

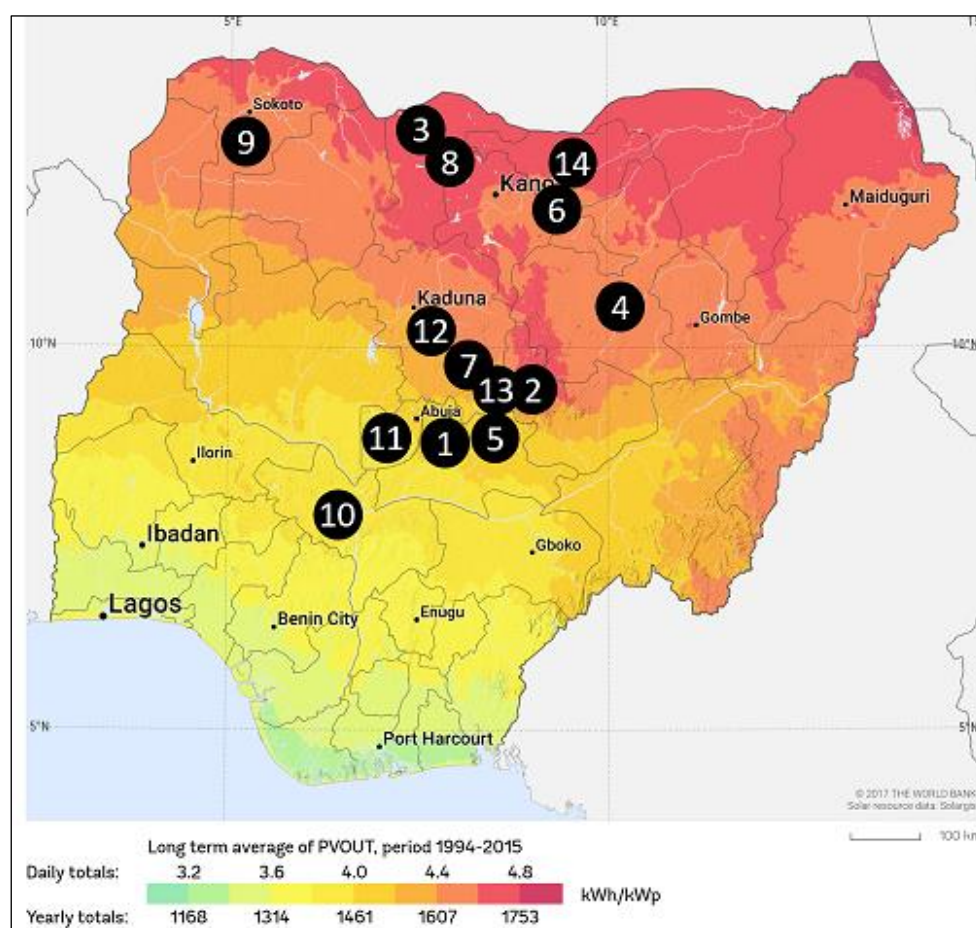
Midterm Review Report

UNDP-GEF Project: De-risking renewable energy NAMA for the Nigerian power sector

GEF Project ID: 5345

UNDP Project ID: 5243

Country: Nigeria
Region: Africa
Focal Area: Climate Change (GEF-5)
GEF Agency: United Nations Development Programme
Executing Agencies: Energy Commission of Nigeria



Map showing locations of 14 planned sites for utility-scale solar PV plants (source: Energy for Growth, Feb 2019)

Date	Version	Comments
29 March 2019	01	First draft
27 April 2019	02	Second draft
31 May 2019	03	Draft final
20 June 2019	04	Final

Opening Page

PROJECT DETAILS:

Project Name:	De-risking renewable energy NAMA for the Nigerian power sector	
Project ID:	UNDP PIMS ID: 5243	GEF Project ID: 5345
Country:	Nigeria	
Region:	Africa	
Focal Area:	Climate change (GEF-5)	
Focal Area Objective/Outcome:	Objective 3 (CCM-3): Promote investment in renewable energy technologies Expected Outcome: Favorable policy and regulatory environment created for renewable energy investments Expected Outcome: Investment in renewable energy technologies increased	
Funding Source:	GEF Trust Fund	
Implementing Agency:	United Nations Development Programme	
Implementation Modality:	National Implementation Modality (NIM)	
Executing Partner(s):	Federal Ministry of Environment, Federal Ministry of Power, Energy Commission of Nigeria, Nigerian Electricity Regulatory Commission	

FINANCIALS:

Project Preparation Grant:	USD 130,000
GEF Project Grant:	USD 4,400,000
Cofinancing Total:	USD 213,550,000
GEF Agency Fees:	USD 418,000
Total Cost:	USD 218,080,000

PROJECT TIMELINE:

Received by GEF:	21 March 2013
Preparation Grant Approved:	12 September 2013
Concept Approved:	01 November 2013
Project Approved for Implementation:	04 April 2016
State Date:	28 June 2016
Closing Date (Planned):	28 June 2021

MIDTERM REVIEW DETAILS:

Midterm Review Timeframe:	March-April 2019
MTR Consultant:	James Lenoci, International Consultant
MTR Reporting Language:	English

Acknowledgements:

The MTR consultant would like to acknowledge the information and feedback provided by interviewed project stakeholders, including the officials from the ECN, FME, FMPW&H, FMB&P, TCN, NERC, CPC, NOA, LEA and the national and international consultants working on the project. Special thanks are also extended to the Project Director, the Project Manager, the Project Assistant, UNDP CO staff and the UNDP-GEF regional technical advisor.

Contents

Executive Summary	i
Abbreviations and Acronyms	vi
1 Introduction	1
1.1 Purpose of the Review	1
1.2 Scope and Methodology	1
1.3 Structure of the Report	1
1.4 Rating Scales	1
1.5 Ethics	2
1.6 Audit Trail	2
1.7 Limitations	2
2 Project Description	3
2.1 Development Context	3
2.2 Problems the Project Sought to Address	3
2.3 Project Description and Strategy	4
2.4 Implementation Arrangements	6
2.5 Project Timing and Milestones	7
2.6 Main Stakeholders	8
3 Findings	9
3.1 Project Strategy	9
3.1.1 Project Design	9
3.1.2 Results Framework	11
3.1.3 Gender Mainstreaming and Social Inclusion Analysis	13
3.2 Progress towards Results	14
3.2.1 Progress towards Outcomes Analysis	14
3.2.2 Adaptive Management: Investment in Off-Grid Solar PV Systems	22
3.2.3 Remaining Barriers to Achieving the Project Objective	23
3.3 Project Implementation and Adaptive Management	23
3.3.1 Management Arrangements	23
3.3.2 Work Planning	26
3.3.3 Finance and Cofinance	26
3.3.4 Project-level Monitoring and Evaluation Systems	28
3.3.5 Stakeholder Engagement and Partnerships	28
3.3.6 Reporting	29
3.3.7 Communications	29
3.4 Sustainability	30
3.4.1 Financial Risks to Sustainability	30
3.4.2 Socioeconomic Risks to Sustainability	31
3.4.3 Institutional Framework and Governance Risks to Sustainability	32
3.4.4 Environmental Risks to Sustainability	32
4 Conclusions and Recommendations	33
4.1 Conclusions	33
4.2 Recommendations	33
4.2.1 Possible Options for Reorienting the Project Strategy	34
Annex 1: MTR Mission Itinerary	
Annex 2: List of Persons Interviewed	
Annex 3: List of Documents Reviewed	
Annex 4: Evaluation Matrix	
Annex 5: Progress towards Results	
Annex 6: Cofinancing Table	
Annex 7: Rating Scales	
Annex 8: Signed UNEG Code of Conduct Agreement Form	
Annex 9: MTR Terms of Reference	
Annex 10: Signed MTR final report clearance form	
Annexed in separate file: audit trail of comments and responses to draft MTR report	
Annexed in separate file: relevant midterm tracking tools	

List of Tables

Table 1: Project information table	i
Table 2: MTR ratings and achievement summary table.....	ii
Table 3: Recommendations table.....	iv
Table 4: Risk categories and underlying barriers considered for DREI analysis (Table 13 of the project document)	4
Table 5: Project stakeholders (taken from Table 12 of the project document)	8
Table 6: SMART analysis of project results framework (project objective).....	11
Table 7: SMART analysis of project results framework (Outcome 1)	11
Table 8: SMART analysis of project results framework (Outcome 2)	12
Table 9: SMART analysis of project results framework (Outcome 3)	13
Table 10: Progress towards results, project objective	14
Table 11: Progress towards results, Outcome 1.....	14
Table 12: Progress towards results, Outcome 2.....	16
Table 13: Progress towards results, Outcome 3.....	21
Table 14: Off-grid solar PV investments, Component 3	22
Table 15: Members of the project steering committee	24
Table 16: Project expenditures through midterm (USD).....	26

List of Figures

Figure 1: Location map of baseline project in Bauchi State (taken from project document)	6
Figure 2: Project organizational chart (taken from Figure 17 of the project document)	7
Figure 3: Draft theory of change	10
Figure 4: Data collection for the GIS-based RE tool (taken from the 01 Feb 2019 initiation workshop slides)	17
Figure 5: Group photograph of participants to the September 2018 ESIA stakeholder forum	18
Figure 6: Photograph of solar cabin at the Lagos Energy Academy	20
Figure 7: Photographs of off-grid solar system at rice processing plant, Ogun State (source: Dec 2017 report)	23
Figure 8: Currency fluctuations and inflation, 2014-2019.....	27
Figure 9: Photo of Bauchi State project site (taken from revised RAP, June 2017)	32

List of Boxes

Box 1: Overview of the GCF-funded Nigeria Solar IPP Support Program	31
---	----

Executive Summary

The project, which was approved under the GEF-5 replenishment cycle, is being implemented through a national implementation modality with the Energy Commission of Nigeria as the lead implementing partner, supported by the UNDP as the GEF implementation agency. Basic project information is summarized below in **Table 1**.

Table 1: Project information table

Project Title:	De-risking renewable energy NAMA for the Nigerian power sector		
UNDP Project ID (PIMS #):	5243	PIF Approval Date:	12 Sep 2013
GEF Project ID (PMIS #):	5345	CEO Endorsement Date:	04 Apr 2016
Award ID:	86990	Project Document (ProDoc) Signature Date (date project began):	28 Jun 2016
Country(ies):	Nigeria	Date project manager hired:	Jan 2018
Region:	Africa	Inception Workshop date:	31 May 2017
Focal Area:	Climate Change	Midterm Review date:	Mar-Apr 2019
GEF-5 Focal Area Objective:	CCM-3	Planned closing date:	28 Jun 2021
Trust Fund:	GEF TF	If revised, proposed closing date:	N/A
Executing Agency:	Energy Commission of Nigeria		
Other execution partners:	N/A		
Project Financing:	at CEO endorsement (USD)	at Midterm Review (USD)*	
[1] GEF financing (excl. PPG):	4,400,000	1,110,437	
[2] UNDP contribution:	1,500,000	142,649	
[3] Government:	2,050,000	1,100,000	
[4] Other partners:	210,000,000	5,000,000	
[5] Total cofinancing [2 + 3+ 4]:	213,550,000	6,242,649	
PROJECT TOTAL COSTS [1 + 5]	217,950,000	7,353,085	

*Cut-off date for project midterm is 28 March 2019.

Project Description

The project was designed to support the Government of Nigeria to develop a Nationally Appropriate Mitigation Action (NAMA) for the Nigerian power sector. The NAMA is targeting solar photovoltaic (PV) technology, primarily to achieve a transformation in the electricity mix such that at least 20 GW of Nigeria's electricity is generated from solar PV by 2030. The NAMA design aims to use a rigorous quantitative methodology based on UNDP's Derisking Renewable Energy Investment (DREI) framework. The project is building upon existing national development policies and initiatives that seek to put in place public derisking instruments to support the more efficient and effective participation of the private sector in the power sector. The project envisages developing the NAMA architecture and enabling conditions through a combination of complementary policy and financial derisking instruments, which will be validated through the implementation of a 100 MW PV project. The project contributes to the country's attainment of its voluntary mitigation targets in the energy sector, with expected direct emission reductions of 452,000 tons of carbon dioxide equivalents (tCO₂e) during the project's lifetime and additional indirect emission reductions of between 6.61 and 6.79 million tCO₂e. Being the first of its kind, the baseline project was designed to pave the way for catalyzing more private investments so that the NAMA will generate national benefits related to green growth, energy security and job creation at scale.

The project duration is 5 years, starting from 28 June 2016 and ending 28 June 2021. Implementation is funded with a USD 4,400,000 GEF project grant and USD 213,550,000 of cofinancing, contributed from ECN, the Federal Ministry of Environment (FME) the Lagos Energy Academy (LEA), UNDP and Nigeria Solar Capital Partners (private sector).

Purpose and Methodology

The objective of the MTR was to gain an independent analysis of the progress midway through the project. The MTR focused on identifying potential project design problems, assessing progress towards the achievement of the project

objective, and identifying and documenting lessons learned about project design, implementation, and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The project performance was measured based on the indicators of the project results framework and relevant GEF tracking tools. The MTR was an evidence-based assessment and relied on feedback from persons who have been involved in the design, implementation, and supervision of the project, as well as beneficiaries of project interventions, and review of available documents and findings of the field mission.

Project Progress Summary

Following a significant delay in commencing the implementation of the project, activities under components 1 and 2 associated with strengthening the enabling environment for development and implementation of nationally appropriate mitigation actions (NAMAs) were initiated in 2018 and the first quarter of 2019. The official start date of the 5-year duration project is 28 June 2016, the day when the Government of Nigeria signed the project document and less than 3 months after GEF endorsement on 4 April. The project inception workshop was organized on 31 May 2017, roughly 11 months after the project start date, and the project manager was hired in January 2018. The project director and ECN's technical officers were in place at project entry to initiate project implementation.

Technical assistance consultancies have been procured for implementing activities on formulating renewable energy (RE) technology action plans, developing an MRV mechanism for the power sector, carrying out a study on domestic financial sector reform to unlock low-cost capital for green investment, creating a GIS tool for identifying practicable RE sites in the country and capacitating Nigerian professionals in the project cycle of planning, financing, constructing and operating utility-scale solar PV installations. Several stakeholder workshops have been convened to validate the preliminary results of these outputs and to deliberate on issues constraining progress with respect to on-grid RE development.

Investments in utility-scale on-grid RE, particularly solar PV have been stalled, as independent power purchasers (IPPs) have not yet reached financial close following power purchase agreements (PPAs) signed in 2016. The activities under Component 3, which make up approximately 50% of the allocated GEF project grant, have consequently not started. The IPP for the Bauchi state solar PV plant, which is the envisaged NAMA facilitated by the project, has updated the environmental and social impact assessment (ESIA) as well as the resettlement action plan (RAP) in 2017. The identified resettlement requirements indicated in the RAP are more extensive than those outlined in social and environmental risk screening in the project document.

Through an adaptive management measure, without gaining approval by the project steering committee or UNDP, the project financed approximately USD 300,000 for off-grid solar PV systems at two agro-processing facilities in Jigawa and Ogun States and for a solar-powered water borehole in a community in Kano State.

As of 28 March 2019, a cumulative amount of USD 1,110,437 (25%) of the USD 4,400,000 GEF implementation grant have been expended.

Midterm Review Ratings

MTR ratings and a summary of achievements are presented below in **Table 2**.

Table 2: MTR ratings and achievement summary table

Measure	MTR Rating	Achievement Description
Project Strategy	Not Rated / Not applicable	<p>The project is aligned to Objective 3 of the GEF-5 climate change focal area strategy, aimed at promoting investment in renewable energy technologies. The project design was informed by the DREI analysis carried out during the PPG phase in broad stakeholder consultation. GEF funding was allocated under Components 1 and 2 to strengthen the enabling environment, i.e., derisking investments into utility-scale RE. The design does not articulate a clear pathway for advancing the policy and financial derisking instruments into governmental or financial sector reforms. Such policy level reforms require longer time periods than the 5-year project implementation phase.</p> <p>The added value elements designed under Component 3 include demonstrating proof-of-concept application of interface electronics to match the voltage of renewable energy to that of the national grid, using automated robotic-arm driven cleaning mechanisms on the PV panels, and deploying anti-abrasive coatings to combat the effects of damaging sand blasting in the desert environment of northern Nigeria. It is unclear if the incremental reasoning for Component 3 remains valid, in light of technological advances made and other changed circumstances.</p> <p>The social and environmental screening process (SESP) concluded that the project is HIGH risk, based on two aspects: (1) security, regarding with the political instability in the north of Nigeria; and (2) resettlement of project affected persons. Gender aspects were not integrated into the project design; the analysis of the resettlement in Bauchi State would focus on women. And, the design lacks a coherent knowledge management strategy.</p>

Measure	MTR Rating	Achievement Description
Progress towards Results	Objective Achievement: Unsatisfactory	The project objective is predicated on the development and operationalization of the 100-MW solar PV plant in Bauchi State. Due to the continued delays in the IPP for this plant (and the other 13 IPPs that signed PPAs in 2016) from reaching financial close, the construction of the utility-scale plant has not started and consequently, no progress has been made in registering a NAMA for the Nigerian power sector.
	Outcome 1: Moderately satisfactory	There has been some progress made under Component 1, including preparation of a framework for an MRV mechanism for the power sector, a preliminary calculation of a grid emission factor, and draft technology action plans for solar, wind and biomass RE. DREI analyses on 3 policy and financial instruments have not yet started, and based on consultations with UNDP technical advisors, the DREI methodology has more utility for a sector-scale analysis rather than assessment of separate instruments. It is unclear how the outputs under this component will be institutionalized. This should be a primary focus during the second half of the project.
	Outcome 2: Moderately satisfactory	Reasonable progress has been made with respect to the activities under this component, including carrying out a study on domestic financial sector reform, initiating the development of a GIS tool to identify practicable RE sites, and capacitating local professionals in on-grid solar PV development. A stakeholder forum was held in September 2018 to deliberate the needs regarding environmental and social safeguard guidelines, but there has not been any specific work on development of the guidelines. The lessons learned report under Output 2.5 is designed to be developed in the last year of the project. With respect to Indicator 2.2 (investments on on-grid utility-scale RE projects), there has not been any on-grid utility-scale solar PV projects delivered in the country through midterm. Uncertainty regarding the institutionalization of the outputs under this component is also a concern.
	Outcome 3: Unsatisfactory	Component 3 is the investment part of the project, and the lack of progress is due to the delays in reaching financial close for the planned solar PV plant in Bauchi State; none of the 14 investments included in the PPAs signed in 2016 have gotten off the ground for the same reason. The barriers hindering private investment in the utility-scale RE sector in Nigeria that were present at project entry are still in place at midterm, and, in fact, the financial risks might have increased. Due primarily to the lack of solvency in the power sector, largely as a result of shortcomings in the privatization of the power generation and distribution services, the Federal Government of Nigeria is reluctant to enter into put-call option agreements (PCOAs), which are essentially sovereign guarantees for the private sector investments.
Project Implementation and Adaptive Management	Moderately satisfactory	<p>The project is being implemented under a national implementation modality, with the ECN functioning as the sole executing agency. The implementation modality outlined in the project document that involved having ECN, FMPW&H, FME and NERC acting as responsible parties for different project components, resulting in a general lack of ownership among these other institutional partners.</p> <p>There was an 11-month delay from the official start date, 28 June 2016 to the date when the inception workshop was held, on 31 May 2017. The reasons for the delay, as described in the 2018 PIR report and described in MTR interviews were the prolonged time required to recruit the PMU team (the project manager was recruited in January 2018), difficulties faced in recruitment of international consultants and transitions within government administration, particularly the GEF operational focal point office. The delay in commencing project implementation has adversely affected project efficiency, but the lack of progress towards achieving the project objective is largely due to the external factor of the IPPs not reaching financial close.</p> <p>The UNDP country office (CO) in Abuja has provided support to the project, including on strategic guidance, administrative issues, procurement support and financial reporting. And the UNDP-GEF RTA and UNDP senior energy finance specialist have provided advisory support to the project. It is noted that the UNDP CO staff, apart from providing financial expenditure reports, did not participate in the MTR process, including being absent during the opening meeting and debriefing, and unavailable for interview during the MTR mission and afterwards via Skype or telephone. UNDP CO staff were involved during the review of the MTR report.</p> <p>The project has done a good job in facilitating stakeholder engagement through convening several workshops and meetings. And, procurement of technical consultancies has been successful in recruiting qualified consultants and service providers. Managing the various technical inputs has been a challenge; it would be advisable to have a part-time chief technical advisor provide quality control and strategic guidance.</p> <p>In summary, the assessment of project implementation and adaptive management was diminished due to the extended delay in commencing project implementation, not pursuing a joint implementation modality, the limited participation of the UNDP CO in the MTR process and the deviation from the project design regarding allocation of GEF funds for off-grid solar systems for agro-industrial facilities without securing approval from the PSC and UNDP.</p>
Sustainability	Moderately unlikely	The financial risks identified at project development are still in place, and, might have increased in the past few years, due to the liquidity problems in the power sector. Even with the potential

Measure	MTR Rating	Achievement Description
		leveraging through the GCF program, the utility-scale solar PV investments still require governmental commitment, e.g., through PCOAs as a requisite of reaching financial close. There are significant socioeconomic considerations associated with the planned solar PV plant in Bauchi State, including security risks and resettlement of nearly 300 households. Mitigation plans have been drafted, but the likelihood of delays associated with these risks is high. Shortcomings with respect to institutional arrangements and governance are evident in the fact that actual available electricity generation capacity ranges between 4 and 5 GW with a gross installed capacity of 13 GW. At the project level, the lack of institutional ownership of project outputs further diminishes the prospect that results will be sustained after GEF funding ceases. Environmental sustainability is enhanced by the fact that an environmental and management plan (ESMP) has been developed for the solar PV plant in Bauchi State.

Summary of Conclusions

The underlying objective of the project continues to be relevant, as the Federal Government of Nigeria (FGN) remains committed to diversifying the power sector with increased RE inputs. Due to the current lack of liquidity in the power sector, stemming from some unfavorable outcomes of the 2013 privatization of electricity generation and distribution services, the government is significantly constrained in issuing guarantees for further private sector investment, and the 14 IPPs that signed PPAs in 2016 have yet to reach financial close. Some stakeholders feel that the recently approved GCF program (“Nigeria solar IPP support program”) will provide much needed leverage to enable the IPPs to reach financial close. Approved in February 2019, the GCF program includes USD 467 million of concessional financing and a debt replacement facility, aiming to deliver 400 MW to the national grid through 3-5 solar PV utility-scale investments.

The risk for further delays, however, remains high. Under the best case scenario, the IPP for the Bauchi State plant might reach financial close by the end of 2019, and following 12-15 months of construction, the installation would be commissioned in March 2021, three months before the scheduled close of the project. Not only is the prospect of reaching financial close uncertain, the issues associated with resettling nearly 300 households could require much longer time to sort out than envisaged. And, the incremental reasoning for the GEF funding under Component 3, which includes providing proof-of-concept field demonstration of interface electronics, automated PV panel cleaning mechanisms and sand abrasion proof coatings for PV panels for the planned 100-MW solar PV plant in Bauchi State, should be revalidated. There have been advances in solar PV technology that might render proof-of-concept demonstrations unnecessary, and there might be conflicts regarding the commercial terms the IPPs have negotiated with their suppliers.

In conclusion, it is imperative to reassess the project strategy, to determine if it is sensible to remain engaged on utility-scale solar PV or to reorient the focus, e.g., towards rooftop PV or embedded generation and interconnected mini-grids.

The project has made moderately satisfactory progress in completing the outputs under Components 1 and 2; however, institutional ownership of the outputs is uncertain. One reason for the unclear ownership is attributable to the fact that the project is not being jointly implemented as outlined in the project document. Apart from the ECN, the FMPW&H, the FME and the NERC were indicated as executing agencies (or as responsible parties). These institutions are members of the project steering committee (PSC) and have attended project-sponsored workshops, but they do not have direct implementation responsibilities. This is considered a significant shortcoming; the project implementation arrangements should also be reconsidered as the overall project strategy is reassessed.

Recommendations

The MTR recommendations outlined below in **Table 3** have been formulated with the aim of improving project effectiveness and enhancing the likelihood that project results will be sustained after GEF funding ceases.

