gender issues in order to integrate and internalize gender issues into all activities. - Undertake gender energy training for policy makers and local LED industries	Dec. 2022	Component 2		Initiated
<b>Recommendation 8: Prepare Project risk reports under the PARs. See Para 120</b>				
<b>Management response:</b> PAR has accommodated a separate section to update and review risks entries including activities for treatment(s). In addition to that, CO has also established standard minutes of meeting for Project Board. The standard minutes of meeting embraces risks.				
Key action(s) Note: The key action is about moving towards	Completion date	Responsible unit(s)	Tracking	
			Comments	Status (initiated, completed or no due date)
Accommodation of risks report in the PAR.	July 2022	UNDP	PAR and minutes of	Completed

			PBM embrace the risk report.	
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