Table 3: Recommendations table

No.	Recommendation	Responsibility
1.	Reassess the project strategy and redesign the project components accordingly. Three possible options are discussed in Section 4.2.1 of this MTR report and include: Option 1, remain focused on utility-scale solar PV and update the project strategy according to current circumstances; Option 2, reorient the project strategy towards rooftop PV (on-grid); and Option 3, reorient the project strategy towards embedded generation and interconnection mini-grids. The project results framework and allocation of funding across project components should be adjusted according to the updated or revised strategy. It is also recommended to develop a theory of change for the updated project strategy and reformulate the project results framework and an exit strategy in accordance with the causal pathways. A draft theory of change is included in this MTR report for consideration.	UNDP, PMU/ECN, PSC

No.	Recommendation	Responsibility
2.	Strengthen involvement of the FMPW&H and FME through a joint implementation approach. Implementation roles and responsibilities should be assigned to the FMPW&H and FME, and possibly other stakeholders, to strengthen involvement and ensure ownership of the processes.	UNDP, PSC
3.	Identify institutional roles and responsibilities for the project outputs and facilitate ownership of project results, through institutionalizing the project results. The institutional roles and responsibilities for each of the project outputs should be identified, and specific “champions” assigned in the relevant institutions to help facilitate institutionalization of project results. Project outputs include, but are not limited to technology action plans, MRV mechanism, GIS tool, environmental and social safeguard guidelines, financial sector reforms, etc.	PMU, PSC
4.	Provide technical advisory support to help ensure coherency of project results. A part-time chief technical advisor should be recruited to support the PMU in ensuring high quality of project outputs and to guide the project towards achieving the intended outcomes.	PMU, UNDP
5.	Streamline and clarify the role and responsibilities of the project steering committee. A terms of reference should be prepared for the project steering committee that includes identification of members and descriptions of roles and responsibilities. Stakeholders that are not members of the PSC should be encouraged to attend the PSC meetings as observers.	PSC, UNDP
6.	Develop and implement a communication and knowledge management strategy and action plan. A communication and knowledge management strategy and action plan should be developed in accordance with the updated or revised project strategy. An emphasis should be placed on proactively sharing knowledge generated by the project and information from the RE sector in general, as one of the derisking instruments to overcome the barrier of the lack of awareness and knowledge of the value of RE among decision-makers, consumers, end-users and local residents.	PMU, UNDP
7.	Improve coordination with other projects and programs An important part of reassessing the project strategy is to determine how the available GEF funds provide meaningful incremental support to the sector, considering that there are several other ongoing projects and programs underway and in the pipeline. Apart from updating the analysis of baseline activities and possibly identifying additional cofinancing partners, the project should implement an approach for maintaining close coordination with other projects and programs throughout the implementation phase. It would also be advisable to expand the level of sharing lessons learned and best practices among the portfolio of UNDP-GEF projects in the region.	PMU, UNDP
8.	Update the monitoring and evaluation (M&E) plan for the project. Concurrent with updating or revising the project results framework according to the updated or revised project strategy, an updated M&E plan should be developed and implemented for the project. The means for verifying each of the performance metrics in the results framework should be described, along with allocation of resources and responsibilities. The GEF climate change mitigation tracking tool should also be updated according to the revised strategy. And, as indicated in Section 3.3.4 of this MTR report, the GHG emission reductions achieved through the off-grid solar PV investments made in 2017 should be included in the midterm assessment of the tracking tool.	PMU, UNDP
9.	Strengthen management of project risks. Management of project risks should be strengthened, including more proactive involvement in mitigation of social and environmental risks associated with the utility-scale solar PV plant in Bauchi State. Project risks should also be reassessed according to the process of updating or revising the project strategy, and appropriate risk mitigation measures should be implemented accordingly.	PMU, UNDP
10.	Facilitate a decision from the PSC and UNDP that is retroactive in regard to the investment in off-grid solar PV systems in 2017. The use of GEF funds for investment in off-grid solar PV systems in 2017 should be reconciled through a decision by the PSC and UNDP that is effective retroactively.	PSC, UNDP
11.	Follow up on the progress of implementing the recommendations for achieving financial sector reform. It would be advisable to follow up on the recommendations made in the financial sector reform report under Output 2.1, identifying responsible entities for each of the recommendations and requesting progress feedback reports at each of the project steering committee meetings.	PMU, PSC

Abbreviations and Acronyms

Exchange Rate, NGN: USD:

At project start (28 June 2016):
282.000

At midterm review (28 March 2019):
358.664

AfDB	African Development Bank
APR	Annual Project/Progress Report
AWP	Annual Work Plan
BMZ	German Federal Ministry for Economic Cooperation and Development
CCM	Climate Change Mitigation
CDR	Combined Delivery Report
CO	(UNDP) Country Office
CPC	Consumer Protection Council
CPD	Country Programme Document (UNDP)
CSO	Civil Society Organization
CTF	Clean Technology Fund
DREI	Derisking Renewable Energy Investment (UNDP methodology)
ECN	Energy Commission of Nigeria
EE	Energy Efficiency
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
FGN	Federal Government of Nigeria
FMB&P	Federal Ministry of Budget and Planning
FME	Federal Ministry of Environment
FMF	Federal Ministry of Finance
FGN	Federal Government of Nigeria
FMP	Federal Ministry of Power – changed to Federal Ministry of Power Works & Housing (FMPW&H)
GCF	Green Climate Fund
GEF	Global Environment Facility
GHG	Greenhouse Gas
GIS	Geographic Information System
GIZ	<i>Deutsche Gesellschaft für Internationale Zusammenarbeit</i> (German Corporation for International Cooperation GmbH)
ICF	International Climate Fund
INDC	Intended Nationally Determined Contribution
IPP	Independent Power Producer
kWp	Kilowatt-peak
LEA	Lagos Energy Academy
M&E	Monitoring and Evaluation
MRV	Monitoring, Reporting and Verification
MTR	Midterm Review
MW	Megawatt
NAMA	Nationally Appropriate Mitigation Action
NBET	Nigerian Bulk Electricity Trading Limited
NERC	Nigerian Electricity Regulatory Commission
NESP	Nigerian Energy Support Programme
NGN	Nigerian Naira
NGO	Non-Governmental Organization
NIM	National Implementation Modality
NOA	National Orientation Agency
NPS	Nigerian Power Sector

Midterm Review Report, 2019

De-risking renewable energy NAMA for the Nigerian power sector

UNDP PIMS ID: 5243; GEF Project ID: 5345

NSCP	Nigeria Solar Capital Partners
PCOA	Put-Call Option Agreement
PIF	Project Identification Form (GEF)
PIR	Project Implementation Review
PMU	Project Management Unit
PPA	Power Purchase Agreement
PPG	Project Preparation Grant (GEF)
PRG	Partial Risk Guarantee
PSC	Project Steering Committee
PTFP	Presidential Task Force on Power
PV	Photovoltaic
RAP	Resettlement Action Plan
RE	Renewable Energy
RENAC	Renewables Academy AG
RTA	Regional Technical Advisor (UNDP)
SDG	Sustainable Development Goal
SMART	Specific, Measurable, Achievable, Relevant and Time-bound
STAP	Scientific and Technical Advisory Panel
tCO ₂ e	Tonnes carbon dioxide equivalent
TAP	Technology Action Plan
TCN	Transmission Company of Nigeria
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNSDPF	United Nations Sustainable Development Partnership Framework
USD	United States Dollar
WB	World Bank

1 Introduction

1.1 Purpose of the Review

The objective of the MTR was to gain an independent analysis of the progress mid-way through the project. The review focuses on project strategy, progress towards results, project implementation and adaptive management, and the likelihood that the envisaged global environmental benefits will be realized and whether the project results will be sustained after closure.

1.2 Scope and Methodology

The MTR was an evidence-based assessment, relying on feedback from individuals who have been involved in the design, implementation, and supervision of the project, and a review of available documents and findings made during field visits. The overall approach and methodology of the evaluation follows the guidelines outlined in the UNDP Guidance for Conducting midterm reviews of UNDP-supported, GEF-financed Projects¹.

A mission to Nigeria took place from 10-18 March 2019. The mission itinerary is compiled in **Annex 1**, and key project stakeholders interviewed for their feedback are listed in **Annex 2**.

The MTR Consultant completed a desk review of relevant sources of information, such as the project document, project progress reports, financial reports, and key project deliverables. A complete list of information reviewed is compiled in **Annex 3**.

As a data collection and analysis tool, an evaluation matrix (see **Annex 4**) was developed to guide the review process. Evidence gathered during the fact-finding phase of the MTR was cross-checked between as many sources as practicable, to validate the findings.

The PMU provided a self-assessment of progress towards results, using the project results framework template provided by the MTR Consultant in the MTR inception report. The project results framework was used as an evaluation tool, in assessing attainment of project objective and outcomes (see **Annex 5**).

Cofinancing details were provided by the PMU and cofinancing partners and are summarized into the cofinancing table compiled as **Annex 6** to the MTR report.

The MTR Consultant also reviewed the baseline and midterm assessments of the GEF CCM Tracking Tool provided by the PMU; the filled-in tracking tools are annexed in a separate file to this report.

The MTR Consultant summarized the initial findings and recommendations of the MTR at the end of the mission on 18 March 2019 in a debriefing held at the UNDP country office in Abuja.

1.3 Structure of the Report

The MTR report was prepared in accordance with the outline specified in the UNDP-GEF MTR guideline. The report starts out with a description of the project, indicating the duration, main stakeholders, and the immediate and development objectives. The findings of the evaluation are broken down into the following categories:

- Project Strategy
- Progress towards results
- Project implementation and adaptive management
- Sustainability

The report culminates with a summary of the conclusions reached and recommendations, formulated to enhance implementation during the final period of the project implementation timeframe.

1.4 Rating Scales

Consistent with the UNDP-GEF MTR guidelines, certain aspects of the project are rated, applying the rating scales outlined in **Annex 7**.

Progress towards results and project implementation and adaptive management are rated according to a 6-point scale, ranging from highly unsatisfactory to highly satisfactory. Sustainability is evaluated across four risk dimensions,

¹ Guidance for Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects, 2014, UNDP-GEF Directorate.

including financial risks, socio-economic risks, institutional framework and governance risks, and environmental risks. According to UNDP-GEF evaluation guidelines, all risk dimensions of sustainability are critical: i.e., the overall rating for sustainability cannot be higher than the lowest-rated dimension. Sustainability was rated according to a 4-point scale, including likely, moderately likely, moderately unlikely, and unlikely.

1.5 Ethics

The review was conducted in accordance with the UNEG Ethical Guidelines for Evaluators, and the MTR Consultant has signed the Evaluation Consultant Code of Conduct Agreement form (**Annex 8**). The MTR consultant ensures the anonymity and confidentiality of individuals who were interviewed and surveyed. In respect to the UN Declaration of Human Rights, results are presented in a manner that clearly respects stakeholders' dignity and self-worth.

1.6 Audit Trail

To document an "audit trail" of the evaluation process, review comments to the draft report will be compiled along with responses from the MTR Consultant and documented in an annex separate from the main report. Relevant modifications to the report will be incorporated into the final version of the MTR report.

1.7 Limitations

The review was carried out over the period of March-April 2019, including preparatory activities, field mission, desk review and completion of the report, according to the guidelines outlined in the terms of reference (**Annex 9**).

There were no limitations associated with language. Project documentation are in English and the official language in Nigeria is English. Considering no site activities have started at the proposed location of the solar PV plant in Bauchi state, the MTR mission did not include a visit to Bauchi State. The MTR consultant interviewed the permanent secretary of the Bauchi State Ministry of Environment by telephone. Skype interviews were held with a few other stakeholders who were unavailable to meet in person during the MTR field mission.

Overall, the MTR consultant concludes that the information obtained during the desk review and field mission were sufficiently representative to enable an evaluation of progress made during the first half of the project.

2 Project Description

2.1 Development Context

The project is consistent with the governmental plans and policies towards diversifying the energy mix in the country, increasing renewable energy generation and expanding electrification coverage. According to Nigeria's Intended Nationally Determined Contribution (INDC, Nov 2015), most rural communities remain off the grid and about 60% of the population lacks access to electricity. As outlined in the INDC, poorer households are paying a "poverty penalty" in order to meet their energy needs; they pay proportionally more for energy, spend more time acquiring fuels and suffer health impacts associated with poor fuel quality. And, women are disproportionately affected, particularly in rural communities. The current government policy Electricity Vision 30:30:30, aims for generation of 30 GW in 2030, with 30 per cent from renewable energy sources.

The project design was aligned with the 2014-2017 UNDP Country Programme Document (CPD), particularly Strategic Results 2 and 3, "Social capital and sustainable and equitable economic growth", and the expected outputs of promoting initiatives for access to renewable and rural energy and building capacity to develop, coordinate and monitor energy diversification policy and strategy for equitable energy access.

The project objective is complementary to the 2014-2017 UNDP Strategic Plan, specifically Outcome 1, "Growth and development are inclusive and sustainable, incorporating productive capacities that create employment and livelihoods for the poor and excluded", and Output 1.4, "Scaled up action on climate change adaptation and mitigation across sectors which is funded and implemented" and 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)".

2.2 Problems the Project Sought to Address

Nigeria is one of the 141 countries to either agree to the Copenhagen Accord (Decision 2/CP.15) or to be associated with it. The Federal Government of Nigeria (FGN) communicated its intention to be associated with the Accord on 21 May 2010 (see Annex 7.1) without submitting a list of Nationally Appropriate Mitigation Actions (NAMAs) to the UNFCCC Secretariat. NAMAs are typically implemented to incentivize mitigation on a long-term basis at a sector-policy level to reduce emissions permanently. It is also noted that Nigeria has not yet submitted any NAMAs to the NAMA Registry for financial support. Based on these considerations, the UNDP-GEF project was designed to support the Federal Government of Nigeria (FGN) to develop and implement the first NAMA in the country.

Nigeria is the largest oil producer in Africa, holds the largest natural gas reserves on the continent, and is among the world's top five exporters of liquefied natural gas (LNG). While Nigeria is a net exporter of oil and gas, the deficient state of its power sector is partly attributed to the supply deficiency of natural gas for electricity generation. For example, as pointed out in the situational analysis of the project document, in 2013, total on-grid generation was 29,629 GWh, of which thermal generation from gas was 79.4% and the remaining 20.6% from hydro. In 2013, only 46% of the total installed on-grid generation capacity of 10,915 MW was available. Nigeria's electricity grid faces many challenges, including insufficient grid-connected capacity to meet demand, inadequate infrastructure to make the country's abundant gas available for power generation, and an inefficient transmission and distribution system with limited coverage. In part for these reasons, an estimated 50% of the electrical energy consumed in the country is currently produced off-grid by diesel and gasoline generators of all shapes and sizes.

In order to achieve economic development goals, the country needs to be expanded installed power generation capacity. The vision relies heavily on the private sector to take an important role in the power market (generation, transmission and distribution). While power sector reforms are being implemented to favor private sector participation in the power market, significant risks (and underlying barriers) are hindering private investments in the Nigerian power sector, especially concerning renewable energy sources. Some of these barriers are described below in **Table 4**.

As part of the project development process, the UNDP Derisking Renewable Energy Investment (DREI) methodology was used to assess the potential benefits of investing in derisking measures in removing the barriers that are constraining uptake of utility-scale, on-grid RE development. In comparing the *business-as-usual* and *post-derisking* scenarios, the results clearly demonstrate how investing in public derisking measures creates significant direct economic savings in achieving Nigeria's utility-scale solar PV investment targets.

Table 4: Risk categories and underlying barriers considered for DREI analysis (Table 13 of the project document)

Risk Category	Generic Description	Underlying Barriers
Power Market Risk	Risk arising from limitations and uncertainties in the power market, and/or sub-optimal regulations to address these limitations and promote renewable energy markets	<ul style="list-style-type: none"> <i>Market outlook:</i> Lack of or uncertainties regarding Government renewable energy strategy and targets <i>Market access/price:</i> Sub-optimal energy market liberalisation; uncertainties regarding competitive and price outlook; limitations in PPA and/or PPA process <i>Market distortions:</i> high fossil fuel subsidies
Permits Risk	Risk arising from the public sector's inability to efficiently and transparently administer renewable energy-related licensing and permits	<ul style="list-style-type: none"> Labour-intensive, complex processes and long time-frames for obtaining licences and permits (generation, EIAs, land title) for renewable energy projects High levels of corruption. No clear recourse mechanisms
Social Acceptance Risk	Risks arising from lack of awareness and resistance to wind energy in communities, end-users, and other stakeholders such as unions	<ul style="list-style-type: none"> Lack of awareness of renewable energy amongst consumers, end-users, and local residents
Resource & Technology Risk	Risks arising from use of the renewable energy resource and technology (resource assessment; construction and operational use; hardware purchase and manufacturing)	<ul style="list-style-type: none"> <i>For resource assessment and supply:</i> inaccuracies in early-stage assessment of renewable energy resource <i>For planning, construction, operations and maintenance:</i> uncertainties related to securing land; sub-optimal plant design; lack of local firms and skills. limitations in civil infrastructure (roads etc.) <i>For the purchase and, if applicable, local manufacture of hardware:</i> purchasers' lack of information on quality, reliability and cost of hardware; lack of local industrial presence and experience with hardware
Grid/Transmission Risk	Risks arising from limitations in grid management and transmission infrastructure in Nigeria	<ul style="list-style-type: none"> <i>Grid code and management:</i> limited experience or sub-optimal operational track-record of grid operator with variable sources (e.g. grid management and stability). Lack of standards for the integration of variable renewable energy sources into the grid <i>Transmission infrastructure:</i> inadequate or antiquated grid infrastructure, including lack of transmission lines from the renewable energy source to load centres; uncertainties for construction of new transmission infrastructure
Counterparty Risk	Risks arising from the utility's poor credit quality and an IPP's reliance on payments	<ul style="list-style-type: none"> Limitations in the utility's (electricity purchaser) credit quality, corporate governance, management and operational track-record or outlook; unfavourable policies regarding utility's cost-recovery arrangements
Financial Sector Risk	Risks arising from the lack of information and track record on financial aspects of solar PV, and general scarcity of investor capital (debt and equity), in Nigeria	<ul style="list-style-type: none"> <i>Capital scarcity:</i> Limited availability of local or international capital (equity/and or debt) for green infrastructure due to, for example: under-developed local financial sector; policy bias against investors in green energy <i>Limited experience with renewable energy:</i> Lack of information, assessment skills and track-record for renewable energy projects amongst investor community; lack of network effects (investors, investment opportunities) found in established markets; lack of familiarity with project finance structures
Political Risk	Risks arising from country-specific governance, social and legal characteristics	<ul style="list-style-type: none"> Uncertainty or impediments due to war, terrorism, and/or civil disturbance Uncertainty due to high political instability; poor governance; poor rule of law and institutions Uncertainty or impediments due to government policy (currency restrictions, corporate taxes)
Currency/Macro-economic Risk	Risks arising from the broader macroeconomic environment and market dynamics	<ul style="list-style-type: none"> Uncertainty due to volatile local currency; unfavourable currency exchange rate movements Uncertainty around inflation, interest rate outlook due to an unstable macroeconomic environment

2.3 Project Description and Strategy

Project Strategy:

The objective of the UNDP-GEF project is to support the Federal Government of Nigeria (FGN) in the development and implementation of a Nationally Appropriate Mitigation Action (NAMA) in the energy sector, namely a RE NAMA for the Nigerian Power Sector (NPS). The project is expected to contribute towards the reduction of greenhouse gas (GHGs) emissions related to the renewable electricity targets established voluntarily by the Government of Nigeria.

The rationale for selecting the power sector as the focus of the project was twofold. Firstly, the energy sector is the largest emitter of GHGs in Nigeria, and secondly, the deficient state of the power sector has been identified as a primary

constraint for achieving the main objectives of the government's energy policy. Renewable energy development in the power sector is seen as a means for energy mix diversification and increasing energy security, improving the reliability of grid power, and delivering job creation and global environmental benefits simultaneously.

The project aims to develop a single and coherent Nigerian power sector RE NAMA. Solar PV was the chosen technology for demonstrating the development of the NAMA. This approach was intended to serve to market the NAMA as an integrated package to attract financial (international, bilateral, public and private sector) support.

The project was designed to support both the design and implementation of a RE NAMA in the NPS, applying relevant NAMA methodologies and guidance for identifying and designing technology-specific (in this case solar PV) NAMA components, and piloting the implementation of the NAMA activities around a 100 MW private sector solar PV plant in Bauchi State.

To achieve this, the project has been divided into three main components:

Component 1: Design and development of a power sector renewable energy NAMA supported by DREI analysis

Expected outcome (Outcome 1): A coherent derisking approach is established for catalyzing private sector investment to implement renewable energy power sector NAMA.

Component 2: Policy and institutional framework for private investment in on-grid renewable power generation

Expected outcome (Outcome 2): Public instruments are developed and implemented for derisking the national policy environment

Component 3: First commercial on-grid RE project

Expected outcome (Outcome 3): The Nigeria Power Sector RE NAMA is operationalised by demonstrating a proof-of-concept grid-connected solar PV plant with quantified GHG emission reductions

The derisking instruments designed and implemented under Components 1 and 2 were envisaged to serve to reduce the financing costs of renewable energy in Nigeria, thereby reducing the unit cost (cost per ton of CO₂) of GHG abatement. This would provide more incentive for bilateral donors to support the RE NAMA (designed with robust MRV systems and a sound derisking framework for designing incentives).

Baseline project:

Apart from the two technical assistance components, the project also encompasses an investment component to support a baseline investment project in Bauchi State to enhance its mitigation potential and for inclusion in the RE NAMA. GEF financing was envisaged to be used incrementally to create the appropriate policy and capacity environment in which the identified (and enhanced) baseline project can be embedded, thereby enhancing its probability of successful implementation; establishing the framework for a programmatic approach to the RE NAMA in the NPS; and supporting the pre-conditions for replication in Nigeria and in the broader West African region.

The baseline project is a planned 100 MW on-grid solar PV plant that is being developed by Nigeria Solar Capital Partners (NSCP) in Bauchi State, located in the northeast part of the country. At the time of project development, the NSCP project was considered the most advanced on-grid solar PV project being developed in Nigeria, and it had reached the stage of power purchase agreement (PPA) negotiations. The project was also carrying out social and environmental impact assessments using the due diligence processes of multilateral institutions. The project is also benefiting from the technical and financial assistance of the World Bank (WB) and the African Development Bank (AfDB) under the Clean Technology Fund (CTF).

The planned solar PV plant in Bauchi State is designed to occupy a 200-ha area and consist of approximately 340,000 solar panels. Ancillary components of the baseline project including an onsite substation, and 18-km 330-kV overhead transmission line to interconnect the solar energy plant to the national grid, internal access roads, a guard house, office and control center. The proposed layout of the plant is shown below on **Figure 1**.

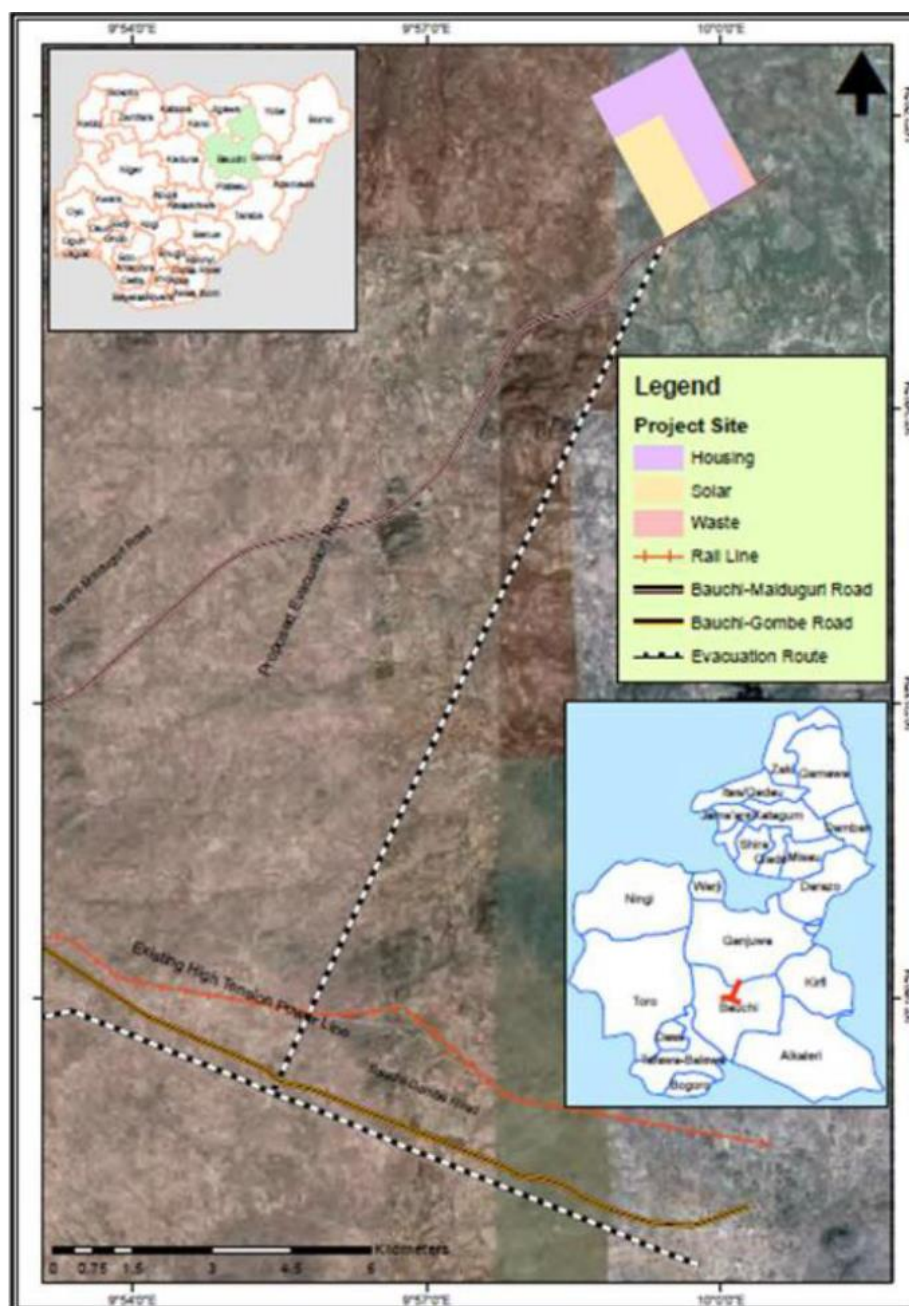


Figure 1: Location map of baseline project in Bauchi State (taken from project document)

2.4 Implementation Arrangements

The project is being implemented under a national implementation modality. According to the project document, the Federal Ministry of Environment (FME) is the lead implementing partner (executing agency). The project design further explains that the FME would appoint a senior officer as a Project Director to: i) coordinate the project activities with the activities of other Government entities; and ii) certify that the expenditures are in line with the approved budgets and work-plans. And, the project board (referred to in practice as the project steering committee) was envisaged to be chaired by the FME. In actual practice, the Energy Commission of Nigeria (ECN) is functioning as the executing agency and the Project Director is an official from the ECN.

As the GEF implementation agency, UNDP ensures that the project receives technical and managerial support, as needed, from the UNDP Country Office, and from the UNDP-GEF Regional Technical Advisor. UNDP also performs the project assurance function. UNDP is also accountable for the disbursement of funds and the achievement of the project goals, in accordance with the approved work plan.

The role of project steering committee (PSC), as described in the project document is to guide project implementation and to support the project in achieving its listed outputs and outcomes. The PSC was envisaged to be chaired by the

Federal Ministry of Environment and to comprise the Federal Ministry of Power (later changed to Ministry of Power, Works and Housing), the Federal Ministry of Finance, the Nigerian Electricity Regulatory Commission, the Energy Commission of Nigeria, the Presidential Task Force on Power (which has since been disbanded), the Lagos Energy Academy, and a representative of the private sector (Nigeria Solar Capital Partners), representative of CSO/NGO (e.g., involved in the development of the 100 MW solar PV project in Bauchi State), as well as the Project Manager. The Project Manager is a non-voting member in the PSC meetings and is responsible for compiling a summary report of the discussions and conclusions of each meeting.

The project organization chart is presented below in **Figure 2**.

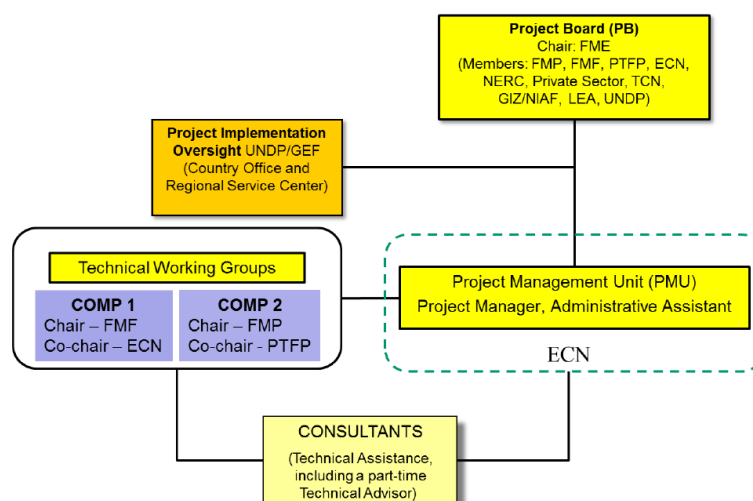


Figure 2: Project organizational chart (taken from Figure 17 of the project document)

2.5 Project Timing and Milestones

Project Milestones:

Received by GEF:	21 March 2013
Preparation Grant Approved (PIF approved):	12 September 2013
Project Approved for Implementation:	04 April 2016
Start Date (project document signed by government of Nigeria):	28 June 2016
Project Inception Workshop:	31 May 2017
Project Manager hired	January 2018
Midterm Review:	March-April 2019
Closing Date (Planned):	28 June 2021

The project identification form (PIF) was approved on 12 September 2013, and following the project preparation phase, the project obtained approval for implementation by the GEF CEO on 04 April 2016. The official start date of the project is 28 June 2016, the date when the Government of Nigeria signed the project document. The project inception workshop was held 11 months later, on 31 May 2017. The reasons for the delay, as described in the 2018 PIR report and described in MTR interviews were the prolonged time required to recruit the PMU team (the project manager was recruited in January 2018), difficulties faced in recruitment of international consultants and transitions within government administration, particularly the GEF operational focal point office. It is noted that the project director and ECN's technical officers were in place at project entry to initiate project implementation.

The date of midterm review (MTR) was March-April 2019, which represents halfway through the project's implementation phase, considering 28 June 2016 as the official start date. Implementation has effectively been carried out for approximately 1-1/2 years.

The planned closing date for the 5-year project is 28 June 2021.

2.6 Main Stakeholders

The main stakeholders for the project and their expected roles and responsibilities, as outlined in the stakeholder analysis in the project document, are listed below in **Table 5**.

Table 5: Project stakeholders (taken from Table 12 of the project document)

Stakeholder	Roles and responsibilities (project preparation & implementation)
Energy Commission of Nigeria (ECN)	The ECN has the statutory mandate for strategic planning and coordination of national policies in the field of energy. ECN has coordinated stakeholder consultations during preparation of the project. During the implementation phase, ECN will be the co-chair of the Technical Working Group (TWG) for Component 1 of the project. The ECN will also house the Project Management Unit (PMU).
Federal Ministry of Power, Works & Housing (FMPW&H)	The key function of the Ministry is to develop and facilitate the implementation of policies for the provision of adequate and reliable power supply in the country. In this capacity, the FMP was consulted during the formulation of the project. The FMP will chair the TWG for Component 2 of the project. The FMP will also be a direct beneficiary of the project through the development of geospatially referenced practicable locations for siting various types of on-grid renewable energy projects.
Nigerian Electricity Regulatory Commission (NERC)	NERC is an independent regulatory agency mandated to regulate and monitor the Nigerian power sector. Of direct relevance to NERC is the DREI analysis that can be used to guide the revision of MYTO II (equivalent of feed-in-tariffs in Nigeria) using a risk-adjusted approach. The DREI analyses can complement the technical assistance that the NERC is getting from GIZ under the NESP. This provides an opportunity for the UNDP-GEF project to collaborate with the GIZ and NERC. NERC will be invited to join the TWG for Component 2 and the Project Board.
Federal Ministry of Environment (FME)	The GEF Operational Focal Point and the DNA are hosted within the Ministry of Environment. The former was involved during the PIF and project preparation phases and will continue his involvement during project implementation. As the coordinator for developing the Nigeria NAMA strategy and action plan, the FME was closely involved in the formulation of the UNDP-GEF project. The FME will have a central role as chair of the Project Board (PB), and hence have the responsibility to seek high level political support for the project during implementation. The FME will also be a beneficiary of the project through the output related to the development of guidelines for social and environmental screening of RE projects so that the national EIA is aligned with international benchmarks.
Private sector – Nigeria Solar Capital Partners (NSCP)	Because of the prevailing barriers and risks, there is currently limited private sector investment in renewable energies in Nigeria. The most prominent solar PV private developer to date – i.e. NSCP - has been heavily involved in preparation of the UNDP-GEF project. Since NSCP is also the project owner of the 100 MW baseline solar PV project in Bauchi State, it will continue to be a key stakeholder throughout project implementation. Further, NSCP will be a member of the Project Board. The DREI methodology, which has been used in the preparation of the project, and will be used in Component 1 to assist the NAMA preparation, involves active outreach to the private sector to solicit its quantitative feedback on the barriers and investment risks to renewable energy in Nigeria. The DREI analysis performed for this Project Document involved structured interviews with 8 private sector investors, both domestic and international.
Federal Ministry of Finance (FMF)	The FMF was consulted during project formulation. It will chair the TWG for Component 1 and it will be a member of the PB. The FMF will be a direct beneficiary of the project under Component 1 that seeks to identify and propose financial derisking instruments to attract private sector investments in renewable energies, and in particular solar energy. The FMF will be closely consulted during the project implementation to identify the appropriate financial sector reforms that may be required in Nigeria in order to unlock low-cost public finance.
Presidential Task Force on Power (PTFP)	The PTFP was established in 2010 to drive the implementation of the reform of Nigeria's power sector. The role of the PTFP is to co-ordinate the activities of the various agencies charged with ensuring the removal of legal and regulatory obstacles to private sector investment in the power industry. It also has the mandate to monitor the planning and execution of various short-term projects in generation, transmission, distribution and fuel-to-power that are critical to meeting the stated service delivery targets of the power sector roadmap. In these capacities, the PTFP will co-chair the TWG for Component 2 of the project. Given its mandate, the PTFP will also provide political support for the UNDP-GEF project. The chairperson (or delegate) of the PTFP will be a member of the PB. Note: the PTFP has since been disbanded.
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)	GIZ has been consulted throughout all the stages of project design and conceptualization, specifically – but not exclusively – in regard to the projects discussed in Section 1.3.2. Since GIZ is working in close collaboration with several national partners, including FMP, NERC and local training institutions, seamless coordination with projects implemented by GIZ will be ensured. Further, lessons-learned from the GIZ projects will be drawn upon when implementing the UNDP-GEF project. GIZ will be invited to be a member of the PB.
Lagos Energy Academy (LEA)	The LEA was consulted during the project formulation, and it was identified as a reliable partner for providing applied trainings for technicians from the private sector across the entire solar PV value chain. Through seed funding from the Lagos State Government and DFID, the LEA has put in place state-of-the-art training facilities, including testing laboratories and field operation of a solar PV array. The UNDP-GEF project will capitalize on these initial investments to develop new training courses and to complement existing equipment. The LEA will be invited to form part of the PB and as a member of the WG for Component 2.

3 Findings

3.1 Project Strategy

3.1.1 Project Design

The project was approved under the GEF-5 replenishment cycle and aligned to Objective 3 of the GEF-5 climate change focal area strategy and the following two outcomes:

Objective 3 (CCM-3): Promote investment in renewable energy technologies

Expected Outcome: Favorable policy and regulatory environment created for renewable energy investments

Expected Outcome: Investment in renewable energy technologies increased

As confirmed through interviews held during the MTR mission, there was considerable optimism in the country at the time when the project was being developed, that utility-scale, on-grid RE private sector investments would be realized. Nigeria Solar Capital Partners was reportedly the most advanced among the IPPs and they had secured financing from the World Bank and the African Development Bank. Identifying this investment as the target for the first power sector NAMA in Nigeria was, therefore, understandable. Focusing on a single IPP, however, might not have been the best approach. It might have been more advisable to have worked with the first IPP to obtain financial close.

Considering the large size of Nigeria and the high potential impacts associated with deploying utility-scale renewable energy investments in the country, there has been significant donor support. Several of the review comments to the project design were associated with potential duplication among other donors, including the Nigerian Energy Support Programme (NESP), funded by the European Union and the German Federal Ministry for Economic Cooperation and Development (BMZ) and implemented by GIZ. The project design was reworked from the concept presented in the PIF to address these concerns. In fact, according to MTR interviews, the on-grid components of the NESP were later reworked due to the blockage with regard to the IPPs achieving financial close.

The project design was informed by the DREI analysis carried out during the PPG phase in broad stakeholder consultation. GEF funding was allocated under Components 1 and 2 to strengthen the enabling environment, i.e., derisking investments into utility-scale RE. The design does not articulate a clear pathway for advancing the policy and financial derisking instruments into governmental or financial sector reforms. Such policy level reforms require longer time periods than the 5-year project implementation phase.

Institutional ownership of the project is unclear. The project document implies that the project would be essentially jointly implemented by the Federal Ministry of Environment (FME), the Federal Ministry of Power, Works and Housing (FMPW&H) and the Energy Commission of Nigeria (ECN). In fact, the ECN is the lead implementing partner and the FME and FMPW&H do not have direct implementation roles. Based on their institutional mandates, it seems that the FMPW&H would have been better suited to lead the implementation of the project.

The added value elements designed under Component 3 include demonstrating proof-of-concept application of interface electronics to match the voltage of renewable energy to that of the national grid, using automated robotic-arm driven cleaning mechanisms on the PV panels, and deploying anti-abrasive coatings to combat the effects of damaging sand blasting in the desert environment of northern Nigeria.

There is clearly an important value in interface electronics, including for the planned solar PV plant in Bauchi State, where 18 km transmission line will be constructed to connect to the national grid. It is unclear what proportion of the required interface electronics are covered through the allocated GEF funds. USD 2,116,400 were allocated for equipment (Atlas 71600) under Component 3, but this figure includes the interface electronics, the automated cleaning mechanism and the anti-abrasive coatings. There is no detailed breakdown provided in the project document for this line item.

It is also unclear whether commercial risks associated with some of the proposed proof-of-concept demonstrations were fully vetted. For example, would there be liabilities regarding possible damage (e.g., scratching) caused by the automated robotic cleaning mechanisms. Also, according to the proposed flow of funds outlined in the project document, the construction of the solar PV plant in Bauchi State was envisaged to happen during the first two years of the 5-year project. In this case, does it make sense to demonstrate the utility of anti-abrasive coatings, if the panels had already been delivered.

The project design does not include a theory of change. For the purposes of the midterm review and to support a possible redesign of the project, the MTR Consultant prepared a draft theory of change for consideration (**Figure 3**).

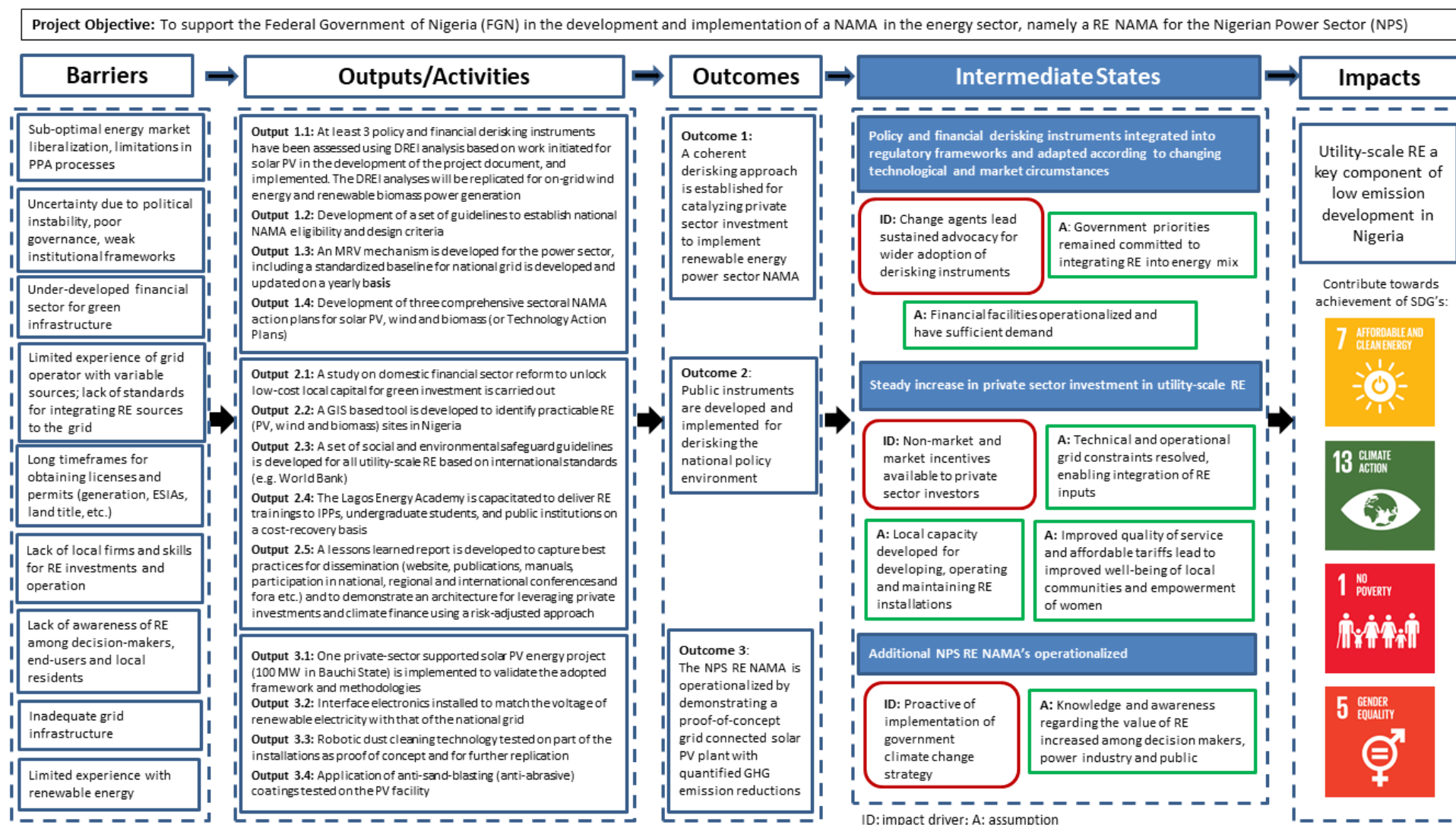


Figure 3: Draft theory of change

3.1.2 Results Framework

As part of this midterm review, the project results framework for the project was assessed against “SMART” criteria, to evaluate whether the indicators and targets were sufficiently specific, measurable, achievable, relevant, and time-bound. With respect to the time-bound criterion, all targets are assumed compliant, as they are set as end-of-project performance metrics.

Project Objective:

There are three indicators at the project objective level, as described below in **Table 6**.

Table 6: SMART analysis of project results framework (project objective)

Indicator	Baseline	End-of-Project target	MTR SMART analysis				
			S	M	A	R	T
Objective: To support the Federal Government of Nigeria (FGN) in the development and implementation of a NAMA in the energy sector, namely a RE NAMA for the Nigerian Power Sector (NPS)							
A. A NAMA developed for the Nigerian power sector (NPS)	No NAMA for the energy sector	A NAMA developed for the NPS and submitted for registration with the UNFCCC NAMA Registry	Y	Y	Y	Y	Y
B. Quantity of renewable electricity generated by on-grid baseline projects (MWh/year)	No MRV system for monitoring GHG emission reductions in the energy sector	262 GWh/yr is generated by 100 MW PV plant in Bauchi State	Y	Y	?	Y	Y
C. Quantity of direct GHG emissions resulting from the baseline projects and power sector NAMA (tCO ₂ /year)	Proposed 100 MW PV plant in Bauchi State becomes operational but with deficiencies (e.g. significant policy and financial risks)	Emissions reductions: • Total direct emission reductions of 452,000 tCO ₂ between 2017 and 2020	Y	Y	?	Y	Y
SMART: Specific, Measurable, Achievable, Relevant, Time-Bound Green: SMART criteria compliant; Yellow: questionably compliant with SMART criteria; Red: not compliant with SMART criteria							

Objective Indicator A represents the development of a NAMA for the Nigerian power sector and submittal for registration with the UNFCCC NAMA Registry. This indicator is specific, measurable, certainly relevant and, at the time of project development, considered achievable. Indicators B and C are both reflecting the aim of operating the planned 100 MW solar PV plant in Bauchi State and the associated GHG emissions avoided. The developer has estimated that construction of the plant would take 12-15 months following financial close. This timeframe would be reasonable in a more mature market, where on-grid RE has been operating for some time, but it appears overly optimistic as the first utility-scale solar PV in Nigeria. Moreover, nearly 300 households require resettlement and there is a risk that the process of resettling these families would extend beyond the agreed 3-month notice period.

Component 1: Design and development of a power sector renewable energy NAMA supported by DREI analysis

There is one outcome designed for Component 1, focused on establishing a derisking approach for catalyzing private sector investment in implementation of RE power sector NAMA. Three indicators have been established for assessing the achievement of this outcome, as described below in **Table 7**.

Table 7: SMART analysis of project results framework (Outcome 1)

Indicator	Baseline	End-of-Project target	MTR SMART analysis				
			S	M	A	R	T
Outcome 1: A coherent derisking approach is established for catalyzing private sector investment to implement renewable energy power sector NAMA							
1.1. Number of policy and financial derisking instruments designed using DREI analysis and implemented	No methodology is used to quantify risks that hinder investments in RE, and to develop policy and financial derisking instruments to promote large-scale private investments.	At least 3 policy and financial derisking instruments have been assessed using DREI analysis based on work initiated in the development of the project document	?	Y	Y	?	Y
1.2. Number of national guidelines	No technology action plans for promoting RE projects. Social and environmental safeguards for RE projects do not meet international standards.	3 TAPs developed by the end of Year 3	?	Y	Y	?	Y
1.3. Standardised baseline for calculating GHG emission reduction for on-grid RE	No baseline exists to calculate emission reductions for grid connected RE.	An MRV mechanism is developed for the power sector, including a standardized baseline for national grid developed in Year 1 and updated on a yearly basis	?	Y	Y	Y	Y
SMART: Specific, Measurable, Achievable, Relevant, Time-Bound Green: SMART criteria compliant; Yellow: questionably compliant with SMART criteria; Red: not compliant with SMART criteria							

The end target for Indicator 1.1 is the assessment of 3 policy and financial derisking instruments. Assessment of derisking instruments is more of an output under this component. It would have been advisable to formulate a performance metric that reflects how the results of the assessments would be implemented or otherwise taken up. Similarly, for Indicator 1.2, development of technology action plans (TAPs) is an output, not necessarily a measure of how the envisaged outcome of establishing a derisking approach can be evaluated. Endorsement of the TAPs, or rather operationalization of the plans would be more appropriate outcome level target.

For Indicator 1.3, the meaning of “developing” an MRV mechanism is not sufficiently specific. Development and implementation of an MRV mechanism would reflect a higher level of ownership of the process.

Component 2: Policy and institutional framework for private investment in on-grid renewable power generation

Under Outcome 2, public instruments are envisaged to be developed and implemented for derisking the national policy environment. Achievement of this outcome is based on two indicators, with five sub-targets set for Indicator 2.1 (see Table 8).

Table 8: SMART analysis of project results framework (Outcome 2)

Indicator	Baseline	End-of-Project target	MTR SMART analysis				
			S	M	A	R	T
Outcome 2: Public instruments are developed and implemented for derisking the national policy environment							
2.1. Number of public instruments developed and implemented (e.g. trainings delivered to IPPs, RE resources assessments, environmental and social safeguards, RE IPPs benefiting from trainings)	Limited availability of local capital because of the risk perception of the financial sector	A study on domestic financial sector reform to unlock low-cost local capital for green investment is carried out	Y	Y	Y	?	Y
	No GIS-based tool to provide the practicable RE potential is available	A GIS based tool is developed to identify practicable RE (PV, wind and biomass) sites in Nigeria	Y	Y	?	?	Y
	Lack of internationally-benchmarked social and environmental safeguards	A set of social and environmental safeguard guidelines is developed for all utility-scale RE by the end of Year 1 based on international standards	Y	Y	Y	?	Y
	Limited capacity in public and private institutions to plan, implement, monitor and evaluate RE projects	The Lagos Energy Academy are capacitated to deliver RE trainings to IPPs, undergraduate students, and public institutions on a cost-recovery basis	Y	Y	Y	Y	Y
	Not indicated	A lessons learned report is developed to captured best practices for dissemination (Year 5)	Y	Y	Y	?	Y
2.2. Investments in on-grid utility scale RE projects	Not indicated	Not indicated	N	N	?	Y	Y
SMART: Specific, Measurable, Achievable, Relevant, Time-Bound Green: SMART criteria compliant; Yellow: questionably compliant with SMART criteria; Red: not compliant with SMART criteria							

The performance metrics under Indicator 2.1 are generally focused on development of studies, tools and guidelines, and there is limited focus on implementation. For example, the intended use of the study on domestic financial reform is unclear. Developing a GIS based tool for identifying practicable RE sites in Nigeria is an ambitious undertaking, rendering the achievability questionable. Establishing an end target that measures how such a GIS tool is being used, e.g., number of visits to an online version of the tool, or application of the tool by private sector investors, might have been a better measure of achievement of this outcome. Developing social and environmental safeguard guidelines for utility-scale RE is relevant; however, the operationalization of these guidelines is not reflected in the end target. For instance, obtaining minister level endorsement of the guidelines would signify a degree on institutionalization.

With regard to the end target on developing a report on lessons learned in Year 5, this would serve as a useful compendium of best practices. But the timing of having the report produced in the final year of the project's implementation phase does not provide much opportunity for timely exchange of experiences in the rapidly changing power sector landscape. It would have been advisable to design a more proactive knowledge management strategy that promotes regular sharing of lessons learned among the stakeholder community.

There was no baseline or end target set for Indicator 2.2, regarding investments in on-grid utility-scale RE projects.

Component 3: First commercial on-grid RE project

Outcome 3 is focused on the operationalization of the first commercial on-grid RE project in Nigeria, the planned 100-MW solar PV plant in Bauchi State. Two indicators were established for measuring the achievement of demonstrating a proof-of-concept grid connected solar PV plant with quantified GHG emission reductions (see Table 9).

Table 9: SMART analysis of project results framework (Outcome 3)

Indicator	Baseline	End-of-Project target	MTR SMART analysis				
			S	M	A	R	T
Outcome 3: The NPS RE NAMA is operationalised by demonstrating a proof-of-concept grid connected solar PV plant with quantified GHG emission reductions							
3.1. Emission reductions from grid-connected PV power	Baseline project implemented with identified deficiencies	113,150 tCO _{2e} /year from 100 MW PV plant in Bauchi State (452,000 tCO _{2e} between 2017 and 2020	Y	Y	?	?	Y
3.2. Number of households benefiting from electricity generated by PV plants (households/year) ²	No MRV system for NPS NAMA	295,000 households benefiting from PV by the end of the project.	Y	Y	?	?	Y
SMART: Specific, Measurable, Achievable, Relevant, Time-Bound Green: SMART criteria compliant; Yellow: questionably compliant with SMART criteria; Red: not compliant with SMART criteria							

Indicator 3.1 is essentially the same objective level Indicator C, and for the same reasons as described above, there are questions on whether the full 100-MW plant can be fully operationalized during the project's implementation phase. Similarly, regarding Indicator 3.2, the number of households benefitting from the on-grid PV might not be achievable if the full 100-MW is not installed by the end of the project.

The two indicators under Outcome 3 do not capture the added-value of the GEF funds earmarked under Component 3, specifically for demonstrating proof-of-concept for interface electronics, automated cleaning mechanisms and sand abrasion proof coatings. It would have been more relevant to formulate a performance metric for the incremental reasoning of the GEF funding towards this capital investment.

3.1.3 Gender Mainstreaming and Social Inclusion Analysis

The UNDP social and environmental screening process (SESP) was carried out as part of the project preparation phase (PPG), and the results annexed to the project document. The SESP concluded that the project is rated as HIGH risk, based on two aspects: (1) security, regarding with the political instability in the north of Nigeria; and (2) resettlement of project affected persons. Four risks, each associated with the construction phase of the solar PV plant, were characterized as MODERATE: risks to habitats; risks to community health & safety; risks to cultural heritage; and risks of pollution.

The SESP describes what management measures are expected to be taken in response to the identified risks. With regard to the security risks, the developer is reportedly working with the government in securing the site, including engaging military personnel trained in anti-terrorism protocols. The developer had also commissioned several studies associated with the investment, including a resettlement action plan. As recorded in the SESP, 30 households were identified as requiring resettlement. The revised resettlement action plan, dated June 2017, indicates more extensive resettlement requirements, with 297 households identified.

A gender analysis and action plan were not made during the PPG phase, and the project results framework is not gender-specific. During the GEF-5 replenishment cycle, UNDP policy required gender analyses and action plans for projects having identified gender risks. There were no gender-related risks identified in the SESP; however, it was noted that the resettlement would focus on women, even though the communities in Bauchi State tend to be patriarchal. And, the lack of electricity in rural areas affects women disproportionately, e.g., time required for gathering fuelwood, impacts of wood-fired cookers, etc.

The 2018 project implementation review (PIR) report indicates that a gender analysis and action plan will be commissioned, to "provide a holistic road map to guide implementation for the entire duration of the project". At the time of the midterm review, in March 2019, procurement of a gender specialist was announced on the UNDP website. Earlier attempts to recruit a qualified gender specialist were reportedly unsuccessful.

² The targets are based on average electricity consumption of approximately 879 kWh/household in 2011 calculated using the following data: (1) population = 164,728,579 persons (Annual Abstract of Statistics, 2012); (2) average number of persons per household = 5.9 - <http://www.kwarastate.gov.ng/statistics/population/householdsizeandcharacteristics.php>; and (3) per capita electricity consumption = 149 kWh/person (World Development Indicators, 2014)

3.2 Progress towards Results

3.2.1 Progress towards Outcomes Analysis

Objective: To support the Federal Government of Nigeria (FGN) in the development and implementation of a NAMA in the energy sector, namely a RE NAMA for the Nigerian Power Sector (NPS)	
Progress towards achieving the project objective is rated as:	Unsatisfactory

Progress towards achievement of the project objective is rated as **unsatisfactory**, as summarized below in **Table 10**.

Table 10: Progress towards results, project objective

Indicator	Baseline	Midterm status	End-of-Project target	MTR Assessment
Date:	2015	Mar 2019	June 2021	
A. A NAMA developed for the Nigerian power sector (NPS)	No NAMA for the energy sector	NAMA not yet registered for the energy sector	A NAMA developed for the NPS and submitted for registration with the UNFCCC NAMA Registry	Not on target
B. Quantity of renewable electricity generated by on-grid baseline projects (MWh/year)	No MRV system for monitoring GHG emission reductions in the energy sector	PV plant in Bauchi delayed	262 GWh/yr is generated by 100 MW PV plant in Bauchi State	Not on target
C. Quantity of direct GHG emissions resulting from the baseline projects and power sector NAMA (tCO ₂ /year)	Proposed 100 MW PV plant in Bauchi State becomes operational but with deficiencies (e.g. significant policy and financial risks)	PV plant in Bauchi delayed	Emissions reductions: • Total direct emission reductions of 452,000 tCO ₂ between 2017 and 2020	Not on target

The delay in starting the implementation of the project has had an adverse effect on project efficiency, but the underlying constraint is associated with the blockage in the RE sector. The IPP for the Bauchi State solar PV plant and other IPPs that signed PPAs in 2016 have not reached financial close as of March 2019. The timeline outlined in the project document envisaged the investment in Bauchi State would occur in Years 1 and 2. The objective level performance metrics are predicated on the development and operation of this utility-scale solar PV plant.

Component 1: Design and development of a power sector renewable energy NAMA supported by DREI analysis

Outcome 1: A coherent derisking approach is established for catalyzing private sector investment to implement renewable energy power sector NAMA	
Progress towards achieving Outcome 1 is rated as:	Moderately Satisfactory

Progress towards achievement of the Outcome 1 is rated as **moderately satisfactory**, as outlined below in **Table 11**.

Table 11: Progress towards results, Outcome 1

Indicator	Baseline	Midterm status	End-of-Project target	MTR Assessment
Date:	2015	Feb 2019	Jun 2021	
1.1. Number of policy and financial derisking instruments designed using DREI analysis and implemented	No methodology is used to quantify risks that hinder investments in RE, and to develop policy and financial derisking instruments to promote large-scale private investments.	DREI analyses not yet started. Should reassess the utility of DREI analyses on separate policy and financial instruments	At least 3 policy and financial derisking instruments have been assessed using DREI analysis based on work initiated in the development of the project document	Not on target
1.2. Number of national guidelines	No technology action plans for promoting RE projects. Social and environmental safeguards for RE projects do not meet international standards.	Draft TAPs prepared; should be further developed. And there is no clear path towards institutionalizing the TAPs.	3 TAPs developed by the end of Year 3	On target
1.3. Standardised baseline for calculating GHG emission reduction for on-grid RE	No baseline exists to calculate emission reductions for grid connected RE.	Proposed design drafted; uncertain how the mechanism will be institutionalized	An MRV mechanism is developed for the power sector, including a standardized baseline for national grid developed in Year 1 and updated on a yearly basis	Not on target

There has been some progress made under Component 1, including preparation of a framework for an MRV mechanism for the power sector, a preliminary calculation of a grid emission factor, and draft technology action plans for solar, wind and biomass RE. DREI analyses on 3 policy and financial instruments have not yet started, and based on consultations with UNDP technical advisors, the DREI methodology has more utility for a sector-scale analysis rather than assessment of separate instruments.

Output 1.1: At least 3 policy and financial derisking instruments have been assessed using DREI analysis based on work initiated for solar PV in the development of the project document, and implemented. The DREI analyses will be replicated for on-grid wind energy and renewable biomass power generation

There has not been progress made under Output 1.1, involving assessing 3 policy and financial derisking instruments using the UNDP DREI methodology. A terms of reference has been developed for a technical assistance consultancy, but the procurement process has not yet been initiated.

Based on discussions with UNDP regional technical advisors during the MTR process, the UNDP has recognized the utility of using the DREI methodology to assess an overall sector, but the tool is not designed to evaluate individual policy or financial instruments. It would be advisable to implement an adaptive management measure for Output 1.1, based on current circumstances and also a possible reorientation of the strategy for the investment component of the project (Component 3). One idea that was discussed during the MTR debriefing was to assess the viability of a business model involving solar PV PPAs that are based on energy delivered. This is a position that the government seems to be moving towards, and the contribution of such an assessment would provide valuable insight.

If the Component 3 strategy is redirected away from utility-scale solar PV, then the activities under this output could be redesigned accordingly.

Output 1.2: Development of a set of guidelines to establish national NAMA eligibility and design criteria

Output 1.3: An MRV mechanism is developed for the power sector, including a standardized baseline for national grid is developed and updated on a yearly basis

The scope of Output 1.2 seems similar to that of Output 1.3, i.e., development of a measurement, verification and reporting (MRV) mechanism and GHG emission reduction estimation methodologies are part of the requisite minimum standards for NAMA design.

A technical assistance consultancy has been made with Deloitte Tohmatsu Financial Advisory LLC for development of an MRV mechanism for the Nigerian power sector and for calculation of the grid emission factor (GEF) for the Nigerian power system. Version 1.0 of the report on Development of an MRV Mechanism for the Nigerian Power Sector was issued on 01 November 2018 and a 2-day stakeholder validation workshop was held on 15-16 November 2018 in Port Harcourt. The report provides an overview of a design for a national MRV system for the power sector, outlines an MRV implementation plan and includes a gap analysis and required support. It is unclear what the next steps are in actually developing an MRV mechanism.

During an MTR interview with the Climate Change Department of the Federal Ministry of Environment (FME), the director of the department indicated that Nigeria participated in an EU-funded regional capacity building project, specifically aimed at developing an MRV mechanism for the power sector. The lead international consultant from Deloitte Tohmatsu was not informed of this EU-funded project. As the Designated National Authority (DNA), the FME is an important stakeholder and there appears to have been limited involvement of this ministry in the process of preparing the report on an MRV mechanism.

Version 1.1 of the report on the Calculation on the grid emission factor (GEF) for the Nigerian power system was issued on 01 December 2018. The report identifies the next steps, which include validation of the calculations and transfer of the ownership of the emission factor to the Clean Development Mechanism DNA of Nigeria, and the DNA would then need to start data collection and update the grid emission factor from 2019 onwards. There was no evidence available to the MTR consultant that the calculations have been verified and ownership has been transferred to the DNA. The report also outlines the training needs for data collection and calculation of GHG emissions and emission reductions. It is unclear whether the project will be facilitating these trainings or the DNA or other relevant agencies will be responsible.

Output 1.4: Development of three comprehensive sectoral NAMA action plans for solar PV, wind and biomass (or Technology Action Plans)

A technical assistance consultancy has been made with KPMG to develop comprehensive sectoral NAMA technology action plans (TAPs) for solar, wind and biomass. The first draft of the report on the TAPs was issued in December 2018; the lead international consultant indicated that they are awaiting feedback from the project team on organizing a

stakeholder validation workshop. It would be advisable to provide the consultants review feedback prior to organizing a validation workshop. The draft report on the TAPs provides background information on the power sector in Nigeria, includes technology action plans for solar, biomass and wind, discusses the required financial and non-financial interventions and concludes with a discussion on the path forward. It is unclear how the TAPs will be institutionalized. For example, the plans do not clearly articulate which are the responsible governmental entities that would be responsible for implementing the plans. And, importantly, there are no concrete actions specified, with institutional responsibilities indicated, timeframes estimated and resources requirements specified.

Component 2: Policy and institutional framework for private investment in on-grid renewable power generation

Outcome 2: Public instruments are developed and implemented for derisking the national policy environment	
Progress towards achieving Outcome 2 is rated as:	Moderately satisfactory

Progress towards achievement of the Outcome 2 is rated as **moderately satisfactory**, as outlined below in **Table 12**.

Table 12: Progress towards results, Outcome 2

Indicator	Baseline	Midterm status	End-of-Project target	MTR Assessment
Date:	2015	Feb 2019	Jun 2021	
2.1. Number of public instruments developed and implemented (e.g. trainings delivered to IPPs, RE resources assessments, environmental and social safeguards, RE IPPs benefiting from trainings)	Limited availability of local capital because of the risk perception of the financial sector	Draft report prepared; follow-up required during second half	A study on domestic financial sector reform to unlock low-cost local capital for green investment is carried out	On target
	No GIS-based tool to provide the practicable RE potential is available	Activity initiated; rather ambitious result for nationwide coverage	A GIS based tool is developed to identify practicable RE (PV, wind and biomass) sites in Nigeria	On target
	Lack of internationally-benchmarked social and environmental safeguards	TA not yet initiated; need to reconcile scope and timing	A set of social and environmental safeguard guidelines is developed for all utility-scale RE by the end of Year 1 based on international standards	Not on target
	Limited capacity in public and private institutions to plan, implement, monitor and evaluate RE projects	Online training underway and hands-on training later in March.	The Lagos Energy Academy are capacitated to deliver RE trainings to IPPs, undergraduate students, and public institutions on a cost-recovery basis	On target
	Not indicated	Scheduled for Year 5	A lessons learned report is developed to capture best practices for dissemination (Year 5)	Unable to assess
2.2. Investments in on-grid utility scale RE projects	Not indicated	On-grid utility-scale solar PV projects not yet implemented	Not indicated	Not on target

The end targets for Indicator 2.1 are essentially the outputs under this outcome, as described below for Outputs 2.1 through 2.5. The project initiated activities under each of the first four outputs during the second half of 2018 and extending into early 2019. Reasonable progress has been made, except for the envisaged environmental and social safeguard guidelines under Output 2.3; a 3-day stakeholder forum was organized in September 2018, but there has not been any specific work on development of the guidelines. The lessons learned report under Output 2.5 was designed to be developed in the last year of the project, Year 5.

With respect to Indicator 2.2 (investments on on-grid utility scale RE projects), there is no baseline or end target established. Nevertheless, there has not been any on-grid utility-scale solar PV projects delivered in the country through midterm.

Output 2.1: A study on domestic financial sector reform to unlock low-cost local capital for green investment is carried out

A study on Nigerian domestic financial sector reform to unlock low-cost local capital for green investment was through a technical assistance consultancy with the UK-based firm Climate Mundial Limited, with support from the Nigerian firm Clean Energy Consult. The results of the study were validated in a stakeholder workshop held on 15-16 November 2018 and the final version of the report was issued on 23 November 2018. The eight recommendations included in the final version area listed below.

1. Provide capacity building to deposit money banks (DMBs) and national development financial institutions (DFIs) in solar PV project risk
2. Provide access to longer-term credit lines to DMBs for green investment
3. Prepare securitization vehicle to help DMBs refinance initial project loans
4. Work with the Nigerian Electricity Regulatory Commission (NERC) to address solvency challenges in the transitional electricity market (TEM)
5. Consider the role of the eligible customer regulation
6. Develop a roadmap to listing of a solar independent power producer on equity capital markets
7. Take advantage of Article 6 of the Paris Agreement
8. Carry out continuous stakeholder engagement

The recommendations provide strategic guidance for achieving financial sector reform. While many of the recommendations will require longer term time horizons, there has already been progress with respect to recommendation No. 5, according to information shared by a representative of Clean Energy Consult during an MTR interview. The NERC is considering introducing an option to bypass the distribution companies and enable developers to deal directly with the transmission company.

It would be advisable to follow up on these recommendations during the second half of the project, e.g., identifying responsible entities for each of the recommendations and requesting progress feedback reports at each of the project steering committee meetings.

Output 2.2: A GIS based tool is developed to identify practicable RE (PV, wind and biomass) sites in Nigeria

Activities under Output 2.2, regarding development of a GIS based tool to identify practicable RE sites in Nigeria was initiated in February 2019, when the selected consultancy GESTO Energy Consulting held a stakeholder workshop in Abuja. The timeframe for delivering the web-based GIS tool is August 2019. Data demands are understandably significant, as the tool will cover the entire country. Indeed, the utility of the GIS tool will largely be a function of the data inputs. As shown below in **Figure 4**, the consultancy had acquired a fair amount of information by the time of the 01 February 2019 stakeholder workshop, but the pending data requirements are extensive.

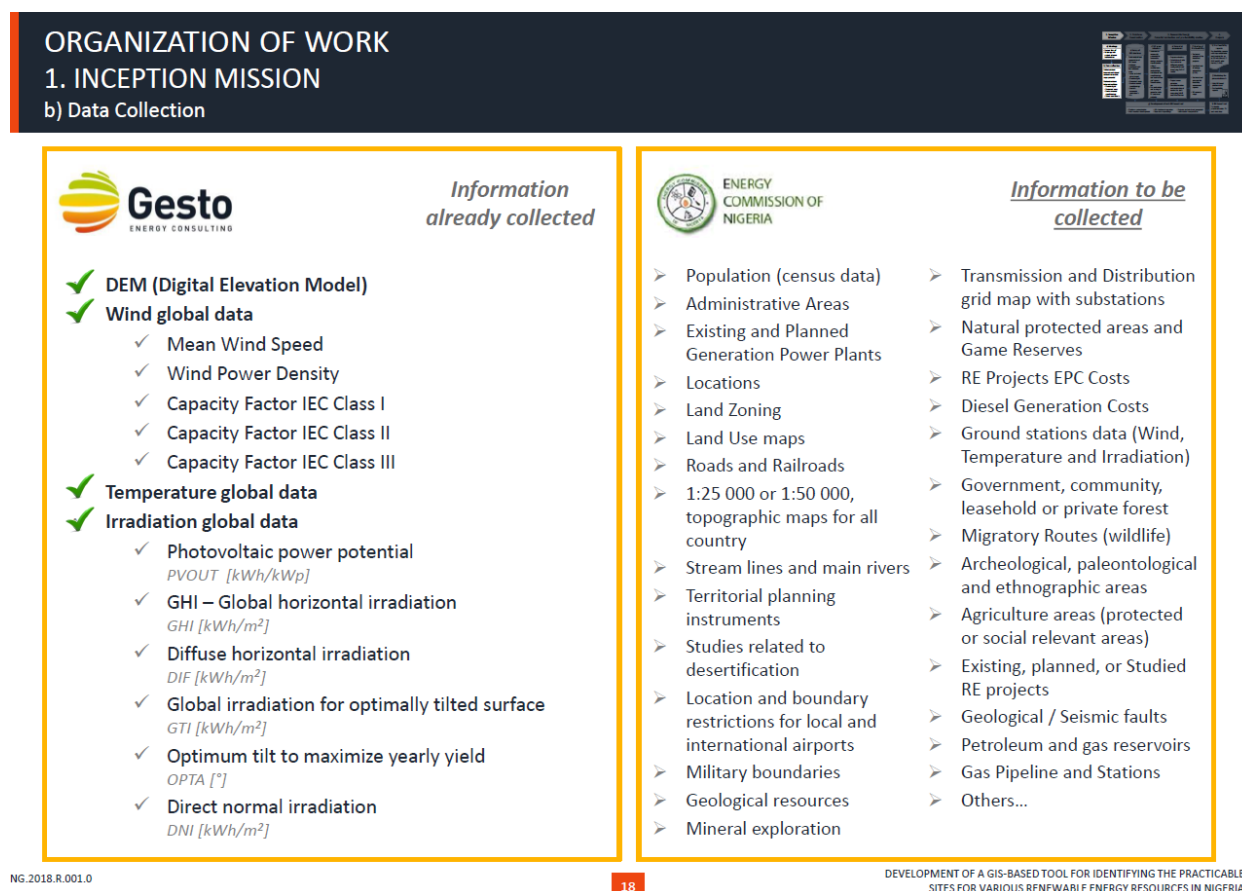


Figure 4: Data collection for the GIS-based RE tool (taken from the 01 Feb 2019 initiation workshop slides)

Some of the interviewed governmental stakeholders interviewed during the MTR mission indicated that there are data security concerns regarding some of the requested inputs, and approval from relevant authorities will be required in the coming months. The August deadline seems optimistic considering these potential constraints in obtaining data.

The description of work in the February 2019 stakeholder workshop slides indicate that the GIS tool will cover solar PV and wind; biomass is not mentioned, although it is listed in the terms of reference for this assignment and in the description of the output in the project document.

There have been similar tools developed in Nigeria, and it will be important to ensure that the efforts under the project are not duplicating something that has already been done and builds upon the results achieved to date. An evaluation of suitable sites for wind farm development in Nigeria was presented in a scientific article in May 2018³. Several interviewed stakeholders during the MTR mission mentioned that a national wind resource map prepared a few years had not been well received, due to inaccuracies and generally low quality. It will be important to manage expectations in the development of the GIS tool on this project.

Another important consideration is the sustainability of the tool. It is unclear which institution will take ownership of the platform, which server will it be installed on and whether funds will be available for operating and updating the tool.

Output 2.3: A set of social and environmental safeguard guidelines is developed for all utility-scale RE based on international standards (e.g. World Bank)

The first step the project took under Output 2.3 was to organize a 3-day stakeholder forum in Port Harcourt on 25-27 September 2018, to gather feedback from the stakeholder community on the current gaps in the ESIA process and legislation in Nigeria and to recommend measures for addressing them through the project. The forum was attended by 70 participants; a group photograph taken from the forum report is shown below in **Figure 5**



Figure 5: Group photograph of participants to the September 2018 ESIA stakeholder forum

During the keynote address made by the director of the Environmental Assessment Department of the Federal Ministry of Environment, there have been a number of ESIA's developed for renewable energy projects, including 42 prospective hydropower plants, 90 solar plants, 7 wind power plants and 3 biomass plants. The following thirteen recommendations were made during the forum:

- i. The Federal Ministry of Environment should, as a matter of urgency, initiate steps to harmonize and close-out all identified gaps in the present ESIA process and come up with relevant guidelines for ESIA reports for ease of access to finance, especially from International Funders.

³ Ayodele, T.R. et al. May 2018. On the most suitable sites for wind farm development in Nigeria. Elsevier Data in Brief 19 (2018) 29-41.

- ii. The Federal Ministry of Environment should liaise with the Energy Commission of Nigeria (ECN) and other players in the power sector to ensure Environmental Consultants have the capacity to bring up bankable ESIA reports.
- iii. The EIA registration form should be revised to have provisions for names and signature of the Lead Environmental Practitioner and Assistant Lead Environmental Practitioner and requirement to attach their CVs.
- iv. Final EIA Reports should include an Appendix with the list of reviewers and their ranking of the EIA.
- v. Accrediting separate consultants to handle (a) IMM (*impact measurement & management*) and (b) disclosure of EIAs to communities should be considered.
- vi. Mitigation measures from ESIA reports should be carefully reviewed with senior management of the proponent during the initial and all follow up IMMs to ensure that SMART Environmental and Social Action Plans (ESAPs) are generated.
- vii. The ESIA disclosure process should be made more robust to ensure that the general public and communities have easy access to the findings of the ESIA. This could include (a) the indication of the weblink to the EIA when the public hearing is advertised in the newspaper, and (b) engagement of a third party by the proponent to disclose findings of the ESIA to affected communities, using disclosure methods that are suitable to the area (e.g., town criers, focus group discussions, ESIA summary in pamphlets written in local language, etc.)
- viii. The process for the certification of individuals to become Environmental Consultants and ESIA Practitioners should be strengthened
- ix. Environmental Consultants found to repetitively carry out poor ESIA study and/or documentation after due warnings should be properly sanctioned.
- x. The validity period of accredited Environmental Consultants should be extended beyond the current 2years.
- xi. Environmental Consultants should commence ESIA assignments with good understanding of the applicable requirements of the financing institutions as well as the reviewing organizations.
- xii. Project proponents should always ensure that competent consultants are engaged to undertake their ESIA Study.
- xiii. The Bill to amend the EIA Act should be expeditiously forwarded to the National Assembly.

During the MTR interview with representatives of the Environmental Assessment Department of the Federal Ministry of Environment, department officials verified the need to develop specific ESIA guidelines for utility-scale renewable energy projects. The ministry has developed an abridged version of the ESIA process and is working with the NESP in formulating guidelines for solar PV mini-grids (<1 MW). But, there is a gap with respect to utility-scale renewable energy investments. This was confirmed during the MTR debriefing held in Abuja on 18 March 2019.

It will be important for the project team to work closely with the ministry in identifying the specific incremental support that can be provided by the GEF funding, and then formulate an appropriate technical assistance terms of reference. The project should also work with the ministry in facilitating ministerial endorsement of the guidelines; this would essentially mean that the guidelines would be institutionalized, thus enhancing the likelihood that project results will be sustained after GEF funding ceases.

Progress towards developing environmental and social safeguard guidelines has been characterized as “not on target”, because, apart from the 3-day stakeholder forum, there has not been progress made towards developing the guidelines.

Output 2.4: The Lagos Energy Academy is capacitated to deliver RE trainings to IPPs, undergraduate students, and public institutions on a cost-recovery basis

The project has made good progress under Output 2.4, which involves capacitating the Lagos Energy Academy (LEA) to deliver RE trainings to IPPs, undergraduate students and public institutions on a cost-recovery basis.

The Germany based Renewables Academy AG (RENAC) was awarded the contract to work with the LEA in developing and delivering training-of-trainers modules. RENAC has worked earlier with LEA in developing an off-grid solar training course, which is now mainstreamed into LEA’s offerings.

RENAC colleagues made a fact-finding mission to Lagos during 5-7 December 2018, and then followed up with designing and delivering the on-grid solar training-of-trainers course. At the time of the MTR mission in March 2019, the online portion of the training was underway and the 2-week hands-on component was planned to start on 25 March. In response to RENAC’s recommendations for equipment needed for the training, the project made the procurements and arranged delivery of the equipment to the LEA. The solar cabin at the LEA (see **Figure 6**) is one of the facilities that will be used for delivering the hands-on training.



Figure 6: Photograph of solar cabin at the Lagos Energy Academy

This training is designed to provide an end-to-end overview of the process of developing, financing, administering, installing, operating and decommissioning utility-scale solar PV plants. Once the market becomes more mature, with operable solar PV plants, there will be a need to develop more comprehensive trainings oriented to specific functions, e.g., technicians or solar PV supervisors. For the off-grid solar PV sector, LEA is currently developing such trainings.

During the December 2018 PSC meeting, a representative from the Federal Ministry of Women Affairs and Social Development suggested that women should be encouraged to participate in the training-of-trainers courses. Based on information shared by the project manager, the course being held in March 2019 has 16 participants, of which 1 is a woman.

Preliminary suggestions by a representative of RENAC for the next steps include the following:

- Set up of a quality assurance system, e.g., continuous support of LEA with training material updates, shadowing of trainers to support their professional development and ensure high local training quality.
- Follow-up online trainings, e.g., on financing large-scale PV projects (consistent with RENAC's Green Finance Specialist training).
- Further face-to-face trainings/training-of-trainers on other relevant topics, such as PV-diesel hybrid systems, empowering (solar) entrepreneurship, grid-integration of variable renewable energies, political framework development, etc.

Output 2.5: A lessons learned report is developed to capture best practices for dissemination (website, publications, manuals, participation in national, regional and international conferences and fora etc.) and to demonstrate an architecture for leveraging private investments and climate finance using a risk-adjusted approach

There has been no progress under Output 2.5, which aims to have a lessons learned report developed in Year 5 of the project. It might be advisable to consider creating a project website, or utilize the website or social media platform of one of ECN or another key stakeholder. Having a website or social media presence would provide a knowledge management platform, where information could be timely and effectively shared across the domestic and international stakeholder communities.

Component 3: First commercial on-grid RE project

Outcome 3: The NPS RE NAMA is operationalised by demonstrating a proof-of-concept grid connected solar PV plant with quantified GHG emission reductions	
Progress towards achieving Outcome 3 is rated as:	Unsatisfactory

Progress towards achievement of the Outcome 3 is rated as **unsatisfactory**, as outlined below in **Table 13**.

Table 13: Progress towards results, Outcome 3

Indicator	Baseline	Midterm status	End-of-Project target	MTR Assessment
Date:	2015	Feb 2019	Jun 2021	
3.1. Emission reductions from grid-connected PV power	Baseline project implemented with identified deficiencies	Baseline project not yet implemented	113,150 tCO _{2e} /year from 100 MW PV plant in Bauchi State (452,000 tCO _{2e} between 2017 and 2020)	Not on target
3.2. Number of households benefiting from electricity generated by PV plants (households/year) ⁴	No MRV system for NPS NAMA	Households not yet benefitting	295,000 households benefiting from PV by the end of the project.	Not on target

Component 3 is the investment part of the project, and the lack of progress is due to the delays in reaching financial close for the planned solar PV plant in Bauchi State; none of the 14 investments included in the PPAs signed in 2016 have gotten off the ground for the same reason. The barriers hindering private investment in the utility-scale RE sector in Nigeria that were present at project entry are still in place at midterm, and, in fact, the financial risks might have increased. Due primarily to the lack of solvency in the power sector, largely as a result of shortcomings in the privatization of the power generation and distribution services, the Federal Government of Nigeria is reluctant to enter into put-call option agreements (PCOAs), which are essentially sovereign guarantees for the private sector investments.

Output 3.1: One private-sector supported solar PV energy project (100 MW in Bauchi State) is implemented to validate the adopted framework and methodologies

The solar PV project in Bauchi State has not yet started because the developer has not yet reached financial close. As explained during an interview with a representative of the developer, Nigeria Solar Capital Partners (NSCP), after NSCP learned that their project was considered for concessional financing through the GCF-funded program, they extended their PPA for one year from 21 January 2019 to 21 January 2020. The NSCP representative indicated that they have accepted the government's proposed reduction of the tariff from USD 11.5 cents/kWh to USD 7.5 cents/kWh, but have rejected the concept that the terms be based on energy delivered and not capacity delivered.

The expected progress envisaged by NSCP over the next 2 years is summarized below:

- May 2019, government cabinet reconvenes
- July 2019, receive PCOA and partial risk guarantee (PRG)
- Provide 3-month notice to local communities (farming season ends in November)
- December 2019, reach financial close
- January 2020, mobilize construction, estimate 12-15 months for construction of full 100-MW plant
- March 2021, commissioning of solar PV plant

This timeframe seems to be the best case scenario, assuming that concessional financing is obtained through the GCF program and the Ministry of Finance and NBET sign the PCOA. Another important assumption in the above timeframe is that the 3-month notice period for sorting out the resettlement of 297 households will be sufficient.

The project has had limited involvement with NSCP during the first half of the project, apart from a meeting held in August 2018 with the PMU, UNDP country office and the UNDP regional technical advisor. NSCP has not been included on the project steering committee (PSC), although the description of the PSC in the project document included them, and there is no record that NSCP representatives participated in the project inception workshop in May 2017.⁵

There have been activities associated with the proposed solar PV project in Bauchi State in the last couple of years, including the finalization of the environmental and social impact assessment (ESIA) and the resettlement action plan (RAP). It would have been advisable for the project to have been more aware of these processes. For instance, the required resettlement is considerably more extensive than outlined in the project document.

There has also been no involvement of Bauchi State representatives during the first half of the project. The MTR consultant conducted a brief telephone interview with the permanent secretary of the Bauchi State Ministry of Environment. He was rather new in his position, but he did indicate that there are some unresolved issues associated with the planned resettlement.

⁴ The targets are based on average electricity consumption of approximately 879 kWh/household in 2011 calculated using the following data: (1) population = 164,728,579 persons (Annual Abstract of Statistics, 2012); (2) average number of persons per household = 5.9 - <http://www.kwarastate.gov.ng/statistics/population/householdsizeandcharacteristics.php>; and (3) per capita electricity consumption = 149 kWh/person (World Development Indicators, 2014)

⁵ The PMU indicated that NSCP was invited but did not attend.

Output 3.2: Interface electronics installed to match the voltage of renewable electricity with that of the national grid

There has been no progress under Output 3.2, regarding the envisaged interface electronics at the planned solar PV plant in Bauchi State. This is understandable, as the investment is stalled due to delays in reaching financial close. However, it would be prudent for the project to validate the technical conditions and allocated costs envisaged at the PPG phase. The need for interface electronics seems to still be valid, e.g., according to the August 2018 meeting notes with the developer, the technical concern associated with grid stability was mentioned. But, there is no evidence of reviewing the estimated costs associated with providing interface electronics, whether the allocation made under Component 3 (which was not explicitly specified) is sufficient, and whether cofinancing contributions from the developer are needed.

Output 3.3: Robotic dust cleaning technology tested on part of the installations as proof of concept and for further replication

There has been no progress under Output 3.3, regarding the envisaged added-value investment in automated cleaning mechanisms, using robotic dust cleaning technology. Again, there is no record of verifying whether this investment remains relevant, and the technical details and associated costs have not yet been worked out. A proof-of-concept approach was outlined in the project document, but there has not been a conceptual design prepared or a budget cost estimate made. It is unclear how much of the equipment costs allocated under Component 3 were envisaged for this output. And, it would be advisable to hold discussions with the developer and their suppliers, to ensure that there are no conflicts associated with the commercial terms they are negotiating. During an MTR interview with a representative of another IPP, that developer indicated that they would not be interested in such a proof-of-concept technology, firstly because there could be an issue regarding insurance and commercial warranties, e.g., if some of the panels become accidentally scratched, and also because their business model entails cleaning the panels with water and providing job opportunities for local community residents.

Output 3.4: Application of anti-sand-blasting (anti-abrasive) coatings tested on the PV facility

There has been no progress under Output 3.4, regarding application of anti-sand-blasting (anti-abrasive) coatings at a proof-of-concept scale for the solar PV plant in Bauchi State. Considering that the project was developed in 2014-2015, it would be advisable to verify that this envisaged added-value investment remains relevant. The project has not held technical discussions with the developer or their suppliers in this matter, it is unclear what proportion of the equipment costs allocated under Component 3 were envisaged for this output, and it is uncertain what cofinancing contributions are expected. During an MTR interview with a representative of another IPP, that developer indicated that they would not be interested in such a proof-of-concept investment, as they have more or less negotiated the terms with their commercial supplier and a long-term performance warranty shifts the risk to the supplier for ensuring the panels remain functional according to specification. The developer also indicated that anti-abrasive coatings have already been proven technically, and therefore a proof-of-concept would be unnecessary.

3.2.2 Adaptive Management: Investment in Off-Grid Solar PV Systems

The project made an adaptive management deviation from the project design in supporting the construction of three off-grid solar investments, listed below in **Table 14**.

Table 14: Off-grid solar PV investments, Component 3

Item	Cost (USD)
Demonstration Project in Jigawa State: Creation of Solar-Powered Agro (Groundnut) Processing Cottage Industrial Cluster in Aujara Community, 120 x 310 W panels: 37.2 kW capacity	\$146,828
Demonstration Project in Ogun State: Creation of Solar-Powered Agro (Rice) Processing Cottage Industrial Cluster in Moloko Asipa Community, 120 x 310 W panels: 37.2 kW capacity	\$119,550
Demonstration Project in Kano State: Creation of Solar-Powered Water Borehole in Moda-Madadi Community, 6 x 300 W panels: 1.8 kW capacity	\$24,624

Note: cost details obtained from the project expenditure ledger

The project has produced three technical reports describing the investments made. Two photographs from the December 2017 report on the solar PV system constructed at the rice processing center are shown below in **Figure 7**.



Solar panels on roof of processing building



Solar battery bank

Figure 7: Photographs of off-grid solar system at rice processing plant, Ogun State (source: Dec 2017 report)

The 25 January 2018 PSC meeting minutes makes the following reference to these investments: “In addition, preparations are also made to remove barriers of off-grid up-takers through solar-PV for agro-processing industry (rice in Ogun State and groundnut in Jigawa State).” And, these demonstration scale investments are also mentioned in the 2018 project implementation review (PIR) report. There is, however, no record that the PSC and the UNDP agreed to this deviation from the project design.

It would be advisable to retroactively sort out these off-grid investments, e.g., including as an agenda item in the next project steering committee meeting. The GHG emissions reduced through replacing the former diesel-powered installations at the agro-processing facilities and the water borehole should be calculated and included among the results achieved by the project.

3.2.3 Remaining Barriers to Achieving the Project Objective

A considerable amount of work remains to achieve the project objective and outcomes. Some of the barriers that need to be overcome in the second half of the project include:

IPPs not reaching financial close. The continued impasse in advancing the 14 IPPs towards financial close is significantly impeding integration of utility-scale RE to the power sector and progress on this project. The project is scheduled to close in June 2021, and under the best case scenario, the utility-scale solar PV plant in Bauchi State might be commissioned in March 2021. The project strategy should be reassessed according to the continued delay in reaching financial close and changed circumstances.

Uncertain relevance of the strategic approach for the investment component of the project (Component 3). If the reassessment of the project strategy concludes that the project remains focused on utility-scale solar PV, then it would be important to revalidate the relevance of the incremental reasoning with respect to the investment component. This includes the envisaged proof-of-concept demonstrations of interface electronics, automated mechanisms for cleaning the PV panels and abrasion-resistant coatings on the panels.

Lack of coherency in advancing the project outputs into effectual derisking instruments. The project has effectively initiated technical assistance consultancies and has started to produce deliverables under the designed outputs. It is unclear how these outputs will be institutionalized and advanced into effectual derisking instruments. Implementation responsibilities should be extended to the FMPW&H, FME and possibly the NERC, according to the joint implementation modality outlined in the project document. And, it would be advisable to recruit a part-time chief technical advisor to provide quality control and strategic guidance, increasing the overall coherency of the project results.

3.3 Project Implementation and Adaptive Management

Project Implementation and Adaptive Management is rated at: Moderately Satisfactory

3.3.1 Management Arrangements

The project is being implemented under a national implementation modality. According to the project document, the Federal Ministry of Environment (FME) is the lead implementing partner (executing agency). The project design further explains that the FME would appoint a senior officer as a Project Director to: i) coordinate the project activities with the activities of other Government entities; and ii) certify that the expenditures are in line with the approved budgets

and work-plans. And, the project board (referred to in practice as the project steering committee) was envisaged to be chaired by the FME. The approved CEO Endorsement Request lists the following institutions as executing partners:

- Federal Ministry of Environment (FME)
- Federal Ministry of Power - later changed to Federal Ministry of Power, Works & Housing (FMPW&H)
- Energy Commission of Nigeria (ECN)
- Nigerian Electricity Regulatory Commission (NERC)

And, the project budget included in the project document indicates that ECN and FMPW&H would be responsible parties or implementing agents for Component 1; FMPW&H, FME and ECN would be responsible parties or implementing agents for Component 2; and FMPW&H and ECN would be responsible parties or implementing agents for Component 3. The inception workshop report reiterates the joint implementation modality of the project. But, in actual practice, the Energy Commission of Nigeria (ECN) is functioning as the sole executing agency and the Project Director is an official from the ECN. This envisaged joint implementation modality has not been implemented.

Project steering committee:

The project steering committee has convened three times during the first half of the project:

- 02 June 2017, held in Cross Rivers State (2 days following the 31 May 2017 inception workshop)
- 25 January 2018, held at the ECN offices in Abuja
- 06 December 2018, held in Lagos

The description of the PSC outlined in the project document suggested the 10 members listed below in **Table 15**. Some additional members are included in the list of PSC members indicated in the inception workshop report.

Table 15: Members of the project steering committee

Suggested Members of PSC (project document)	Members of PSC (inception workshop report)
<ol style="list-style-type: none"> 1. Federal Ministry of Environment (chair) 2. Federal Ministry of Power 3. Federal Ministry of Finance 4. Nigerian Electricity Regulatory Commission 5. Energy Commission of Nigeria 6. Presidential Task Force on Power 7. Lagos Energy Academy 8. Nigeria Solar Capital Partners 9. CSO/NGO representative of project in Bauchi State 10. UNDP 	<ol style="list-style-type: none"> 1. Federal Ministry of Environment – GEF Operational Focal Point 2. United Nations Development Programme 3. Energy Commission of Nigeria 4. Federal Ministry of Environment 5. Nigerian Electricity Regulatory Commission 6. Representative of IPPs in On-grid Solar PV 7. Federal Ministry of Finance 8. Standard Organization of Nigeria 9. Transmission Company of Nigeria 10. Nigerian Bulk Electricity Trading Plc 11. Consumer Protection Council 12. Non-Governmental Organization to be represented by Renewable Energy Association 13. Representative of National Association of Distribution Companies 14. Ministry of Budget and National Planning 15. National Orientation Agency 16. Bauchi State Government

Some of the PSC meeting minutes indicate additional members. For example, the minutes of the January 2018 PSC meeting indicate that two representatives of the Federal Ministry of Women Affairs and Social Development (FMWASH) are members. There was an intention to keep the numbers of PSC members to a reasonable number, as indicated in the following statement from the project document: “Other members can be invited at the decision of the PB on an as-needed basis, but taking due regard that the PB remains sufficiently lean to be operationally effective.” It would be advisable if the project clarifies the core members of the committee, and others invited would be considered “observers”.

According to the recorded meeting minutes, certain members have been consistently absent. These include Nigeria Solar Capital Partners (not present at any of the 3 meetings), Bauchi State governmental and non-governmental representatives (not present at any of the 3 meetings), the FMPW&H (present at 1 of the 3 meetings), NERC (present at 1 of the 3 meetings) and the Ministry of Finance (present at 1 of the 3 meetings).

The PSC meeting minutes include satisfactory accounts of the discussions and decisions made. There is reference in the January 2018 meeting minutes about the use of GEF funds for the off-grid solar systems for the agro-processing

facilities, but there is no record of a decision made to deviate from the project design and approve the use of the GEF funds for this purpose.

It would be advisable to discuss progress towards results during the PSC meetings, e.g., using the project results framework as a reference. It would also be advisable to use the opportunity of the PSC meetings to discuss how the project outputs will be institutionalized.

GEF Agency (UNDP):

The UNDP Country office in Abuja has provided support to the project, including on strategic guidance, administrative issues, and financial reporting. The UNDP Country Office has also provided procurement support, e.g., for recruitment of international consultants. UNDP CO staff have participated in each of the 3 PSC meetings and in the stakeholder workshops held by the project.

UNDP CO staff were unavailable for an interview during the MTR mission to Nigeria and also afterwards via Skype or telephone. UNDP CO staff did not participate in the opening meeting of the MTR mission on 11 March 2019 or in the debriefing on the final day, 18 March. This was unfortunate and gave the impression of a lack of focus on this project. UNDP CO staff were involved during the review of the MTR report.

Renewable energy is not prominently included in the 2018-2022 United Nations Sustainable Development Partnership Framework (UNSDPF) for Nigeria. There is one reference to renewable energy development under Outcome 7 of the UNSDPF, but no specific targets are identified. The updated UNDP Country Programme Document (CPD) was unavailable for review by the MTR Consultant.

With respect to project risks, the critical risk associated with the impasse of the utility-scale IPPs from reaching financial close is discussed in the 2018 project implementation review (PIR) report and the possible consequential need to redesign the investment component of the project. There have been some shortcomings regarding risk management. The social and environmental screening made at the PPG phase concluded the overall risk rating for the project is HIGH, because of the security risks associated with the political instability in the north and due to the resettlement of project affected person. The 2018 PIR mentions that the project was constrained from engaging in Bauchi State due to the security risks there; however, it is important to note that the IPP arranged to update the ESIA and resettlement action plan in 2017, with extensive stakeholder consultations. One result of these consultations was the identification of more households requiring resettlement (297 compared to 30 in the PPG phase screening). And, Bauchi State representatives, governmental and non-governmental, have not participated in any of the 3 project steering committee meetings.

Technical advisory services have been delivered by the UNDP-GEF regional technical advisor (RTA) based in Addis Ababa. The RTA provides as delivered strategic support to the project team and provided feedback to the project implementation review (PIR) reports. And, the RTA made a visit to Nigeria in August 2018 to meet with Nigeria Solar Capital Partners, along with the project manager and UNDP CO staff, to discuss the status of the planned investment in Bauchi State.

One of the comparative advantages of UNDP as the GEF implementation agency is their global reach, with resident offices throughout the region. It would be advisable to increase the level of sharing lessons learned and best practices in other African countries.

Lead Implementing Partner (ECN):

The lead implementing agency for the project is the Energy Commission of Nigeria (ECN). The Deputy Director of ECN has been appointed as project director, and a full-time project manager and project assistant, both financed through the GEF funds, make up the project management unit (PMU), with a dedicated office in the ECN headquarters building in Abuja.

There was an 11-month delay from the official start date, 28 June 2016 to the date when the inception workshop was held, on 31 May 2017. The reason for the delay, as described in the 2018 PIR report was the prolonged time required to recruit the PMU staff. The project manager was recruited in January 2018.

Project activities, according to the design outlined in the project document, effectively started in 2018. The off-grid investments made in 2017 deviated from the project design and were carried out without explicit approval by the PSC and the UNDP. The project has been effective in mobilizing activities under Components 1 and 2, completing procurements with international and national consultancies, and organizing several stakeholder workshops. In evaluation of progress towards results, there were concerns noted regarding institutional ownership of the project outputs; this is something the project should focus on during the second half of the project.

Regarding risk management, the risk log included in the annual work plans, shows the political risk downgraded to "low", from a "medium" rating at project design. The political risk is defined as: "Political instability or change in

government could lead to potential policy reversals that may impact the energy policy & discourage private investors". Based on MTR interviews, it is apparent that the governmental partners have made changes to the terms of the PPAs, e.g., reduced the tariff from USD 11.5 cents/kWh to USD 7.5 cents/kWh, and are also advocating for other changes, such as basing the PPAs on energy delivered, rather than capacity delivered. Considering these observations and the current lack of liquidity in the power sector, downgrading the political risk to "low" seems questionable.

In summary, the assessment of project implementation and execution was diminished due to the extended delay in commencing project implementation, not pursuing a joint implementation modality, the limited participation of the UNDP CO in the MTR process and the deviation from the project design regarding allocation of GEF funds for off-grid solar systems for agro-industrial facilities without securing approval from the PSC and UNDP.

3.3.2 Work Planning

The GEF approved the project for implementation on 04 April 2016, and the Federal Government of Nigeria approved the project document on 28 June of that year. There was then an 11-month delay before the inception workshop was convened on 31 May 2017. According to the 2018 PIR report, this delay was due to the extended amount of time to recruit the PMU staff. In fact, the project manager started in January 2018. This delay has adversely impacted project efficiency, as the 5-year implementation timeframe was effectively shortened by 1-1/2 years.

The project document includes an indicative budget and work plan extending over the 5-year implementation timeframe. There were no adjustments noted in the inception workshop report. An updated 5-year work plan was prepared shortly after the inception workshop, on 21 June 2017. The budget for 2017 in the 21 June 2017 work plan was USD 400,100. A revised 2017 budget was prepared later that year (date not recorded on the document); the revised version includes the off-grid solar systems for the agro-processing facilities. There was no indication of those costs in the 21 June version of the work plan.

The 2018 and 2019 work plans include descriptions of output and outcome indicators and targets. This is useful information to include in the work plan, as well as showing budgeted activities under each of the three components. However, the results frameworks included in the work plan template was not filled out in 2018 and is only partially filled in the 2019 plan.

3.3.3 Finance and Cofinance

Financial Expenditures:

The cut-off date for project midterm is 28 March 2019. Considering the official start date of the project is 28 June 2016, the cut-off represents a point of time that is approximately halfway through the 5-year implementation timeframe.

According to available expenditure reports provided by the UNDP CO, a total of USD 1,110,437 of the GEF implementation grant of USD 4,400,000 have been incurred through project midterm, or roughly 25%, as shown below in **Table 16**.

Table 16: Project expenditures through midterm (USD)

Component	Actual Expenditures (USD)					GEF Grant
	2016	2017	2018	2019*	Total	Prodoc Budget
Component 1	0	40,272	258,803	22,896	321,971	1,108,200
Component 2	0	319,396	323,557	3,037	645,990	852,300
Component 3	0	0	40,391	7,114	47,505	2,230,000
Project Management	0	35,426	57,679	1,866	94,970	209,500
Total	0	395,094	680,430	34,913	1,110,437	4,400,000
Source: combined delivery reports (CDRs) provided by UNDP CO					Balance:	3,289,563

*2019 expenditures through 28 March.

*The 2019 CDR contained a USD 43,357.48 charge under Component 3 that was mistakenly allocated to this project.

The USD 321,971 incurred under Component 1 represents 29% of the indicative budget for this component. For Component 2, 76% of the indicative USD 852,300 budget has been spent through midterm. It seems that some of the costs allocated for Component 2 in 2017 might be Component 3 costs. The ECN expenditure ledger provided by the PMU shows nearly USD 300,000 for investments in off-grid solar systems for agro-processing facilities in 2017. The 2017 CDR does not show any expenditures for Component 3. This should be clarified through a financial audit.

The 2019 figures in Table 16 for Component 3 do not contain a USD 43,357.48 charge (Atlas 72215 – Transportation Equipment); this cost was mistakenly charged to this project and represent costs for transportation of equipment for another project. Interviewed PMU representatives indicated that these costs will be credited back to the project.

Project management costs through midterm were USD 94,970, which is 9% of the sub-total of costs incurred for Components 1 through 3. This rate of project management costs is higher than the 5% GEF policy threshold. The project should evaluate what costs are allocated under project management; for example, it might be advisable to allocate the time that the project manager spends on technical issues to the respective technical component.

Financial delivery was 99% in 2017 and approximately 80% in 2018.

Currency Fluctuations and Inflation:

A fair proportion of the project costs is payable in USD, e.g., for international consultancies and for the planned equipment expenditures under Component 3. But, there is a substantial proportion of the budget payable in local currency, NGN. Considering currency fluctuations with respect to the USD over the past couple of years and inflation that has consistently been greater than 10% (see **Figure 8**), there have been some efficiency gains due to these factors.

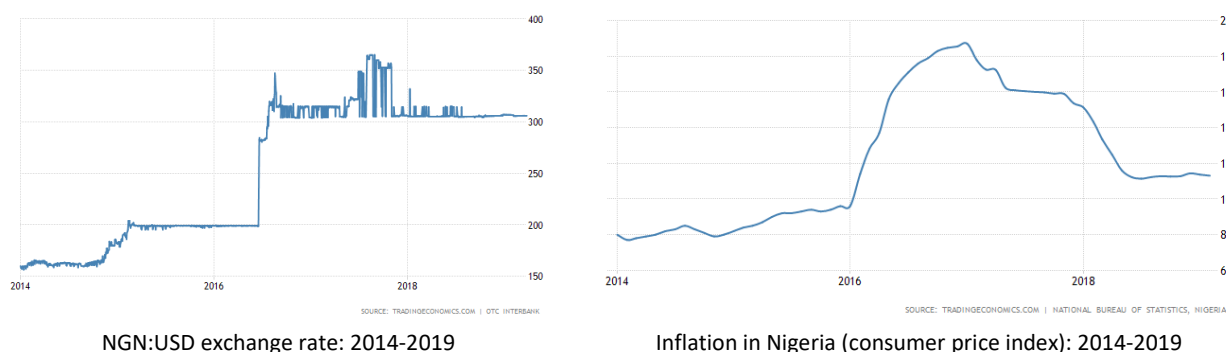


Figure 8: Currency fluctuations and inflation, 2014-2019

Asset Management:

A copy of the project asset register was not shared with the MTR Consultant, as requested in the MTR inception report or during the MTR mission. There has been equipment purchased to support the hands-on training at the Lagos Energy Academy, and there were investments for the solar systems for the agro-processing facilities. The PMU shared an Excel file later that contains a list of assets purchased on 17 March 2019 for the hands-on training. There is no information in the spreadsheet regarding purchase value. And, the assets purchased for the off-grid solar units are not included in this spreadsheet. It would be useful to expand this spreadsheet into an asset register. The spot check report dated 7 March 2018 (PWC) indicates that ECN is maintaining an asset register; it is noted that the spot check was made for a total of three projects including this one (also including the sustainable fuelwood management and the access to renewable energy projects). It would also be advisable to clarify through a financial audit of how the project is managing and transferring assets acquired with the GEF funds.

Financial Audits:

At the time of the MTR mission in March 2019, there was reportedly a financial audit underway. It is the understanding of the MTR consultant that there have been no earlier financial audits made of the project; no records were provided for review. One spot check report, dated 7 March 2018, prepared by PWC was provided by the PMU after the first draft of the MTR report was submitted. A few findings and recommendations are indicated in the March 2018 spot check report, including (1) the IP (ECN) and UNDP should regularly reconcile their records to avoid discrepancies in expenditures reporting by both parties; (2) the IP should ensure that approved requests for direct payments and work plans are obtained from UNDP and properly filed.

Cofinancing:

There has been limited tracking of cofinancing contributions during the first half of the project. Based on inquiries made during the MTR mission, the cumulative total of cofinancing contributions by midterm is USD 6,242,649, which is less than 4% of the expected USD 150,500,000 by project closure (see **Annex 6**).

Of the USD 1,500,000 of UNDP grant cofinancing (TRAC funds) confirmed at project endorsement, USD 142,649 have been incurred through midterm; this is the figure reported for Fund 04000 in the 2018 and 2019 CDR's. There were no expenditures under this fund in the 2017 CDR. The indicative UNDP cofinancing outlined in the project budget in the project document was broken down into international consultants (Atlas 71200), local consultants (Atlas 71300), travel

(Atlas 71600), equipment and furniture (Atlas 72200), audiovisual and print production costs (Atlas 74200) and training, workshops and conferences (Atlas 75700). The expenditures allocated under Fund 04000 in the 2018 and 2019 CDR's were for staff salaries, staff expenses, and UN Volunteer (UNV) related expenses.

Roughly half of the confirmed USD 1,500,000 in-kind cofinancing from ECN, or USD 800,000 have been incurred through midterm, according to the PMU. These contributions are represented by staff time, office space, vehicle use, etc.

The FME has contributed an estimated USD 100,000 of in-kind cofinancing by midterm; this is 50% of the USD 200,000 confirmed at project endorsement. FME contributions are primarily associated with staff time.

The LEA confirmed the investment of USD 150,000 for the solar lab at their premises. This facility will be used for delivering the hands-on training sessions and is included in the USD 350,000 of in-kind confirmed cofinancing at project endorsement. The total amount of cofinancing by LEA that has materialized by midterm is USD 200,000, which also includes staff time and services associated with the training-of-trainers activities.

The largest amount of confirmed cofinancing when the project was endorsed was a USD 210 million grant contribution from Nigeria Solar Capital Partners; this sum represents the estimated investment for the solar PV plant in Bauchi State. The IPP has incurred development related activities, such as the ESIA, resettlement action plan and others. The interviewed representative of Nigeria Solar Capital Partners indicated that USD 5 million have been spent to date from 2013 and the total capital investment has been revised from USD 210 million to USD 147 million..

3.3.4 Project-level Monitoring and Evaluation Systems

The monitoring & evaluation (M&E) plan was prepared using the standard UNDP template for GEF-financed projects. The estimated cost for implementation of the M&E plan, as recorded in the project document, is USD 80,800, which is about 2% of the GEF grant. The UNDP template for GEF-6 projects, for example, suggests that the M&E budget be 5% of the value of the implementation grant.

The M&E plan and requirements were not mentioned in the project inception workshop report.

There has been one PIR report prepared through midterm, covering the period of June 2017 through June 2018. The PIR report was found to be thorough, including inputs from the key project partners and issues and self-ratings reported with candor.

Development objectives are partly built into the project results framework, e.g., with respect to the number of people expected to benefit from the utility-scale solar PV installed in Bauchi State. The results are not disaggregated by gender.

Tracking tools:

One of the M&E tools used on the project is the GEF-5 climate change mitigation (CCM) tracking tool. A baseline assessment of the tracking tool was prepared (provided to the MTR consultant by the RTA), but was not annexed to the project document. During the MTR mission, the RTA and PMU provided the midterm assessment of the tracking tool. The MTR consultant has the following observations and suggestions regarding the Objective 3 (Renewable Energy) section of the midterm assessment of the tracking tool:

Establishment of financial facilities (e.g., credit lines, risk guarantees, revolving funds):

- Answer indicated: 1: no facility in place
- Suggestion: 3: facilities proposed but not operationalized/funded

Capacity building:

- Answer indicated: 2: information disseminated/awareness raised
- Suggestion: 3: training delivered

Installed capacity per technology:

It would be advisable to include the cumulative 76.2 kW of solar PV systems installed at the agro-processing facilities. GHG emissions reduced can be calculated if the combined capacity of the replaced diesel-powered installations is known for each site.

3.3.5 Stakeholder Engagement and Partnerships

Stakeholder engagement has been enhanced through the number of workshops and meetings the project has organized, including the following:

- 31 May 2017, Calabar, Cross River State. Project inception workshop. 76 participants attended the workshop.

- 02 June 2017, Calabar, Cross River State. 1st project steering committee meeting. 12 participants attended the meeting.
- 25 January 2018, Abuja. 2nd project steering committee meeting. 25 participants attended the meeting.
- 15 March 2018, Abuja. 2nd Strategic planning meeting with on-grid solar IPPs and stakeholders on the proposed national stakeholders' forum on grid-connected solar PV in Nigeria. 15 participants attended the meeting.
- 18 May 2018, Abuja. Technical working group meeting on the UNDP-GEF project on de-risking renewable energy NAMA for the Nigeria energy sector. 16 participants attended the meeting.
- 18 July 2018, Abuja. Technical working group meeting on the UNDP-GEF project on de-risking renewable energy NAMA for the Nigeria energy sector. 10 participants attended the meeting.
- 24-25 July 2018, Ikeja, Lagos State. 2-day grid-connected renewable energy investors' forum. 46 participants attended the forum.
- 25-27 September 2018, Port Harcourt. Stakeholders' interactive forum on environmental and social impact assessment (ESIA) for renewable energy (RE) development Nigeria. 70 participants attended the workshop.
- 15-16 November 2018, Port Harcourt. Validation workshop on Nigerian domestic financial sector reform for on-grid renewable energy investment and for the development of a measurement, reporting and verification (MRV) framework for the Nigerian power sector. 48 participants attended the workshop.
- 6 December 2018, Lagos. 3rd project steering committee meeting. 18 participants attended the meeting.
- 5-7 December 2018, Lagos. Fact-finding mission for train-the-trainer program on large-scale grid-connected PV projects in Nigeria. Several stakeholder meetings held during these 3 days.
- 01 February 2019, Abuja. Wrap-up meeting of the inception mission on development of a GIS mechanism for identifying practicable renewable energy (RE) sites in Nigeria. 30 participants attended the meeting.

As discussed earlier, one of the main shortcomings with respect to stakeholder engagement and partnerships is that the FMPW&H and FME do not have direct implementation roles on the project, as planned. This is constraining engagement by these important stakeholders and weakens project sustainability.

There has also been limited engagement with governmental and non-governmental stakeholders in Bauchi State, where the 100-MW utility-scale solar PV is planned.

3.3.6 Reporting

There has been one project implementation review (PIR) reports produced to date, for the period covering July 2017 through June 2018. The PIR report addresses challenges the project has faced, including the blockage associated with the IPPs in reaching financial close. The ratings applied in the 2018 PIR were "moderately satisfactory" for progress toward development objective, and "moderately unsatisfactory" with respect to implementation. The overall risk rating was "substantial". These internal ratings are considered appropriate by the MTR consultant.

There is no evidence that the PIR report was shared with the PSC members. The minutes of the 3rd PSC meeting held in December 2018 does not mention the PIR report.

With respect to documenting adaptive management measures, the project has produced three separate technical reports regarding the off-grid solar PV investments made in 2017, but the decision to deviate from the project design was not documented.

3.3.7 Communications

The primary approach taken in communicating with stakeholders has been through workshops and meetings. And, for this, the project has done a good job in organizing frequent workshops, sharing draft outputs and documenting stakeholder feedback.

The learning and knowledge sharing strategy outlined in the project document (Section 5.7) was concise and lacks specifics, as copied below:

"Results from the project will be shared within and beyond the project intervention zone through existing information-sharing networks and forums at the national, sub-national, regional and global levels."

The project will identify and participate, if considered relevant and appropriate, in scientific, policy-based and/or any other networks which may be considered beneficial to project implementation, providing access to lessons-learned and contributing to its replicability.”

The plan to distill lessons learned into a report in Year 5 is a fairly passive approach. It would be advisable to implement a more proactive knowledge management strategy, e.g., regularly posting project information and knowledge products on a website or social media platform.

3.4 Sustainability

Sustainability is generally considered to be the likelihood of continued benefits after the GEF funding ends. Under GEF criteria each sustainability dimension is critical, i.e., the overall ranking cannot be higher than the lowest one among the four assessed risk dimensions.

Overall sustainability rating:

Likelihood that benefits will continue to be delivered after project closure: Moderately unlikely

The financial risks identified at project development are still in place, and, might have increased in the past few years, due to the liquidity problems in the power sector. Even with the potential leveraging through the GCF program, the utility-scale solar PV investments still require governmental commitment, e.g., through PCOAs as a requisite of reaching financial close.

There are significant socioeconomic considerations associated with the planned solar PV plant in Bauchi State, including security risks and resettlement of nearly 300 households. Mitigation plans have been drafted, but the likelihood of delays associated with these risks is high.

Shortcomings with respect to institutional arrangements and governance are evident in the fact that actual available electricity generation capacity ranges between 4 GW and 5 GW with a gross installed capacity of 13 GW. At the project level, the lack of institutional ownership of project outputs further diminishes the prospect that results will be sustained after GEF funding ceases.

Environmental sustainability is enhanced by the fact that an environmental and management plan (ESMP) has been developed for the solar PV plant in Bauchi State.

Overall, the likelihood that benefits will continue to be delivered after project closure is rated as **moderately unlikely**. The following sections include considerations across the four sustainability risk dimensions, including financial, institutional and governance, socioeconomic, and environmental.

3.4.1 Financial Risks to Sustainability

The barriers hindering private investment in the utility-scale RE sector in Nigeria that were present at project entry are still in place at midterm, and, in fact, the financial risks might have increased. Due primarily to the lack of solvency in the power sector, largely as a result of shortcomings in the privatization of the power generation and distribution services, the Federal Government of Nigeria is reluctant to enter into put-call option agreements (PCOAs), which are essentially sovereign guarantees for the private sector investments. The PPAs with the 14 IPPs were signed in 2016, and as of March 2019, none of the IPPs has reached financial close. Two of the IPPs, Afrinergia Power Limited and CT Cosmos, which are under the same ownership and plan to develop the 50-MW plant in Nasarawa State and the 70-MW plant in Plateau State, signed PCOAs in January 2018, but have not yet reached financial close.

The FGN has signaled that the USD 11.5 cents/kWh tariff agreed in the PPAs signed in 2016 is unsustainably high and would make the solar projects among the most expensive sources of electricity for the Nigerian Bulk Electricity Trading (NBET) Plc. The Ministry of Finance is proposing a tariff of USD 7.5 cents/kWh, which is a figure that the ministry considers would allow projects to reach financial close. Most of the projects, however, might not be viable at this tariff. A recently approved program funded under the Green Climate Fund (GCF) aims to facilitate financial close, through providing concessional financing that would essentially lower the tariff and still cover the costs of the debt. A summary of this GCF program is presented below in **Box 1**.

Even with the potential leveraging through the GCF program, the utility-scale solar PV investments still require governmental commitment, e.g., through PCOAs as a requisite of reaching financial close. In summary, financial risks associated with increasing private sector investment into the Nigerian power sector remain high, and a rating of **moderately unlikely** is applied to this dimension of project sustainability.

Box 1: Overview of the GCF-funded Nigeria Solar IPP Support Program

GCF program title: Nigeria Solar IPP Support Program (GCF 104)

National designated entity: Federal Ministry of Environment

Accredited entity: Africa Finance Corporation

Executing entity: Africa Finance Corporation

Beneficiary: Various renewable energy IPP projects in Nigeria

Estimated implementation start date: Q3 2019

Estimated implementation end date: Q3 2022

Total financing: up to USD 467 million

The program is predicated on removing the financial barriers to the local private sector and utility-scale solar power producers by reducing the financial risks of these IPPs through concessional loans and a debt replacement facility. The program consists of up to USD300 million, with up to USD100 million to be equally provided by AFC, AfDB and GCF. USD 140 million is 30 per cent equity from sponsors and USD 27 million potential contribution from local banks. Support will be provided in the form of senior debt financing of up to 70 per cent of total project costs with the balance through equity up to 30 per cent. The program is expected to deliver approximately 400 MW of renewable power, through an estimated 3-5 utility-scale solar projects. The program aims to reduce or avoid 476,487 tCO₂e on an annual basis and 9,592,739 tCO₂e over the 21-year lifespan of the program.

3.4.2 Socioeconomic Risks to Sustainability

With more than 50% of the population lacking access to on-grid electricity and committed government investment and international donor financing, there is widespread expectation among the public that service will expand and improve. Participation of the private sector in delivering capacity through development of RE technologies is a positive contribution, provided that prices are not unreasonably increased. The issue of collections is a challenge in Nigeria. In fact, according to interviewed governmental institutional stakeholders, the collection rates have decreased since the 2013 privatization of power generation and distribution, largely due to reduced service quality. In contrast, some of the mini-grid projects which have much higher local tariffs than charged by the on-grid distribution companies, have seen very high rates of collection, reaching 95% in some cases.⁶ This implies that service quality is a more significant contributing factor to low collection rates than affordability issues or other constraints.

Significant capital investments are being implemented and are in the pipeline to improve transmission quality and to expand electrification coverage. Such investments enhance the sustainability prospects. There is, however, considerable political risks associated with granting sovereign guarantees to private sector developers in the power sector, due to current liquidity constraints that have resulted from unfavorable arrangements associated with the 2013 privatization of electricity generation and distribution.

There are socioeconomic considerations associated with the planned investments, including the plant in Bauchi State. There are security risks associated with the political instability in this part of the country. In January 2018, Canadian and American citizens were kidnapped (later released) in Kaduna State while working on setting up off-grid solar power installations⁷.

There are also resettlement related risks. An estimated 297 households⁸ require resettlement at the site of the Bauchi State plant; a photograph of the project site in Bauchi State, taken from the revised resettlement action plan (June 2017) is shown below in **Figure 9**.

⁶ Based on evidence provided during MTR interviews with mini-grid proponents.

⁷ Associated Press online report, 17 January 2018.

⁸ Source: Revised Resettlement Action Plan, June 2017.



Figure 9: Photo of Bauchi State project site (taken from revised RAP, June 2017)

The developer has made community consultations and negotiated relevant compensation arrangements. With this large number of households and possible unforeseen conditions, e.g., uncovering traditional sites, such as burial grounds, there is a high likelihood that the risks associated with resettlement are higher than estimated. There are a number of other risks associated with the construction of the plants, including community health & safety risks.

There are positive socioeconomic aspects associated with the construction and operation of the plant in Bauchi State, as well as the on-grid plants. A number of construction jobs will be provided and long-term operation and maintenance will require support from local communities.

Considering the factors outlined above, the socioeconomic dimension of project sustainability is rated as **moderately unlikely**.

3.4.3 Institutional Framework and Governance Risks to Sustainability

An efficient institutional framework and effective governance structures are critical in ensuring sustained development and implementation of on-grid RE in the power sector. Considering that available generation capacity ranges between 4 GW and 5 GW with a gross installed capacity of 13 GW, the gas, transmission and distribution constraints are largely a function of institutional and governance shortcomings.

With respect to some of the project results, sustainability will depend on institutional ownership. It is unclear, for example, which institution(s) will operationalize the technology action plans; which institution(s) will advance the recommendations for developing an MRV mechanism; how will the GIS mapping tool be institutionalized after project closure; which institution(s) will follow up on the recommended financial sector reforms; and how will the social and environmental safeguard guidelines be institutionalized. It will be important to strengthen stakeholder involvement, e.g., through identifying “champions” who will facilitate further development of the results generated under the project.

Institutional framework and governance risks remain relevant. At midterm, a rating of **moderately unlikely** is applied for this sustainability dimension.

3.4.4 Environmental Risks to Sustainability

There were no significant environmental impacts identified in the ESIA completed for the planned solar PV plant in Bauchi State. Environmental sustainability is enhanced by the fact that an environmental and management plan (ESMP) has been developed for the Bauchi State project and through eventual implementation of this plan. Mitigation measures to prevent adverse environmental impacts, particularly during construction, as a result of increased traffic, dust emissions associated with land clearing, potential land contamination from incidental spills from earthwork equipment, and noise, will require proactive supervision.

The establishment of utility-scale PV in Nigeria will have significant benefits with respect to reductions in GHG emissions and be a key component of the low-emission development of the country in years to come.

A **moderately likely** rating has been applied for the environmental sustainability dimension at midterm.

4 Conclusions and Recommendations

4.1 Conclusions

The underlying objective of the project continues to be relevant, as the Federal Government of Nigeria (FGN) remains committed to diversifying the power sector with increased RE inputs. Due to the current lack of liquidity in the power sector, stemming from some unfavorable outcomes of the 2013 privatization of electricity generation and distribution services, the government is significantly constrained in issuing guarantees for further private sector investment, and the 14 IPPs that signed PPAs in 2016 have yet to reach financial close. Some stakeholders feel that the recently approved GCF program ("Nigeria solar IPP support program") will provide much needed leverage to enable the IPPs to reach financial close. Approved in February 2019, the GCF program includes USD 467 million of concessional financing and a debt replacement facility, aiming to deliver 400 MW to the national grid through 3-5 solar PV utility-scale investments.

The risk for further delays, however, remains high. Under the best case scenario, the IPP for the Bauchi State plant might reach financial close by the end of 2019, and following 12-15 months of construction, the installation would be commissioned in March 2021, three months before the scheduled close of the project. Not only is the prospect of reaching financial close uncertain, the issues associated with resettling nearly 300 households could require much longer time to sort out than envisaged. And, the incremental reasoning for the GEF funding under Component 3, which includes providing proof-of-concept field demonstration of interface electronics, automated PV panel cleaning mechanisms and sand abrasion proof coatings for PV panels for the planned 100-MW solar PV plant in Bauchi State, should be revalidated. There have been advances in solar PV technology that might render proof-of-concept demonstrations unnecessary, and there might be conflicts regarding the commercial terms the IPPs have negotiated with their suppliers.

In conclusion, it is imperative to reassess the project strategy, to determine if it is sensible to remain engaged on utility-scale solar PV or to reorient the focus, e.g., towards rooftop PV or embedded generation and interconnected mini-grids.

The project has made moderately satisfactory progress in completing the outputs under Components 1 and 2; however, institutional ownership of the outputs is uncertain. One reason for the unclear ownership is attributable to the fact that the project is not being jointly implemented as outlined in the project document. Apart from the ECN, the FMPW&H, the FME and the NERC were indicated as executing agencies (or as responsible parties). These institutions are members of the project steering committee (PSC) and have attended project-sponsored workshops, but they do not have direct implementation responsibilities. This is considered a significant shortcoming; the project implementation arrangements should also be reconsidered as the overall project strategy is reassessed.

4.2 Recommendations

No.	Recommendation	Responsibility
1.	Reassess the project strategy and redesign the project components accordingly. Three possible options are discussed in Section 4.2.1 of this MTR report and include: Option 1, remain focused on utility-scale solar PV and update the project strategy according to current circumstances; Option 2, reorient the project strategy towards rooftop PV (on-grid); and Option 3, reorient the project strategy towards embedded generation and interconnection mini-grids. The project results framework and allocation of funding across project components should be adjusted according to the updated or revised strategy. It is also recommended to develop a theory of change for the updated project strategy and reformulate the project results framework and an exit strategy in accordance with the causal pathways. A draft theory of change is included in this MTR report for consideration.	UNDP, PMU/ECN, PSC
2.	Strengthen involvement of the FMPW&H and FME through a joint implementation approach. Implementation roles and responsibilities should be assigned to the FMPW&H and FME, and possibly other stakeholders, to strengthen involvement and ensure ownership of the processes.	UNDP, PSC
3.	Identify institutional roles and responsibilities for the project outputs and facilitate ownership of project results, through institutionalizing the project results. The institutional roles and responsibilities for each of the project outputs should be identified, and specific "champions" assigned in the relevant institutions to help facilitate institutionalization of project results. Project outputs include, but are not limited to technology action plans, MRV mechanism, GIS tool, environmental and social safeguard guidelines, financial sector reforms, etc.	PMU, PSC
4.	Provide technical advisory support to help ensure coherency of project results. A part-time chief technical advisor should be recruited to support the PMU in ensuring high quality of project outputs and to guide the project towards achieving the intended outcomes.	PMU, UNDP
5.	Streamline and clarify the role and responsibilities of the project steering committee. A terms of reference should be prepared for the project steering committee that includes identification of members and descriptions of roles and responsibilities. Stakeholders that are not members of the PSC should be encouraged to attend the PSC meetings as observers.	PSC, UNDP

No.	Recommendation	Responsibility
6.	Develop and implement a communication and knowledge management strategy and action plan. A communication and knowledge management strategy and action plan should be developed in accordance with the updated or revised project strategy. An emphasis should be placed on proactively sharing knowledge generated by the project and information from the RE sector in general, as one of the derisking instruments to overcome the barrier of the lack of awareness and knowledge of the value of RE among decision-makers, consumers, end-users and local residents.	PMU, UNDP
7.	Improve coordination with other projects and programs An important part of reassessing the project strategy is to determine how the available GEF funds provide meaningful incremental support to the sector, considering that there are several other ongoing projects and programs underway and in the pipeline. Apart from updating the analysis of baseline activities and possibly identifying additional cofinancing partners, the project should implement an approach for maintaining close coordination with other projects and programs throughout the implementation phase. It would also be advisable to expand the level of sharing lessons learned and best practices among the portfolio of UNDP-GEF projects in the region.	PMU, UNDP
8.	Update the monitoring and evaluation (M&E) plan for the project. Concurrent with updating or revising the project results framework according to the updated or revised project strategy, an updated M&E plan should be developed and implemented for the project. The means for verifying each of the performance metrics in the results framework should be described, along with allocation of resources and responsibilities. The GEF climate change mitigation tracking tool should also be updated according to the revised strategy. And, as indicated in Section 3.3.4 of this MTR report, the GHG emission reductions achieved through the off-grid solar PV investments made in 2017 should be included in the midterm assessment of the tracking tool.	PMU, UNDP
9.	Strengthen management of project risks. Management of project risks should be strengthened, including more proactive involvement in mitigation of social and environmental risks associated with the utility-scale solar PV plant in Bauchi State. Project risks should also be reassessed according to the process of updating or revising the project strategy, and appropriate risk mitigation measures should be implemented accordingly.	PMU, UNDP
10.	Facilitate a decision from the PSC and UNDP that is retroactive in regard to the investment in off-grid solar PV systems in 2017. The use of GEF funds for investment in off-grid solar PV systems in 2017 should be reconciled through a decision by the PSC and UNDP that is effective retroactively.	PSC, UNDP
11.	Follow up on the progress of implementing the recommendations for achieving financial sector reform. It would be advisable to follow up on the recommendations made in the financial sector reform report under Output 2.1, identifying responsible entities for each of the recommendations and requesting progress feedback reports at each of the project steering committee meetings.	PMU, PSC

4.2.1 Possible Options for Reorienting the Project Strategy

It is apparent that the project strategy needs to be reassessed, in light of the fact that there continues to be an impasse regarding the IPPs reaching financial close. The essence of the project objective is predicated on developing and operationalizing the first NPS RE NAMA in the country, namely the planned 100-MW solar PV plant in Bauchi State. Based on stakeholder consultations during the MTR mission, the following three options are identified for possibly reorienting the project strategy.

Option 1: Remain focused on utility-scale solar PV and update strategy according to current circumstances

The first option entails remaining focused on utility-scale solar PV and updating the strategy according to current circumstances. The approval of the GCF program in February 2019 could leverage a resolution to the current blockage, by offering concessional funding opportunities to qualified IPPs. NSCP, the IPP for the Bauchi State investment, indicated that if they are able to access the concessional funding through the GCF program and obtain an approved PCOA and partial risk guarantee by the summer of 2019, they expect to reach financial close by the end of the year. The estimated construction time for the 100-MW plant is 12-15 months, meaning that under best case conditions, commissioning would occur in March 2021. This UNDP-GEF derisking project is scheduled to close in June 2021; if the maximum allowable 18-month no-cost extension is obtained, then there might be sufficient time to strengthening the enabling environment, enhancing the prospects for other utility-scale RE investments.

The project strategy would need to be updated under this option. For example, rather than carrying out the DREI analyses of 3 policy and financial instruments, as planned in Output 1.1, it might be advisable to assess the viability of the business model advocated by the government, of basing the PPA terms on energy delivered rather than capacity delivered. With respect to Component 3, it would be advisable to verify whether the envisaged incremental support of the GEF funds is currently relevant and also to validate the allocated funds.

There are challenges to consider for this option. Firstly, due to the liquidity shortfalls in the power sector, there are uncertainties on whether the IPPs and the government can reach agreement on revised PPAs and PCOAs. There are also risks associated with resettlement in Bauchi State. The IPP indicated that they are obliged to provide a 3-month notice to the community, according to the resettlement action plan. Considering that nearly 300 households require resettlement, there is a high likelihood that more time will be needed.

Option 2: Reorient the project strategy towards on-grid rooftop solar PV

Option 2 involves a substantive reorientation of the project strategy, focusing on rooftop solar PV rather than the utility scale investments that continue to be blocked. On-grid rooftop PV is not widely developed in Nigeria. There is a feed-in-tariff regulatory framework in place (for <1 MW installations), and there have been a few examples of industries implementing rooftop PV, e.g., the Rumbu Industries facility (plastics) in Kano, where they have installed a 73 kWp system that is inter-connected to their diesel-powered generators and the grid. The FMPW&H is planning a rooftop PV system for their headquarters office complex in Abuja; they are currently in negotiation with the Abuja distribution company for feeding into the grid.

There are also challenges to consider for this option. Firstly, reaching agreements with distribution companies might be problematic. And, the fact that most facilities in Nigeria have invested (sunk costs) in diesel generators to provide back-up power during power outages, there might be a reluctance to commit to rooftop PV. In terms of lifetime GHG emission reductions, the impact would be lower under this option as compared to Option 1, which involves a 100-MW utility-scale solar PV plant. With rooftop PV, the GEF funds would likely support technical assistance to validate this particular business model, and one pilot plant might be feasible within the time and cost constraints of the project.

Option 3: Reorient the project strategy towards embedded generation and interconnected mini-grids

Option 3 would also represent a substantive change in strategy, focusing on embedded generation and interconnected mini-grids. The FMPW&H is actively promoting embedded generation and interconnected mini-grids. For instance, there is a pilot project under development in Sokoto State, where a 5-10 MW decentralized solar generation plant is planned to address technical deficiencies in the transmission feeder line in this area. The objective of the pilot is to demonstrate the benefits of decentralization, decarbonization and digitalization. There are many locations in the country with similar shortcomings, and this approach is advantageous to distribution companies.

There are other donors supporting the government in this sector, including the NESP. It would be important to find the specific niche for the GEF funds, and it would be important to identify the synergy with the GEF-7 mini-grids project that is currently being conceptualized. Similar to Option 2, the lifetime GHG emissions reduced would likely be lower than for Option 1, and it is uncertain whether the criteria for registering a NAMA would be fulfilled.

Annex 1: MTR Mission Itinerary

Sunday, 10 March:

- MTR consultant arrives to Abuja (5:30pm)

Monday, 11 March:

- Opening meeting at ECN offices, Abuja
- Interview national consultant Clean Energy Consult
- Interview GEF Operational Focal Point, Federal Ministry of Environment (FME)
- Interview representatives of Ministry of Budget and Planning, Social Development Department
- Interview national consultant Peninsula & Hedges

Tuesday, 12 March:

- Interview representative of the Transmission Company of Nigeria (TCN)
- Interview representatives of the Federal Ministry of Power, Works & Housing (FMPW&H)
- Interview representatives of the FME, Climate Change Department
- Interview representatives of the FME, Environmental Assessment Department
- Interview representative of the Consumer Protection Council

Wednesday, 13 March:

- Interview representative of the Nigerian Electricity Regulatory Commission (NERC)
- Interview representatives of the National Orientation Agency
- Interview project manager

Thursday, 14 March:

- Skype interview UNDP-GEF RTA and UNDP Senior Energy Finance Specialist
- Interview CEO of Afrinergia and CT Cosmos (2 of the IPPs for the utility-scale solar PV plants)
- Follow-up interview with the project manager
- Telephone interview the permanent secretary of the Bauchi State Ministry of Environment

Friday, 15 March:

- Skype interview with director of the Lagos Energy Academy
- Field visit to the 1.2-MW solar PV plant at the Usman Dam Water Works in Abuja
- Follow-up interview with representatives of the FMPW&H
- Interview representatives of GIZ

Saturday, 16 March:

- Consolidate MTR findings, prepare debriefing slides
- Skype interview with UNDP-GEF RTA and UNDP Senior Energy Finance Specialist

Sunday, 17 March:

- Consolidate MTR findings, prepare debriefing slides

Monday, 18 March:

- MTR debriefing, ECN office in Abuja
- Telephone interview with representative of Nigeria Solar Capital Partners
- Mission wrap-up
- MTR consultant departs Abuja (11:30 pm)

Annex 2: List of Persons Interviewed

Name	Position	Organization	Female/Male
Prof. Eli Jidere Bala	Project Implementing Partner	Energy Commission of Nigeria (ECN)	Male
Kusimo Tope	GEF Operational Focal Point	Federal Ministry of Environment, GEF Office	Male
Engr. Ekpenyong Okon	Project Team Leader	UNDP/ECN PMU Office	Male
Mr. Oliver Waissbein	Senior Energy Finance Specialist	UNDP	Male
Mr. Faris Khader	Regional Technical Advisor, Climate Change Mitigation/Energy	UNDP Regional	Male
Engr. Isaac Ierve	Project Manager	Energy Commission of Nigeria (ECN)	Male
Ibe Grace	Project Assistant	Energy Commission of Nigeria (ECN)	Female
Engr. Aribaba Peter	PSC Member	Transmission Company of Nigeria (TCN)	Male
Dr. Peter Yerime Peter Tarfa	PSC Member	Federal Ministry of Environment, Department of Climate Change (FME)	Male
Ms. Odotero R.A.	Technical Working Group (TWG) Member	Federal Ministry of Environment, Environmental Assessment Department	Female
Mr. John A. Alonge	Director	Federal Ministry of Environment, Environmental Assessment Department	Male
Engr. Olu Leke	PSC Member	Lagos Energy Academy (LEA)	Male
Engr. Tope Dina	PSC Member	Federal Ministry of Power Works and Housing (FMPW&H)	Male
Engr. Chinedum Ukabiala	PSC Member	Nigerian Electricity Regulatory Commission (NERC)	Male
Engr. Sham T. Kolo	PSC Member	Consumer Protection Agency (CPC)	Male
Mr. F. N. Abdulraheem	Assistant Director (Social Development)	Ministry of Budget & National Planning	Male
Mr. Obikaonu Udochi Louis	Assistant Director (Social Development) and PSC Member	Ministry of Budget & National Planning	Male
Ms. Stella Oneli	PSC Member	National Orientation Agency (NOA)	Female
Mr. Sani Umar	Permanent Secretary	Bauchi State Government Ministry of Environment	Male
Ms. Hasana Bello Aliyu	PSC Member	Nigeria Solar Capital Partners	Female
Mr. Bestman Uwadia	PSC Member	Afrinergia	Male
Engr. Chimereze Nousu	PSC Member	GIZ (NESP)	Male
Mr. Luis-Carlos Miro	Head of Unit, Sustainable Energy Access (On-grid and Off-grid)	GIZ (NESP)	Male
Ms. Fauzia Chevonne Mohammed	Advisor, Sustainable Energy Access (On-grid)	GIZ (NESP)	Female
Mr. Abba Aliyu	National Consultant	Peninsula & Hedges	Male
Barr. Huzi Ishaku Mshelia	National Consultant	Clean Energy Consult	Male
Mr. Vladislav Arnaoudav	International Consultant	Deloitte Tohmatsu, Japan	Male
Mr. Singh Manpreet	International Consultant	KPMG, India	Male
Mr. Daniel Rossetto	International Consultant	Climate Mundial, London	Male
Lars Koerner	International Consultant	Renewable Academy (RENAC), Germany	Male
Mr. Carlos Gueifo	international Consultant	Gesto Energy Consulting, Portugal	Male

Annex 3: List of Documents Reviewed

1. Project Identification Form (PIF)
2. UNDP Project Document
3. GEF CEO Endorsement Request
4. GEF Review Sheet
5. STAP Review Sheet
6. UNDP Environmental and Social Screening results
7. Project inception report
8. Annual work plans for each year of implementation (2017, 2018 and 2019)
9. Annual financial project reports (combined delivery reports - CDR), broken down by components and project management (2017, 2018 and 2019 (through 28 March))
10. Expenditure ledger (from ECN)
11. Cofinancing records
12. Project Implementation Review (PIR) report (2018)
13. Quarterly Progress Reports (QPRs)
14. Finalized GEF focal area Tracking Tools at CEO endorsement and midterm
15. Terms of reference for technical assistance consultancies (development of GIS tool; establish MRV mechanism; financial sector reform study; train-the-trainers; technology action plans; gender analysis; DREI analysis)
16. Consultancy products ((development of GIS tool inception mission report; establish MRV mechanism; financial sector reform study; train-the-trainers inception mission report; technology action plans)
17. Environmental and Social Impact Assessment report of Bauchi State project, June 2017
18. Resettlement Action Plan for the Bauchi State project, June 2017
19. Cumulative Impact Assessment report of the Bauchi State project, May 2017
20. Project Steering Committee meeting minutes (June 2017, January 2018 and December 2018)
21. Meeting memorandum, 15 March 2018, Abuja. 2nd Strategic planning meeting with on-grid solar IPPs and stakeholders on the proposed national stakeholders' forum on grid-connected solar PV in Nigeria.
22. Meeting memorandum, 18 May 2018, Abuja. Technical working group meeting on the UNDP-GEF project on de-risking renewable energy NAMA for the Nigeria energy sector.
23. Meeting memorandum, 18 July 2018, Abuja. Technical working group meeting on the UNDP-GEF project on de-risking renewable energy NAMA for the Nigeria energy sector.
24. Meeting memorandum, 24-25 July 2018, Ikeja, Lagos State. 2-day grid-connected renewable energy investors' forum.
25. Meeting memorandum 25-27 September 2018, Port Harcourt. Stakeholders' interactive forum on environmental and social impact assessment (ESIA) for renewable energy (RE) development Nigeria.
26. Meeting memorandum 15-16 November 2018, Port Harcourt. Validation workshop on Nigerian domestic financial sector reform for on-grid renewable energy investment and for the development of a measurement, reporting and verification (MRV) framework for the Nigerian power sector.
27. Meeting memorandum 5-7 December 2018, Lagos. Fact-finding mission for train-the-trainer program on large-scale grid-connected PV projects in Nigeria. Several stakeholder meetings held during these 3 days.
28. Meeting memorandum 01 February 2019, Abuja. Wrap-up meeting of the inception mission on development of a GIS mechanism for identifying practicable renewable energy (RE) sites in Nigeria
29. UNDP Country Programme Document (CPD) 2014-2017
30. United Nations Sustainable Development Partnership Framework (UNSDPF) 2018-2022
31. Economic Recovery & Growth Plan 2017-2020, Federal Republic of Nigeria, Ministry of Budget and National Planning
32. Nigeria's Second National Communication, under the United Nations Framework Convention on Climate Change, February 2014
33. Nigeria's Intended Nationally Determined Contribution, 271115 (UNFCCC)
34. Nigeria: Human Development Indices and Indicators: 2018 Statistical Update
35. Green Climate Fund (GCF) funding proposal for FP104 (Nigeria Solar IPP Support Program), 1 February 2019

Annex 4: Evaluation Matrix

Evaluation theme	Questions	Sources	Methodology
Project Strategy			
Project Design:	To what extent is the project suited to local and national development priorities and policies?	National development strategies, sector plans, medium term development plan, project document	Desk review, interviews
Project Design:	To what extent is the project in line with GEF operational programs?	GEF focal area strategies, project design, PIR reports	Desk review, interviews
Project Design:	To what extent are the objectives and design of the project supporting environment and development priorities?	UNPDF, UNDP CPD, multilateral environmental agreements, etc.	Desk review, interviews
Project Design:	Does the project design remain relevant in generating global environmental benefits?	GEF strategies, national and subnational development plans, PIF, project document, CEO endorsement request, reviews, PIRs	Desk review, interviews
Results Framework:	Does the results framework fulfil SMART criteria and sufficiently captures the added value of the project?	Strategic results framework, tracking tools, inception report, PIRs	Desk review, interviews
Results Frameworks:	What changes could be made (if any) to the design of the project in order to improve the achievement of the project's expected results?	SMART analysis of results framework, current national and local development strategies	Desk review, interviews
Mainstreaming:	How are broader development objectives are represented in the project design?	Project document, social and environmental social screening procedure, gender action plan, work plans for community activities, training records, monitoring reports of community activities, project steering committee meeting minutes, stakeholder feedback during MTR mission	Desk review, interviews, field visits
Progress towards Results			
Progress towards Outcomes Analysis:	Has the project been effective in achieving the expected outcomes and objective?	PIRs, self-assessment reports by PMU, annual reports, monitoring reports, output level deliverables, midterm tracking tool, stakeholder feedback during MTR mission	Desk review, interviews, field visits
Progress towards results:	To what extent has the project increased institutional capacity?	Progress reports, national and local development strategies, etc.	Desk review, interviews, field visits.
Progress towards results:	How has the project been able to influence monitoring and evaluation associated with climate change mitigation?	Progress reports, national and local development strategies, budget allocations, increased level of awareness	Desk review, interviews, field visits
Risk management:	What were the risks involved and to what extent were they managed?	Project document, risk log, progress reports	Desk review, interviews, field visits
Lessons learned:	What lessons have been learned from the project regarding achievement of outcomes?	Progress reports, lessons learned reports, back-to-office reports	Desk review, interviews
Remaining Barriers to Achieving the Project Objective:	How are the project outputs addressing key barriers?	PIRs, annual reports, project steering committee meeting minutes, stakeholder feedback during MTR mission	Desk review, interviews, field visits

Evaluation theme	Questions	Sources	Methodology
Project Implementation & Adaptive Management			
Management Arrangements, GEF Partner Agency:	How were lessons learned on other projects incorporated into project implementation?	PIRs, project steering committee meeting minutes, audit reports, feedback obtained during MTR mission	Desk review, interviews
Management Arrangements, Executing Agency / Implementing Partner:	How effective has adaptive management been, e.g., in response to recommendations raised by project steering committee?	PIRs, project steering committee meetings, feedback obtained during MTR mission	Desk reviews, interviews
Work Planning:	Are milestones within annual work plans consistent with indicators in strategic results framework.	Project document, multi-year work plan, annual work plans, PIRs, financial expenditure reports, feedback obtained during MTR mission	Desk review, interviews
Finance and Cofinance:	How efficient has financial delivery been?	Financial expenditure reports, combined delivery reports, audit reports, project steering committee meeting minutes, PIRs, midterm cofinancing report, feedback obtained during MTR mission	Desk review, interviews
Cost-effectiveness:	How cost-effective have the project interventions been?	Analysis of progress towards results, financial delivery	Desk review, interviews, field visits
Project-level Monitoring and Evaluation Systems:	How timely has implementation of adaptive management measures been?	PIRs, midterm tracking tools, monitoring reports, annual progress reports, self-assessment reports by PMU, project steering committee meeting minutes, feedback obtained during MTR mission	Desk review, interviews, field visits
Stakeholder Engagement:	How inclusive and proactive has stakeholder involvement been?	Stakeholder involvement plan in the project document, meeting minutes, records of exchange visits, stakeholder feedback obtained during MTR mission	Desk review, interviews, field visits
Partnership Arrangements:	How effective have partnership arrangements been?	Partnership agreements, contracts, progress reports, cofinancing realized	Desk review, interviews, field visits
Local Capacity Utilized:	Has the project efficiently utilized local capacity in implementation?	Contracts, financial expenditure records, progress reports	Desk review, interviews, field visits
Reporting:	Adaptive management measures implemented in response to recommendations recorded in PIRs.	PIRs, annual progress reports, midterm tracking tools, output level project deliverables, feedback obtained during MTR mission	Desk review, interviews
Communication:	Project information is effectively managed and disseminated.	Internet and social media, press releases, media reports, statistics on awareness campaigns, evidence of changes in behavior, feedback obtained during MTR mission	Desk review, interviews, field visits
Sustainability			
Risk Management:	How timely has delivery of project outputs been?	Project document, risk logs, PIRs, project steering committee meeting minutes, feedback during MTR mission	Desk review, interviews
Lessons Learned:	What lessons can be drawn regarding sustainability of project results, and what changes could be made (if any) to the design of the project in order to improve sustainability of project results?	Progress reports, monitoring and evaluation reports, feedback from stakeholders, current national and local development strategies and sector plans	Desk review, interviews, field visits
Financial Risks to Sustainability:	How has the project addressed financial and economic sustainability?	Budget allocations, progress reports, government publications	Desk review, interviews, field visits

Evaluation theme	Questions	Sources	Methodology
	Are recurrent costs sustainable after project closure? What evidence is available that demonstrates budget allocations have been or will be made to sustain project results?		
Socioeconomic Risks to Sustainability:	What incentives are in place or under development to sustain socioeconomic benefits? What evidence is available that demonstrates capacities and resilience of local communities have been strengthened?	Project outputs realized, progress reports	Desk review, interviews, field visits
Institutional Framework and Governance Risks to Sustainability:	What is the level of ownership of approaches promoted by the project? What policies are in place that enhance the likelihood that project results will be sustained?	Tracking tool, training records, evidence of policy reform, governance platform records	Desk review, interviews, field visits
Environmental Risks to Sustainability:	What evidence is available that demonstrate reduction of key threats? Have any new threats emerged?	Tracking tool, budget allocations, training record, statistics on awareness campaigns	Desk review, interviews, field visits
Progress towards Impact			
Environmental stress reduction	What evidence is available that demonstrates progress towards environmental stress reduction?	Delivered outputs, progress reports, feedback from stakeholders, monitoring and evaluation reports	Desk review, interviews, field visits
Environmental status change	What evidence is available that demonstrates progress towards environmental status change?	Delivered outputs, progress reports, feedback from stakeholders, monitoring and evaluation reports	Desk review, interviews, field visits
Community well-being	What evidence is available that demonstrates progress towards improving community well-being?	Delivered outputs, progress reports, feedback from stakeholders, monitoring and evaluation reports	Desk review, interviews, field visits
Policies	What evidence is available that demonstrates progress towards changes in policies?	Delivered outputs, progress reports, feedback from stakeholders, monitoring and evaluation reports	Desk review, interviews, field visits
Governance mechanisms	What evidence is available that demonstrates progress towards changes in governance mechanisms?	Delivered outputs, progress reports, feedback from stakeholders, monitoring and evaluation reports	Desk review, interviews, field visits
Capacities	What evidence is available that demonstrates progress towards changes in capacities?	Delivered outputs, progress reports, feedback from stakeholders, monitoring and evaluation reports	Desk review, interviews, field visits
Unintended consequences	What unintended consequences have occurred?	Delivered outputs, progress reports, feedback from stakeholders, monitoring and evaluation reports	Desk review, interviews, field visits

Annex 5: Progress towards Results

Assessment Key:	Achievement Rating Scale:
Achieved	Ratings assigned using the following 6-point scale: highly satisfactory, satisfactory, moderately satisfactory, unsatisfactory, highly unsatisfactory
On target to be achieved	
Not on target to be achieved	
Unable to assess	

Indicator	Baseline	End of Project target	Self-assessment by PMU, Feb 2019	Midterm Assessment	MTR Assessment Justification
Objective: To support the Federal Government of Nigeria (FGN) in the development and implementation of a NAMA in the energy sector, namely a RE NAMA for the Nigerian Power Sector (NPS)					
A. A NAMA developed for the Nigerian power sector (NPS)	No NAMA for the energy sector	A NAMA developed for the NPS and submitted for registration with the UNFCCC NAMA Registry	Self-assessment not made.	Not on target	NAMA not yet registered for the energy sector
B. Quantity of renewable electricity generated by on-grid baseline projects (MWh/year)	No MRV system for monitoring GHG emission reductions in the energy sector	262 GWh/yr is generated by 100 MW PV plant in Bauchi State	Self-assessment not made.	Not on target	PV plant in Bauchi delayed
C. Quantity of direct GHG emissions resulting from the baseline projects and power sector NAMA (tCO ₂ /year)	Proposed 100 MW PV plant in Bauchi State becomes operational but with deficiencies (e.g. significant policy and financial risks)	Emissions reductions: • Total direct emission reductions of 452,000 tCO ₂ between 2017 and 2020	Self-assessment not made.	Not on target	PV plant in Bauchi delayed
Achievement rating, project objective:					Unsatisfactory
Component 1: Design and development of a power sector renewable energy NAMA supported by DREI analysis					
Outcome 1: A coherent derisking approach is established for catalyzing private sector investment to implement renewable energy power sector NAMA					
1.1. Number of policy and financial derisking instruments designed using DREI analysis and implemented	No methodology is used to quantify risks that hinder investments in RE, and to develop policy and financial derisking instruments to promote large-scale private investments.	At least 3 policy and financial derisking instruments have been assessed using DREI analysis based on work initiated in the development of the project document	The methodology was developed by UNDP experts and UNDP is still working on the assessment on the policy and financial derisking instruments for Nigeria.	Not on target	DREI analyses not yet started. Should reassess the utility of DREI analyses on separate policy and financial instruments
1.2. Number of national guidelines	Social and environmental safeguards for RE projects do not meet international standards	3 TAPs developed by the end of Year 3	A final draft study report on Three Comprehensive TAPs for Solar PV, Wind, and Biomass has been developed.	On target	Draft TAPs prepared; should be further developed. And there is no clear path towards institutionalizing the TAPs.
1.3. Standardised baseline for calculating GHG emission reduction for on-grid RE	No baseline exists to calculate emission reductions for grid connected RE. No technology action plans for promoting RE projects.	An MRV mechanism is developed for the power sector, including a standardized baseline for national grid developed in Year 1 and updated on a yearly basis	An MRV mechanism has been developed for the Nigerian power including Grid Emission Calculation Factor. A final draft study report has been developed.	Not on target	Proposed design drafted; uncertain how the mechanism will be institutionalized
Achievement rating, Outcome 1:					Moderately Satisfactory

Indicator	Baseline	End of Project target	Self-assessment by PMU, Feb 2019	Midterm Assessment	MTR Assessment Justification
Component 2: Policy and institutional framework for private investment in on-grid renewable power generation					
Outcome 2: Public instruments are developed and implemented for derisking the national policy environment					
2.1. Number of public instruments developed and implemented (e.g. trainings delivered to IPPs, RE resources assessments, environmental and social safeguards, RE IPPs benefiting from trainings)	<ul style="list-style-type: none"> Limited availability of local capital because of the risk perception of the financial sector No GIS-based tool to provide the practicable RE potential is available Limited capacity in public and private institutions to plan, implement, monitor and evaluate RE projects Lack of internationally-benchmarked social and environmental safeguards 	A study on domestic financial sector reform to unlock low-cost local capital for green investment is carried out	A study on the domestic financial sector to unlock low-cost capital for green investment has been conducted and completed.	On target	Draft report prepared; follow-up required during second half
		A GIS based tool is developed to identify practicable RE (PV, wind and biomass) sites in Nigeria	Project activities ongoing. An International consulting firm Gesto Energy Consulting, Portugal is engaged to develop a GIS based tool to identify practicable RE (PV, wind and biomass) sites in Nigeria. Kick-off mission has been done and data collection is ongoing.	On target	Activity initiated; rather ambitious result for nationwide coverage
		A set of social and environmental safeguard guidelines is developed for all utility-scale RE by the end of Year 1 based on international standards	The PMU collaborated with the Environmental Assessment Department of the Federal Ministry of Environment to organise a 3-Day National Stakeholders' Forum on Environmental and Social Impact Assessment (ESIA) for Renewable Energy Development in Nigeria. Issues to consider for Nigerian EA to comply with international benchmarks were discussed. More discussions are on-going.	Not on target	TA not yet initiated; need to reconcile scope and timing
		The Lagos Energy Academy are capacitated to deliver RE trainings to IPPs, undergraduate students, and public institutions on a cost-recovery basis	An international consulting firm, -Renewable Energy Academy (RENAC) based in Germany is engaged to capacitate 16 staff of Lagos Energy Academy (LEA), Nigerian Power Training Institute (NAPTIN) and some Independent Power Producers (IPP) to deliver RE trainings to IPPs, Undergraduate students, and public institutions on a cost recovery basis. The training will start on March 25 and end April 6, 2019.	On target	Online training underway and hands-on training later in March.
		A lessons learned report is developed to captured best practices for dissemination (Year 5)		Unable to assess	Scheduled for Year 5
2.2. Investments in on-grid utility scale RE projects	Not indicated	Not indicated		Not on target	On-grid utility-scale solar PV projects not yet implemented
Achievement rating, Outcome 2:					Moderately Satisfactory
Component 3: First commercial on-grid RE project					
Outcome 3: The NPS RE NAMA is operationalised by demonstrating a proof-of-concept grid connected solar PV plant with quantified GHG emission reductions					

Midterm Review Report, 2019

De-risking renewable energy NAMA for the Nigerian power sector

UNDP PIMS ID: 5243; GEF Project ID: 5345

Indicator	Baseline	End of Project target	Self-assessment by PMU, Feb 2019	Midterm Assessment	MTR Assessment Justification
3.1. Emission reductions from grid-connected PV power	Baseline project implemented with identified deficiencies	113,150 tCO _{2e} /year from 100 MW PV plant in Bauchi State (452,000 tCO _{2e} between 2017 and 2020)	Recognizing that all the 14 IPPs (including Nigerian Solar Capital Partners) for On-Grid RE-based projects registered by NERC could not reach financial close after over 7 years and there is no hope of doing so. The PMU collaborated with PSC members to organize a 2-Day ON-Grid Investors forum to create opportunity for the IPPs and key policy makers to discuss the issues and proffer solutions. At the end, the issue stood at inability of FGN to provide Partial Risk Guarantees to DFIs/World Bank to enable them loan money to IPPs since there is no domestic financial facility. Consequently, there have been no emission reductions due to lack of grid connected PV power. Achievement of the target would require the baseline project to reach financial close, move to site and complete and operate the plants, which has not happened.	Not on target	Baseline project not yet implemented
3.2. Number of households benefiting from electricity generated by PV plants (households/year) ⁹	No MRV system for NPS NAMA	295,000 households benefiting from PV by the end of the project.	There has been no household benefiting from PV.	Not on target	Households not yet benefitting
Achievement rating, Outcome 3:					Unsatisfactory

⁹ The targets are based on average electricity consumption of approximately 879 kWh/household in 2011 calculated using the following data: (1) population = 164,728,579 persons (Annual Abstract of Statistics, 2012); (2) average number of persons per household = 5.9 - <http://www.kwarastate.gov.ng/statistics/population/householdsizeandcharacteristics.php>; and (3) per capita electricity consumption = 149 kWh/person (World Development Indicators, 2014).

Annex 6: Cofinancing Table

Note	Sources of Cofinancing ¹	Name of Cofinancer	Type of Cofinancing ²	Amount Confirmed at CEO Endorsement USD	Actual Amount Contributed at Stage of Midterm Review USD	Expected Amount by Project Closure ³ USD	Actual % of Expected Amount USD
4	GEF Agency	UNDP	Grant	\$1,500,000	\$142,649	\$1,500,000	10%
5	National Government	Energy Commission of Nigeria	In-kind	\$1,500,000	\$800,000	\$1,500,000	53%
6	National Government	Federal Ministry of Environment	In-kind	\$200,000	\$100,000	\$200,000	50%
7	National Government	Lagos Energy Academy	In-kind	\$350,000	\$200,000	\$350,000	57%
8	Private Sector	Nigeria Solar Capital Partners	Grant	\$210,000,000	\$5,000,000	\$147,000,000	3%
	Total			\$213,550,000	\$6,242,649	\$150,550,000	4%
Notes:							
1	Sources of Co-financing may include: Bilateral Aid Agency(ies), Foundation, GEF Partner Agency, Local Government, National Government, Civil Society Organization, Other Multi-lateral Agency(ies), Private Sector, Other						
2	Type of Co-financing may include: Grant, Soft Loan, Hard Loan, Guarantee, In-Kind, Other						
3	Expected amount by project closure includes actual materialized by midterm and expected cofinancing during the second half of the project.						
4	Staff salaries, staff expenses and UNV related expenses (source: Fund 04000, 2018 combined delivery report).						
5	Office space, staff time, vehicles, etc.						
6	Staff time						
7	Offices for meetings, training facilities,						
8	Development costs to date from 2013, including ESIA, RAP, etc., and revised estimate of capital investment						

Annex 7: Rating Scales

Ratings for progress towards results:

Highly Satisfactory (HS)	Project is expected to achieve or exceed all its major global environmental objectives, and yield substantial global environmental benefits, without major shortcomings. The project can be presented as “good practice”.
Satisfactory (S)	Project is expected to achieve most of its major global environmental objectives, and yield satisfactory global environmental benefits, with only minor shortcomings.
Moderately Satisfactory (MS)	Project is expected to achieve most of its major relevant objectives but with either significant shortcomings or modest overall relevance. Project is expected not to achieve some of its major global environmental objectives or yield some of the expected global environment benefits.
Moderately Unsatisfactory (MU)	Project is expected to achieve its major global environmental objectives with major shortcomings or is expected to achieve only some of its major global environmental objectives.
Unsatisfactory (U)	Project is expected not to achieve most of its major global environment objectives or to yield any satisfactory global environmental benefits.
Highly Unsatisfactory (U)	The project has failed to achieve, and is not expected to achieve, any of its major global environment objectives with no worthwhile benefits.

Ratings for project implementation and adaptive management:

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”.
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.
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.
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.
Unsatisfactory (U)	Implementation of most of the seven components is not leading to efficient and effective project implementation and adaptive management.
Highly Unsatisfactory (HU)	Implementation of none of the seven components is leading to efficient and effective project implementation and adaptive management.

Ratings for sustainability (one overall rating):

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
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
Moderately Unlikely (MU)	Significant risk that key Outcomes will not carry on after project closure, although some outputs and activities should carry on
Unlikely (U)	Severe risks that project Outcomes as well as key outputs will not be sustained

Annex 8: Signed UNEG Code of Conduct Agreement Form

Evaluators:

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

MTR Consultant Agreement Form

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

Name of Consultant: James Lenoci

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

Signed at Budapest on 11 February 2019



James Lenoci
MTR Consultant

Annex 9: MTR Terms of Reference

Terms of Reference

Consultancy for UNDP-GEF Midterm Review Derisking Renewable Energy NAMA for the Nigerian Power Sector

Location: Nigeria

Application Deadline: 7th December, 2018

Category: DREI

Type of Contract: 2 Individual Contracts

Assignment Type: International & Local Consultant

Languages Required: English

Starting Date: 15 January 2019

Duration of Initial Contract: 21 days

Expected Duration of Assignment: 3months

1. INTRODUCTION

This is the Terms of Reference (ToR) for the UNDP-GEF Midterm Review (MTR) of the full-sized project titled Derisking Renewable Energy NAMA for the Nigerian Power Sector (PIMS # 5243) implemented through the Energy Commission of Nigeria (ECN), which is to be undertaken in Q1 2019. The project started on 28th June 2016 and is in its second year of implementation. In line with the UNDP-GEF Guidance on MTRs, this MTR process was initiated before the submission of the second Project Implementation Report (PIR). 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/guidance.shtml#gef>).

2. PROJECT BACKGROUND INFORMATION

The Derisking Renewable Energy NAMA for the Nigerian Power Sector was designed to support the Government of Nigeria to develop a Nationally Appropriate Mitigation Action (NAMA) for the Nigerian Power Sector. The NAMA will target solar PV primarily to achieve a transformation in the electricity mix such that at least 20GW of Nigeria's electricity is generated from solar PV by 2030. The NAMA design will use a rigorous quantitative methodology based on UNDP's Derisking ("DREI") methodology. The project will build upon existing national development policies and initiatives that seek to put in place public derisking instruments to support the more efficient and effective participation of the private sector in the power sector. The project will develop the NAMA architecture and enabling conditions through a combination of complementary policy and financial derisking instruments, which will be validated through the implementation of a 100 MW PV project. The project will contribute to the country's attainment of its voluntary mitigation targets in the energy sector, with expected direct emission reductions of 205,700 tonnes of CO₂e during the project's lifetime and additional indirect emission reductions of between 6.79 and 9.72 million tCO₂e. Being the first of its kind, the baseline project will also pave the way for catalyzing more private investments so that the NAMA will generate national benefits related to green growth, energy security and job creation at scale. To achieve this, the project has been divided into three main components:

Component 1: Design and development of a power sector renewable energy NAMA supported by DREI analysis,

Component 2: Policy and institutional framework for private investment in on-grid renewable power generation,

Component 3: First commercial on-grid RE project.

The following outcomes are expected from the project:

- Policy and Financial De-risking Instruments assessed using DREI analysis based on Solar PV (Catalyzing private sector investment)
- Public instruments developed and implemented for derisking the national policy environment:
- The Nigeria Power Sector RE NAMA Operationalized by demonstrating a proof-of-concept grid-connected solar PV plant with quantified GHG emission reductions.

The project duration is 5 years starting from June 28, 2016 and ending June 28, 2021 with an overall GEF budget of US\$ 4,400,000 and co-financed by UNDP US\$1,500,000, National Government (in-kind) 2,050,000, Private Sector US\$ 210,000,000 total budget US\$ 217,950,000. The project is nationally implemented (NIM) by the Energy Commission of Nigeria with UNDP Country office support.

3. OBJECTIVES OF THE MTR

The MTR will assess progress towards the achievement of the project objectives and outcomes as specified in the Project Document and assess early signs of project success or failure with the goal of identifying the necessary changes to be made to set the project on-track to achieve its intended results. The MTR will also review the project's strategy, its risks to sustainability

4. MTR APPROACH & METHODOLOGY

The MTR must provide evidence-based information that is credible, reliable and useful. The MTR team will review all relevant sources of information including documents prepared during the preparation phase (i.e. PIF, UNDP Initiation Plan, UNDP Environmental & Social Safeguard Policy, the Project Document, project reports including Annual Project Review/PIRs, project budget revisions, lesson learned reports, national strategic and legal documents, and any other materials that the team considers useful for this evidence-based review). The MTR team will review the baseline GEF focal area Tracking Tool submitted to the GEF at CEO endorsement, and the midterm GEF focal area Tracking Tool that must be completed before the MTR field mission begins. The MTR team is expected to follow a collaborative and participatory approach ensuring close engagement with the Project Team, government counterparts (the GEF Operational Focal Point), the UNDP Country Office(s), UNDP-GEF Regional Technical Advisers, and other key stakeholders. Engagement of stakeholders is vital to a successful MTR. Stakeholder involvement should include interviews with stakeholders who have project responsibilities, including but not limited to the Project Steering Committee members, and the Energy Commission of Nigeria (ECN), Federal Ministry of Power, Works and Housing (FMPWH), Federal Ministry of Environment (FMEnv.), Federal Ministry of Finance (FMF), GIZ, Nigerian Electricity Regulatory Commission (NERC), Nigeria Solar Capital Partners (NSCP), Lagos Energy ACADEMY (LEA); executing agencies, Project Board, project stakeholders, etc. Additionally, the MTR team is expected to conduct field missions to the Baseline project (Nigerian Solar Capital Partners' (NSCP) site) location site. The final MTR report should describe the full MTR approach taken and the rationale for the approach making explicit the underlying assumptions, challenges, strengths and weaknesses about the methods and approach of the review.

5. DETAILED SCOPE OF THE MTR

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.

i Project Strategy

Project design:

- Review the problem addressed by the project and the underlying assumptions.
- Review the effect of any incorrect assumptions or changes to the context to achieving the project results as outlined in the Project Document.
- Review the relevance of the project strategy and assess whether it provides the most effective route towards expected/intended results. Were lessons from other relevant projects properly incorporated into the project design?
- Review how the project addresses country priorities. Review country ownership. Was the project concept in line with the national sector development priorities and plans of the country?
- Review decision-making processes: 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?
- Review the extent to which relevant gender issues were raised in the project design. See Annex 9 of *Guidance for Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects* for further guidelines.
- If there are major areas of concern, recommend areas for improvement.

Results Framework/Log frame:

- Undertake a critical analysis of the project's Log frame indicators and targets, assess how "SMART" the midterm and end-of-project targets are (Specific, Measurable, Attainable, Relevant, Time bound), and suggest specific amendments/revisions to the targets and indicators as necessary.
- Are the project's objectives and outcomes or components clear, practical, and feasible within its time frame?
- Examine if progress so far has led to / or could in the future catalyse beneficial development effects (i.e. income generation, gender equality and women's empowerment, improved governance etc...) that should be included in the project results framework and monitored on an annual basis.
- Ensure broader development and gender aspects of the project are being monitored effectively. Develop and recommend SMART 'development' indicators, including sex-disaggregated indicators and indicators that capture development benefits.

ii Progress Towards Results Progress Towards Outcomes Analysis:

- Review the logframe indicators against progress made towards the end-of-project targets using the Progress Towards Results Matrix and following the *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects*; colour code progress in a "traffic light system" based on the level of progress achieved; assign a rating on progress for each outcome; make recommendations from the areas marked as "Not on target to be achieved" (red).

Table: Progress Towards Results Matrix (Achievement of outcomes against End-of-project Targets)

Project Strategy	Indicator (if applicable)	Baseline Level	Level in 1 st PIR	Mid-Term Target	End of project Target	Mid-Term Level & Assessment	Achievement rating	Justification for Rating
Objective:								
Outcome 1:	Indicator 1:							
	Indicator 2:							
Outcome 2:	Indicator 3:							
	Indicator 4:							
	Etc.							
Etc.								

Indicator keys

Green = Achieved	Yellow = on target to be achieved	Red = not on target to be achieved
-------------------------	--	---

In addition to the progress towards outcomes analysis:

- Compare and analyse the GEF Tracking Tool at the Baseline with the one completed right before the Midterm Review.
- Identify remaining barriers to achieving the project objective in the remainder of the project.
- By reviewing the aspects of the project that have already been successful, identify ways in which the project can further expand these benefits.

iii Project Implementation and Adaptive Management

Management Arrangements:

- Review overall effectiveness of project management as outlined in the Project Document. Have changes been made and are they effective? Are responsibilities and reporting lines clear? Is decision-making transparent and undertaken in a timely manner? Recommend areas for improvement.
- Review the quality of execution of the Executing Agency/Implementing Partner(s) and recommend areas for improvement.
- Review the quality of support provided by the GEF Partner Agency (UNDP) and recommend areas for improvement.

Work Planning:

- Review any delays in project start-up and implementation, identify the causes and examine if they have been resolved.
- Are work-planning processes results-based? If not, suggest ways to re-orientate work planning to focus on results?
- Examine the use of the project's results framework/ logframe as a management tool and review any changes made to it since project start.

Finance and co-finance:

- Consider the financial management of the project, with specific reference to the cost-effectiveness of interventions.
- Review the changes to fund allocations as a result of budget revisions and assess the appropriateness and relevance of such revisions.
- Does the project have the appropriate financial controls, including reporting and planning, that allow management to make informed decisions regarding the budget and allow for timely flow of funds?
- Informed by the co-financing monitoring table to be filled out, provide commentary on cofinancing: is co-financing being used strategically to help the objectives of the project? Is the Project Team meeting with all co-financing partners regularly in order to align financing priorities and annual work plans?

Project-level Monitoring and Evaluation Systems:

- Review the monitoring tools currently being used: Do they provide the necessary information? Do they involve key partners? Are they aligned or mainstreamed with national systems? Do they use existing information? Are they efficient? Are they cost-effective? Are additional tools required? How could they be made more participatory and inclusive?
- Examine the financial management of the project monitoring and evaluation budget. Are sufficient resources being allocated to monitoring and evaluation? Are these resources being allocated effectively?

Stakeholder Engagement:

- Project management: Has the project developed and leveraged the necessary and appropriate partnerships with direct and tangential stakeholders?
- Participation and country-driven processes: Do local and national government stakeholders support the objectives of the project? Do they continue to have an active role in project decision-making that supports efficient and effective project implementation?
- Participation and public awareness: To what extent has stakeholder involvement and public awareness contributed to the progress towards achievement of project objectives?

Reporting:

- Assess how adaptive management changes have been reported by the project management and shared with the Project Board.
- Assess how well the Project Team and partners undertake and fulfil GEF reporting requirements (i.e. how have they addressed poorly-rated PIRs, if applicable?)
- Assess how lessons derived from the adaptive management process have been documented, shared with key partners and internalized by partners.

Communications:

- Review internal project communication with stakeholders: Is communication regular and effective? Are there key stakeholders left out of communication? Are there feedback mechanisms when communication is received? Does this communication with stakeholders contribute to their awareness of project outcomes and activities and investment in the sustainability of project results?
- Review external project communication: Are proper means of communication established or being established to express the project progress and intended impact to the public (is there a web presence, for example? Or did the project implement appropriate outreach and public awareness campaigns?)
- For reporting purposes, write one half-page paragraph that summarizes the project's progress towards results in terms of contribution to sustainable development benefits, as well as global environmental benefits.

Sustainability

- Validate whether the risks identified in the Project Document, Annual Project Review/PIRs and the ATLAS Risk Management Module are the most important and whether the risk ratings applied are appropriate and up to date. If not, explain why.
- In addition, assess the following risks to sustainability:

Financial risks to sustainability:

- What is the likelihood of financial and economic resources not being available once the GEF assistance ends (consider potential resources can be from multiple sources, such as the public and private sectors, income generating activities, and other funding that will be adequate financial resources for sustaining project's outcomes)?

Socio-economic risks to sustainability:

- Are there any social or political risks that may jeopardize sustainability of project outcomes? What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained? Do the various key stakeholders see that it is in their interest that the project benefits continue to flow? Is there sufficient public / stakeholder awareness in support of the long term objectives of the project? Are lessons learned being documented by the Project Team on a continual basis and shared/ transferred to appropriate parties who could learn from the project and potentially replicate and/or scale it in the future?

Institutional Framework and Governance risks to sustainability:

- Do the legal frameworks, policies, governance structures and processes pose risks that may jeopardize sustenance of project benefits? While assessing this parameter, also consider if the required systems/ mechanisms for accountability, transparency, and technical knowledge transfer are in place.

Environmental risks to sustainability:

- Are there any environmental risks that may jeopardize sustenance of project outcomes?

Conclusions & Recommendations

The MTR team will include a section of the report setting out the MTR's evidence-based conclusions, considering the findings.

Recommendations should be succinct suggestions for critical intervention that are specific, measurable, achievable, and relevant. A recommendation table should be put in the report's executive summary. See the Guidance for Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects for guidance on a recommendation table.

The MTR team should make no more than 15 recommendations total.

Ratings

The MTR team will include its ratings of the project's results and brief descriptions of the associated achievements in a MTR Ratings & Achievement Summary Table in the Executive Summary of the MTR report. See Annex E for ratings scales. No rating on Project Strategy and no overall project rating is required.

Table. MTR Ratings & Achievement Summary Table for Derisking Renewable Energy NAMA for the Nigerian Power Sector

Measures	MTR achievements	Achievements description
Project Strategy	N/A	
Progress Towards Results	Objective Achievement Rating: (rate 6-point scale)	
	Outcome 1 achievement ratings (rate 6-point scale)	
	Outcome 2 achievement ratings (rate 6-point scale rating)	
	Outcome 3 achievement rating (rate 6-point scale rating)	
	Etc.	
Project implementation & adaptive management	(rate 6-point scale rating)	
Sustainability	(rate 4-point scale rating)	

6 TIMEFRAMES

The total duration of the MTR will be approximately twenty-one (21) days over a time period of six (6) weeks starting (01 February 2019), and shall not exceed five months from when the consultant(s) are hired. The tentative MTR timeframe is as follows:

Time Frame	Activity
7 th December, 2018	Application closes
Before 10 th January, 2019	Selected MTR Team
15 January, 2019	Prep the MTR Team (handover of Project Documents)
2 days (before 25 January 2019)	Document review and preparing MTR Inception Report
2 days	Finalization and Validation of MTR Inception Report- latest start of MTR mission
7 days (between 28 January 2019 and 15 February 2019)	MTR mission: stakeholder meetings, interviews, field visits
Between 10-15 February 2019)	Mission wrap-up meeting & presentation of initial findings earliest end of MTR mission
7days (27 February 2019)	Preparing draft report
2 days (10 March 2019)	Incorporating audit trail from feedback on draft report/Finalization of MTR report
TBD	Preparation & Issue of Management Response
TBD	Expected date of full MTR completion

Options for site visit should be provided in the inception report

7. MIDTERM REVIEW DELIVERABLES

7. MIDTERM REVIEW DELIVERABLES					
S/N	Deliverables		Timeline		Payment
1	MTR Inception Report	MTR team clarifies objectives and methods of Midterm Review	No later than 2 weeks before the MTR mission: 15 January 2019	MTR team submits to the Commissioning Unit and project management	20%
2	Presentation	Initial Findings	End of MTR mission: 15 February 2019	MTR Team presents to project management and the Commissioning Unit	30%
3	Draft Final Report	Full report (using guidelines on content outlined in Annex B) with annexes	Within 3 weeks of the MTR mission: 27 February 2019	Sent to the Commissioning Unit, reviewed by RTA, Project Coordinating Unit, GEF OFP	30%

S/N	Deliverables		Timeline		Payment
4	Final Report*	Revised report with audit trail detailing how all received comments have (and have not) been addressed in the final MTR report	Within 1 week of receiving UNDP comments on draft: 10 March 2019	Sent to the Commissioning Unit	20%

*The final MTR report must be in English.

8. MTR ARRANGEMENTS

The principal responsibility for managing this MTR resides with the Commissioning Unit. The Commissioning Unit for this project's MTR is UNDP Nigeria Country Office. The commissioning unit will contract the consultants and ensure the timely provision of per diems and travel arrangements within the country for the MTR team. 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.

9. TEAM COMPOSITION

A team of two independent consultants will conduct the MTR - one team leader (with experience and exposure to projects and evaluations in other regions globally) and one team expert, usually from the country of the project (Nigeria). The consultants cannot have participated in the project preparation, formulation, and/or implementation (including the writing of the Project Document) and should not have a conflict of interest with project's related activities.

The selection of consultants will be aimed at maximizing the overall "team" qualities in the following areas:

- Recent experience with result-based management evaluation methodologies;
- Experience applying SMART indicators and reconstructing or validating baseline scenarios;
- Competence in adaptive management, as applied to UNDP/GEF Projects;
- Experience working with the GEF or GEF-evaluations;
- Experience working in Nigeria, and knowledge of the policy landscape;
- Work experience in relevant technical areas for at least 10 years (experience in small-scale wind energy and mini-grids, as well as wind skills capacity building will be an added advantage); Demonstrated understanding of issues related to gender and 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;
- A Master's degree in (Engineering, Energy, Finance, Economics, Physics, Environment or Development Studies), or other closely related field.

10. PAYMENT MODALITIES AND SPECIFICATIONS

10% of payment upon approval of the final MTR Inception Report 30% upon submission of the draft MTR report 60% upon finalization of the MTR report.

11. APPLICATION PROCESS

Recommended Presentation of Proposal:

- Letter of Confirmation of Interest and Availability using the template** provided by UNDP;
- CV and a Personal History Form;**
- Brief description of approach to work/technical proposal** of why the individual considers him/herself as the most suitable for the assignment, and a proposed methodology on how they will approach and complete the assignment; (max 1 page)
- Financial Proposal** that indicates the all-inclusive fixed total contract price and all other travel related costs (such as flight ticket, per diem, etc.), supported by a breakdown of costs, as per template attached to the Letter of Confirmation of Interest template. If an applicant is employed by an organization/company/institution, and he/she expects his/her employer to charge a management fee in the process of releasing him/her to UNDP under Reimbursable Loan Agreement (RLA), the applicant must indicate at this point, and ensure that all such costs are duly incorporated in the financial proposal submitted to UNDP.

All application materials should be submitted electronically to **undpgefdrei@gmail.com** by **7th December, 2018**. Incomplete applications will be excluded from further consideration.

Criteria for Evaluation of Proposal:

Only those applications which are responsive and compliant will be evaluated. Offers will be evaluated according to the technically qualified score above 70% with lowest prices financial proposal where the technical score will be weighted at 70% and the price proposal will weigh as 30% of the total scoring. Part of awarding the contract will also be based on acceptance of UNDP's General Terms and Conditions.

EVALUATION CRITERIA

- Work experience in relevant technical areas for at least 10 years; 30 POINTS
- Experience working with the GEF or GEF-evaluations; 25 POINTS
- Competence in adaptive management, as applied to UNDP/GEF Projects; 10 POINTS
- Recent experience with result-based management evaluation methodologies; 10 POINTS
- Experience applying SMART indicators and reconstructing or validating baseline scenarios; 5 POINTS
- Experience working in Nigeria, and knowledge of the policy landscape; 10 POINTS
- Project evaluation/review experiences within United Nations system will be considered an asset; 5 POINTS
- Demonstrated understanding of issues related to gender and experience in gender sensitive evaluation and analysis; 5 POINTS
- A Master's degree in (Engineering, Energy, Finance, Economics, Physics, Environment or Development Studies), or other closely related field. 10 POINTS
- Excellent communication skills; 5 POINTS
- Demonstrable analytical skills; 5 POINTS

Annex 10: Signed MTR final report clearance form

Midterm Review Report Reviewed and Cleared By:	
Commissioning Unit	
Name:	
Signature:	Date:
UNDP-GEF Regional Technical Advisor	
Name:	
Signature:	Date: