Terminal Evaluation of UNDP/GEF Project

Promoting Sustainable Rural Energy Technologies (RETs) for Household and Productive Uses

(GEF Project ID: 5501; UNDP PIMS ID: 5200)

Final Report

by
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Title of UNDP supported GEF financed Project	
Promoting Sustainable Rural Energy Technologies (RETs) for Household and Productive Uses	
Project ID#S	
Award ID	00086749
Project ID	00093964
PIMS	5200
Management Arrangement	NIM/DIM
TE Timeframe and Date of Final TE Report	
Timeframe for TE	August – October 2021,
Date of Final Report	November 10, 2021
Region and Countries included in the Project	
Region	Africa,
Country	Ethiopia
GEF Focal Area/Strategic Programme	
GEF-5 Climate Change Strategy Objective – 2 : Promoting Market Transformation for Energy Efficiency in Building and Transport sectors	
GEF-5 Climate Change Strategy Objective- 3: Promotion of Investment in Renewable Energy Technologies	
Implementing Partners	
United Nations Development Programme (UNDP), Ethiopia	
Ministry of Water, Irrigation and Electricity (MoWIE), Govt. of Ethiopia	
Responsible Partners	
United Nations Capital Development Fund (UNCDF), Ethiopia	
Environment, Forest and Climate Change Commission (EFCCC), Govt. of Ethiopia	
Development Bank of Ethiopia (DBE)	
Regional Energy Bureaus (REB)	
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TABLE OF CONTENTS

List of Tables

ACRONYMS and ABBREVIATIONS

AETDPD	Alternative Energy Technology Development and Promotion Directorate
APR	Annual Progress Review
AWP	Annual Work Plan
BGZ	Benishangul Gumuz Regional State
CO	Country Office
CO_2e	Carbon Dioxide Emission
CRGE	Climate Resilient Green Economy
CRGF	Credit Risk Guarantee Facility
CRGFMC	Credit Risk Guarantee Fund Management Committee
DAC	Development Assistance Committee
DBE	Development Bank of Ethiopia
DIM	Direct Implementation Modality
EDC	Entrepreneurship Development Centre
EEA	Ethiopian Energy Authority
EFCCC	Environment, Forest and Climate Change Commission
EREDPC	Ethiopian Rural Energy Development and Promotion Centre
ESA	Ethiopian Standards Agency
ETB	Ethiopian Birr
FeMSEDA	Federal Micro and Small Enterprises Development Agency
FIs	Financial Institutions
FSPs	Financial Service Providers
GEF	Global Environment Facility
GoE	Government of Ethiopia
GHG	Green House Gas
GTP II	Growth and Transformation Plan II
IA	Implementing Agency
ICS	Improved Cook Stove
M&E	Monitoring and Evaluation
MFIs	Micro-Finance Institutions
MoFED	Ministry of Finance and Economic Development
MoWIE	Ministry of Water, Irrigation and Energy
MoTI	Ministry of Trade and Industry
MTR	Midterm Review
NBE	National Bank of Ethiopia
NDBP	National Domestic Biogas Programme
NICSP	National Improved Cook-Stove Programme
NIM	National Implementation Modality
NPL	Non-Performing Loan

OECD	Organization for Economic Cooperation and Development
OIB	Oromia International Bank
PIF	Project Identification Form (GEF)
PIR	Project Implementation Review
ProDoc	Project Document
PRF	Project Result Framework
PSC	Project Steering Committee
PVOC	Pre-export Verification of Conformity
REB	Regional energy Bureaus
REF	Rural Electrification Fund
RETs	Rural Energy Technologies
SDG	Sustainable Development Goals
SE4All	Sustainable Energy for All
SFM	Sustainable Financial Mechanism
SME	Small and Medium Enterprises
SNNPR	Southern Nations Nationalities and Peoples Region
TA	Technical Assistance
TE	Terminal Evaluation
ToR	Terms of Reference
UNCDF	United Nations Capital Development Fund
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar

1. EXECUTIVE SUMMARY

This report summarizes the findings of the Terminal Evaluation (TE) of the UNDP supported - GEF Financed Project titled **Promoting Sustainable Rural Energy Technologies (RETs) for Household and Productive Uses** (hereby referred as RET Project or Project) that received a USD 4.091 million grant from the Global Environment Facility (GEF) in June 2015.

1.1 Project Information Table

The key data of the project subject to this evaluation is presented in the **Table -1** below -:

Table No. - 1 : Project Information Table

Project Title	**Promoting Sustainable Rural Energy Technologies (RETs) for Household and Productive Uses**		
UNDP Project ID (PIMS)	5200	**PIF Approval Date**	29 August 2013
GEF Project ID	00086749	**CEO Endorsement Date**	12 June 2015
Project ID	00093964	**Project Document (ProDoc) Signature Date (date project began)**	June 2016 (October 2016)
Country	Ethiopia	**Management Arrangements**	NIM/DIM
Region	Africa	**Inception Workshop Date**	30 October – 01 November 2016
Focal Area	Multi-Focal Areas	**Midterm Review Date**	November 2018
GEF-5 Strategic Program	**Objective CCM-2**: Promoting Market Transformation for Energy Efficiency in Building and Transport sectors **Objective CCM-3** : Promotion of Investment in Renewable Energy Technologies	**Planned Closing Date**	June, 2020
Trust Fund	GEF	**If revised, proposed closingdate**	June 2021
GEF Agency	UNDP Ethiopia		
Other Executing Agency	Ministry of Water, Irrigation and Electricity (MoWIE), Govt. of Ethiopia		

	United Nations Capital Development Fund (Responsible Partner for Component -3	
Project Financing	at CEO endorsement (USD)	at Completion (USD)
(1) GEF Financing	**4,091,781**	4,059,166
(2) UNDP Contribution (Cash & Kind)	**900,000**	935,261
(3) UNCDF Contribution	**980,000**	140,000
(4) Govt. of Ethiopia (Cash & Kind)	**29,179,954**	**-**
(5) Private Sector (Investment & Kind)	**5,800,000**	-
(6) Others		
DBE (loan)	**20,000,000**	-
HIVOS,SNV, ABPP (in Kind)	**6,185,945**	-
RET Enterprises (in Kind & Cash)	**6,000,000**	-
(7) Total Co-financing	**67,165,899**	-
Project Total Cost	**73,137,689**	5,134,427

1.2 Project Description (brief)

To complement Government of Ethiopia strategic vision's to develop low carbon and climate resilient green economy, the Ministry of Water, Irrigation and Energy (MoWIE), Govt. of Ethiopia and UNDP in collaboration with UNCDF and other Government Partners have implemented a UNDP supported - GEF financed Project on **Promoting Sustainable Rural Energy Technologies (RETs) for Household and Productive Uses** with the aim to create enabling environment to promote and encourage greater use of small-scale renewable energy technologies for household and productive uses in off-grid rural areas of the country. The activities proposed in the project were designed to remove identified barriers that hamper the wide-scale use of off-grid renewable energy technologies through sustainable financing mechanisms and provision of technical assistance. To achieve this objective, the project's interventions were organized into four components, namely – **Component-1**: Strengthened Regulatory and Legal Framework based on National Standards; **Component- 2**: Rural Public Awareness Campaign on Renewable Energy Technologies; **Component-3**: Sustainable Financial Mechanism (SFM) for RETs for Rural households; and **Component- 4**: Business Incubator to Promote Greater

Entrepreneurship for Investment in RETs. The project has followed private sector driven and market based approach in implementation. The various project interventions focusing on de-risking and market enabling activities combined together with the sustainable financial support mechanism were expected to help in transforming the market for off-grid renewable energy technologies in rural communities. The low carbon Rural Energy Technologies (RETs) that were introduced for meeting cooking, lighting and other energy requirements are different types of Improved Cookstoves (*Mirt*, *Gonzie*, *Tikikil, Lakech and others*), and different capacity solar energy technologies, including Solar Home Systems and Solar Lanterns. The Project was implemented in the off-grid areas of nine regional states of the country [namely Afar, Amhara, Benishangul – Gumuz, Gambella, Harari, Oromia, SNNPRs (including the newly formed Sidama region[1]), Somali and Tigray].

The project intended to save 35.5 million mega Joules of energy and to reduce Ethiopia's energy related CO2 emissions by approximately 2 million tons of CO2e by disseminating 600,000 improved biomass cookstoves and 200,000 solar lighting systems by end of 2021.

As regards implementation of the project, its overall responsibility was with Ministry of Water, Irrigation and Energy (MoWIE) and UNDP Ethiopia. The other Government, and International Organizations who were actively involved for a specific roles were - Environment, Forest and Climate Change Commission (formerly called Ministry of Environment, Forest and Climate Change), Development Bank of Ethiopia (DBE) and United Nations Capital Development Fund (UNCDF). Whereas at the field level, Regional Energy Bureaus, Private Commercial Banks and Micro-finance Institutions, Rural Energy Technology Enterprises in both improved biomass stoves manufacturers and distributors, and solar energy technology product importers and distributors were partnered for their respective roles in overseeing field implementation, financing, delivering the products and/or providing post sales services to the end users respectively.

The revised Project Identification Form (PIF) was initially submitted as full size proposal for GEF approval in August 2013. The final approval for a GEF grant of USD 4,091,781 was received in June 2015. The Project Document was signed in June 2016, followed by Project Inception Workshop during October 30 & November 01, 2016. The Inception Report was finalized in December 2016. The project duration was initially set for 5 years. An extension of one year was subsequently granted with the current revised closing date as December 31, 2021.

[1] Sidama region, which was one of the Zones of SNNPR became the 10th regional state of Ethiopia in November 2019 after a zone-wide referendum

1.3 Evaluation Ratings Table

Though initial coordination and mobilization of the partners in starting the project activities took some time in the beginning, but the collective efforts had compensated the lost time. The Evaluation Ratings presented in the Table below consolidates individual ratings undertaken in a number of areas within the main TE report, as detailed in the TE report's 'Section-4: Findings'. The rating scales used in TE Report are described at Annexure - 6.

Table No. 2 - Terminal Evaluation Rating Table

1. Monitoring and Evaluation (M&E)[2]	**Rating**
M&E Design at Entry	**S**
M&E Plan Implementation	**MS**
Overall Quality of M&E	**MS**
2. Implementing Agency (IA) Implementation & Executing Agency (EA) Execution	**Rating**
Quality of UNDP Implementation/Oversight	**HS**
Quality of Implementing Partner/Execution	**HS**
Overall Quality of Implementation/Execution	**HS**
3. Assessment Outcomes[3]	**Ratings**
Relevance	**HS**
Effectiveness	**HS**
Efficiency	**HS**
Overall Project Outcome Rating	**HS**
4. Sustainability	**Ratings**
Financial Sustainability	**L**
Socio-political Sustainability	**ML**
Institutional Framework and Governance Sustainability	**L**
Environmental Sustainability	**L**
Overall Likelihood of Sustainability	**ML**

[2] M&E rating: Highly Satisfactory (HS), Satisfactory (S) Moderately Satisfactory (MS), Moderately Unsatisfactory (MU), Unsatisfactory (U), Highly Unsatisfactory (HU).

[3] The rating for the main *evaluation criteria is narratively highlighted in the report; other rating is not. Rating explanations:* ***HS-*** *Highly Satisfactory;* ***S-*** *Satisfactory;* ***MS-*** *Moderately Satisfactory;* ***MU –*** *Moderately Unsatisfactory;* ***U*** *– Unsatisfactory;* ***HU*** *– Highly Unsatisfactory;* ***UA*** *– Unable to Assess;* ***N/A*** *– Not Applicable Sustainability ratings:* ***L*** *– Likely;* ***ML*** *– Moderately Likely;* ***MU*** *– Moderately Unlikely; U – Unlikely. Impact ratings: Significant (****S****); Minimal (****M****); Negligible (****N****).*

1.4 SUMMARY OF MAIN FINDINGS, CONCLUSIONS, RECOMMENDATIONS AND LESSONS

1.4.1 Main Findings

Despite delayed start of the project, the RETs project was successful in achieving the intended objectives. The evaluation team has assessed that the project scope, design and implementation approach, including the overall structure of the project results frame work, as ***Satisfactory*** for resolving *t*he critical elements of identified barriers. It has been found that the vital structures and systems have successfully been set up; forming a very strong foundation for the project's enhanced delivery of results. However, the evaluators have identified some gaps in the project design, which include: liquidity shortage and foreign exchange accessibility problem in the risk guarantee fund; and lack of clear exit strategy.

The evaluation team has reviewed specific operational risks and assumptions considered during project formulation and found their validity in designing implementation strategy. However, beside the description of the risks and assumptions in the PRF, the Evaluation Team did not find any follow up to these risks during the implementation of the project. However, the link between the risks/assumption section of the PRF and the Table dealing with the risks and risks mitigation strategies in the Project Document and Inception Report are consistent. In view of this, the overall Project Risk Management is therefore rated as ***Satisfactory***.

The evaluation team has found that the project used adaptive management extensively by adjusting the project activities to overcome the key barriers and obstacles typically faced during the implementation as well as some initial flaws in the project design. The adaptive management actions, therefore, can be rated as ***Highly Satisfactory***.

The evaluators have assessed the monitoring and evaluation approach followed both from reports and interview of project stakeholders. It was noticed that all field visits were made with the aim to inspect and verify project activities on the ground, identify challenges and risks and to suggest remedial actions, ensure proper utilization of grant by the awardee suppliers. The team has the opinion that this has definitely helped achieve better coordination, partnership and an effective management of project implementation. However, it is worth to mention that some of the core indicators and outputs listed in the Project Results Framework (logframe) were not monitored/tracked. To list a few are – type and efficiency of technology disseminated, actual energy saved or related CO_2e avoided. We were informed that the operational performance of the RET technology could not be monitored due to lack of appropriate measurement devices and field level laboratories in the country. Another major problem cited in relation to M&E of this project was that it

could not be taken regularly due instability in different parts of the country and occurrence of COVID-19 pandemic and subsequent measures taken by the Govt. to prevent spread of the virus. In view of these, Project's overall achievement in regard to implementation of M&E Plan is rated as ***Moderately Satisfactory.***

The Evaluators found that the management arrangements were adequate and effective for the implementation of the project. They provided the project with clear roles and responsibilities for all parties including clear reporting lines of authority. The PSC met regularly to monitor the implementation of the project and approve the AWPs and progress reports. The overall structure of the project organization in the "National Implementation Modality" has been found useful, since AETCPD was managing the Project well, ensured continuous involvement of project stakeholders(via PSC) and kept the senior beneficiaries as well as UNDP in a close communication loop. The adequacy and effectiveness of the project management are therefore rated as ***Satisfactory.***

Project consistency with the national development priorities especially in the energy sector has been a strong factor behind the registered achievements hitherto and also sets the stage for the attainment of better results at full implementation. The project was also aligned with the needs of beneficiary rural communities. Furthermore, the RETs project was designed in alignment with the country development framework and strategies of development partners; particularly UNDAF, UNDP, UNCDF, and GEF. It was also in consistence with the 2030 Development Agendas, i.e. Sustainable Development Goals (SDGs). Therefore, the program of RETs project has been assessed as ***Highly Relevant*** in terms of alignment with national priorities, consistency with needs of beneficiary, and policy and priority of development partner (UNDP-GEF, UNCDF, DBE, etc.).

Regarding results of the project, the overall objective of the RETs project was ***to promote and encourage significantly greater use of energy efficient and renewable energy technologies for household and productive uses in rural communities in Ethiopia.*** The evaluation team has measured the achievement the overall objective using objectively verifiable indicators and targets set towards this. In this context, the achievement of the overall objective of the project under evaluation was above planned target (124%) and rated as ***Highly Satisfactory***.

Equally, the evaluators have assessed and rated the *achievement/Effectiveness* of RET project at outcome levels. Accordingly, all the outcomes have been rated as ***Highly Satisfactory*** except outcome 2, rated as ***Satisfactory*** (see the chart below).

Output	Achievement	Ratings
Overall objective	124%	Highly Satisfactory
Outcome 1	100%	Highly Satisfactory

Outcome 2	77.3%	Satisfactory
Outcome 3	85.5%	Highly Satisfactory
Outcome 4	100%	Highly Satisfactory
Overall Effectiveness	***91.9%***	***Highly Satisfactory***

It has been assessed that the efficiency of the RETs Project *(Promoting Sustainable Rural Energy Technologies for Household and Productive Uses)* has been rated as **Highly Satisfactory.** The project has successfully and effectively mobilized all relevant stakeholders whose participation in, ownership of and contribution towards the project form a strong foundation for enhanced project sustainability.

1.4.2 Conclusions

In general, the Project implementation was successful for commercialization of the RE technologies where private sector market the products and services and public funds were used to enforce quality control measures, building consumers awareness, aligning the project within the existing Govt. policies and institutional framework, creating competitive market environment. **The Technical Standards and Test Protocols enacted to ensure quality and reliability of various RET products has complemented in winning the confidence and acceptability of the end-users and in expansion of energy services in other parts of the country.** The implementation of the standards on cook stoves have also promoted competition in the market and encouraged developers of less-efficient stoves to focus on R&D to improve stove efficiency. Similarly, enforcement of standards and quality control and conformity-testing of imported solar products has helped in building trust of the consumers that products are reliable and correctly labelled. Face-to- face engaging nature of communication and products demonstration during the roadshows, in addition to the campaign through national and regional media, was an another effective medium to educate the potential consumers on how their living can be improved by using these fuel efficient products, besides other economic, health and environment related benefits, resulting in fueling-in interest in buying, resulting in creation of additional demand RETs appliances after the roadshows. Establishment of CRGF and its governance structure (GFMC) has helped MFIs to increase their customer base and to extend finance to those customers who were earlier considered as not viable and risky. RET suppliers also viewed the guarantee facility as an important intervention from the project to help them to mobilize additional finance for their business which enables them to improve their local cash/financing problems or able to improve their imports or helped in expanding their business. The grant award was instrumental in encouraging the new entrepreneurs to venture in small-scale RET business, development of new products, and enabled existing enterprises to expand their business.

The TE team also noted that a total of 485,952 RET items (257,212 different types of Improved Cook Stoves and 228,740 different sizes Solar Energy Technology Products) were disseminated to rural communities through increased access to finance through loan (Credit risk guarantee fund), roadshows and market demonstration activities. Following these activities, the regions have increased the market linkage and capacity of enterprises and additional 1,347,907 RET items (816,323 different types of Improved Cook Stoves and 531,584 different sizes of solar energy technology products) were disseminated throughout the nine regions due to financial access, market linkage and promotional works done through different media and trainings

1.4.3 Lessons Learned

Based on the review of project documents, interviews with key informants and analysis of the information collected for this evaluation, several lessons learned are presented below -:

Adaptive management is a key management instrument for this type of project, providing the necessary flexibility to review and reinvent the approach to implement the project as needed to secure project deliverables while maintaining adherence to the overall project design.

The application of the UNDP NIM modality is an effective management tool to develop national ownership of projects funded by international donors.

As part of knowledge management, a project of this type needs to end up with a final phase to document results and to identify the way forward to replicate these results in similar context in the country and in the region. The way forward should also include appropriate solutions to address the gaps noticed in the project design or the challenges encountered in implementation of the project.

Adequate staffing of the partner agencies involved in the project implementation and separate budget allocation for M&E (including for tracking of gender and other cross cutting issues) are important in a national level project of this type as the amount of coordination required is high and regular travelling to remote rural areas for M&E pose several challenges and require a specific budget provision for the activity. Both these factors had an adverse effect on the project progress.

Inadequate M&E of project results which involves evaluation of the project' success in achieving its outcomes and comparing it with the core indicators defined in the logical framework as the focus of field visits made by the project team was to inspect and verify

project activities on the ground, identify challenges and risks and to suggest remedial actions, ensure proper utilization of grant by the awardee enterprise.

In order to ensure sustainability and build confidence of end-users in the technology, it is important that indicators related to expected socio-economic benefits to end-users (in terms of fuel saved, user satisfaction, reduction in indoor pollution, impact on health) are identified during the formulation of the project. Once,it is part of the project strategy (log-frame) and of the monitoring framework, it will be easy to quantify and document such benefits and to assess efficacy of the solution deployed.

In the private sector driven and market based approach, one of the challenge is that the product may not reach the poorest among the poor. For example – the subsistence economies, the people living in remote rural areas don't generate cash surplus, limiting their purchasing power and limiting the opportunity to shift modern energy services. Most of these people also find it difficult to get credit necessary to pay upfront cost of the RE product/service as their income cycles are agriculture dependent and adhering to regular repayment schedules is a difficult proposition for these peoples. Therefore, an exclusive dispensation (scheme) for providing credit facility at lowered interest rate or direct grant /subsidy so that this section could also be covered and reap the benefits of the modern energy services

The project has focused to follow 'minimalist approach' – meeting basic or minimum household energy needs of the unserved communities (energy needs of cooking, lighting and heating). Though, importance of this approach can't be under emphasized but such a strategy does not help in addressing the chronic poverty that the poor find difficult to extricate themselves from. Therefore, focus should also be given for energizing/ strengthening productive applications and community services with a view to improve livelihoods, cash income generation and employment creation

Technology development support to improve design and access to testing facility should be publicized in the technology roadshows and market demonstration to ensure sustainability of cookstoves producers and availability of quality products to the consumers located in rural/remote areas of the country;

Adequate interaction with FSPs was not carried out during project preparation as well as during the implementation and requires appropriate strategy to address the following while looking into replication**.**

a) Liquidity Shortage Although 11 FSPs (four banks and seven MFIs) signed the CRGF framework agreements with the DBE, only five FSPs (Enat Bank, Oromia International Bank, Zemen Bank, Addis Bank and PEACE MFI) were able to lend to ESPs by utilizing the guarantee facility because of liquidity shortage. During interaction, many Banks and MFIs were of the opinion that in addition to the credit guarantee, provision of loanable funds (in the

form of debt) to financial institutions, if made available, will help in overcoming liquidity shortage and boost credit provision to ESPs;

b) Shortage of foreign currency: Importers and distributors of Solar Energy products were forced to wait a minimum of 6 months to access foreign currency for importation of the products; and
c) High lending interest rates of MFIs: Unlike banks, MFIs are not able to mobilize sufficient deposits to cheaply finance their lending activities. This is mainly due to lack of reliable MIS system capable of providing their customers real time access to their accounts (deposit, withdrawal, transfer, etc.). MFIs also have limited access to concessional loans. As a result, the MFIs resort to expensive sources of refinancing such as borrowing from banks at commercial rates which make their lending interest rate very expensive and unaffordable to most of the ESPs. Currently, most MFIs apply flat interest rate with average rate of 22% per annum

1.4.4 Summary Recommendations

Based on the findings of the evaluation **and experience of TE Team in other countries like India and other neighboring South East Asian Countries, the suggestions/ recommendations mentioned below may be considered while planning for scaling up activities on promoting use of small-scale RETs in the next phase after closure of the project** -:

Recommendation 1: All Technical Reports, Knowledge Products and other relevant information/data produce under the project be made available to public on closure of the project

The project has produced a body of knowledge including technical standards for cookstoves and DC solar home system, communication strategy for technology roadshows, CRGF operational manual, guidelines for grant awards, documentation of success stories and lessons learned etc. As the project is approaching for closure by end of the year, it is recommended that this body of knowledge, including full listing in the final project report is available for reference of all the stakeholders associated with expanding the energy access in rural areas. It is also encouraged to make these products available online.

Recommendation 2: Development of a Web based Platform on Energy Access

In the era of digitization, it will be prudent to develop a web based platform (may be called as **Energy Access Knowledge Portal**) which should be a combination of depository of related information/data (old and on-going) and an interactive platform for the concerned stakeholders to share their experiences, innovations, ideas, raise queries and draw mutual benefit from the collective learning on day-to-day basis.

Recommendation 3: Establishment of Region-wise Testing and Certification Facilities for Cookstoves

At present, full-fledged facility for testing and certification has been created only at one place i.e. National Energy Workshop and Laboratory, Addis Ababa under AETDPD. Though the Incubation Centers have been set region-wise but at present, they are not well equipped and fully functional. It is therefore suggested that either the Incubation Centers are made functional to perform testing of cookstoves or the mobile testing facilities or at the display/exhibition centres may be created for facilitating the small cookstoves entrepreneur from remote rural areas in getting their products tested and make necessary improvements, if required, to meet the prescribed performance standards.

Recommendation 4: Establishment of Distribution or Supply Chain Network in Rural Areas for Cookstoves

The project emphasis was more centric towards building producer's technical skills and production capacity rather than developing the capabilities for end to end supply chain. Since, the distribution or supply chain networks available in rural areas is not adequate and transportation of RET products, especially cookstoves, to rural areas is a costly affair (as it is usually through labour, cart, car etc.), a govt. owned facility such as Display/ Exhibition Centre's/Retail Showrooms for RET products or additional financial incentives/ support scheme to the RET suppliers/distributors/retailers may be planned so that availability of the product to the ultimate consumers at affordable cost could be ensured.

Recommendation 5: Tracking of Socio-economic and other Developmental Benefits such as Health and Reduction in GHG Emissions

The project has been able to address well all aspects of sustainability except the Socio-economic risks. A study on socio-economic benefits from the beneficiaries/end-users perspective may be planned to ensure that the energy solutions deployed are right, correctly matching the needs and preferences of the consumers. Similarly, project interventions may have brought about noticeable improvements in the lives of the local communities in terms of benefits related to fuel savings, health, convenience, awareness about the RE products and reduction in GHG emissions. Therefore, a separate study may also be planned to quantify and track these developmental benefits systematically.

Recommendation 6: Focused Approaches for Consumer Awareness and for Market Development

In order to sensitize prospective customers about the RET products, promotional activities may be divided distinctly into social and commercial marketing. In the areas where market is developed for RET (consumers are aware and willing to pay), RET suppliers and MFIs

can scale up the activities. However, where the market is undeveloped, private sector and MFIs are in non-existent, consumers have limited capacity to pay for the products, well targeted awareness raising activities/ roadshows, trainings, demonstrations, piloting etc. may be organized through regional/zonal/local networks.

Recommendation 7: Provide Loanable Fund in Addition to Guarantee Letter

In addition to guarantee in paper, provision of loanable funds (in the form of debt) to financial institutions is necessary to boost credit provision to RET suppliers. The financial resources in the FIs are being stretched by current demand. The financial institutions are not able to fulfill the financing demand of their clients due to liquidity shortage. As a result, the FIs give priority to big-ticket customers such as exporters and big depositors. Experiences from other interventions (World Bank's Energy Project) indicated that provision of loanable funds to FIs is an important mechanism in addressing the financing needs of target groups such as RETs suppliers.

Recommendation 8: Design Support Mechanism to Improve Access to Foreign Currency of RET Suppliers

It has been learned from FSPs and RET Suppliers that there is serious difficulty to access foreign currency to import solar energy products. It takes longer time up to a year period. The DBE and NBE through the risk-guarantee facility should arrange a mechanism in which RET suppliers could access foreign currency in shorter possible time. The DBE and NBE along with UNDP and UNCDF should design a system in which World Bank and other donors will create foreign currency support system within the risk-guarantee facility. In this context, both developed and emerging market and developing economy (EMDE) countries have adopted different risk-guarantee schemes including accessibility to foreign exchange. For example, Government of Pakistan has provided risk-guarantee to electricity investors so as to make them access to finance and foreign currency designed in the 1990s. Similarly, the Government of Vietnam foreign exchange guarantee for a number of power projects in 2000.

The RET Suppliers which require foreign currency guarantee are large and national based suppliers participating in importation and dissemination of rural energy technology. For this guarantee purpose, a fixed amount of foreign currency should be deposited in FSPs account where eligible RET suppliers can access the foreign currency; the equivalent being paid in local currency by the beneficiary solar energy suppliers.

Recommendation 9: Design and Implement Sustainability Build-up and Exit Strategy

The assessment revealed promising sustainability of the project results. However, most of the RETs Suppliers especially small and medium enterprises require further support in terms of skill and operational capacity building through training, BDS service, loan provision for their continued operation. Therefore, the program (CRGF) should continue to support the RET suppliers to sustain the results achieved so far.

Recommendation 10: Enable Credit Risk-Guarantee Facility and Other RET Products to Continue

The *Risk-guarantee facility* is a very important mechanism to ensure financial access to RET Suppliers. The mechanism has encouraged energy technology suppliers to engage in the business on sustainable basis. The mechanism is one way of leveraging private-sector partnership in such development efforts. Therefore, the credit risk guarantee facility should continue serving the RET Suppliers with modification of products such as providing loanable fund to FSPs and inclusion of foreign currency access support as specified under the above recommendations.

2. INTRODUCTION

To complement Government of Ethiopia vision's to expand access of clean energy in rural areas, UNDP Ethiopia and Ministry of Water, Irrigation and Electricity (MoWIE) have jointly implemented a GEF financed project titled **Promoting Sustainable Rural Energy Technologies (RETs) for Household and Productive Uses** (hereby referred as RET Project or Project) with the aim to promote and encourage greater use of small-scale renewable energy technologies in off-grid rural areas through sustainable financing mechanisms and provision of technical assistance. The Terminal Evaluations (TEs) are integral parts of the UNDP-supported GEF-financed project evaluation cycle by project closing. This report has been prepared according to the scope of work defined in ToR to conduct the TE and the UNDP/GEF Terminal Evaluation Guide. The report summarizes all activities, achievements and outputs of the project as well as identify the extent to which objectives have been met, implementation structures and capacities developed. It covers the key evaluation outcomes - relevance, effectiveness, efficiency, sustainability and impact, as well as selected cross cutting issues including gender equality and women empowerment. It also presents Lesson Learned from the project implementation/execution and puts forward several recommendations. This evaluation study was conducted during the period from 02.08.2021 to 31.10.2021 and final report was submitted on 02.11.2021.

2.1 Purpose and Objective of the Terminal Evaluation

2.1.1 In accordance with UNDP and GEF M&E policies and procedures, all full and medium-sized UNDP supported – GEF financed projects are required to undergo a Terminal Evaluation (TE) upon completion of implementation of a project to *provide a comprehensive and systematic account of the performance of the completed project by evaluating its design, process of implementation and achievements vis-à-vis GEF project objectives and any agreed changes during project implementation.* As such, the TE of the Rural Energy Technologies (RETs) Project will have the following complementary purposes-:

i) promote accountability and transparency, and to assess and disclose levels of accomplishments of the Project in the context of providing technical assistance in building requisite regulatory and legal frameworks; strengthening institutional/ individual capacities and

partnerships; advocacy and raising awareness in rural areas, sustainable financing mechanism for RET service providers; business incubation; impact resulting from the de-risking measures taken by the project; and the replications and/or scaling up of project interventions; etc.,

ii) synthesize lessons that may help improve the selection, design and implementation of future UNDP-supported GEF-financed initiatives and to improve the sustainability of benefits and aid in overall enhancement of UNDP programming;

iii) assess and document project results and the contribution of these results towards achieving GEF strategic objectives aimed at global environmental benefits;

iv) provide feedback on issues that are recurrent across the small renewable energy technologies portfolio that require attention, and on improvements regarding possible follow-up efforts to scale up investments in rural energy access; and

v) contribute to the GEF Evaluation Office databases for aggregation, analysis and reporting on effectiveness of GEF operations on the quality of monitoring and evaluation across the GEF system.

vi) gauge the extent of project convergence with other priorities within the UNDP country programme, including harmonization with other UN Development Assistance Framework (UNDAF) and UNDP Country Programme Action Plan (CPAP) outcomes and outputs.

2.1.2 The evaluation team comprises of two external evaluators - an International Consultant, Team Leader and a National Consultant, Team Member and will prepare the TE Report based on -:

i) by undertaking evaluation independent of Project Management to ensure independent quality assurance;
ii) analyzed appropriateness of project design, feasibility of project logic/TOC, risks and assumptions;
iii) assess, achievements of outputs and outcomes, likelihood of the sustainability of outcomes, and if the project met minimum M&E requirements; and

iv) report reliable, credible and useful data/information on contribution of the project as well as to provide lessons from the project on broader applicability.
v) Disaggregation of data collected by gender equality and women's empowerment, and other disadvantaged categories or cross cutting issues.
vi) This will include an outlook and guidance in charting future direction by UNDP, Government of Ethiopia, on continued support for expanding access to modern energy services to the people living in off-grid rural/remote areas and to reducing GHG emissions thereof.

2.2 Scope

The TE was conducted adhering to the Terms of Reference appended as **Annex – 1,** and included a Field Mission of National Consultant to different regions as per Mission Programme appended as **Annex-2**. In order to achieve the evaluation objectives and to capture evaluative evidences of its contribution to the achievements in last five years [Oct. 2016 to June 2021] against the expectations set out in the project results/logical framework, a detailed evaluation of the work was carried out following the steps and guidance outlines in the recent UNDP Guidance for Conducting Terminal Evaluations of UNDP-supported GEF-financed Projects. It has also followed a participatory & consultative approach ensuring close engagements with key government counterparts, UNDP CO, UNCDF, project team and other key stakeholders and beneficiaries. This final TE report has been organized as per Table of Contents suggested in the UNDP Guide/suggested in the ToR. In conducting the evaluation, the UNEG Ethical Guidelines for Evaluation have also been fully respected.

2.3 Methodology

The methodology adopted for conducting the TE was based on the principle to capture evidence based information that is credible, reliable and useful. It consists of five distinct phases to cover all objectives and deliverables of the assignment stipulated in the ToR and are in accordance with norms and approaches/steps described in the UNDP Guide for Terminal Evaluation of a GEF funded projects. Table-3 below outlines these phases including various activities that were undertaken under each phase.

Table –3: Different Phases and Activities for Conducting the Evaluation

Phase and Task Name	
1	**Inception Report**
1.1	Kick-off Meeting with the UNDP/Project Team
1.2	Review of Project Document (Prodoc.) and PIF
1.3	Detailing/Updation of Methodology and Work Plan proposed in the Technical Proposal
1.4	Development of Evaluation Criteria Matrix, Interview Question Guide, List of Key Informants (UNDP Team, Implementing Partners, Other Stakeholders including Beneficiaries), Itinerary for Field Visits and Focus Group Discussions
1.5	Finalization of Inception Report in consultation with UNDP/Project Team
2	**Desk Review of Relevant Documents**
2.1	Review of all project-related documents and reports as listed in the information package
3	**Field Visits and Key Informant Interviews/Focus Group Discussions**
3.1	Field Visits and Key Informant Interviews/Focus Group Discussions by the National consultant as per plan agreed in the Inception Report Virtual Participation of International Consultant in FGDs wherever possible
4	**Analysis and Synthesis of Information/Data**
4.1	Analysis and Synthesis of Information and Data gathered from desk review, field visits and FGDs
4.2	Preparation of initial findings, conclusions and recommendations
4.3	Presentation of initial findings to project management and the CRES Unit at end of evaluation mission
5	**Preparation of TE Reports**
5.1	Preparation of draft report
5.2	Review of draft report by UNDP/Project Team and other Experts
5.3	Updating of draft report based on the feedbacks from UNDP
5.4	Finalization and Submission of Final Report along with Audit Trail

2.4 Data Collection and Analysis

2.4.1 A combination of Qualitative and Quantitative Evaluation Methods and Tools were used for collecting and analysis of data. Information was mined from

review of available documents and progress reports as secondary information and primary information was obtained through data-gathering activities conducted as part of this evaluation, mainly Key Informants Interviews (KIIs) and Focus Group Discussions and observation of project outcomes at project sites during field mission. The instruments/tools developed and used for collection of primary information/data were – a) Evaluation Criteria Matrix using key questions, related indicators, data sources, and proposed data analysis tools/methodology; b) Interview Protocol (Semi Structured Questionnaire) to solicit information from the stakeholders; c) List stakeholders (key Informants and Beneficiaries) to be interviewed; d) conducting key informants interviews using phone, zoom, face-to-face or other communication platforms as well as by emails when needed; d) achievements rating using the 'TE Ratings' guidance provided in the ToR. Accordingly, a total of 28 KII (9 Female and 19 Male) from FSPs, RETs Suppliers, Project Team, UNDP, and national and regional Government Officials and Experts were consulted and interviewed during the evaluation mission. Furthermore, 5 FGDs consisting Project team, Banks, and regional Government Bureaus have been conducted. Upon gathering information/data from different types of stakeholders at different levels of management, it was triangulated through the concept of 'multiple lines of evidence' to validate and generate credible, reliable information and data which was useful in assessing project results (relevance, effectiveness, efficiency, sustainability, impact, outcomes……etc. and information on gender equality and empowerment, negative impact of Covid-19 on achievements/interventions) and in finalization of the report.

The evaluability of results/achievements documented at minimum covering appropriateness of project design, implementation management, M&E design at entry and M&E Plant at implementation, Overall and Outcome level results, and has been rated using UNDP-GEF Rating table following terminal evaluation guideline for UNDP-supported, GEF-financed project[4]/rating scale given in the ToR. The ratings of overall and Outcome level ratings were done based on *evaluation guideline and criteria (relevance, effectiveness, efficiency, impact and sustainability*. Furthermore, relevance of the project has been assessed in terms of the outcomes alignment with government national policies and strategies reflected in GTP II (2015/16 – 2019/20) and the New Ten Years Development Plan (2021 – 2030); alignment with development partners country priority

[4] UNDP, 2020; Guidance for conducting terminal evaluations of UNDP-Supported, GEF-Financed Projects, New York.

frameworks contained in UNDAF 2016 – 2020, UN CPD 2021 – 2025, and SDGs (2016 – 2030). Assessment of cross-cutting issues, particularly involvement of women beneficiaries and benefits they obtained has been conducted.

2.4.2 A detailed write-up on the Evaluation Criteria Matrix, Interview Protocol (list of Questionnaire), list of Stakeholders Interviewed/Contacted, are appended as **Annex-3, Annex-4,** and **Annex-5,** respectively.

2.5 Potential Limitation of the Evaluation

The efforts planned for completion of this evaluation was 35 man-days. However, there were limitations in performing field mission by the international consultant and in collecting and validation of information remotely. Some of the challenges faced by the team are as under-:

i) Due to present scenario of COVID-19 Pandemic, travel of International Consultant to Ethiopia for field missions and/or for on-site meetings with partner stakeholders was not contemplated and report was finalized based on the inputs collected remotely as well as gathered by the National Consultant from interviews, Focus Group Discussions and by observations during field visits.
ii) Results also depend on the quality of respondent selected from the project sites
iii) It is possible that the reality was not presented correctly because of the subjective perspective of the qualitative approach (as respondents gave their side of the story)
iv) The virtual interactions with the project team and stakeholders using remote tools such as Skype, Zoom, and Video Links, in addition to email, were used for collecting the requisite information/data and feedback. However, these methods were not as efficient as face-to-face interaction. Moreover, there were delays in gathering the planned information due to availability of communication network on all the locations and spread of virus infection.

2.6 Structure of the Report

The structure of this TE report follows the Evaluation Report Outlines as suggested in the ToR which is in turn compliant with 'TE Report Content' documented in the

UNDP Guide for Conducting Terminal Evaluations of UNDP-supported GEF-financed Projects. The full report has been organized in five main Sections and Annexures. The **Section–I** : Executive Summary - presents quick overview of the project, evaluation results ratings, and summary of findings, conclusions, lesson learned and recommendations. The **Section -2: Introduction -** documents purpose and objective of the evaluation, scope, methodology including data collection and analysis, limitations of the evaluation and structure of the final report. The **Section -3: Project Description**- contains concise write-ups on project start date and duration, development context, problem that project sought to address, immediate development objectives of the project, expected results, main stakeholders and theory of change. The **Section - 4: Findings –** presents evaluation finding related to the project design and formulation, project implementation and project results. **Section - 5 : Main Findings, Conclusions, Recommendations and Lessons -** finally summarizes main findings, conclusions, recommendations and lesson learned.

3 Project Description and Development Context

3.1 Project Start Date and Duration including Milestones

The revised Project Identification Form (PIF) was initially submitted as a full size proposal for GEF approval in August 2013. The final approval for a GEF grant of USD 4,091,781 was received in June 2015. According to the approved Project Document, project implementation was envisaged to commence in April 2016 and end in June 2020. However, the Project Document was signed in June 2016, followed by Project Inception Workshop during October 31 & November 01, 2016. The Inception Report was finalized in December 2016. The project duration was initially set for 5 years. An extension of one year was subsequently granted with the current revised closing date as December 31, 2021.

Project implementation was well guided by clear milestones in tandem with UNDP-GEF cherished project cycle. Actual launch of project implementation was however delayed by 8 months with more delays witnessed under Component-3. UNCDF, a responsible partner for implementation of the component-3, was on board only in August 2017, resulting in delayed start of SFM scheme and related awareness campaign. Though initial coordination and mobilization of the partners in starting the project activities took some time in the beginning, but the project implementation was fast tracked and collective

efforts had compensated the lost time. The project's results framework clearly sets out key milestones to be achieved by the end of the project duration.

3.2 Development Context : Environmental, Socio-economic, institutional, and Policy Factors relevant to the Project Objective and Scope

Ethiopia is a land-locked country in East Africa with a population of about 109.20 million [as per 2018 report of the World Bank], growing at a rate of 2.9% annually. With an area of 1.1 million square kilometer, Ethiopia is the largest country by area (and population) in the East Africa and the second most populous country in Sub-Saharan Africa after Nigeria.

The economic growth and socio-economic indicators vary widely from region to region in Ethiopia. Oromia, Amhara and Tigray regions and the city of Addis Ababa have higher socio-economic development levels, whereas the regions of Benishangul-Gumuz, Gambela, Afar and Somali, collectively known as the 'emerging region' lag behind other regions in socio-economic development.

As regards Institutional setting, the country is composed of nine national regional states and two administrative states (Addis Ababa City administration and Dire Dawa City Council). The national regional states as well as the two city administrative councils, are further sub-divided into 68 zones, and the zones are sub-divided into approximately 550 Woredas. A Woreda is managed by a local government and is equivalent to a district. The Woredas are composed of the smallest unit of local government, the 15000 Kebeles. Each Kebele consists of at least five hundred families or households.

The government of Ethiopia through the recently terminating Growth and Transformation Plan II (GTP II – 2015/16 – 2019/20) aspires to reduce the number of population living in extreme poverty to 16.7% by 2020. The plan identifies a number of strategies and priority areas that are envisaged to support the achievement of the set targets. Priority areas include inter alia; Macro-economic development, Agriculture and Rural Transformation, Industry and Infrastructure Development, Urban development, Housing and Construction as well as Human Resource Development.

The Growth and Transformation Plan (GTP II) recognizes the contribution of sustainable access to *efficient energy* in the transformation agenda of rural

communities in Ethiopia and places considerable emphasis on the country's power generating capacity. Despite the decimal emphasis placed on the *Rural Energy Technologies* in the plan, there is an overall recognition of the need to strengthen a *green growth economy* in the country. This was evidenced through a number of initiatives that have been undertaken to promote accessibility to and usage of renewable energy. They include amongst others: The Rural Electrification Strategy; National Improved Cook-Stove Programme (NICSP); National Domestic Biogas Programme (NDBP); and Rural Electrification Fund (REF).

Although the government had undertaken several interventions to expand access to electricity and increase climate resilience in the past two decades, national electrification level prior to the RETs project was very low (23%) with a very wide rural-urban variation in which 88% of the urban households have access to electricity compared to only 5% in the rural areas. The geographic access nationally to electricity grid stands at about 56%. The overall electricity consumption is estimated to be 91 kWh/person – a low level compared with the Sub-Saharan African average of 521 kWh/person. Similarly, rural residential cooking and baking energy requirements account for 72% of rural energy use and 88% of which is met from unsustainable biomass such as wood, charcoal, animal dung, leaves, agricultural residues etc. Its burning in inefficient traditional cook stoves has harmful effects to the environment and climate - single largest source of GHG emissions in Ethiopia[5].

Much as Ethiopian government has been committed to promote green economy which was also envisaged to support the attainment of a middle-income status by 2025, its realization is being threatened by the country's overdependence on non-renewable energy source that promote environmental degradation. Whereas there has been accelerating uptake and utilization of RETs, a significant gap between RETs supply and potential RETs demand due to the growing number of households and rising incomes was noted at the design stage of RETs project.

[5] ProDoc: Promoting Sustainable Rural Energy Technologies (RETs) for Household and Productive Uses, Signed May 18, 2016.

Although considerable efforts to promote access to electricity in Ethiopia had been undertaken prior to the RETs project, a number of barriers were hindering the success of such interventions. Thus, the RETs project was designed to address the problem of poor access to renewable energy for rural population by tackling accessibility barriers as presented in the next sub section.

Promoting Sustainable Rural Energy Technologies (RETs) for Household and Productive Uses project complements the Ethiopian Energy Policy, the Ethiopian Climate Resilient Green Economy Strategy, the Initial National Communication of Ethiopia to the UNFCCC and the Sustainable Energy for All (SE4All) initiative. The project aims to reduce Ethiopia's energy-related CO_2 emissions by approximately 2 million tonnes CO_2e by promoting renewable energy and low greenhouse gas (GHG)-producing technologies as a substitute for fossil fuels and non-sustainable biomass utilization in the country, with a focus on rural household appliances for cooking, lighting, heating and productive uses. The activities proposed in the project are designed to remove barriers that hamper the wide-scale use of off-grid renewable energy technologies in households and productive uses in rural areas of Ethiopia, where extending the grid is simply not feasible in the short-run and where the ability to pay for larger-scale solutions is often limited.

3.3 Problem that Project Sought to Address, Threats and Barriers Targeted

The Government of Ethiopia has a vision to achieve middle-income status by 2025 and to create a climate-resilient green economy with net zero carbon emissions. In order to meet this challenge, the country needs to reach its economic goals in a sustainable manner, which includes increased levels of access to modern energy in off-grid rural areas. The problems which this RET project initially meant to address are described below -:

a) The main **root causes** for lack of energy access in the country are - : i) energy poverty; ii) over exploitation of solid biomass resources; iii) limited measures taken to improve energy efficiency; very large financing needs; iv) very limited role for private sector; v) insufficient institution and human capacity for planning and implementation.

b) The key **threats** of and **impact** on climate change identified during the project formulation were-: i) rapidly-growing demand for energy and an

unsustainable rate of fuel wood consumption; ii) rate of deforestation and degradation to be worsen over the coming decades, as the population grows at 2-3% per year; iii) country focus on large-scale hydropower as part of promoting renewables; iv) use of Kerosene as a household fuel contains benzene and other aromatics that are dangerous carcinogens and environmental hazards; v) affordability of small-scale renewable energy technologies for providing the basic energy needs of rural communities; vi) lack of awareness and limited ability of local communities to pay severely limit the application of more efficient appliances; vii) extending grid is simply not practical in many parts of the country due to the costs involved and Solar lanterns offer a low-cost, fully renewable alternative to the burning of wood or charcoal; viii) significant market potential - over 70 million people lack access to modern energy services ; ix) vulnerability of Ethiopia's economy to climate change, combined with its plans to achieve accelerated and green growth, demand significant investment in mitigation and adaptation; x) need to enhance Government capabilities in policy and institutional frameworks, and to provide sufficient means to increase access to private-sector financing to navigate the complex task of leveraging emerging opportunities associated with climate change; xi) market barriers associated with low (or no) returns on investment, high up-front costs and lack of access to capital, high risks and non-financial barriers (technical and business skills, paying capacity of people living in rural settings) make it difficult to attract investment that increases access to modern energy.

In view of the root causes and threats mentioned above, this UNDP supported - GEF financed Project implemented by the Ministry of Water, Irrigation and Energy (MoWIE), Govt. of Ethiopia and UNDP in collaboration with UNCDF and other Government Partners focused to address four principal barriers that prevent the widespread dissemination of small-scale renewable energy technologies in Ethiopia and are succinctly describe below -

Barrier 1- Need for Strengthened National Regulatory and Legal Framework for Rural Renewable Energy in Ethiopia;

Barrier 2- Lack of Public Awareness of the Benefits of Low Cost Renewable Energy Household Appliances

Barrier 3- Lack of Affordability of Small-scale Renewable Energy Solutions and Lack of a Financial Support Mechanism to help accelerate the Dissemination of Household's Renewable Energy Appliances

Barrier 4- Lack of Enterprises involved in Supplying Renewable Energy Technologies to Rural Communities in Ethiopia

In the alternative scenario proposed by this project, a more holistic and market based approach is undertaken towards promoting renewable energy technologies in rural communities in Ethiopia. This more holistic approach would clearly not take place without the GEF project and the targeted rural communities would not have the opportunity to benefit from modern energy services. Further, the project is also consistence with climate change strategy and complements Government of Ethiopia strategic vision's to develop low carbon and climate resilient green economy and its several policy initiatives notably - Climate-Resilient Green Economy (CRGE) Strategy, National Energy Policy, Ethiopia Growth and Transformation Plan (GTP), the Initial National Communication of Ethiopia to the UNFCCC and the Sustainable Energy for All initiative.

3.4 Immediate and Development Objectives of the Project

The overall objective of the project is to promote and encourage greater use of renewable energy technologies for household and productive uses in rural communities in the country. Its immediate objective is to reduce Ethiopia's energy related CO2 emissions by approximately 2 million tons of CO2e by promoting renewable energy and low greenhouse gas (GHG) producing technologies as a substitute for fossil fuels and non-sustainable biomass utilization in the country, with a focus on rural household appliances for cooking, lighting and heating. The activities proposed in the project are designed to remove barriers that hamper the wide-scale use of off-grid renewable energy technologies in households and productive uses in rural areas, where extending the grid is simply not feasible in the short-run and where the ability to pay for larger-scale solutions is often limited.

In order to achieve the project objective, and address the identified barriers, the project's interventions were organized into four components, namely – **Component- 1**: Strengthened Regulatory and Legal Framework based on National Standards; **Component- 2**: Rural Public Awareness Campaign on

Renewable Energy Technologies; **Component-3**: Sustainable Financial Mechanism (SFM) for RETs for Rural households; and **Component- 4**: Business Incubator to Promote Greater Entrepreneurship for Investment in RETs.

The project has followed a more private sector driven and market-based approach implementation strategy for creating enabling environments through implementing the activities under each components. The four components consist of a combination of de-risking instruments (Component 1) and market-enabling activities (Component 2 and Component 4) that will combine with a financial support mechanism (Component 3) to help transform the market for off-grid renewable energy technologies in rural communities.

3.5 Expected Results

In line with the project components, four outcomes were designed as indicated below-:

Outcome 1- Favorable legal and regulatory environment are designed for small-scale off-grid renewable energy investments in rural areas, and modalities for stakeholder training to comply with and implement the new standards and regulations are in place by 2018,

Outcome 2- Greater awareness among rural populations about the benefits and qualities of renewable energy for household and productive uses, as well as awareness among RET enterprises about the availability of Sustainable Financial Mechanism and business support created by 2018,

Outcome 3- By 2020, replicable business model for wider scale-up across other developing countries by adopting an integrated approach to addressing demand and supply-side barriers is created, and

Outcome 4 - By 2016 Business incubation support programme initiated at MoWIE.

At the end of its lifetime, the project intended to save 35.5 million mega Joules of energy and to reduce Ethiopia's energy related CO2 emissions by approximately 2 million tons of CO2e by disseminating 600,000 improved biomass cookstoves and 200,000 solar lighting systems, benefiting about 800,000 households. Moreover, the project has also planned to provide volume of financial investment through Sustainable Financial Mechanism to about 200

RET Enterprises and promote business incubation process in the small-scale renewable energy sector. It also aimed to set up legal frameworks that protect and promote the marketing of standardized RET products through the application of standards.

3.6 Main Stakeholders

The Project Document provided a comprehensive analysis of the Project's key stakeholders, including an assessment of their roles and responsibilities in supporting or facilitating the implementation of the project activities. The main project stakeholders include -:

- Ministry of Water, Irrigation and Energy (MoWIE)
- Ministry of Finance and Economic Cooperation (MoFEC)
- Environment, Forest and Climate Change Commission (EFCCC)
- United Nations Development Programme (UNDP)
- United Nations Capital Development Fund (UNCDF)
- Development Bank of Ethiopia (DBE)
- Ethiopian Standards Agency (ESA)
- Ethiopian Energy Authority (EEA)
- Ethiopian Conformity Assessment Enterprise
- Ethiopia Solar Energy Development Association
- Ethiopian Climate Innovation Centre (ECIC)
- Regional Energy Bureaus
- Association of Ethiopian Micro-finance Institutions
- Micro Finance Institutions (PEACE, ACSI, etc.)
- Commercial Banks (OIB, Zemen, Enat, etc.)
- Entrepreneurship Development Center
- Addis Ababa Institute of Technology
- Department of International Development (DFID)

An elaboration of stakeholders who have participated or received support from the Project is provided in Section 4.1.4.

3.7 Baseline Indicators (Theory of Change)

The process for developing indicators begins at the project conceptualization and design phase. Well-designed indicators that track the various components of a theory of change, would help to test whether the theorized relationships between inputs, activities, outputs, outcomes and impacts hold true in practice.

Generally, indicators can be established at Inputs, Outputs, Outcomes and Objective levels. Input indicators measure the resources required in project implementation. Conversely, output indicators describe the delivery of products, including, but not limited to: the providing training and technical assistance; creating standards and legislative documents; investing in buildings and infrastructure; and hiring staff required to implement a project. On the other hand, outcomes indicators represent what the project intends to achieve in the short and medium term. Finally, objective or impact indicators describe progress made towards higher-level goals.

In this project, baseline indicators have been designed at Overall objective and Outcome levels; no indicators have been established at output and input levels. The indicators established at Overall Objective and Outcomes Levels are presented in Table -4 below -:

Table –4: Summary of Baseline Indicators established for RETs Project

Overall Objective/ Outcomes	Indicators Established	Baseline
Objective: To promote and encourage significantly greater use of energy efficient and renewable energy technologies for household and productive uses in rural communities in Ethiopia	***Indicator***: Lifetime energy saved.	Use of over 15 million inefficient cook-stoves and over 15 million kerosene lamps leads to over 35 Mt CO2e annually.
Component 1: Strengthened regulatory and legal framework based on national standards		
Outcome 1: Favorable legal and regulatory environment are designed for small-scale off-grid renewable energy investments in rural areas, and modalities for stakeholder training to comply with and implement the new standards and regulations are in place by 2018.	***Indicator 1.1***: Status of development and enforcement of RET hardware standards by Government of Ethiopia (GoE) ***Indicator 1.2***: Number of participants benefiting from trainings (gender-disaggregated	No regulatory basis to improve and control the quality of rural energy technologies for Ethiopia.
Component 2: Rural Public Awareness Campaign on Renewable Energy Technologies		
Outcome 2: Greater awareness among rural populations about the benefits and qualities of renewable energy for household and productive uses, as well as awareness among RET	***Indicator 2.1***: Type, item prices and estimated efficiency of technologies directly sold at road shows;	Use of over 15 million inefficient cook-stoves and over 15 million kerosene lamps leads to

enterprises about the availability of ; SFM and business support created by 2017.	***Indicator 2.2***: Number, size and length of appearances of promotions in media; ***Indicator2.3***: Number of RET enterprises using SFM or applying for business incubation services	51 Mt CO2e of emissions annually.
Component 3: Sustainable Financial Mechanism (SFM) for RETs for rural households – UNCDF CleanStart		
Outcome 3: By the end of project, more than 290,000 low-income households and micro-enterprises (1,500,000 beneficiaries) will have sustainable access to clean energy through micro-finance.	***Indicator 3,1***: Volume of investment mobilized by FSPs participating in the CRGF; ***Indicator 3.2***: Number of enterprises that got sustainable financial support through loans	No lending on RETs by MFIs; slow disbursement of an available World Bank loan for the sector of USD 40 million (15% disbursement rate as of April 2014)
Component 4: Business Incubator to Promote Greater Entrepreneurship for Investment in RETs		
Outcome 4: By 2017 Business incubation programme commenced to support greater entrepreneurship in RET investment	***Indicator 4.1***: Number of enterprises that launch micro-businesses to sell either small-scale solar technologies or improved cook-stoves (or both)	At least 120 enterprises in Ethiopia are unable to launch improved businesses due to lack of capital and business expertise

Source: Project Document

4 FINDINGS

4.1 PROJECT DESIGN and FORMULATION

4.1.1 Analysis of Project Result Framework : Project Logic and Strategy, Indicators

Recognizing the importance of increase access to modern energy supply as a key driver of the rural economic growth and poverty reduction and to enhance climate resilience, the Ethiopian Government has taken a range of initiatives in the past for dissemination of small-scale renewable energy technologies in the rural areas. Despite accelerating RET dissemination rate, there were barriers preventing widespread dissemination as well as significant gap between the supply and potential demand of RET. The support for private sector engagement and the

creation of incentives for small and medium enterprises to thrive were also very limited.

This UNDP-GEF RET Project was framed with a aims to reduce Ethiopia's energy-related CO2 emissions by approximately 2 million tonnes CO2e by promoting renewable energy and low greenhouse gas (GHG)-producing technologies as a substitute for fossil fuels and non-sustainable biomass utilization in the country. The four components proposed in the project, which are complementing to each other, were adequate to remove the principal barriers identified earlier which were hampering wide-scale use of off-grid renewable energy technologies, mainly on rural household appliances for cooking, lighting heating and productive uses in rural areas of the country. These project components upon successful implementation should significantly contribute to achieve the ultimate goal of creating the conducive enabling environment for a sustainable market based and private sector driven dissemination of rural energy technology products.

The project's focus on dissemination of improved cook stoves and small-scale solar technologies was rationalized by a number of factors, including -: i) energy poverty and energy demand growing rapidly; ii) over-exploitation of solid biomass resources which in turn leads to deforestation and other unsustainable environmental harm; iii) use of inefficient biomass stoves for cooking and kerosene lamps for lighting; iv) very limited measures taken to improve energy efficiency; v) very large financing needs; vi) limited role for the private sector; vii) insufficient institutional and human capacity for planning and implementation in the sector viii) affordability and lack of awareness of small-scale renewable energy technologies.

The **Project Results Framework/Log-frame** for the project is well defined, establishing clear linkages among the key project performance parameters (Outcomes, Outputs, Indicators, Baseline Value and Targets) and is included in Table No – 8. The project design (PIF) was developed in August 2013 and Project Document was approved for GEF grant (CEO Endorsement) in June 2015. Review of the project framework and overall strategy detailed in the project document when compared with the initial strategy presented in the Project Identification Form (PIF) reveals no major difference in the overall strategy of the project. From the beginning, project has foreseen 4 components, which respond to the identified general barriers that the project was trying to overcome. It is, however, noticeable that the Project Office (PO) has also used the same initial version of

project log-frame throughout the project period, although some of the targets were revised during the project implementation.

Altogether, the project planning log-frame has established total 10 indicators to track and report progress/achievement for various outcomes under the four components, which seems to be reasonable. However, TE team is of the view that – i) indicator '*Number of Households Benefiting from Project Supported Access to RETs*' under Project Objectives will not give a true picture of project performance in the absence of defining of baseline values as steps to disseminate RETs had been taken earlier also prior to start of this project. This fact was also pointed out in MTR of the project conducted in November 2018; and ii) the part indicator '*Estimated Efficiency of Technology sold directly at Roadshows*' under component 2 may not be feasible to record/report as access to testing facility especially for cookstoves is not within the reach of small and medium enterprises operating in remote rural areas.

In addition to the above, TE Team also observed that there was inadequate consultation with the Key Implementing Partners during the project development phase resulting in delayed starting of the project and revision in the stipulated cumulative targets over the project period. Some of the points in support of this are listed below -:

- The Project Document was endorsed by GEF on June 12, 2015 whereas it was signed on May 16, 2016, almost after a year;
- UNCDF, a responsible partner for implementation of the component 3, was on board only in August 2017, resulting in delayed start of SFM scheme and related awareness campaign due to Output 3.1: Risk-Capital establishment was not accomplished and the fund transferred to other country. UNCDF has also revised their direct contribution (co-finance) to project to USD 80,000 from the initial commitment of USD 980,000 of its global resources;
- No kind and/or cash contribution from HIVOS/SNV in-spite of committing in writing.
- Direct sale target of 3,00,000 stipulated at roadshows was though considered as very ambitious but no revision was made in-spite of adverse effect on project activities due to COVID-19 Pandemic.

With the exception of few oversights and defaults in the project log-frame, the project scope, design and implementation approach otherwise, including the

overall structure of the project results framework, can be considered as *satisfactory* for a full-size project addressing the critical elements of identified barriers, strengthening regulatory and legal framework, greater awareness, incubation and innovativeness, and for creating enabling environment for a sustainable market based and private sector driven dissemination of rural energy technology products. Considering the above analysis (strength and weakness) the project design is rated as ***Satisfactory***.

Project Design is Rated as Satisfactory

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
	S				

4.1.2 Assumptions and Risks

The Project assumptions, risks and mitigations strategies to address those risks were identified during formulation phase of the project and presented in the project document. These assumptions, risks and their mitigation strategies, as elaborated in the project document, and updated during the project inception workshop are summarized below-:

i) Assumptions

A key assumption of the project is that Government, MFIs and RET enterprises will coordinate activities, sequentially and/or in geographical locations, to realize essential project synergies. This may involve the processes of selecting partner institutions or locations to pilot and roll-out activities. Without financing of RET enterprises and individual consumers, RET enterprises will achieve minimal market penetration; likewise, finance alone cannot achieve results without the enabling infrastructure (from the national to the local) for the RET supply chain.

ii) Risks and Mitigation Strategies

The identified risks and mitigation strategies were as under -:

Risk	Level	Risk Mitigation Strategies
Limited Government capacity and resources impede effective project implementation	Moderate	Project Management will be established to make sure the risk of underperformance is mitigated. If underperformance occurs, the following project structures will be involved in proactively seeking solutions to overcome implementation challenges - • A Project Steering Committee (PSC) will be established to co-ordinate the main governmental stakeholders and international partners, such as MoWIE, MoFEC, EFCCC, DBE, UNDP and UNCDF, and ensure that the project remains on course to deliver the desired outcomes of the required quality; and • At the (sub-national) regional level, the project will enhance the technical and managerial capacities of Regional Energy Bureaus through Resident Capacity Builders/Coordinators. Their role will also be to inter-link the technical staff of the Energy Bureaus with the financial capacity of FSPs in order to properly raise awareness of RET enterprises.
Weak coordination between different energy programmes causes duplication of efforts and systems	Low	The UNDP-implemented, GEF-financed project will work with MoWIE and UNCDF CleanStart to ensure sufficient coordination is achieved among all MoWIE and donor programmes. In case of any overlaps identified and duplication of efforts, the PSC will be tasked with reconciling competing efforts. There is value added to the project in linking the MoWIE-executed GEF project with contributions provided by CleanStart. One benefit to the project is the performance-based selection of FSPs based on their level of partnering with RET suppliers. FSPs will be required to discuss, structure and articulate their partnership and implementation model with RET suppliers in the business plan that they will submit to CleanStart for further evaluation. Component 3 will also include technical assistance for match-making between FSPs and RET suppliers, and thus mitigate the potential overlap of activities and programmes
Lack of awareness of the benefits of clean and renewable energy	Low	The project will develop large public awareness campaigns targeted at rural households in order to

technologies prevents their widespread dissemination		overcome the awareness barrier. For example, road shows will address the challenge that many inhabitants in the rural areas lack televisions, radios and internet (which limits the role of mass-media campaigns). Through the use of GEF funds, the project will mobilize RET enterprises to extend their awareness-raising activities to the remote areas and reach out to end-users. If a lack of information and awareness prevails, especially at the level of (sub-national) regions, the project may redistribute funds allocated to dissemination activities or leverage further co-financing during project implementation to mitigate the risk as much as possible.
Limited affordability of RETs by rural populations	Moderate	30 million people in Ethiopia live on less than 1 USD per day. However, four factors will help to reduce this risk -: i). Consumer spending power in Ethiopia is increasing as the economy grows; ii) Efforts are being strengthened to bring down the cost of production through local business development support; iii) Only the most affordable and commercially-viable technologies have been selected for promotion; and iv) The financial support mechanism will help to reduce the cost to consumers.
Entrepreneurs are not interested in entering the renewable energy technology market in Ethiopia	Moderate	Lack of start-up capital is the key barrier facing most small-scale enterprises wanting to start their own businesses. Component 3 will provide suitable financing mechanisms to strengthen the capacity of MFIs and their willingness/ability to offer targeted financing to enterprises and end-users. If the sector is shown to be profitable, there will be a clear interest from other firms to enter the market. Component 4 will facilitate market entry by providing start-up capital and additional capacity building.
Macroeconomic risk - Financial sector stability and sustainability risks due to controlled, low interest rates and high inflation, resulting in negative real interest rates	Moderate	The project cannot mitigate the economic risks that are influenced by macroeconomic and financial market developments. However, through the introduction of the Sustainable Financial Mechanism, the economic risks for end-users and RET enterprises

		will be minimized, since a continuous policy dialogue with NBE to maintain prudent macroeconomic policies and interest rate-setting policies will be achieved. In addition, the project will ensure that key financial indicators, such as development of interest rates, cost recovery, financial returns and the financial health of participating FSPs, will be regularly monitored, and, in case of adverse developments emerging, countermeasures planned within the PSC.
Environmental risk - The project does not lead to anticipated results and therefore GHG mitigation potential is not realized	Moderate	The project will lead to significant climate change mitigation benefits through the delivery of enhanced, reliable energy supply, which will promote energy access among the poor. Without proper hardware standards/labels, awareness and financing mechanisms, which the project is specifically promoting to support RET enterprises and individual consumers to use these technologies, RET enterprises will achieve only minimal market penetration; likewise, the project would not be able to achieve its anticipated significant lifetime indirect GHG emission reductions. Climate-related risks are considered low. As Ethiopia's Initial National Communication to the UNFCCC notes, biomass resources may experience stress as temperature and precipitation regimes evolve, and hydro-power resources may be at risk of reduced rainfall and higher evaporation rates. The project will serve to reduce both stresses by reducing demands on biomass (through the use of more efficient cook-stoves) and promoting the use of solar energy.

In addition to the above assumptions and risks, the Project Results Framework is also listing a number of assumptions and risks, more specific to achieving the project objective and four main outcomes and are presented below -:

i) Overall Objective of the Project

Assumptions

- Government is focusing its legal and policy framework to align with international best-

practice with respect to product standards and certifications.
- National efforts at institutional level to mitigate the effects of GHG emissions in rural energy end-use and local manufacturing of RETs are being strengthened.
- GEF support is able to promote the use of innovative energy technologies at the rural level and thus help to meet CRGE targets quicker.

Risks
- The lack of appropriate energy efficiency and renewable energy policies and regulations for rural energy technologies is maintained within the country framework.
- The Government does not commit adequate resources and implementation support to develop and enforce standards.
- Without an appropriate political framework and sufficient financial mechanisms in place, the activity of RET enterprises remains at a low level.
- GHG emission targets are not being met.

ii) Component -1

Assumptions
- Government is focusing its legal and policy framework to align with international best-practice with respect to product standards and certifications.
- Building capacity among stakeholders in implementation and enforcement of new standards and regulations is being ensured.

Risks
- The Government does not commit adequate resources and implementation support to develop and enforce standards.
- The lack of proper technical standards and regulations results in low-quality products which prevent a boost to, and widespread usage of, innovative, safe, efficient rural energy technologies

iii) Component -2

Assumptions
- Public awareness strategy to promote RET use at rural level appropriately designed to target-RET enterprises, Rural households, and local/regional stakeholders
- Supply and demand will be better matched by increasing the awareness of end-consumers of the benefits of RETs.
- Potential for scaling-up will be greatly enhanced by the new legislation to promote renewable energy in the rural environment.

Risks
- Lack of awareness at rural level is maintained because of lack of suppliers promoting their products directly 'on the ground.
- Awareness campaigns need to be spread across remote regions and localities, which is time- and resource intensive to be effective.

iv) Component -3
Assumptions

- Limited availability of liquidity being a major concern for FSPs, although availability of a World Bank credit line through DBE to on-lend to finance clean energy in Ethiopia.
- Existing loan products are offered only on a very limited scale to some FSPs.
- Risk capital grants to be provided to a select number of high-performing FSPs.
- Pre-investment technical assistance to support FSPs to strategize and articulate their proposed business models and risk assessments of clean energy lending programmes.

Risks

- Risk of no lending for RETs by FSPs due to unfavourable loan conditions reduces the access to financing.
- Increment of RET installations foreseen through project support at risk.
- Credit risk guarantee is not in place and thus FSPs fail to offer competitive loan conditions to RET enterprises and entrepreneurs.
- Weak knowledge of FSP loan officers about clean technologies hampers the uptake of micro-lending.

v) Component -4
Assumptions

- Enhanced products and availability of after-sale services and investments in RET enterprises will lead to market development that contributes to improved household energy access at the rural level.
- Business development support of 120+12 additional RET enterprises will create a sufficient basis for replicating innovations to other entrepreneurs and businesses.

Risks

- RET enterprises are not aware of the business support or unable to meet the minimum criteria for qualifying for the support instruments.
- Missing financial support and weak financial mechanisms in place that do not attract entrepreneurs to invest into new businesses.
- Lack of capacity at business incubation support units

The risks identified in the Project Results Framework (PRF) are mostly specific operational risks, which were identified against a set of specific activities to achieve the expected outputs. Related to these risks a set of assumptions were identified. These specific operational risks and assumptions are valid when reviewing and finalizing the project implementation strategy. However, beside the description of these risks and assumptions in the PRF, the Evaluation Team did not find any follow up to these risks during the implementation of the project. So, focus was mostly on the initial list of risks presented in the Table above which was entered into the UNDP-Atlas system and monitored throughout the implementation of the project.

However, in general, the link between the risks/assumption section of the PRF and the Table dealing with the risks and risks mitigation strategies in the Project Document and Inception Report are consistent.

The overall Project Risk Management is therefore rated as satisfactory

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
	S				

4.1.3 Lessons from Other Relevant Projects (e.g. same focal area) incorporated into RET Project Design

The Project Document does not include a specific chapter/section to highlight the lessons from other projects that have been incorporated into project design, but the Project Document refers in some places indirectly to lessons learned or barriers from other project activities that the RET project wanted to pursue -:

i) The World Bank and the International Finance Corporation's (IFC) Lighting Africa initiative : Ethiopia (LA-E, also known as Lighting Ethiopia), in partnership with MoWIE, has provided training to local distributors interested in distributing modern off-grid lighting products with international manufacturers in the context of the Lighting Africa Quality Assurance Programme and Lighting Africa Quality Standards and Product Verification. In the report published in June 2013, it was pointed out that the strategies adopted in the past were not effective enough in continuously engaging the private sector as a key driver for marketing off-grid lighting products. Efforts made has helped to create awareness about lighting products in project areas. However, it was location specific and did not help to build a sustainable market chain. Federal and regional government energy sector organizations and non-governmental organizations active in the energy sector should work more on awareness creation and technical capacity building, and help link market channels to end-consumers. The UNDP-GEF project have taken cognizance of these facts while designing four components of the Project. It is expected that additional GEF support will address these identified barriers and to add substantial momentum to the baseline activities through further –a) strengthening of technical standards and regulations and preparation of a strategy for rolling them out to the market; and b) capacitating the financial

service providers, such as DBE, MFIs and the private sector RET suppliers, through inclusion in regional awareness creation activities (road shows) and through financial and technical business support to concerned stakeholders.

ii) Limited availability of liquidity has always been a major concern for MFIs due to the market and regulatory conditions in Ethiopia. Though, MFIs have access to a World Bank credit line through DBE under its ENREP (Electricity Network Reinforcement and Expansion Project) programme, to on-lend to finance clean energy in Ethiopia but it do not have adequate provisions for capacitating and required risk mitigation strategies to enable FSPs to be sufficiently confident to disburse loan at scale rapidly; and therefore FSPs were following a cautious approach for providing these loans. To address this challenge and to add speed to credit flow in the RET sector, project in partnership of the UNCDF - CleanStart Programme, have planned -:

- to provided targeted advisory services - a) to build capacities of the financial service providers such as DBE, Banks and MFIs for awareness raising and confidence building; b) to train local enterprises in enhancing business skills; and c) providing Technical Assistance to FSPs to assess, develop, deploy and scale-up micro finance products to finance sustainable rural energy technologies to low income households or to RET enterprises to develop Business Plans to mobilize credits from the FSPs; and

- to develop a Credit Risk Guarantee Scheme to facilitate loans from DBE /FSPs to RET enterprises who do not have sufficient collateral based on USAID's Development Credit Authority (DCA) model. The DCA usually provide partial credit risk guarantees (typically 50%) to leverage credit from local financial institutions to entrepreneurs/SMEs as well as to specific development sectors such as energy, health and agriculture. In 2013, USAID DCA approved 26 new partial credit risk guarantees in 19 countries, including Ethiopia. In Ethiopia, the DCA guarantee facility was provided through the Bank of Abyssinia, a private sector bank, for agricultural supply chain and other small-scale manufacturing businesses.

What remains astonishing is the fact that the design of the project did not envisage any further linkage or provide at least reference to experiences and lessons-learned gathered from other likely projects or innovative financing models in other

countries. Since similar activities addressing the issues of rural energy access ongoing in neighbouring East African Countries such as Kenya, Tanzania and Uganda, linking similar projects or at least exchange of experience should have been intended/foreseen.

4.1.4 Planned Stakeholder Participations

During the PIF and PPG preparation stages, consultations with the stakeholders and stakeholders analysis were undertaken in order to identify key stakeholders and to ensure from the beginning their full engagement in formulation of the project and commitment to the successful implementation of the project. A detailed capacity assessment of the MoWIE, which was nominated as the Lead Executing of the Project, and a few other key partnerships facilitating or supporting the implementation of project activities was included in the Prodoc. Furthermore, a Table at Annexure -1 of the Prodoc. showing roles and responsibilities of various stakeholders was also provided.

From the stakeholder engagement plan developed by the project team, it was noticed that same set of stakeholders were involved in implementation of different project activities under the four project components. Of course the level of engagement varies from stakeholder to stakeholder. Some stakeholders were directly involved in the implementation of project activities whereas others were involved by aligning/ complementing the project interventions with the works they were doing. Of those which were directly involved include -:

i) **Project Activities under Component -1 :** Ethiopian Ministry of Water, Irrigation and Energy, Ethiopian Environment, Forest and Climate Change Commission, Ethiopian Standards Agency, Ethiopian Energy Authority, Ethiopian Conformity Assessment Enterprise, Ethiopia Solar Energy Development Association, Regional Energy Bureaus, Department of International Development (DFID)
ii) **Project Activities under Component - 2 :** Ethiopian Ministry of Water, Irrigation and Energy, Ethiopian Environment, Forest and Climate Change Commission, Regional Energy Bureaus,
iii) **Project Activities under Component - 3 :** Development Bank of Ethiopia, United Nations Capital Development Fund (UNCDF), Association of Ethiopian Micro-finance Institutions (however, coordinators of this component denied participation of AEMFIs)

iv) **Project Activities under Component - 4 :** Entrepreneurship Development Center, Addis Ababa Institute of Technology, Ethiopian Ministry of Water, Irrigation and Energy, Ethiopian Environment, Forest and Climate Change Commission, Regional Energy Bureaus

TE Team has observed that -:

i) The Regional government water and energy bureaus were the main stakeholders on the implementation of this project at region level. Different government organizations mainly Ethiopian Rural Energy Development and Promotion Centre (EREDPC), Ethiopian Energy Authority, Ethiopian Ministry of Trade, Ethiopian Standards Agency, Ethiopian Conformity Assessment Enterprise, Ethiopian Revenue and Customs Authority, Development Bank of Ethiopia were highly involved in the control and permit of solar energy technology products imported in the country. They were key in the formulation and enforcement of the national standards and guiding other relevant stakeholders for smooth implementation of the project activities. The United Nations Capital Development Fund (UNCDF) was the responsible partner for implementation of component-3 of the project in collaboration with Development Bank of Ethiopia. National and Regional medias and promotional companies were also key stakeholders in supporting the aggressive promotion activities of the project.

ii) As regards partnership with the private sectors, the local enterprises mainly the Medium and small scale enterprises(MSEs) were the key partners in realizing the market based and private sector driven dissemination of 200,000 solar home systems and 600,000 improved cook stoves throughout the country. These partners were highly involved in the preparation of national standards on the three technology products (solar home systems, biomass baking stoves and biomass cooking stoves) and increasing the awareness level of communities on the benefits of improved and modern rural energy technologies. However, it has been reported by EREDPC that the national standards developed for improved cook stoves are voluntary in nature. They were also key partners in conducting successful pilot technology roadshows. Mainly, the communities engaged in the production and sell of improved cook-stoves were the good partners of the project in reaching its goal by the end of the project period as they were actively involved in the market based and private sector driven dissemination of rural energy

technologies. First round training on entrepreneurship skill development was given to improved cook stoves producers coming from the nine regional states in the country. Few of these trainees have then participated in the pilot technology roadshow and benefited from the opportunities created there. Moreover they were the direct beneficiaries from the business incubation component in the form of grant award and BDS.

iii) The Financial intermediaries which are micro-finance institutions and commercial banks were also participating in the project ensuring access to finance to importers of solar energy technologies and local producers of improved biomass stoves through the credit risk guarantee fund mechanism established by the project.

iv) The local communities (Indigenous Peoples) located in off-grid areas of the country were the main target beneficiaries (end-users) of this project. These communities participated in the implementation of the project activities by way of playing part in promoting access to improved and modern rural energy technologies together with regional energy bureaus, especially in organizing the technology roadshow, weekly market day and energy day events to increase the awareness of those communities on the benefits of those technologies which has made a significant impact in terms of the promotion of the use of rural energy technologies in those areas.

During the TE mission, the National Consultant was able to meet with key stakeholders and project's beneficiaries and it was noticeable their involvement in the project's implementation. However, there was no evidence of partnerships with national and international non-governmental organizations and development partners (except DFID) at national and/or regional level which was brought to our notice.

The general conclusion, project management has achieved respectable partnerships with relevant stakeholders and has successfully managed to engage key stakeholders listed in the project document.

4.1.5 Linkages between Project and Other Interventions within the Sector

Table No. - 5 below identifies projects which have complementarity with the RETs project. These projects include-: National Biogas Program Phase I, National

Biogas Program Phase II, National Improved Cook-stove Program, Ethiopia Rural Electrification Program II, Renewable Energy Guarantees Project for Ethiopia, Access to Distributed Electricity and Lighting in Ethiopia (ADELE), etc. These projects have one way or the other have complementarity with the RETs Project, which help to phase out the use of fossil and forest products and direct to use of renewable energy sources and promotion of use of energy saving appliances. All these projects contribute to the reduction of CO_2 emissions from using fossil and forest products based energy sources.

Table No. - 5: Related Projects on Rural Energy Promotion and Electrification in Ethiopia

Related Projects	Dates/Sponsors	Major Objectives
National biogas program, Ethiopia (Phase I)	2008 – 2012 Sponsors : Beneficiary Farmers, Government, Donors (Biogas for Africa Initiative and SNV/ Ethiopia)	The overall goal of the NBP is to improve the livelihood and quality of life of rural households in Ethiopia through the exploitation of market and non-market benefits of domestic biogas such as replacement of unsustainable utilization of wood and charcoal for cooking and lighting; use of high value organic fertilizer from the bio-slurry; and improvement of health and development conditions for rural households. The main objective of the first phase of the Program was to develop a commercially viable domestic biogas sector in Ethiopia
National Biogas Program of Ethiopia, Phase II (NBPE-II)	2014 to 2017 Sponsors : Beneficiary Households, Government, Africa Biogas Partnership Programme (EUR 4.8 million) and EnDev (USD 0.5 million)	The goal of the National Biogas Program of Ethiopia, Phase II (NBPE-II) is to support Government of Ethiopia's efforts in developing a commercially viable, market-oriented biogas sector for reducing carbon emissions and creating access to efficient domestic energy. The NBPE intends to install 20,000 domestic biogas units. Funding has been secured for project design but not for implementation. The Biofuel Development Directorate of MoWIE is responsible for Phase II
National Improved Cook-Stove Program	January 2013 to December 2018 Sponsors : GoE (MoWIE), Gov. Norway/ NORAD, BARR Foundation, and UNDP	The National Improved Cook-Stove Program (NICSP) is intended to support the adoption of 9.4 million improved cook-stoves through building relevant institutional capacity and developing a sustainable and vibrant market for ICS. The NICSP is hosted by AETDPD/MoWIE and implemented with the Regional Energy Bureaus, MEFCC and MoFEC

Ethiopia - Rural Electrification Project II	2006 – 2011 Sponsors : GoE and AfDB,	The main objective of the AfDB funded intervention project is to increase access of electricity in rural areas of Ethiopia, thus contributing to the poverty reduction goal of the Government, as stipulated in the Plan for Accelerated and Sustained Development to End Poverty. The project aims to supply electricity to 335 rural towns and villages and improve the national electricity access rate from 17% in 2006 to 20% in 2011 in order to promote socio-economic development of rural areas.
Renewable Energy Guarantees Program for Ethiopia	2019 – 2025 Sponsors : GoE (MoF)	The objective of the Renewable Energy Guarantees Program Project for Ethiopia is to increase renewable energy generation capacity through private sector participation in Ethiopia. There is one component to the project, the first component being Metehara Solar IPP. The REGREP first phase consists of IDA guarantee support to the Metehara Solar IPP (100 MW), which is the most advanced IPP transaction. The PDO for REGREP Phase 1 is to increase renewable energy generation capacity through private sector participation in Ethiopia.
Access to Distributed Electricity and Lighting in Ethiopia (ADELE)	2021 – 2025 Sponsors : GoE and World Bank (IDA)	The Access to Distributed Electricity and Lighting in Ethiopia (ADELE) is component of Ethiopia's National Electrification Program (NEP), aims to strategically change direction from infrastructure development to the delivery of adequate, reliable and affordable electricity services with a vision to reach universal electrification by 2025. "With a goal of providing electricity services for nearly 5 million people, 11,500 enterprises and 1,400 health and education facilities, the project represents the World Bank's continued support to the Government of Ethiopia's NEP and is aligned with our commitment to support Ethiopia's resilient recovery from the COVID 19 pandemic.

4.1.6 Replication Approach

The project design envisaged a replication approach by building an enabling environment to support private sector driven and market based approach for a wide scale dissemination of these rural energy technology solutions to communities residing in the off-grid areas through successful implementation of component 3 - developing a replicable business model/ Sustainable Financial Mechanism (SFM) for RETs for Rural households, complemented with -:

- Strengthening Regulatory and Legal Framework based on National Standards;
- Organizing Rural Public Awareness Campaign on Renewable Energy Technologies;
- Targeted advisory services to build capacities of the financial service and local enterprises;
- Providing Technical Assistance to FSPs to assess, develop, deploy and scale-up micro finance products to finance sustainable rural energy technologies or to RET enterprises to develop Business Plans to mobilize credits from the FSPs;
- Business Incubator to Promote Greater Entrepreneurship for Investment in RETs.

It is also envisaged that if the project is successful, it will work to attract additional funds from other international development institutions and investors to scale-up the guarantee fund's size and scope.

4.1.7 UNDP Comparative Advantage

UNDP CO has been working in Ethiopia since 1981. Since then, UNDP has focused on providing Ethiopia with strategic support to build national capacity and enhance the country's development results in the areas of poverty reduction and economic growth, democratic governance as well as climate resilient development. It has earlier implemented a project - Technology Need Assessment with the GEF support in 2007. In addition to this, UNDP has –a) a multi- dimensional development perspective; b) vast experience in designing/developing and integrating policy in national processes; creating local capacities through effective collaboration with a wide range of local stakeholders, encompassing public and private sectors in addition to technical experts, civil society and grassroots level organizations; and c) ability to address cross sectional issues and inclusiveness, sharing good practices and lessons learned from other countries around the globe. All these approaches were strongly applicable for

promoting rural energy technologies in Ethiopia. Furthermore, this project is framed around three strategic priorities of the UNDP Country Programme: enhanced economic growth and poverty reduction; democratic governance and capacity development; and development of a low-carbon and climate-resilient economy. Therefore, Given the UNDP's long track record on a wide variety of projects within the energy sector and other comparative advantages, UNDP was aptly suited as the agency championing this GEF funded RET Project.

4.2 Project Implementation

4.2.1 Adaptive Management

The project has used adaptive management extensively to secure project deliverables while maintaining adherence to the overall project design. The important adaptive management measures that were enacted during the course of its implementation are listed below -:

a) The project has followed a hybrid implementation modality - NIM/DIM as opposed to the original plan to use NIM whereby the project activities were to be implemented by the government procedures and staff. The DIM management framework was introduced in order to facilitate greater and more effective intervention.

b) Following the recommendations made in the MTR report of the project and the support from PSC, four resident capacity builders (2 each with the background of ICS and Solar Energy Technologies) were recruited to provide technical and project activities administration support to the regional energy bureaus which was crucial for successful implementation of the project activities and to reach on targets set by the project. This was in addition to the project office defined staff mentioned in the project document.

c) Opened the Credit Risk Guarantee Fund account at NBE, managed by DBE and UNDP directly transferred en-block amount of USD 1.58 million to this account to be use as CRGF for commercial banks and MFIs involved in the implementation of the project. Although this was contrary to the original project design but this measure by the PSC was vital to make up for the lost time due to the delay in implementing the activities under component 3.

d) Based on the suggestion of the Credit Risk Guarantee Fund Management Committee (CRGFMC), the condition of CRGF provides partial credit risk guarantee coverage was relaxed from 50% of loan to 70% for development regional states and women for ICS and solar energy technologies and for maximum loan size of one million ETB (USD 27,550.00) in November 2019 for – a) RET suppliers and enterprises (both men and women owned) operating in Developing Regional States (DRS), Refugee Camps and Internally Displaced People (IDP) as well as non-DRS (their business can be located in non-DRS regions); and b) RET suppliers whose businesses ((both women and men owned businesses; their businesses and manufacturing centers) located in non-DRS and willing to serve DRS regions and refugee camps, distributing only ICS, enter into an agreement with the respective DRS energy bureaus to distribute ICS to the regions. This relaxation was done with a view to enhance their access to loan.

e) The Operational Manual of CRGF was revised periodically (latest version-8th, November 2019) with a view to act as a ready reference guide for all concerned stakeholders. Some of the key changes made are – a) the clause on 'Participating Financial Institutions (PFIs) must have experience in energy lending' was removed to include all interested PFIs; b) the clause on 'PFIs must have at least 20,000 clients' was replaced by 10,000; and c) the Grant Award Scheme was adjusted to consider prototype innovations by all RET enterprises and individuals against the earlier provision was for registered ones only.

f) In order to attract more proposal for innovative ideas competition, grant amount was raised to USD 8000 from initial planned amount of USD 5000, keeping in view inflation, increase requirement in the working capital of a RET enterprise, etc.

g) Developed and put in place an M & E framework to capture outcome level performance by using ten major indicators performance tracking table.

h) In order to lower the impact of Government's state emergency resulting due to COVID -19 Pandemic, some of the project activities planned for the years 2020 and 2021 have been reprogrammed – mainly the project activities such as technology roadshows and market demonstrations were changed to broadcasting awareness raising promotional messages through regional radio and television using different local languages.

In conclusion, the project has used adaptive management extensively by adjusting the project activities to overcome the key barriers and obstacles typically faced during the implementation as well as some initial flaws in the project design, while still keeping the main project targets and objective in mind. The adaptive management actions, therefore, can be rated as **Highly Satisfactory**

4.2.2 Actual Stakeholders Participation and Partnership Arrangements

The project was implemented using the existing government system, structures, and experts to implement its activities in the nine regional states. The Federal and Regional Energy Offices were responsible to manage/coordinate the activities at all levels of their respective regions. Even if shortage of transport and low budget for monitoring was a critical barrier for the movement of experts in the regions, the government officials and experts at regional and federal level, have a firm commitment and sense of ownership to achieve the project objectives. The project staff and regional energy office experts, especially the focal persons in the regions, have adequate awareness and understanding of the project objective.

As described in Para 3.6 and 4.1.4, all the stakeholders (different Ministries and Organizations) identified during PIF and PPG preparation phase were involved in implementation of different activities of the project, although the level of engagement was varying from stakeholder to stakeholder. Some stakeholders were directly involved in the implementation of project activities whereas others were involved by aligning/ complementing the project interventions with the works they were doing.

A few other key partnerships facilitating or supporting the implementation of project activities were as under -:

v) The involvement of the private sectors, the local enterprises mainly the Medium and small scale enterprises(MSEs) was the key partners in realizing the market based and private sector driven dissemination of small-scale RETs in off-grid rural areas of the country. These partners were actively involved in development of the national standards and increasing the awareness among the communities on the benefits of improved and modern rural energy technologies. They were also key partners in conducting successful pilot

technology roadshows. Mainly, the communities engaged in the production and sell of improved cook-stoves were the good partners of the project in reaching its goal by the end of the project period as they were involved in the market based and private sector driven dissemination of rural energy technologies.

vi) The micro-finance institutions and commercial banks, who were participating in the project as financial intermediaries, have played an important role in ensuring access to finance to importers of solar energy technologies and local producers of improved biomass stoves through the credit risk guarantee fund mechanism established by the project.

vii) The local communities (Indigenous Peoples) located in off-grid areas of the country, who were the main target beneficiaries (end-users) of this project, participated in implementation of the project activities by way of playing part in promoting access to improved and modern rural energy technologies together with regional energy bureaus, especially in organizing the technology roadshow, weekly market day and energy day events to increase the awareness of those communities on the benefits of those technologies which has made a significant impact in terms of the promotion of the use of rural energy technologies in those areas.

viii) Business Incubation to Promote Greater Entrepreneurship for Investment in RETs was another noteworthy activity to forge partnership with the new entrepreneurs. As a result, four women entrepreneurs emerged as a successful entrepreneurs in establishing their business in RET space.

During the TE mission, the National Consultant was able to meet with key stakeholders and project's beneficiaries and it was noticeable their involvement in the project's implementation. However, there was no evidence of partnerships with national and international non-governmental/civil society organizations and development partners (except DFID) at national and/or regional level which was brought to our notice.

4.2.3 Project Finance and Co-finance

According to the signed Prodoc., financial (cash) contribution to the project from different agencies consists of -: GEF Grant - USD 4,091,781; UNDP - USD 500,000, UNCDF Clean-Start Global Program - USD 980,000 and Co-financing from Govt.

of Ethiopia (GoE) of USD 11,491,287 as well as further co-financing from DBE with a loan of USD 20 million, Private Sector Investment – 2,800,000 and RET enterprises (in-kind and cash) USD 5,800,000. GoE, UNDP, private sector and International NGOs (HIVOS, SNV, ABPP) also committed for in-kind contribution. However, it was noted that the cash contribution from the private sector and RET enterprises did not come to the project. The international NGOs were not involved in project implementation hence there was no in-kind contribution from them.

As per the information provided through the UNDP M&E Unit as well as documents review, the actual utilization of GEF grant and UNDP TRAC contribution was USD 4,059,166 and USD 935,261 respectively. In addition to these, the UNCDF have used USD 140,000 for Component 3.

As regards management of external grants, Audit Reports for the year 2016 and 2020 shared by the project team were also reviewed. It was noted that all the financial management and reporting procedures and regulations were reported to be followed and there were no adverse remarks from the auditors. For the remaining years (i.e. 2017, 2018, 2019 and 2021), it was informed that audits were not done since the total expenditure for each year was below the thresholds set by OAI (UNDP Office of Audit Investigation).

The key observations of the TE Team from the above analysis are as under -:

i) The external cash grant (GEF component) has been utilized more than 109 per cent;
ii) UNCDF has utilized their direct contribution (co-finance) to the project to USD 140,000 against the initial commitment of USD 980,000;
iii) UNDP has revised/re-adjusted their Cash Contribution to USD 935,261 from the initial commitment of USD 500,000.00;
iv) There was no Co-financing contribution from Govt. of Ethiopia;
v) Cash contribution from the private sector and RET enterprises and in-kind contribution from the international NGOs did not come to the project;
vi) All financial management and reporting procedures and regulations were reported to be followed and there were no adverse remarks from the auditors.

4.2.4 Monitoring and Evaluation : Design at Entry, Implementation, and Overall Assessment of M & E

The Project's Monitoring and Evaluation (M&E) Framework at entry has been described adequately at Part-IV of the Project Document (Prodoc.) and defines roles and responsibilities of identified responsible parties for M&E activities, allocation of indicative budget and the time-frame for a specific activity. Standard UNDP and GEF progress monitoring and reporting tools such as Report of Inception Workshop, Quarterly Progress Report, Annual Work Plan, Annual Project Review (APR)/Project Implementation Reviews (PIRs), Mid-Term and Terminal Evaluation, Annual Financial Audits completed by project office on time, besides periodic monitoring through site visits by UNDP CO, project team and others. A budget of USD 1,40,000 (5 percent of total budget provision) was also kept for this purpose which in our view is on lower side considering team has to travel far off distances, that too in remote rural areas of the country. In view of the provisions stated, M&E at Design Entry has been rated as **Satisfactory**

During implementation, in addition to these progress monitoring and verification tools, the progress of the project was also to be reviewed regularly through meetings of the Project Steering Committee (PSC). The PSC meetings was the main forum on which major Project decisions were to be made. Information from the Project Office and stakeholders was to be provided for discussion at the PSC meetings.

The Evaluation Team on reviewing related documents and interaction with Key Informants noted that – :

i) Project Inception Workshop was organized on October 31 and November 01, 2016 at Addis Ababa and its report was finalized on December 26, 2016. It was inaugurated by H.E. Eng. Wondimu Tekle, MoWIE State Minister and attended by more than 40 participants;
ii) 11 meetings of PSC were organized during the project life cycle and AWP and annual budget were approved, in addition to reviewing progress of project and decisions on adjustment, if any, in the implementation strategy. During the interview of the selected PSC members, it was stated that they felt sufficiently informed about the progress and activities;
iii) The mandatory reports –APRs/PIRs for all the years were submitted in time and reviewed by UNDP CO and RTA, incorporating their

observations/suggestions thereof.

iv) As regards conducting field visits for monitoring progress, a detailed Monitoring and Evaluation Plan was developed by the UNDP Monitoring and Evaluation Team in consultation with project team and UNDP M&E Specialist in July 2018 which was designed to measure two components – a) assessment of project implementation and monitoring performance of project activities; and b) evaluation of project results in terms of relevance, effectiveness, impact. In other terms, the objective of the stipulated monitoring process was to monitor actual management and supervision of project activities in the field, compare it with those scheduled in AWP, make recommendations to improve efficiency and overall effectiveness of project implementation. Whereas M&E of project results was involved in evaluation of the project' success in achieving its outcomes and comparing it with the core indicators defined in the logical framework.

v) The TE Team reviewed following three reports on field visits shared by the project team -:
   a) RET Project Monitoring Visit Report in June 2019 (period covered January 2018 – June 2019 and regions covered – Amhara, Oromia, SNNP, and Tigray);
   b) Report for M&E on Small Grant Award Winner Enterprises in June 2019 (covered 5 award winning Enterprises that are in Addis Ababa, Oromia and SNNP Regions);
   c) Report for M&E on Small Grant Award Winner Enterprises undertaken together with Ethics and Anti-corruption Directorate, January 2020 (covered 6 award winning Enterprises that are in Oromia and SNNP regions)]

From above reports, it was noticed that all the field visits were made with the aim to inspect and verify project activities on the ground, identify challenges and risks and to suggest remedial actions, ensure proper utilization of grant by the awardee enterprise. This has definitely helped in better coordination and partnership and an effective management of project implementation.

However, it is worth to mention that some of the core indicators and outputs listed in the Project Results Framework (logframe) were not monitored/tracked. To list a few are – type and efficiency of the technology disseminated, actual energy saved in the field or related CO2 avoided, number enterprises incubated and number enterprises launch their business. We were informed that the operational performance of the RET technology could not be monitored due to lack of appropriate measurement devices

and field level laboratories in the country. Another major problem cited in relation to M&E of this project was that it could not be taken regularly due instability in different parts of the country and occurrence of COVID-19 pandemic and subsequent measures taken by the Govt. to prevent spread of the virus. The rating of M&E Plan at implementation has been rated as **Moderately Satisfactory**

In view of above, Project's overall achievement in regard to implementation of M&E Plan is rated as **Moderately Satisfactory**

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
		MS			

4.2.5 UNDP Implementation/Oversight and Implementing Partner Execution, Overall Project Implementation/Execution, Coordination and Operational Issues

As per the Management Arrangements described in the Project Document, the Alternative Energy Technology Development and Promotion Directorate (AETDPD) of MoWIE acted as the implementing partner (executing agency) of the project in accordance with UNDPs National Implementation Modality (now referred to as National Execution or NEX modality). NEX modality tasks AETDPD/MoWIE with overall responsibility for execution and implementation of the project. A Project Steering Committee (PSC) was constituted to serve as the executive decision-making body for the project and was to provide the necessary guidance and oversight to the project implementation. It approved Annual Work Plans (AWPs), reviewed the Annual Progress Reports/Project Implementation Reports (PIRs), and reviewed/approved corrective measures when needed. The PSC ensured that the project remained on course to deliver the desired outcomes of the required quality. The PSC composed of members from MoFED, EFCCC, UNDP, UNCDF CleanStart, DBE, EEA, FeMSEDA, AEMFI and national project manager as secretary of the PSC. The Director of AETDPD was designated as the National Project Director and chair of the PSC. An organogram of the RET Project implementation arrangements is provided at Figure 1.

AETDPD has set up a Project Office (PO) in Addis Ababa with a dedicated Project Manager (PM), supported by two Senior Bio-energy Experts and an Account Assistant to administer day-to-day work of the project. The project staff has been

recruited using standard UNDP recruitment procedures. The PO was responsible for overseeing on-ground implementation, preparing reports, taking care of audit requirements and all matters pertaining to accounts and audit. In addition to that, the PO's was responsible to ensure that the project is implemented in an efficient and effective manner and produces the results specified in the Project Document to the required standard of quality and within the specified constraints of time and cost. The PM also liaise and work closely with all partner institutions to link the project with other complementary national programmes and initiatives and was directly reporting to the NPD.

UNDP Country Office (CO) served as the GEF implementing agency for the project and was member of the PSC. It primary function within the PSC was to make sure that the progress towards expected results remains consistent and to ensure a quality assurance role in implementation of the project

UNDCF, through its Cleanstart programme was responsible party for implementing Component-3 of the project (relating to the sustainable finance mechanism). However, the Development Bank of Ethiopia (DBE) was the partnered with UNCDF in providing wholesale funds, credit risk guarantees and assisting in selection of participating Financial Service Providers (FSPs) and technical assistance for clean energy lending.

Regional Implementation

At the regional level, the project was executed and monitored by Regional Energy Bureaus (REBs) and their staffs. PM and Technical Experts in the Project Office acted as the key focal points and provided requisite technical guidance in the regions, termed Resident Capacity Builders /Coordinators. The REBs were also made responsible for coordination and communication between the Project Office in Addis Ababa and the regional offices, and between the regional stakeholders, regional MFIs, and other local agencies.

Guarantee Fund Management Committee (GFMC)

The guarantee fund account, which was a special account of DBE housed in NBE, has been managed by a fund management committee comprising of CleanStart, DBE, MoWIE and UNDP. The key function of the GFMC was – a) approval of lenders (commercial banks and MFIs) eligible to receive guarantees from the facility; b) conduct periodic audit and review of funds guarantee liabilities and review selected

credit risk assessments conducted bt the lender and DBE; and c) review and approve of claim payments in case of a call on guarantee due to defaults

Technical Service Providers

Number of other technical service providers (TSPs) as well as the FSPs, RET enterprises, and DBE who have provided a range of services to AETDPD, now EREDPC /MoWIE in execution of the project. Some of the national level TSPs were the Association of Ethiopian Micro-Finance Institutions (AEMFI), the Ethiopian Climate Innovation Centres (ECICs), the Energy Coordination Office (ECO). However, it has been reported by DBE and UNCDF representatives that the Association of Micro-Finance Institutions) in practice has not participated in providing technical services.

The Evaluators noted that the PSC met total 11 times against the stipulation of at least one meeting per annum and the chair of the PSC was not changed, since the outset of the project.

The financial arrangements and procedures for the project were governed by UNDP rules and regulations applicable on project implemented through the National Implementation Modality (NIM). All procurement and financial transactions were governed by applicable UNDP regulations, including the recruitment of staff and consultants/experts using standard UNDP recruitment procedures.
The Evaluators found that the management arrangements were adequate and effective for the implementation of the project. They provided the project with clear roles and responsibilities for all parties including clear reporting lines of authority. The PSC met regularly to monitor the implementation of the projectand approve the AWPs and progress reports. The good functioning of the PSC provided an effectiveway to communicate, keep stakeholders engaged, a forum to discuss and resolve critical management issuesand nurtured a good national ownership of project achievements. Overall, management arrangements provided the project with "*checks and balances*" mechanisms to review, assess and correct the course of action when necessary.

The overall structure of the project organization in execution of the "National Implementation Modality" has been found useful, since AETCPD was managing the Project well, ensured continuous involvement of project stakeholders (via PSC) and kept the senior beneficiaries as well as UNDP in a close communication loop. The

adequacy and effectiveness of the project management are therefore rated *Satisfactory*.

The overall project management arrangements are rated **Highly Satisfactory.**

Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately Unsatisfactory	Unsatisfactory	Highly Unsatisfactory
HS					

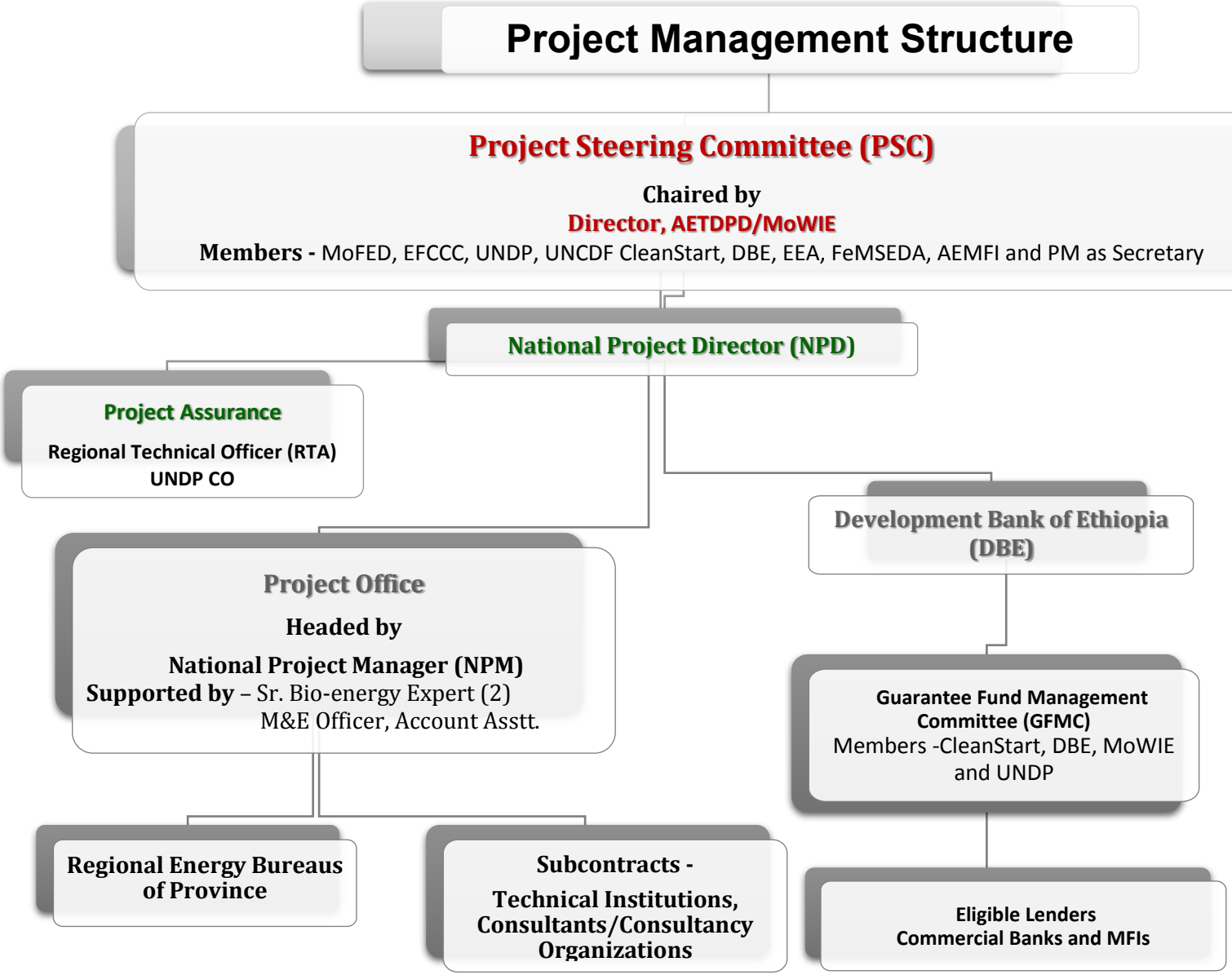

Figure -1 Organogram of the RET Project Management Arrangements

4.3 Project Results and Impacts

This section of the TE report presents the attainment of overall project objective and achievement of results against the different Outcomes of the project. The evaluation was conducted at the Objective and the Outcomes levels with the outputs level analysis being used to generate evidence required to justify or explain the results or effectiveness of the project outcomes. The evaluation uses the indicators identified at design stage as amended in conducting the assessments.

4.3.1 Overall Results (Objective Level)

The RETs project aims to reduce Ethiopia's energy-related CO_2 emissions by approximately 2 million tonnes CO_2e through supporting access to and utilization of renewable energy and low GHG-producing technologies in rural communities of the country. The project envisages enabling 800,000 additional households to access and using renewable energy technology appliances for domestic and productive purposes as an alternative to fossil fuels and non-sustainable biomass utilization in the country. With a focus on rural household appliances for cooking, lighting and heating, the project interventions were designed to remove barriers that hamper the wide-scale use of off-grid renewable energy technologies in households and productive uses in rural areas of Ethiopia.

The contribution of the RETs project have been assessed on the basis of alignment of project outcomes and outputs with the Outcomes of UNDAF, CPD and SDGs and the achievements of project's targeted Outcomes and Outputs to be implemented over the project period.

4.3.2 Project Contribution towards UNDAF and CPD

As described under the project relevance sub-section, the project has contributed towards UNDAF's (2016 – 2020) *Pillar 1* (Inclusive Growth and Structural Transformation - ***Outcomes 2***) and *Pillar 2* (Resilience and Green Economy - ***Outcome 5***); where ***Outcome 2*** defines: By 2020, private driven industrial and service sector growth is increasingly inclusive, sustainable, competitive and job rich; and ***Outcome 5*** defines: By 2020 key Government institutions at federal and regional levels including cities are better able to plan, implement and monitor

priority climate change mitigation and adaptation actions and sustainable resource management[6].

The project contributed towards UN;s support, i.e. ***Outcome 2*** of UNDAF 2016-2020 in capacitating private small and medium suppliers (service providers) of rural energy technologies achieved through providing financial loan on risk-guarantee fund by financial service providers. In this context, 20 private suppliers of rural energy technologies were supported by availing training, technical advice and loan accessibility by the project. As a result of these supports, the volume of businesses of private RETs Suppliers has increased, their income has increased and the number of employees working in these private RETs Suppliers has also increased significantly.

UN's support under ***Outcome 5*** of UNDAF intends to develop and strengthen capacity of Government Institutions so as enable them to best plan, implement and monitoring climate mitigation strategies to mitigate climate change barriers/ impacts on natural resources. In this direction, the RETs project supported national and regional government institution through skill training of experts and provision of technical advises that helped to design strategies and plans that protects destruction of natural resources (fuel wood, charcoal, etc.) by developing, promoting and disseminating renewable energy technologies to end user households. Towards this effect, the project supported development and approval of national standards on solar home systems and improved baking and cooking stoves; training modules on the set standards developed; and trained over 500 stakeholders on implementation and adherence with the new standards and regulations (30% women) in the alternative energy technologies. These interventions have created capacity to avoid or reduce use of fuel use, charcoal thereby avoiding destruction of natural resources and CO_2 emission, which are in the realm of UNDAF 2016-2020.

Furthermore, the project has also contributed to the UNDP CPD ***Outcome*** 2020-2025 which is defined as: By 2025, all people in Ethiopia live in a society resilient to environmental risks and adapted to climate change[7]. The RETs project contributed to the design of UNDP CPD 2020 – 2025 by serving as baseline/ benchmark in 2019. The CPD under Output 3.3 intended to achieve increased access to clean, affordable and sustainable energy. The indicator designed was volume of investment leveraged from public and private sources through UNDP

[6] UN, 2016; United Nations Development Assistance Framework for Ethiopia, 2016 - 2020.

[7] UNDP, 2020; Country Program Document for Ethiopia (2020 - 2025); New York.

and partner support. As baseline an investment volume of $1.4 million (2019) was taken from RETs project and targeted to reach an investment volume of $20 million by 3025 by public and private energy suppliers.

4.3.3 Planned Project Results by Objective and Outcomes

The achievements of the stated project objective has been assessed in terms of the indicators set for measuring project objective as given in the log-frame and in terms of the achievement of results for different Outcomes (see Table No-7) for objective and outcomes level results). The overall objective of the RETs project was ***to promote and encourage significantly greater use of energy efficient and renewable energy technologies for household and productive uses in rural communities in Ethiopia.*** The indicator set to measure the achievement of this objective was lifetime energy saved. It was targeted to save about 35.5 million mega-Joules energy. Towards this, around 44.14 million mega-Joules of energy was saved over the project period and a total of 2.56 million tons of CO_2 equivalent reduced through the distribution of different types of *improved cook stoves* and *solar energy technology* products. The achievement of the objective of the project under evaluation was above planned target (124%) and rated as highly satisfactory.

4.3.3.1 ***Outcome 1:*** Favorable legal and regulatory environment are designed for small-scale off-grid renewable energy investments in rural areas, and modalities for stakeholder training to comply with and implement the new standards and regulations are in place by 2018.

The indicators set to measure achievement of this outcome were: status of development and enforcement of RET hardware standards by Government of Ethiopia (GoE) and number of participants benefiting from trainings (gender-disaggregated). Towards these indicators, it was targeted to set and approve national standards on solar home systems from 15Wp to 200 Wp, Injera baking stoves and cooking stoves and prepared training modules on those standards. This target was achieved fully (100%). Equally, over 500 individual stakeholders across the country were trained in implementation and adherence with the new standards and regulations (30% women), which is 100% achievement. These indicators exhibited full achievement (100%) of *Outcome 1*. As a result of the trainings, the knowledge and skill of suppliers and beneficiary households on standards developed has been improved. The improved knowledge and skill on household energy standards have enhanced the

capacity of participants practically enforce the standards and monitor the distribution and use of standard and quality energy technologies. However, sector key informants noted that standards for improved cook-stoves are voluntary while standards for solar technologies are mandatory. The sector key informants have the opinion that standards for all energy technologies should be mandatory.

4.3.3.2 ***Outcome 2:*** Greater awareness among rural populations about the benefits and qualities of renewable energy for household and productive uses, as well as awareness among RET enterprises about the availability of SFM and business support created by 2017

Three indicators set to measure the achievement of this outcome were -: (1) t*ype, item prices and estimated efficiency of technologies directly sold at road shows, (2) n*umber, size and length of appearances of promotions in media, and (3) number of RET enterprises using SFM or applying for business incubation services. Towards this, it was targeted to develop National Technology Roadshow Communication Strategy Document and 300,000 RET items endorsed and approved by MoWI were targeted to be sold directly at roadshows. Accordingly, National Technology Roadshow Communication Strategy Document has been developed, endorsed and approved by MoWIE; RET suppliers sold or disseminated a total of 370,766 RET items (184,962 different types of ICS and 185,804 different sizes solar energy technology products), which is over achieved (124%). Equally, it was targeted to conduct at least 1000 appearances of promotions (3 types of one minute length) on the benefits and access of RETs to rural public using national media. In this context, full performance was recorded (100% achievement). Furthermore, although it was targeted that 200 RETs use SFM of 500 RETs supplier apply for business incubation services, only 16 RETs suppliers (6 ICS and 10 solar energy technology suppliers) have got loan access using the CRGF scheme through 11 financial institutions working with the project. This is a very low and insignificant achievement. However, the overall achievement of Outcome 2 is **Satisfactory** with 77.3% performance.

As a result of the achievements of Outcome 2, numerous rural community members have created significant awareness on the benefits and uses of improved energy technologies and purchased more than 370,000 energy technologies. The use of these energy technologies have save time and avoid workload spent on collecting fuel woods. The awareness created among RETs

suppliers also enabled them to get access SFM put in place by CRGF, which in return increased the volume of energy technologies imported, produced and marketed.

4.3.3.3 ***Outcome 3:*** By the end of project, more than 290,000 low-income households and micro-enterprises (1,500,000 beneficiaries) will have sustainable access to clean energy through micro-finance.

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The purpose of project ***Component 3*** (*Sustainable Financial Mechanism (SFM) for RETs for rural households*) was to increase access to finance to increase the availability of capital for investments or working capital requirements of RET Supplier Enterprises. The achievement of this component was assessed at o*utcome* level. The indicators set to measure Outcome 3 include: volume of investment mobilized by FSPs participating in the CRGF and number of enterprises that got sustainable financial support through loans. The performance assessment for ***Outcome 3*** (***By the end of project, more than 290,000 low-income households and micro-enterprises (1,500,000 beneficiaries) will have sustainable access to clean energy through micro-finance***) has been elaborated as follows -:

Towards the indicator ''volume of investments mobilized by FSPs participating in the CRGF'', it was targeted to mobilize an investment and deployment of at least 200,000 additional small-scale solar energy technologies and 600,000 improved cook-stoves, worth USD 15 million by the end of the project. Towards this, a total of USD 1.58 million was deposited in a special account opened in NBE and administered by DBE. To date, a total of ETB 59.2 million energy loan (approximately USD 1.644 million) was disbursed to 20 RETs Suppliers issuing guarantee letters amounting to ETB 28.65 million (USD 659,246) by DBE over the project period, In total, 485,952 renewable energy technologies (257,212 improved cooking/baking-stoves and 228,740 small-scale solar energy) were disseminated through integrated project component activities, which exhibited *80.7% achievement*. Regarding the number of enterprises that got financial support through loans, a total of 11 FSPs (4 commercial banks and 7 MFIs) were involved in provision of loan to 20 RET suppliers against guarantee letters amount to USD 659,246 issued through DBE, which shows 90*% achievement*. The achievement shows that the CRGF scheme has met the intended results at outcome level. Due to the establishment of CRGF, the participant FSPs were able extend increased volume of loan to the RETs appliance suppliers. The RETs suppliers in return

were able to purchase, import and distribute/market increased volume of improved RETs (improved cooking stove, solar lights and pumps). The CRGF outcome also helped rural and urban household's access to affordable rural energy appliances.

4.3.3.4 ***Outcome 4:*** By 2017 Business incubation programme commenced to support greater entrepreneurship in RET investment''

The purpose of this outcome was to commence business incubation program to support greater entrepreneurship in RET investment. The indicator set to measure the achievement of this outcome was the number of enterprises that launch micro-businesses to sell either small-scale solar technologies or improved cook-stoves (or both). Towards this effect, it was targeted that 120 enterprises launch micro-businesses to sell either small scale solar technologies or ICS (or both) with at least a 25% success rate (i.e. still in business and profitable after 12 months). Towards this target, 120 enterprises launched micro-businesses with the support of the project, the achievement being 100%. About 33 RET enterprises and individuals (29 M and 4 F owned enterprises) engaged in rural energy technology sector were also got a grant support valuing USD 222,000. As a result of the outcome achievement, RET enterprises and individuals involved in the process were able to expand their business and continued to supply their products and services due to the grant support from the facility.

Table No-6: Project Log-Framework for Assessment of Achievements of RETs Project at Objective and Outcomes Levels[8]

Objective, Outcomes and Indicators	Baseline	Target level at end of Project	Achievements	% Achievement	Rating[9]
Objective: To promote and encourage significantly greater use of energy efficient and renewable energy technologies for household and productive uses in rural communities in Ethiopia				**124.3%**	**HS**
Indicator1: Lifetime energy saved.	The use of over 15 million inefficient cook-stoves and over 15 million kerosene lamps leads to over 2 Mt CO2e annually.	35.5 million mega-Joules of energy saved.	Around 44.14 million mega Joules of energy saved and a total of 2.56 million tons of CO_2 equivalent reduced through the distribution of different types of improved cook stoves and solar energy technology products	**124.3%**	HS
Outcome 1:Favorable legal and regulatory environment are designed for small-scale off-grid renewable energy investments in rural areas, and modalities for stakeholder training to comply with and implement the new standards and regulations are in place by 2018				***100%***	***HS***
Indicator 1.1: Status of development and enforcement of RET hardware standards by Government of Ethiopia (GoE)	No regulatory basis to improve and control the quality of rural energy technologies for Ethiopia.	National Standards on solar home systems from 15Wp to 200 Wp, Injera baking stoves and cooking stoves are set and approved. Training modules on those standards prepared	National standards on solar home systems from 15Wp to 200 Wp, Injera baking stoves and cooking stoves were set and approved. Training modules on those standards prepared	100%	HS
Indicator 1.2: Number of participants benefiting from trainings (gender-disaggregated		Over 500 individual stakeholders are trained in implementation and adherence with the new standards and regulation	Over 500 individual stakeholders across the country were trained in implementation and adherence with the new standards and regulations (30% women)	100%	HS

[8] ODI, 2006; Evaluating Humanitarian Action using OECD-DAC Criteria, London,

[9] Highly Satisfactory (85 – 100%); Satisfactory (70 – 84.9%); Acceptable (50 – 69%); Unsatisfactory (30 – 49%); and Highly Unsatisfactory (below 30%).

Objective, Outcomes and Indicators	Baseline	Target level at end of Project	Achievements	% Achievement	Rating[9]
Outcome 2: Greater awareness among rural populations about the benefits and qualities of renewable energy for household and productive uses, as well as awareness among RET enterprises about the availability of SFM and business support created by 2017				***77.3%***	***S***
Indicator 2.1: Type, item prices and estimated efficiency of technologies directly sold at road shows.	Lack of public awareness in rural communities about the benefits of improved energy technologies for lighting and cooking.	National Technology Roadshow Communication Strategy Document to be developed, endorsed and approved by MoWIE,; 300,000 RET items to be sold directly at roadshows	National Technology Roadshow Communication Strategy Document developed, endorsed, and approved by MoWIE; RET suppliers sold or disseminated a total of 485,952 RET items (257,212 different types of ICS and 228,740 different sizes solar energy technology products).	124%	HS
Indicator 2.2: Number, size and length of appearances of promotions in media.	The use of over 15 million inefficient cook-stoves and over 15 million kerosene lamps leads to 51 Mt CO2e of emissions annually.	At least 1000 appearances of promotions (3 types of one minute length) on the benefits and access of RETs to rural public using national media.	More than 1000 appearances of promotions (3 types of one minute length) on the benefits and access of RETs were telecasted in rural public using media.	100%	HS
Indicator2.3: Number of RET enterprises using SFM or applying for business incubation services	Lack of public awareness about the availability of financial products to purchase rural energy technologies.	200 RET enterprises use SFM and 500 RET enterprises applying for business incubation services.	A total of 16 RETs suppliers (6 Improved cook stoves and 10 solar energy technology suppliers) have got loan access using the credit risk guarantee fund facility through the 11 financial institutions working with the project.	8%	US
Outcome 3: By the end of project, more than 290,000 low-income households and micro-enterprises (1,500,000 beneficiaries) will have sustainable access to clean energy through micro-finance				85.5%	**HS**

Objective, Outcomes and Indicators	Baseline	Target level at end of Project	Achievements	% Achievement	Rating[9]
Indicator 3,1: Volume of investment mobilized by FSPs participating in the CRGF	No lending on RETs by MFIs; slow disbursement of an available World Bank loan of USD 40 million (15% disbursement rate as of April 2014) for the sector	Mobilize an investment and deployment of at least 200,000 additional small-scale solar energy technologies and 600,000 improved cook-stoves, worth USD 15 million	Deposited a total USD 1.58 million at NBE managed by DBE. In total, 485,952 RETs (257,212 improved cooking-stoves and 28,740 small-scale solar energy) disseminated through integrated project component activities; additional USD 1.253 million (59.20 million ETB) Energy loan was mobilized.	80.7%	HS
Indicator 3.2: Number of enterprises that got sustainable financial support through loans		14 Financial intermediaries (4 commercial banks and 10 micro-finance institutions) to be elected using operational manual and a thorough due diligence process; more than 20 RET suppliers involved in disseminating RETs	11 FSPs (4 banks and 7 MFIs) that fulfilled criteria were selected and signed agreement with DBE; 20 RET suppliers got access to loan against guarantee letters amounting to USD 659,246 issued through DBE	90.3%	HS
Outcome 4: By 2017 Business incubation programme commenced to support greater entrepreneurship in RET investment				100%	**HS**
Indicator 4.1: Number of enterprises that launch micro-businesses to sell either small-scale solar technologies or improved cook-stoves (or both)	At least 120 enterprises in Ethiopia are unable to launch improved businesses due to lack of capital and business expertise	120 enterprises to launch micro-businesses to sell either small-scale solar technologies or ICS (or both) with at least a 25% success rate (i.e. still in business and profitable after 12 months).	120 enterprises launched micro-businesses to sell either small –scale solar technologies or improved cook stoves (or both) with at least a 25% success rate (i.e. still in business and profitable after 12 months)	100%	HS
Overall Achievement				**91.90**	**HS**

4.3.4 RELEVANCE

While carrying out the evaluation, an attempt has been made to assess project's relevance in terms of the extent to which the interventions were aligned with national development policies and priorities, consistency with targeted beneficiary community needs, and policy of development partner and donors.

Alignment with national development policies, priorities and plans:-The national development priorities related to alternative energy development and promotion of a decentralized off-grid solar energy supply. In this regard, one of the major strategic directions focuses on enabling the general public benefit from modern energy by strengthening the capacity of stakeholders and expanding renewable energy sources which are *clean and carbon-free including hydropower*, *wind energy, geothermal energy* and *solar energy sources* to meet the energy demand of the country. These alternative energy products will also be made *accessible to rural and urban areas* while giving utmost consideration for power saving. This is believed to reduce fuel wood consumption, reduce deforestation and protect desertification. It also reduces time of fetching fuel wood and enables using the time for productive activities and, while reducing health problems resulting from indoor pollution.

The implementation strategies designed in the alternative energy sources include, among others to focus on capacity building, technical support and monitoring, providing incentives and support by expanding market and promotion. raising the capacity of domestic micro and small scale enterprises involvement, and identification and developing possible domestic and international sources of finance and their efficient utilization mechanism as well as creating favorable conditions for the private sector to participate in the energy sector, which were stipulated in the Growth and Transformation Plan II (GTP II) running from 2015/15 to 2019/20[10]. The RETs Project was also in alignment with the new Ten Year Development Plan of Ethiopia. The ten Years Development Plan's main focus areas in the energy development plan are ensuring access to energy supply; providing the rural population with clean energy supply technologies; providing high quality electric power service; building a reliable electric power infrastructure; ensuring healthy financial position of the energy sector; encouraging private investment in the sector; and developing skilled and ethical manpower[11].The main objectives of

[10] FDRE, NPC, 2016; Growth and Transformation Plan II; 2015/16 – 2019/20, Main Text, Addis Ababa.

[11] FDRE, PDC, 2021; Ten Years Development Plan: A Pathway to Prosperity; 2021 – 2030, Addis Ababa.

the energy development plan in the ten years development plan are to provide the economy with quality electric power service that is accessible, equitable and affordable; and to expand a reliable energy infrastructure.

Therefore, the project entitled *''promoting sustainable rural energy technologies for household and productive uses''* has been designed in alignment to the above described energy policy and strategic direction of developing alternative energy sources. Hence, the RETs project is in the realm of the national strategic direction; and so assessed as ***highly relevant.***

Consistency with needs of Beneficiary :- The RETs project was designed to address the real problems of rural households towards affordability and supply barriers. As described in the project document, rural households in Ethiopia were facing difficulty of affordability and accessibility to modern rural energy technologies. As a result, they were forced to collect fuel wood which takes more of their labour and time thereby leading to deforestation. Limited access to financial resources at baseline is a major hindrance to both households and RET supplier enterprises to afford RET appliances as well as engaging in RET trade respectively. this has been confirmed by RETs supplier enterprises and rural households contacted during the assessment.

The need to enhance household affordability of RETs in the rural communities of Ethiopia coupled with expanded access to investment capital by RET enterprises are the key aspirations of the RETs project. Thus, project interventions planned under the project are directed at overcoming the financial and technology supply barriers by establishing a credit de-risking facility for DBE and micro-finance institutions (MFIs), as well as development and enforcement of national standards for alternative technologies and greater awareness among rural community about the benefit and qualities of renewable energy for household and productive uses.

Information obtained from officials of FSPs, RETs Suppliers, regional experts and rural households confirmed the same that the project addressed the needs of beneficiary households. Therefore, the interventions planned under each output of the RETs project are aligned with real needs of households.

Alignment with policy of development partner and donors:- It has been assessed that the program was well aligned to UNDAF's *Pillar 1* (Inclusive Growth and Structural Transformation, *Outcomes 2*) and *Pillar 2* (Resilience

and Green Economy, *Outcome 5*); where ***Outcome 2*** defines: By 2020, private driven industrial and service sector growth is increasingly inclusive, sustainable, competitive and job rich; and ***Outcome 5*** defines: By 2020 key Government institutions at federal and regional levels including cities are better able to plan, implement and monitor priority climate change mitigation and adaptation actions and sustainable resource management[12].

The RETs project was also aligned with the 2030 Development Agenda; sustainable development goals (SDGs), **Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all; for which the program established Sustainable Financing Mechanism through the Credit Risk Guarantee Facility and supports development and promotion of renewable energy sources and products.**

This UNDP-implemented, GEF-financed project has also been designed to be consistent with the GEF-5 climate change strategy Objective 2 and Objective 3. GEF Climate Change Strategy Objective 2 focuses on promoting market transformation for energy efficiency in the building and transport sectors and explicitly includes promotion of improved cook-stoves. Objective 3 focuses on the promotion of investment in renewable energy technologies.

Therefore, the project ''promoting sustainable rural energy technologies for household and productive uses'' has been designed aligned to the policy and development priority of the donor (UNDP, GEF, and UNCDF) which followed UNDAF results and resource framework outcome and outputs.

In summary, the program of RETs project has been assessed as **H*ighly Relevant*** in terms of alignment with national priorities, consistency with needs of beneficiary, and policy and priority of partner donors (UNDP-GEF, UNCDF, DBE, etc.).

4.3.5 EFFECTIVENESS

Effectiveness:- The assessment of effectiveness primarily focused on determining the extent to which the expected results of the project were achieved at the objective and outcomes levels, measured based on objectively verifiable indicators and targets.

[12] Ibid, 2016.

The achievements of project objective and outcomes have already been assessed above under sub-section 4.3.3. The assessment and ratings at objective and outcomes level has been summarized in Table -8. As can be seen from the figure, the effectiveness of the overall objective of the RETs project has been rated as highly satisfactory, i.e. the project has achieved the intended result at objective level. The effectiveness of Outcome 1, 3 & 4 has been rated as highly satisfactory while that of Outcome 2 is rated as satisfactory. The overall effectiveness of the RETs project in achieving the intended results has been rated as **Satisfactory.**

Table No. -7 : Summary of Overall Project Effectiveness and Ratings

Objective/Outcomes	***Achievements in %***	***Ratings[13]***
Overall Objective	124%	Highly Satisfactory
Outcome 1	100%	Highly Satisfactory
Outcome 2	77.3%	Satisfactory
Outcome 3	85.5%	Highly Satisfactory
Outcome 4	100%	Highly Satisfactory
Overall Effectiveness	**91.9%**	**HS**

Source: Evaluators' Rating, October. 2021.

4.3.6 EFFICIENCY

Efficiency:- Efficiency measures how economically resources (inputs, funds, expertise, time, etc.) are converted into results/outcomes. Specifically, efficiency is used to assess the extent to which programs /projects used the least cost resources or inputs in order to achieve the planned results or outcomes.

In this assignment, efficiency has been assessed in terms of a) management, coordination and facilitation mechanisms put in place; b) the time it took to deliver the required outputs as compared to original plan, whether the required resources were actually provided within timely framework, and c) whether the interventions were implemented within the planned budget/ costs.

[13] Highly Satisfactory (85 – 100%); Satisfactory (70 – 84.9%); Acceptable (50 – 69%); Unsatisfactory (30 –49%); and Highly Unsatisfactory (below 30%)

4.3.6.1 Management, Coordination and Facilitation Mechanism

With regards to management, coordination and facilitation mechanism, the project document and progress reports reveal that regular monitoring and evaluation of RETs activities were done jointly by Project Team Staffs (MoWIE), DBE technical Advisor, UNCDF Ethiopia Country Coordinator, and FSPs. The Project Steering Committee (PSC) was overseeing the general management and administration of the implementation of the project, decide on resource and budget issues, approves plans and required budgets, decide on resolutions to be taken on implementation challenges. The regular meeting of PSC were held at regular intervals - semi-annually. The day-to-day activities of the RETs project was managed by Project Team Staff and DBE (Technical Advisor and Credit Management Department) for CRGF.

The Project Team, DBE and partners jointly conduct monitoring of the implementation of RETs activities, performace achievements and draw strengths and problems faced during implementation and take corrective measures on quarterly basis. However, COVID-19 Pandemic impacted on regularity of the M&E activities for some time.

In view of the above described tasks performed, the evaluator believes that such joint monitoring and follow up, and guidance of implementation process have contributed to achieve project efficiency.

4.3.6.2 Timely Implementation of Planned Targets

Timely and full implementation of planned targets is an indication of project implementation efficiency. Although the establishment of the guarantee facility was delayed, officials and staff of implementing partners and beneficiary FSPs and RETS Suppliers as well as implementing partners confirmed that most of the implementation activities were accomplished timely as planned. They also pointed out that most of the planned targets were fully implemented (100% achieved). The assessment of achievements from project reports supports the statement of the responses of interviewees.

However, it has been reported that occurrence of COVID-19 pandemic has affected implementation of planned targets during the years 2020 and 2021, particularly among RETs Supplier Enterprises.

4.3.6.3 Utilization of Budget as Compared to Planned Budget

Efficiency can be measured in terms of the actual financial expenditures compared to planned project budget. In this regard, the RETs project has utilized more than planned, i.e. 107.4 % percent of the total planned budget (USD 4.33 million) over the project period, i.e. October 2016 to June 2021 (Table -10). This high performance of financial utilization for planned targets also indicates efficiency of the project.

Table No. -8 : Project Expenditures against Planned Budget

Components	Planned Budget (USD)	Expenditure (USD)	% Utilized
		87,360.69	**-**
Component 1 (Outcome 1)	**450,800.00**	**666,645.99**	**147.9**
Component 2 (Outcome 2)	**627,700.00**	**587,739.59**	**93.6**
Component 3 (outcome 3)	**2,235,000.00**	**1,898,019.64**	**84.9**
Component 4 (Outcome 4)	**973,350.00**	**1,147,273.76**	**117.9**
Project Management	**302,931.00**	**608,069.69**	**200.7**
TOTAL	**4,589,781.00**	**4,995,109.36**	**107.4**

Source: Project Document and UNDP M&E Unit, Oct. 30. 2021

Considering the above assessment relating to efficiency measures, the efficiency of the RETs Project *(Promoting Sustainable Rural Energy Technologies for Household and Productive Uses)* has been rated as **H*ighly Satisfactory***.

4.3.7 Gender Equality and Women Empowerment

Women are the primary energy managers in Ethiopia as in most of the developing countries. They are commonly responsible for providing lighting, heating and cooking in households and tend to oversee the smaller, daily household energy transactions. As an entrepreneur, they have enormous potential in relationship building, to manage supply chain and acquire new creditworthy customers in rural areas, thus driving down the cost of customer

acquisition. From a financial performance perspective also, they are considered as less of a credit risks as they generally tend to value scarce access to credit and avoid willfully defaulting. It is reported that over 1000 women's groups and cooperatives at village level with production capacity varying from 20 -200 ICS per month are in existence throughout the country.

The assessment of gender mainstreaming analysis in project design, its implementation and at outcome level was carried out during the project evaluation. It was noted that the project did not have a comprehensive standardized gender analysis completed during the project development phase aligned with the UNDP-GEF Equality Strategy, UNDP Guidance to Gender Analysis, etc. However, it was recognized in Part II of Prodoc. that – a) due to various reasons such as increase scarcity of firewood, lack of fuel efficient/energy saving rural energy technology products, clearing of land for agriculture, higher demand for fuel wood and increased household energy consumption, the burden of firewood collection falls heavily on adult women and girls especially in rural households, thereby supply of traditional fuel wood is highly gendered in Ethiopia; and b) exposure to a range of health damaging pollutants is high among women and young children, who spend time near the domestic hearth. The introducing ICS on a large scale will have direct gender-differentiated impacts in favour of adult women and girls.

Further, as mentioned in the Report on Gender Analysis prepared under the project in May 2020, the project addresses the core barriers in disseminating RET technology that are particularly relevant to women's role in energy consumption and production and pointed out the gaps in the different sections of the project document. There is a lack of affirmative actions that empower women by assigning a minimum quota among award competitors, business incubation, energy experts, trainees, and, monitoring visits etc. There are no qualitative indicators mentioned in the log-frame that can be evaluated at the outcome level except Outcome -1 : Number of participants benefiting from trainings (gender- disaggregated) whereas Outcome -2.1 and 2.2 just mentioned a line statement that 'the public awareness campaign should be aimed at rural populations, including, as a special focus, women's groups.

However on review of annual progress reports/PIRs and other reports/documents,, the TE Team noted that the project team in collaboration with the different implementing partners at federal and

regional levels worked on to address the issues of gender mainstreaming as much as possible. During implementation of the project activities, efforts were made to involve women through officially communicating implementing partners to include women as participants in different capacity building activities such as trainings, field level roadshows and market demonstrations. Moreover, in different events organized by the project like energy week women were given the opportunity to create market linkage within and outside their locality. These measures have helped women to improve their capacity in expanding their business in a sustainable, though the primary focus of these activities was building a conducive market for dissemination of RET and was gender –neutral. Team also noted that the gender disaggregated data especially with respect to capacity building, public awareness campaign, grant award and loan availed by RET suppliers were recorded clearly during the project implementation.

Considering women having the comparative advantages as mentioned above, some of the important initiatives undertaken under the project to facilitate the existing women entrepreneurs and to attract the new one, were -:

a) Provision of the partial credit risk guarantees provided by DBE for the loans sanctioned by commercial banks/MFIs to women owned RET suppliers and enterprises operating in Developing Regional States and Refugee Camps was increased to 70% in November 2019 from 50% stipulated initially for a maximum loan size of one million ETB;

b) Two Entrepreneurship Training Workshops for Rural Energy Technology Enterprises, each 6 days long, were organized by the Entrepreneurship Development Centre (EDC), Ethiopia in December 2016 and November 2018 respectively. The aim of the workshop was to enable entrepreneurs to put their ideas into actions, bring an attitudinal change and build their personal entrepreneurial skills. Besides the male participants, total of 102 Women Entrepreneurs engaged in RET trading, business of improved cook stoves manufacturing and sale, and retailing of solar energy technology products were trained in these workshops.

c) Project instituted an award of grant package (kick-off funding) to support the technology and/or business model innovations in different categories of RET space and to encourage emergence of new enterprises. The award was given to the winners selected through an

open competition by a jury especially constituted for this purpose. The award package consist of a grant amounting to USD 5000 (later increased to USD 8000), specific set of training and business development services and based on performance and capability, winners were eligible to apply for further grant of USD 25000 and that could reach up to USD 40000. A total of 49 RET enterprises and individuals (41 males and 8 female owned enterprises) engaged in the rural energy technology sector were given grant support valuing USD 350,000, and the winners were using the grant support to expand their business and continued to supply their products and services to the end-users.

d) Based on the findings of the technology and business development skill need assessment in ICS, types of trainings organized with the objective of diversifying the business were –i) a training of trainers on the identified technology skills capacity gap to 57 participants (53 males and 4 females) from nine regions; and ii) business advisory services to 35 RET enterprises including females at region level through the trained BDS advisors.

Success Story of the Women Entrepreneurs in ICS Sector

Among the RET Producer and distributor enterprises participating in the project, five women led RET Producers visited and interviewed were managed to grow their ICS production and solar business, able to earn more income than before and hiring of more staff. These women entrepreneurs are -:

a) GeneteTadesse Energy and Fuel-efficient Stove Manufacturing Enterprise, Bahir Dar, Amhara Region, obtained loan of USD 84640 (ETB 4 million) from ACSI in 1st round and repaid fully, she has 15 years of experience and well managed to increase volume of ICS production and marketing, and has 10 permanent workers (Picture -1) shows some of her ICS Products and Semi-Products)

Picture -1 : Genet Tadesse's ICS Products and Semi-Products

b) Tigist Tefera ICS Manufacturing Enterprise, Bahir Dar – Amhara Region, award winner of 2nd round UNDP Grant (USD 8,000); managed to penetrate market due increased volume of production;
c) Abaynesh Alemu Improved Cooking Stove (ICS) Manufacturing Enterprise, Woreta, Amhara Region, able to increase volume and quality of production thereby improved income from the business;
d) Amsale Barega Lembeteret Alternative Energy Technology Enterprise, (SNNP- Wolkite), award winner of 1st (USD 5,000), 3rd (USD 8,000) and 4rth (USD 33,000) rounds;
e) Tigist Tadesse Solar Women, Addis Ababa [took two round of credits – 1st round USD 67712 (ETB 3.2 million) from Zemen Bank and 2nd round USD 95220 (4.5 million) from OIB and repaid both the loans fully.

4.3.8 Country Ownership

As already discussed in various sub-sections of Section -3, the project design is consistence with the Government of Ethiopia's vision's to develop low carbon and climate resilient green economy and its several policy initiatives for accelerating uptake and utilization of RETs in the rural off-grid areas. Dissemination of over 600,000 improved cook stoves (ICS) under the project has contributed to CRGEs goal of reducing emissions by 54 MtCO2 by 2030 through the deployment of a combination of fuel wood-efficient, LPG, biogas and electric stoves.

The importance and benefits of the project and increased focus on promotion of RETs in rural households, together with its benefits of improved indoor air quality and overall health were also unanimously emphasized in by all

stakeholder interviews conducted during the evaluation mission.

The country ownership as evident in the APRs/PIRs as well as the minutes of the PSC meetings, the national and regional level government officials, public and private sector banks and MFIs, and private sector RET enterprises/suppliers have actively participated in project implementation and in decision making. The PSC which was chaired by Director of AETDPD has been consulted on for necessary guidance and for all important decisions and approvals. The composition of the PSC can be considered as adequate by taking into account the scope of the project.

Overall, the government stakeholders have expressed their full satisfaction and positive experiences in implementation of the project and concluded that the activities to promote RETs and support mechanism as well as regulatory framework developed under the project will continue. As informed by the project team, no separate budget provision is proposed to be made and project activities will continue along with other activities.

4.3.9 Sustainability

As stated in the UNDP-GEF Guidelines for TE, sustainability is to be considered the continuation or likelihood of continuation of positive effects/benefits from a project after it has come to an end, and it's potential for scale-up and/or replication. The sustainability of project outcomes is to be assessed in terms of financial risks, institutional framework and governance risks, environmental risks, and socio-economic risks that are likely to affect the continuation or impede sustainability of project outcomes. Each of these are required to be evaluated separately and assigned separate ratings. Accordingly, the focus of the analysis was placed on risks to sustainability as presented hereunder -:

i) Financial Risks to Sustainability

It is evident that all the FSPs and RETs Suppliers participated in the credit risk guarantee facility would earn financial income from their business operations in form of interest, service charges, and profits which ensures their financial sustainability, provided they properly manage the income

and expenses involved. The participant FSPs and RETs Enterprises consulted during the evaluation assessment have confirmed the same.

During the assessment, it was noticed that majority of the RETs Enterprises have repaid the loan and the remaining repayments are being made as per the schedule stipulated in the loan agreement. Default has not been recorded so far, but few RET suppliers which faced challenges due to COVID-19 have rescheduled the repayments. In view of this, borrower RET suppliers who come up with further bankable business proposals are in a position to get additional loans from participating commercial banks and MFIs against the credit risk guarantee facility. This was confirmed by participating RET Suppliers themselves.

However, most of the RETs Supplier have explained that they need further support in capacity building trainings and provision of credit risk guarantee scheme so as to ensure full sustainability of the facility. They want continuation of the Credit Risk Guarantee Scheme with additional products such as foreign currency access, 70% credit risk guarantee against 30% coverage by the supplier enterprises.

Considering the above evidences, the financial sustainability of the credit risk guarantee scheme is rated as **ML**

ii) Institutional Framework and Governance Risks to Sustainability

Strengthening of regulatory framework by enacting new technical standards as well as their enforcement combined with improved skills of FSPs for the innovative financing mechanism have helped in development of wider market for small RETs and thereby ensured sustainability of the project results. The project has provided various capacity building trainings and technical assistances to the project implementers and staff of FSPs and RETs Suppliers. In this regard, 40 staffs were trained on operationalizing the CRGF; capacity building trainings were given to 127 FSPs' staffs and managers (60 bank managers and 67 MFIs' managers) as well as 3 DBE staffs on Sustainable Financial Mechanism and RET financing. Furthermore, the project supported 33 RET suppliers (15 RET suppliers from developing regional states) to develop bankable business plans. Similarly, the project provided BDS to

22 RET suppliers on Bookkeeping & Financial Management. Equally, business plan preparation guideline was developed and training on utilization of the guideline was given to regional energy bureau experts in order for them to support RET suppliers in their respective regions. Furthermore, accounting and Financial Management Manual was developed and provided to RET supplier. The capacity building trainings and technical assistances enabled RETs Suppliers to lead their businesses, and produce/import and market RET products on sustainable basis. Likewise, the technical assistances provided to FSPs enabled them to better understand the energy sector and provide financial services to RET suppliers on sustainable manner. This has been confirmed by the FSPs and RETs Suppliers consulted during the assessment. In addition, the potential for scaling-up has greatly enhanced by the legislation to support and incentivize increased investment in small off-grid renewable energy solutions.

In order to make the implementation of the project activities sustainable, almost all the project activities were implemented using the existing government system and, with the direct and full involvement of government experts and officials. Most of the activities that were implemented have national level relevance and impact, and all relevant stakeholders were fully engaged in the process. The regional energy bureaus (REBs) represented by their assigned focal persons were actively involved in the implementation of the project activities and owned the project. These REBs will continue to work for technology dissemination with the support of government institutions post closure of the project. The best practices and lessons learned of the project were documented and published and disseminated to relevant stakeholders for reference and use. This has been confirmed by the National and Regional Energy Directorates and Bureaus consulted during the evaluation mission. The Director of Improved Cook Stove Study and Promotion Directorate, EREDPC; General Director of SNNPR Mine and Energy Agency; and Deputy Head of Amhara Region Water and Energy Bureau responded that their respective institutions have the mandate provide institutional and technical support to RET Supplier Enterprises. They noted that they are committed to provide institutional capacity building in terms of trainings and technical advice provision. The institutions are also responsible to create enabling environment by enforcing regulations,

developing and adopting quality standards in the renewable energy sub-sectors.

As regards Institutional Capacity for sustaining the Sustainable Financial Mechanism (SFM), the project has provided various capacity building trainings and technical assistances to the project implementers and staff of FSPs and RETs Enterprises. It is worth to mentioned that – 40 staffs were trained on operationalizing the CRGF; capacity building trainings were given to 127 FSPs' staffs and managers (60 bank managers and 67 MFIs' managers) as well as 3 DBE staffs on SFM and RET financing. Furthermore, the project supported 33 RET suppliers (15 RET suppliers from developing regional states) to develop bankable business plans. Similarly, the project provided BDS to 22 RET suppliers on Bookkeeping & Financial Management. The capacity building trainings and technical assistances enabled RETs Suppliers to lead their businesses, and produce/ import and market RET products on sustainable basis. Likewise, the improved skills of FSPs have enabled them to better understand the energy sector and to provide quality financial services to the RET Enterprises/Suppliers; to conduct due diligence and appraise loan request (creditworthiness analysis of a proposal); and effective follow-up and monitoring of energy loan.

Similarly, 32 RET Enterprises working in various regions have potential to be selected for participation in the program were also acquired required skills to develop full-fledge bankable business plans and to run their business. They were trained on Business Development Services, Business Plan Preparation, Accounting & Financial Management and Business Management. Further training was provided on how to upscale their skill on production (ICS), importing (solar technologies) and marketing renewable rural energy technologies. It is also evident that relevant institutions in the sector have the responsibility to provide more trainings in the areas of entrepreneurship and designing of ICS and Solar technologies.

The FSPs and RETs Suppliers involved in implementation of the project were consulted during the mission and they have confirmed that the above stated capacity building exercise were as a result of technical assistances provided as part of the credit risk guarantee facility scheme. They assured that they have the technical capacities to continue with

their business and utilize the guarantee facility as exemplified by the project.

Therefore, Institutional Framework and the Governance the Structure, including businesses and operations of FSPs and RETs Enterprises is rated as ***L*** to continue the project activities in the long run.

iii) Environmental Sustainability

The purpose of implementing this project was to improve rural energy access and contribute to the reduction of carbon emissions. This was achieved by assisting poor households and micro-enterprises to obtain access to sustainable, low-cost, clean energy supplies that contribute to the overall development goals of Ethiopia's GTP and CRGE initiatives – aiming to protect the country from the adverse effects of climate change and building a green economy that will help realize the ambition of reaching middle-income status before 2025. The project has thus contributed to an increase in sustainable access to RETs by more than 843,961 low-income households and micro-enterprises (over 4 million people) through the use of innovative financing mechanisms.

The dissemination of different types of rural energy technology products throughout the country has a direct impact on the reduction of deforestation for fuelwood and as a source of income. This was highly impactful with the direct involvement of the private sector particularly engaging women who are highly vulnerable to the consequences of the negative impacts of environmental degradation. Economically empowering women by involving them as part of a solution for the energy demand in the rural areas was of great help to use their influential ability in the community to bring a positive and sustainable change towards protecting and conserving the environment.

In view of the above explanation, there is no risk to environmental sustainability and is rated as **L** for the long run.

iv) Socio-economic Risks to Sustainability

As stated in the Prodoc., even though grid electrification rates continue to increase, given the large size of the country's off-grid population and

remoteness of many of the regions, grid electrification is unlikely to reach millions of households in the next decade. Hence, off-grid rural energy technologies (RETs), such as solar lanterns and solar home systems, as well as improved cook-stoves and other renewable technologies, have high potential for deployment in Ethiopia and thus need to be supported from the perspective of inclusive and sustainable economic development of the off-grid rural areas. The project was implemented in nine regional states and involved a very broad based of stakeholders in implementation of the project so as such there is no socio-economic risk to Sustainability and rated as **ML.**

Overall Sustainability, as assessed on above four-points, is summarized below in Table No -10

Table No -9 : Overall Sustainability Rating

Sustainability	Ratings
Financial Resources	**L**
Socio-political	**ML**
Institutional Framework and Governance	**L**
Environmental	**L**
Overall Likelihood of Sustainability	**ML**

4.3.10 Impact

In general, the project implementation was successful in making noticeable improvement in developing regulatory frameworks, creating awareness, building capacities of various target groups and dissemination of small scale rural energy technologies in the off grid areas. A total of 485,952 RET items (257,212 different types of Improved Cook Stoves and 228,740 different sizes Solar Energy Technology Products) were disseminated to rural communities in 9 regional states through increased access to finance through loan (Credit risk guarantee fund), roadshows and market demonstration activities. Following these activities, the regions have increased the market linkage and capacity of enterprises and additional 506,377 RET items (319,018 different types of Improved Cook Stoves and 187,359 different sizes of solar energy technology products) were disseminated throughout the nine regions of the country.

Furthermore, the FSPs consulted explained that they were encouraged to lend more loan and earned additional income in form of interest incomes from the loan advanced to RET Suppliers while contribute to significantly greater dissemination of RETs in rural areas. Equally, some RET Suppliers explained that their business volume has increased and operational area doubled due to the accessibility to loan through the guarantee facility. They were able to hire additional labor, and improved their livelihoods from the additional income earned. Production capacity of some RET suppliers was also doubled while capital of some suppliers has increased due to loan obtained from Commercial Banks and MFIs with the CRGF scheme. For example, Mr. Melaku Meaza, an entrepreneur of ICS, responded that his working capital has increased from USD 2116 to USD10580 (ETB 100,000 to ETB 500,000) due to accessibility to loan with the risk-guarantee scheme of the project. Furthermore, the RET Suppliers and individuals obtained the grant awards were able to expand their business and continued to supply their products and services due to the grant support from the facility. This has been confirmed by the RET Suppliers consulted during the evaluation mission; for example W/o Amsale from Wolkited obtained UNDP grant award three times (1st round award of USD 5,000, 3rd round award of USD 8,000, and 4th round award of USD 33,000); W/o Tigist Tefera from Bahir Dar (winner of 3rd grant of USD 8,000), Ato Melaku Meaza from Addis Ababa (winner of 3rd round grant of USD 8,000); etc.

Enforcement of technical standards and conformity-testing of imported solar products combined with organization of awareness creation and capacity building training programmes on technical standards and PVoC manual for different federal and regional level target groups responsible for facilitating its implementation and compliance; Technology Roadshows for live demonstration and on the spot sale of products; Advocacy and Awareness through TV and Radio on the benefits and access of RETs to rural public using national, regional and local media(TV and radios), in different languages have helped to address consumers expectations to receive quality product and to build a sustainable and viable market,

TE team however noted that -a) though the project implementation has been able to address satisfactorily all sustainability related interventions but an assessment on socio-economic benefits from the beneficiaries/end-users perspective was not done to ensure that the energy solutions deployed are right, correctly matching the needs and preferences of the consumers; and

b) the project interventions that might have brought about noticeable improvements in the lives of the local communities in terms of benefits related to fuel savings, health, convenience, awareness about the RE products and reduction in GHG emissions have not been studied at the field to quantify and track these developmental benefits systematically.

5. MAIN FINDINGS, CONCLUSIONS, RECOMMENDATIONS AND LESSONS

5.1 Main Findings

Despite delayed start of the project, the RETs project was successful in achieving the intended objectives. The evaluation team has assessed that the project scope, design and implementation approach, including the overall structure of the project results frame work, as ***Satisfactory*** for resolving *t*he critical elements of identified barriers. It has been found that the vital structures and systems have successfully been set up; forming a very strong foundation for the project's enhanced delivery of results. However, the evaluators have identified some gaps in the project design, which include: liquidity shortage and foreign exchange accessibility problem in the risk guarantee fund; and lack of clear exit strategy.

The evaluation team has reviewed specific operational risks and assumptions considered during project formulation and found their validity in designing implementation strategy. However, beside the description of the risks and assumptions in the PRF, the Evaluation Team did not find any follow up to these risks during the implementation of the project. However, the link between the risks/assumption section of the PRF and the Table dealing with the risks and risks mitigation strategies in the Project Document and Inception Report are consistent. In view of this, the overall Project Risk Management is therefore rated as ***Satisfactory***.

The evaluation team has found that the project used adaptive management extensively by adjusting the project activities to overcome the key barriers and obstacles typically faced during the implementation as well as some initial flaws in the project design. The adaptive management actions, therefore, can be rated as ***Highly Satisfactory***.

The evaluators have assessed the monitoring and evaluation approach followed both from reports and interview of project stakeholders. It was noticed that all field visits were made with the aim to inspect and verify project activities on the

ground, identify challenges and risks and to suggest remedial actions, ensure proper utilization of grant by the awardee suppliers. The team has the opinion that this has definitely helped achieve better coordination, partnership and an effective management of project implementation. However, it is worth to mention that some of the core indicators and outputs listed in the Project Results Framework (logframe) were not monitored/tracked. To list a few are – type and efficiency of technology disseminated, actual energy saved or related CO_2e avoided. We were informed that the operational performance of the RET technology could not be monitored due to lack of appropriate measurement devices and field level laboratories in the country. Another major problem cited in relation to M&E of this project was that it could not be taken regularly due instability in different parts of the country and occurrence of COVID-19 pandemic and subsequent measures taken by the Govt. to prevent spread of the virus. In view of these, Project's overall achievement in regard to implementation of M&E Plan is rated as ***Moderately Satisfactory.***

The Evaluators found that the management arrangements were adequate and effective for the implementation of the project. They provided the project with clear roles and responsibilities for all parties including clear reporting lines of authority. The PSC met regularly to monitor the implementation of the project and approve the AWPs and progress reports. The overall structure of the project organization in the "National Implementation Modality" has been found useful, since AETCPD was managing the Project well, ensured continuous involvement of project stakeholders(via PSC) and kept the senior beneficiaries as well as UNDP in a close communication loop. The adequacy and effectiveness of the project management are therefore rated ***Satisfactory.***

Project consistency with the national development priorities especially in the energy sector has been a strong factor behind the registered achievements hitherto and also sets the stage for the attainment of better results at full implementation. The project was also aligned with the needs of beneficiary rural communities. Furthermore, the RETs project was designed in alignment with the country development framework and strategies of development partners; particularly UNDAF, UNDP, UNCDF, and GEF. It was also in consistence with the 2030 Development Agendas, i.e. Sustainable Development Goals (SDGs). Therefore, the program of RETs project has been assessed as ***Highly Relevant*** in terms of alignment with national priorities, consistency with needs of beneficiary, and policy and priority of development partner (UNDP-GEF, UNCDF,

DBE, etc.).

Regarding results of the project, the overall objective of the RETs project was ***to promote and encourage significantly greater use of energy efficient and renewable energy technologies for household and productive uses in rural communities in Ethiopia.*** The evaluation team has measured the achievement the overall objective using objectively verifiable indicators and targets set towards this. In this context, the achievement of the overall objective of the project under evaluation was above planned target (124%) and rated as ***Highly Satisfactory***.

Equally, the evaluators have assessed and rated the *achievement/Effectiveness* of RET project at outcome levels. Accordingly, all the outcomes have been rated as ***Highly Satisfactory*** except outcome 2, rated as ***Satisfactory*** (see the Table No – 11 below).

Table No – 10: Ratings based on Outcomes Achievement/ Effectiveness

Output	Achievement	Ratings
Overall objective	124%	Highly Satisfactory
Outcome 1	100%	Highly Satisfactory
Outcome 2	77.3%	Satisfactory
Outcome 3	85.5%	Highly Satisfactory
Outcome 4	100%	Highly Satisfactory
Overall Effectiveness	***91.9%***	***Highly Satisfactory***

It has been assessed that the efficiency of the RETs Project *(Promoting Sustainable Rural Energy Technologies for Household and Productive Uses)* has been rated as **Highly Satisfactory.** The project has successfully and effectively mobilized all relevant stakeholders whose participation in, ownership of and contribution towards the project form a strong foundation for enhanced project sustainability.

5.2 Conclusions

In general, the Project implementation was successful for commercialization of the RE technologies where private sector market the products and services and public funds were used to enforce quality control measures, building consumers

awareness, aligning the project within the existing Govt. policies and institutional framework, creating competitive market environment. The Technical Standards and Test Protocols enacted to ensure quality and reliability of various RET products has complemented in winning the confidence and acceptability of the end-users and in expansion of energy services in other parts of the country**.** The implementation of the standards on cook stoves have also promoted competition in the market and encouraged developers of less-efficient stoves to focus on R&D to improve stove efficiency. Similarly, enforcement of standards and quality control and conformity-testing of imported solar products has helped in building trust of the consumers that products are reliable and correctly labelled. Face-to-face engaging nature of communication and products demonstration during the roadshows, in addition to the campaign through national and regional media, was an another effective medium to educate the potential consumers on how their living can be improved by using these fuel efficient products, besides other economic, health and environment related benefits, resulting in fueling-in interest in buying, resulting in creation of additional demand RETs appliances after the roadshows. Establishment of CRGF and its governance structure (GFMC) has helped MFIs to increase their customer base and to extend finance to those customers who were earlier considered as not viable and risky. RET suppliers also viewed the guarantee facility as an important intervention from the project to help them to mobilize additional finance for their business which enables them to improve their local cash/financing problems or able to improve their imports or helped in expanding their business. The grant award was instrumental in encouraging the new entrepreneurs to venture in small-scale RET business, development of new products, and enabled existing enterprises to expand their business.

The TE team also noted that a total of 485,952 RET items (257,212 different types of Improved Cook Stoves and 228,740 different sizes Solar Energy Technology Products) were disseminated to rural communities through increased access to finance through loan (Credit risk guarantee fund), roadshows and market demonstration activities. Following these activities, the regions have increased the market linkage and capacity of enterprises and additional 1,347,907 RET items (816,323 different types of Improved Cook Stoves and 531,584 different sizes of solar energy technology products) were disseminated throughout the nine regions due to financial access, market linkage, and promotional works done through different media and trainings

5.3 Recommendations

Based on the findings of the evaluation and experience of TE Team in other countries like India and other neighboring South East Asian Countries, the suggestions/ recommendations mentioned below may be considered while planning for scaling up activities on promoting use of small-scale RETs in the next phase after closure of the project **-:**

Recommendation 1: All Technical Reports, Knowledge Products and other relevant information/data produce under the project be made available to public on closure of the project

The project has produced a body of knowledge including technical standards for cookstoves and DC solar home system, communication strategy for technology roadshows, CRGF operational manual, guidelines for grant awards, documentation of success stories and lessons learned etc. As the project is approaching for closure by end of the year, it is recommended that this body of knowledge, including full listing in the final project report is available for reference of all the stakeholders associated with expanding the energy access in rural areas. It is also encouraged to make these products available online.

Recommendation 2: Development of a Web based Platform on Energy Access

In the era of digitization, it will be prudent to develop a web based platform (may be called as **Energy Access Knowledge Portal**) which should be a combination of depository of related information/data (old and on-going) and an interactive platform for the concerned stakeholders to share their experiences, innovations, ideas, raise queries and draw mutual benefit from the collective learning on day-to-day basis.

Recommendation 3: Establishment of Region-wise Testing and Certification Facilities for Cookstoves

At present, full-fledged facility for testing and certification has been created only at one place i.e. National Energy Workshop and Laboratory, Addis Ababa under AETDPD. Though the Incubation Centers have been set region-wise but at present, they are not well equipped and fully functional. It is therefore suggested that either the Incubation Centers are made functional to perform testing of cookstoves or the mobile testing facilities or at the display/exhibition centres may be created for facilitating the small cookstoves entrepreneur from remote rural

areas in getting their products tested and make necessary improvements, if required, to meet the prescribed performance standards.

Recommendation 4: Establishment of Distribution or Supply Chain Network in Rural Areas for Cookstoves

The project emphasis was more centric towards building producer's technical skills and production capacity rather than developing the capabilities for end to end supply chain. Since, the distribution or supply chain networks available in rural areas is not adequate and transportation of RET products, especially cookstoves, to rural areas is a costly affair (as it is usually through labour, cart, car etc.), a govt. owned facility such as Display/ Exhibition Centre's/Retail Showrooms for RET products or additional financial incentives/ support scheme to the RET suppliers/distributors/retailers may be planned so that availability of the product to the ultimate consumers at affordable cost could be ensured.

Recommendation 5: Tracking of Socio-economic and other Developmental Benefits such as Health and Reduction in GHG Emissions

The project has been able to address well all aspects of sustainability except the Socio- economic risks. A study on socio-economic benefits from the beneficiaries/end-users perspective may be planned to ensure that the energy solutions deployed are right, correctly matching the needs and preferences of the consumers. Similarly, project interventions may have brought about noticeable improvements in the lives of the local communities in terms of benefits related to fuel savings, health, convenience, awareness about the RE products and reduction in GHG emissions. Therefore, a separate study may also be planned to quantify and track these developmental benefits systematically.

Recommendation 6: Focused Approaches for Consumer Awareness and for Market Development

In order to sensitize prospective customers about the RET products, promotional activities may be divided distinctly into social and commercial marketing. In the areas where market is developed for RET (consumers are aware and willing to pay), RET suppliers and MFIs can scale up the activities. However, where the market is undeveloped, private sector and MFIs are in non-existent, consumers have limited capacity to pay for the products, well targeted awareness raising activities/ roadshows, trainings, demonstrations, piloting etc. may be organized through regional/zonal/local networks.

Recommendation 7: Provide Loanable Fund in Addition to Guarantee Letter

In addition to guarantee in paper, provision of loanable funds (in the form of debt) to financial institutions is necessary to boost credit provision to RET suppliers. The financial resources in the FIs are being stretched by current demand. The financial institutions are not able to fulfill the financing demand of their clients due to liquidity shortage. As a result, the FIs give priority to big-ticket customers such as exporters and big depositors. Experiences from other interventions (World Bank's Energy Project) indicated that provision of loanable funds to FIs is an important mechanism in addressing the financing needs of target groups such as RETs suppliers.

Recommendation 8: Design Support Mechanism to Improve Access to Foreign Currency of RET Suppliers

It has been learned from FSPs and RET Suppliers that there is serious difficulty to access foreign currency to import solar energy products. It takes longer time up to a year period. The DBE and NBE through the risk-guarantee facility should arrange a mechanism in which RET suppliers could access foreign currency in shorter possible time. The DBE and NBE along with UNDP and UNCDF should design a system in which World Bank and other donors will create foreign currency support system within the risk-guarantee facility. In this context, both developed and emerging market and developing economy (EMDE) countries have adopted different risk-guarantee schemes including accessibility to foreign exchange. For example, Government of Pakistan has provided risk-guarantee to electricity investors so as to make them access to finance and foreign currency designed in the 1990s. Similarly, the Government of Vietnam foreign exchange guarantee for a number of power projects in 2000.[14]

The RET Suppliers which require foreign currency guarantee are large and national based suppliers participating in importation and dissemination of rural energy technology. For this guarantee purpose, a fixed amount of foreign currency should be deposited in FSPs account where eligible RET suppliers can access the foreign currency; the equivalent being paid in local currency by the beneficiary solar energy suppliers.

[14] The World Bank, 2019; Government Guarantees for Mobilizing Private Investment in Infrastructure, Washington, DC, USA.

Recommendation 9: Design and Implement Sustainability Build-up and Exit Strategy

The assessment revealed promising sustainability of the project results. However, most of the RETs Suppliers especially small and medium enterprises require further support in terms of skill and operational capacity building through training, BDS service, loan provision for their continued operation. Therefore, the program (CRGF) should continue to support the RET suppliers to sustain the results achieved so far.

Recommendation 10: Enable Credit Risk-Guarantee Facility and Other RET Products to Continue

The *Risk-guarantee facility* is a very important mechanism to ensure financial access to RET Suppliers. The mechanism has encouraged energy technology suppliers to engage in the business on sustainable basis. The mechanism is one way of leveraging private-sector partnership in such development efforts. Therefore, the credit risk guarantee facility should continue serving the RET Suppliers with modification of products such as providing loanable fund to FSPs and inclusion of foreign currency access support as specified under the above recommendations.

5.4 Lessons Learned

Based on the review of project documents, interviews with key informants and analysis of the information collected for this evaluation, Several lessons learned are presented below -:

i) Adaptive management is a key management instrument for this type of project, providing the necessary flexibility to review and reinvent the approach to implement the project as needed to secure project deliverables while maintaining adherence to the overall project design.

ii) The application of the UNDP NIM modality is an effective management tool to develop national ownership of projects funded by international donors.

iii) As part of knowledge management, a project of this type needs to end up with a final phase to document results and to identify the way forward

to replicate these results in similar context in the country and in the region. The way forward should also include appropriate solutions to address the gaps noticed in the project design or the challenges encountered in implementation of the project.

iv) Adequate staffing of the partner agencies involved in the project implementation and separate budget allocation for M&E (including for tracking of gender and other cross cutting issues) are important in a national level project of this type as the amount of coordination required is high and regular travelling to remote rural areas for M&E pose several challenges and require a specific budget provision for the activity. Both these factors had an adverse effect on the project progress. Project Board must maintain an oversight on the staffing requirement since the project has tight time-line for completing all the activities within 4 years.

v) Inadequate M&E of project results which involves evaluation of the project' success in achieving its outcomes and comparing it with the core indicators defined in the logical framework whereas the focus of field visits made by the project team was to inspect and verify project activities on the ground, identify challenges and risks and to suggest remedial actions, ensure proper utilization of grant by the awardee enterprise.

vi) In order to ensure sustainability and build confidence of end-users in the technology, it is important that indicators related to expected socio-economic benefits to end-users (in terms of fuel saved, user satisfaction, reduction in indoor pollution, impact on health) are identified during the formulation of the project. Once, it is part of the project strategy (log-frame) and of the monitoring framework, it will be easy to quantify and document such benefits and to assess efficacy of the solution deployed.

vii) In the private sector driven and market based approach, one of the challenge is that the product may not reach the poorest among the poor. For example – the subsistence economies, the people living in remote rural areas don't generate cash surplus, limiting their purchasing power and limiting the opportunity to shift modern energy services. Most of these people also find it difficult to get credit necessary to pay upfront cost of the RE product/service as their income cycles are agriculture dependent and adhering to regular repayment schedules is a difficult proposition for these peoples. Therefore, an exclusive dispensation (scheme) for providing credit

facility at lowered interest rate or direct grant /subsidy so that this section could also be covered and reap the benefits of the modern energy services

viii) The project has focused to follow 'minimalist approach' – meeting basic or minimum household energy needs of the unserved communities (energy needs of cooking, lighting and heating). Though, importance of this approach can't be under emphasized but such a strategy does not help in addressing the chronic poverty that the poor find difficult to extricate themselves from. Therefore, focus should also be given for energizing/ strengthening productive applications and community services with a view to improve livelihoods, cash income generation and employment creation

ix) Technology development support to improve design and access to testing facility should be publicized in the technology roadshows and market demonstration to ensure sustainability of cookstoves producers and availability of quality products to the consumers located in rural/remote areas of the country;

x) Adequate interaction with FSPs was not carried out during project preparation as well as during the implementation and requires appropriate strategy to address the following while looking into replication -:
   a) Liquidity Shortage Although 11 FSPs (four banks and seven MFIs) signed the CRGF framework agreements with the DBE, only five FSPs (Enat Bank, Oromia International Bank, Zemen Bank, Addis Bank and PEACE MFI) were able to lend to ESPs by utilizing the guarantee facility because of liquidity shortage. During interaction, many Banks and MFIs were of the opinion that in addition to the credit guarantee, provision of loanable funds (in the form of debt) to financial institutions, if made available, will help in overcoming liquidity shortage and boost credit provision to ESPs;
   b) Shortage of foreign currency: Importers and distributors of Solar Energy products were forced to wait a minimum of 6 months to access foreign currency for importation of the products; and
   c) High lending interest rates of MFIs: Unlike banks, MFIs are not able to mobilize sufficient deposits to cheaply finance their lending activities. This is mainly due to lack of reliable MIS system capable of providing their customers real time access to their accounts (deposit, withdrawal, transfer, etc.). MFIs also have limited access to concessional loans. As a result, the MFIs resort to expensive sources of refinancing such as borrowing from banks at commercial rates which make their lending

interest rate very expensive and unaffordable to most of the ESPs. Currently, most MFIs apply flat interest rate with average rate of 22% per annum

Annexure- I

TERM OF REFERENCE (ToR)

FOR THE RECRUITMENT OF INDIVIDUAL CONTRACTOR (IC)

GENERAL INFORMAION	
Services/Work Description:	Recruitment of Consultant for Terminal Evaluation of "Promoting Sustainable Rural Energy Technologies (RETs) for Household and Productive Uses" Project.
Project/Program Title:	Promoting Sustainable Rural Energy Technologies (RETs) for Household and Productive Uses" Project
Post Title:	International Consultant
Consultant Level:	Level C (Senior Specialist)
Duty Station:	Home-based with travel to project areas
Expected Places of Travel:	Selected project areas (Amhara, Benishangeul-Gumuz, Oromia and SNNP regions)
Duration:	35 working days distributed over a maximum of two months.
Expected Start Date:	Immediately after Signing of the Contract

I. BACKGROUND / PROJECT DESCRIPTION

Ethiopia is signatory to United Nations Framework Convention on Climate Change in 1992, the Kyoto Protocol which ratified in 2005 and more recently to the 2015 Paris Agreement. With the aim of implementing these agreements, the government of Ethiopia under its CRGE initiative, GTP and SDG, is determined to take measures towards providing the community with reliable, affordable, and clean energy services that are needed to enhance the livelihood of the people and to fuel the progress of economic growth. Promoting Sustainable Rural Energy Technologies (RETs) for Households and Productive Uses Project is a full-sized national project being implemented by the Ministry of Water, Irrigation and Energy (MoWIE) under Alternative Energy Technologies Development and Promotion Directorate (AETDPD), and the Ministry of Environment, Forest and Climate Change (MoEFCC) which later on changed to the Environment, Forest and Climate Change Commission (EFCCC) under the Improved Cook Stoves Identification, Development and Promotion Directorate, Development Bank of Ethiopia, UN Capital Development fund in collaboration with UNDP through the financial support of the Global Environmental Facility (GEF), which contributes to the different initiatives of the government to provide alternative and clean energy sources to the rural communities. Following a government restructuring in 2020, the EFCCC substituted by the Ethiopian Rural Energy Development and Promotion Center (EREDPC) which has also incorporated AETDPD under MoWIE.

The objective of the project is to promote significant use of energy efficient and renewable energy technologies for household and productive uses in rural communities in the country. The aspiration of the project is to reduce carbon emissions from deforestation and ensuring large scale adoption of clean cooking and lighting technologies through supporting the dissemination of 600,000 improved biomass stoves and 200,000 solar energy technology products focusing on solar home systems in all over the country by the end of 2021 through a private sector driven and market based approach.

This GEF financed, UNDP and, MoWIE and EFCCC later on substituted by EREDPC implemented project complements the Ethiopian Energy Policy, the Ethiopian Climate Resilient Green Economy Strategy, the Initial National Communication of Ethiopia to the UNFCCC and the Sustainable Energy for All initiative. The project aims to reduce Ethiopia's energy-related CO2 emissions by approximately 2 million tons of CO2e by promoting the use of renewable energy and low greenhouse gas (GHG)-producing technologies as a substitute for fossil fuels and non-sustainable biomass utilization in the country, with a focus on rural household appliances for cooking, lighting and heating. The activities proposed in the project are designed to remove barriers that hamper the wide-scale use of off-grid renewable energy technologies in households and productive uses in rural areas of Ethiopia, where extending the grid is simply not feasible in the short-run and where the ability to pay for larger-scale solutions is often limited.

The project consisted of four components and is planned to be implemented over a period of five years. The four components are:

Component 1: Strengthening Regulatory and Legal Framework based on National Standards
Component 2: Rural Public Awareness Campaign on Renewable Energy Technologies
Component 3: Sustainable Financial Mechanism for RETs for rural households
Component 4: Business Incubator to Promote Greater Entrepreneurship for Investment in RETs

The overall goal of the project is creating enabling environment for the wide scale dissemination of quality rural energy technology products in off grid areas of the country. The project seeks to implement a more private sector-driven and market-based approach towards promoting renewable energy technologies in rural communities in Ethiopia. The four components consist of a combination of de-risking instruments (Component 1) and market-enabling activities (Component 2 and Component 4) that will combine with a financial support mechanism (Component 3) to help transform the market for off-grid renewable energy technologies in rural communities.

In line with the project components there are four outcomes listed below:

Outcome 1: Favorable legal and regulatory environment are designed for small-scale off-grid renewable energy investments in rural areas, and modalities for stakeholder training to comply with and implement the new standards and regulations are in place by 2018.

Outcome 2: Greater awareness among rural populations about the benefits and qualities of renewable energy for household and productive uses, as well as awareness among RET enterprises about the availability of Sustainable Financial Mechanism and business support created by 2018.
Outcome 3: By 2020, replicable business model for wider scale-up across other developing countries by adopting an integrated approach to addressing demand and supply-side barriers is created.
Outcome 4: By 2016 Business incubation support programme initiated at MoWIE.

At the end of its lifetime, the project has anticipated to save 35.5 million mega-Joules of energy using improved cook stoves and solar energy technologies through benefiting about 800,000 households from project supported access to RETs. And it also intended to reduce 2 million tons of CO2e GHGs through sale and distribution of about 300,000 RETs technologies using technology road show events. Moreover, the project has also planned to provide volume of financial investment through Sustainable Financial Mechanism for about 200 RET Enterprises and promote business incubation process in the energy sector. It also aimed to set up legal frameworks that protect and promote the effective utilization of standardized RET products through the application of standards.

The project budget consisted of USD 4,091,781 of GEF grant funding, USD 500,000 and later on increased to USD 850,000 from UNDP, USD 980,000 later on decreased to USD 80,000 co-financing from UNCDF CleanStart global programme, USD 300,000 in-kind contribution from UNDP and co-financing from the Government of Ethiopia (MoWIE, FECCC, FeMSEDA/EDP) of USD 35,179,954 as well as further co-financing from the Development Bank of Ethiopia with a loan of USD 20 million, HIVOS, SNV, ABPP (in-kind) USD 6,185,945 and RET Enterprises (in-kind and cash) USD 6,000,000.

The project has been in implementation over the off-grid areas of the nine (including the newly formed region) regional states using the regional energy bureaus as focal points for the project at region level. The project is implemented by the Ministry of Water, Irrigation and Energy (MoWIE), Environment, Forest and Climate Change Commission (EFCCC) which substituted by EREDPC, and Development Bank of Ethiopia (DBE) mainly responsible for the implementation of component 3 of the project in collaboration with the United Nations Capital Development Fund (UNCDF). The project has a project office in MoWIE under the Alternative Energy Technology Development and Promotion Directorate, the director being the National Project Director, with a Project Manager, Monitoring and Evaluation Officer, two senior bioenergy experts and Project Accountant. At region level, the project has focal persons assigned from the respective regional energy bureaus responsible for coordinating the project activities at region level in collaboration with the Ministry. The project also has a steering committee comprised of State Ministers' of the MoWIE, EFCCC, Ministry of Finance, DBE, UNCDF and UNDP. The steering committee supervises the overall implementation and puts directions on issues concerning the implementation of the project. The project office reports physical and financial performance report to the national project director and UNDP, and UNDP reports to the donor, GEF, following its reporting requirements.

Following the identification of one COVID-19 case the Government of Ethiopia declared a state of emergency and restricted movements in an effort to prevent the spread of COVID-19 in March 2020. As a result, all level schools and government offices were closed and any other social gatherings were prohibited. In almost exactly one year having conducted 2,332,735 tests throughout the country a total of 200,563 confirmed cases reported. Majority of the cases (159,774) have been reported from Addis Ababa and Oromia region constituting 79.7% of the national cases. Of the national total 2,801 deaths have been reported since the beginning of the outbreak with a case fatality rate of 1.4% which is lower than that of the global (2.19%). On the other hand, 154,323 (76.94%) cases have recovered, however 1,645 confirmed cases are undergoing treatment in the treatment centers of which 722 are in severe condition. In recent reports and warnings given by the Ethiopian Ministry of Health, total cases, the number of cases in Intensive Care Unit as well as the number of deaths within 24 hours are increasing following the relaxation of prevention measures by the public and government control.

COVID-19 has also affected some project activities implementation mainly following restrictions in mobility and gathering of people was high particularly to continue to conduct public awareness raising activities such as technology roadshows and market demonstrations in all regions of the country. However, these have been mitigated by the project office in consultation with the implementing partner and UNDP ET CO through reprogramming the resources to use of radio and television awareness raising interventions. Thus, despite the challenges to continue to execute the project activities as planned, many of the interventions kept on track of implementation.

II. SCOPE OF THE WORK

The TE will assess the achievement of project results against what was expected to be achieved and draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of UNDP programming. The TE promotes accountability and transparency and assesses the extent of project accomplishments.

The TE will assess project performance against expectations set out in the project's Logical Framework/Results Framework (see ToR Annex A). The TE will assess results according to the criteria outlined in the Guidance for TEs of UNDP-supported GEF-financed Projects http://web.undp.org/evaluation/guidance.shtml#gef.

The TE will focus on the performance of the four project components as well as project management part of the project comparing the target against the project performance indicators. It is also expected to assess the impacts the project interventions have on the rural energy technology dissemination in the rural areas of the country. The TE will also looks into the different components' contribution in realizing the creation of enabling environment for the private energy service providers and finance institutions for the growth of the rural energy sector in general. In a similar manner, the TE will also look into the project management structure and its efficiency in properly utilizing project resources, closely working with the different implementing partners, and delivering the desired results set in the project design.

The Findings section of the TE report will cover the topics listed below. A full outline of the TE report's content is provided in ToR Annex C.

The asterisk "(*)" indicates criteria for which a rating is required.

Findings

i. Project Design/Formulation

- National priorities and country driven-ness
- Theory of Change
- Gender equality and women's empowerment
- Social and Environmental Safeguards
- Analysis of Results Framework: project logic and strategy, indicators
- Assumptions and Risks
- Lessons from other relevant projects (e.g. same focal area) incorporated into project design
- Planned stakeholder participation
- Linkages between project and other interventions within the sector
- Management arrangements

ii. Project Implementation

- Adaptive management (changes to the project design and project outputs during implementation)
- Actual stakeholder participation and partnership arrangements
- Project Finance and Co-finance
- Monitoring & Evaluation: design at entry (*), implementation (*), and overall assessment of M&E (*)
- Implementing Agency (UNDP) (*) and Executing Agency (*), overall project oversight/implementation and execution (*)
- Risk Management, including Social and Environmental Standards

iii. Project Results

- Assess the achievement of outcomes against indicators by reporting on the level of progress for each objective and outcome indicator at the time of the TE and noting final achievements
- Relevance (*), Effectiveness (*), Efficiency (*) and overall project outcome (*)
- Sustainability: financial (*), socio-political (*), institutional framework and governance (*), environmental (*), overall likelihood of sustainability (*)
- Country ownership
- Gender equality and women's empowerment
- Cross-cutting issues (poverty alleviation, improved governance, climate change mitigation and adaptation, disaster prevention and recovery, human rights, capacity development, South-South cooperation, knowledge management, volunteerism, etc., as relevant)
- GEF Additionality
- Catalytic Role / Replication Effect

- Progress to impact

iv. Main Findings, Conclusions, Recommendations and Lessons Learned

- The TE team will include a summary of the main findings of the TE report. Findings should be presented as statements of fact that are based on analysis of the data.
- The section on conclusions will be written considering the findings. Conclusions should be comprehensive and balanced statements that are well substantiated by evidence and logically connected to the TE findings. They should highlight the strengths, weaknesses, and results of the project, respond to key evaluation questions, and provide insights into the identification of and/or solutions to important problems or issues pertinent to project beneficiaries, UNDP and the GEF, including issues in relation to gender equality and women's empowerment.
- Recommendations should provide concrete, practical, feasible and targeted recommendations directed to the intended users of the evaluation about what actions to take and decisions to make. The recommendations should be specifically supported by the evidence and linked to the findings and conclusions around key questions addressed by the evaluation.
- The TE report should also include lessons that can be taken from the evaluation, including best practices in addressing issues relating to relevance, performance and success that can provide knowledge gained from the particular circumstance (programmatic and evaluation methods used, partnerships, financial leveraging, etc.) that are applicable to other GEF and UNDP interventions. When possible, the TE team should include examples of good practices in project design and implementation.
- It is important for the conclusions, recommendations and lessons learned of the TE report to include results related to gender equality and empowerment of women.

The TE report will include an Evaluation Ratings Table, as shown in the ToR Annex.

The TE will also look into the negative impacts of the COVID-19 on overall project planning and implementation in the energy sector. This will include assessing how COVID-19 has affected RET enterprises working with the project in terms of its effects in cooling down the market and creating a challenge for their businesses, and what are the resilience mechanisms they are taking to survive and pass this time, and document those lessons learnt for future program design and planning.

The TE team will review all relevant sources of information including documents prepared during the preparation phase (i.e. PIF, UNDP Initiation Plan, UNDP Social and Environmental Screening Procedure/SESP) the Project Document, project reports including annual 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 evaluation. The TE team will review the baseline and midterm GEF focal area Core Indicators/Tracking Tools submitted to the GEF at the CEO endorsement and midterm stages and the terminal Core Indicators/Tracking Tools that must be completed before the TE field mission begins.

III. EXPECTED OUTPUTS AND DELIVERABLES

The IC who will serve as team leader for the TE shall prepare and submit:

- TE Inception Report: IC in partnership with his/her partner national consultant clarifies objectives and methods of the TE no later than 2 weeks before the TE mission. IC together with the team expert submits the Inception Report to the Climate Resilience and Environmental Sustainability (CRES) Unit and project management. Approximate due date: July 09, 2021
- Presentation: IC together with his/her partner national consultant presents initial findings to project management and the CRES Unit at the end of the TE mission. Approximate due date: August 03, 2021
- Draft TE Report: TE team (international and national consultants) submits full draft report with annexes within 3 weeks of the end of the TE mission. Approximate due date: August 18, 2021
- Final TE Report* and Audit Trail: IC submit revised report, with Audit Trail detailing how all received comments have (and have not) been addressed in the final TE report, to the CRES Unit within 1 week of receiving UNDP comments on draft. Approximate due date: August 26, 2021

*The final TE report must be in English. If applicable, the Commissioning Unit may choose to arrange for a translation of the report into a language more widely shared by national stakeholders.

All final TE reports will be quality assessed by the UNDP Independent Evaluation Office (IEO). Details of the IEO's quality assessment of decentralized evaluations can be found in Section 6 of the UNDP Evaluation Guidelines.15

No.	Deliverables / Outputs	Estimated Duration to Complete	Review and Approvals Required
1	TE Inception Report	5 Working days	Project management and the CRES Unit
2	Presentation of initial findings	18 Working days	>>
3	Draft TE Report	10 Working days	>>
4	Final TE Report	2 Working days	The CRES and Regional Technical Advisor

IV. INSTITUTIONAL ARRANGEMENT / REPORTING RELATIONSHIPS

The principal responsibility for managing this TE resides with the Commissioning Unit. The Commissioning Unit for this project's TE is the Climate Resilience and Environmental Sustainability

15 Access at: http://web.undp.org/evaluation/guideline/section-6.shtml

(CRES) Unit of UNDP Ethiopia Country Office. The CRES Unit will contract the consultants and ensure the timely provision of information and travel arrangements within the country for the TE team. The Project Team will be responsible for liaising with the IC to provide all relevant documents, set up stakeholder interviews, and arrange field visits. The GEF specialist and program specialist at UNDP under the CRES Team in collaboration with the Project manager will directly supervise the Contractor, and the IC will be directly responsible to, reporting to, seeking approval/acceptance of output from CRES Team Leader.

The IC is expected to follow a participatory and consultative approach ensuring close engagement with the Project Team, government counterparts (the GEF Operational Focal Point), Implementing Partners, the UNDP Country Office(s), the Regional Technical Advisors, direct beneficiaries, and other stakeholders.

Engagement of stakeholders is vital to a successful TE, thus, stakeholder involvement should include interviews with stakeholders who have project responsibilities, including but not limited to Project staff, MoWIE, AETDPD, EFCCC, EREDPC, Regional Energy Bureaus, DBE, UNCDF, MoF, Federal government organizations (Ethiopian Energy Authority, Ethiopian Standards Authority, Ministry of Trade and Industry, Ethiopian Conformity Assessment Enterprise, Ministry of Innovation and Technology), RET enterprises, end-users, etc. Additionally, the TE team is expected to conduct field missions to Amhara, Benishangeul-Gumuz, Oromia and SNNP regions including the following project sites grant award winners and beneficiaries of loan through the credit risk guarantee fund facility). If field missions are not possible due to the COVID-19 situation as intended, the consultants will use different alternatives to get data and information from those areas and these include conducting virtual interview through phone or virtual communication platforms and sending out questionnaires. During the field visit the project office will provide the necessary logistics and administrative support to facilitate productive gathering of information from project beneficiaries and stakeholders at region level.

V. LOGISTICS AND ADMINISTRATIVE SUPPORT TO PROSPECT IC

The Consultant will be responsible for providing his/her own working station including but not limited to Office Space; Equipment; Secretarial services; Local transport service; Arrangement of workshop(s) (if validation is required). In the event of filed travel, the project office will arrange the logistics mainly vehicle but all other accommodation expenses will be covered by the consultant himself/herself. The project management in collaboration with the CRES unit will be in-charge for offering both administrative and logistics supports.

VI. DURATION OF THE WORK[16]

[16] *The IC modality is expected to be used only for short-term consultancy engagements. If the duration of the IC for the same TOR exceeds twelve (12) months, the duration must be justified and be subjected to the approval of the Director of the Regional Bureau, or a different contract modality must be considered. This policy applies regardless of the delegated procurement authority of the Head of the Business Unit.*

The total duration of the TE will be approximately 35 working days over a time period of ten weeks starting on July 01, 2021. The timeframe proposed for the TE is subject to flexibility and may be some delays in consultation with the CRES Unit provided that the COVID-19 situation of the country prohibits travel, access to information and/or data from project beneficiaries and stakeholders. Consideration may be given to a time contingency should the evaluation be delayed in any way due to COVID-19. Taking that into consideration tentative TE timeframe is as follows:

- *June 20, 2021:* Application closes
- *June 26, 2021:* Selection of TE Team
- *July 02, 2021:* Prepare the TE team (handover of project documents)
- *July 5-8, 2021: 04 days*: Document review and preparing TE Inception Report
- *July 9, 2021: 01 day*: Finalization and Validation of TE Inception Report- latest start of TE mission
- *July 12 – 30, 2021: 15 days:* TE mission: stakeholder meetings, interviews, field visits
- *August 2-3, 2021:* Mission wrap-up meeting & presentation of initial findings- earliest end of TE mission
- *August 4-17, 2021: 10 days*: Preparation of draft TE report
- *August 18, 2021:* Circulation of draft TE report for comments
- *August 26, 2021*: 1 day: Incorporation of comments on draft TE report into Audit Trail & finalization of TE report
- *August 31, 2021:* Preparation & Issue of Management Response
- *September 03, 2021:* (optional) Concluding Stakeholder Workshop
- *September 06, 2021:* Expected date of full TE completion

The expected start date of contract is *July 01, 2021*.

VII. QUALIFICATIONS OF THE SUCCESSFUL INDIVIDUAL CONTRACTOR (IC)

Education

- Master's degree in Engineering, Energy, Environmental Economics, Business Management, or other closely related field or other closely related field.

Experience

- Minimum 10 years of experience in similar consultancy projects and/or IC contracts.
- Relevant experience with results-based management evaluation methodologies.
- Experience applying SMART indicators and reconstructing or validating baseline scenarios.
- Competence in adaptive management, as applied to Energy, Infrastructure, Transport and Technology;
- Experience working with the GEF or GEF-evaluations.

- Experience working in East Africa, Ethiopia.
- Demonstrated understanding of issues related to gender and Energy, Infrastructure, Transport and Technology.
- Experience in gender responsive evaluation and analysis.
- Excellent communication skills.
- Demonstrable analytical skills.
- Project evaluation/review experience within United Nations system will be considered an asset.
- Experience with implementing evaluations remotely will be considered an asset.

Language

- Fluency in written and spoken English.
- Capacity to communicate fluently with different stakeholders (civil society, government authorities, local communities, project staff)

d. Functional Competencies:

- Practical experience in evaluating development projects particularly in relation with renewable energy and/or mitigation interventions.
- Experience in similar assignments and leading consultancy tasks remotely
- Experience in formulating development strategies and policies.
- Excellent public speaking and presentation skills]
- Computer skills: full command of Microsoft applications (word, excel, PowerPoint) and common internet applications will be required.

e. Core Competencies:

- Demonstrates integrity by modelling the UN's values and ethical standards
- Promotes the vision, mission, and strategic goals of UNDP.
- Displays cultural, gender, religion, race, nationality and age sensitivity and adaptability
- Treats all people fairly without favoritism.
- Fulfils all obligations to gender sensitivity and zero tolerance for sexual harassment.

Important Note:

The Consultant is required to have the abovementioned professional and technical qualifications**. Only the applicants who hold these qualifications** will be shortlisted and contacted.

VIII. CRITERIA FOR SELECTING THE BEST OFFER

Upon the advertisement of the Procurement Notice, qualified Individual Consultant is expected to submit both the Technical and Financial Proposals. Accordingly, Individual Consultants will be evaluated based on Cumulative Analysis as per the following scenario:

- Responsive/compliant/acceptable, and

- Having received the highest score out of a pre-determined set of weighted technical and financial criteria specific to the solicitation. In this regard, the respective weight of the proposals are:
    a. Technical Criteria weight is **70%**
    b. Financial Criteria weight is **30%**

Criteria	Weight	Max. Point
Technical Competence (based on CV, Proposal and interview (if required))	**70%**	100
▪ **Criteria a.** Understanding the Scope of Work (SoW); comprehensiveness of the methodology/approach; and organization & completeness of the proposal		50 pts*
▪ **Criteria b.** Minimum educational background as per the requirement in the ToR		5 pts**
▪ **Criteria c.** Minimum 10 years of experience in similar consultancy projects and/or IC contracts		10 pts **
▪ **Criteria d.** Competency-based Interview which allow to evaluate individual competencies		5 pts**
Financial (Lower Offer/Offer*100)	**30%**	30
Total Score	**Technical Score * 70% + Financial Score * 30%**	

IX. PAYMENT MILESTONES AND AUTHORITY

Payments will be made based on actual days worked and upon submission of agreed deliverables (of satisfactory quality) and supporting documents. The consultant will indicate the cost of services for each deliverable in US dollars all-inclusive17 lump-sum contract amount when applying for this consultancy. The consultant will be paid based on the effective UN exchange rate (where applicable), only after approving authority confirms the successful completion of each deliverable as per the following payment schedule:

Installment of Payment/ Period	Deliverables or Documents to be Delivered	Approval should be obtained	Percentage of Payment
1st Installment	Final TE Inception Report	The CRES Unit	20 %
2nd Installment	Draft TE report	"	40 %
3rd Installment	Final TE report	The CRES and Regional Technical Advisor (via signatures on the TE	40 %

17 The term "All inclusive" implies that all costs (professional fees, travel costs, communications, etc.) that could possibly be incurred by the Contractor are already factored into the final amounts submitted in the proposal.

Installment of Payment/ Period	Deliverables or Documents to be Delivered	Approval should be obtained	Percentage of Payment
		Report Clearance Form) and delivery of completed TE Audit Trail	

Criteria for issuing the final payment of 40%

- The final TE report includes all requirements outlined in the TE TOR and is in accordance with the TE guidance.
- The final TE report is clearly written, logically organized, and is specific for this project (i.e. text has not been cut & pasted from other MTR reports).
- The Audit Trail includes responses to and justification for each comment listed.

In line with the UNDP's financial regulations,

- when determined by the Commissioning Unit and/or the consultant that a deliverable or service cannot be satisfactorily completed due to the impact of COVID-19 and limitations to the TE, that deliverable or service will not be paid.

Due to the current COVID-19 situation and its implications, a partial payment may be considered if the consultant invested time towards the deliverable but was unable to complete to circumstances beyond his/her control.

X. CONFIDENTIALITY AND PROPRIETARY INTERESTS

The Individual Consultant shall not either during the term or after termination of the assignment, disclose any proprietary or confidential information related to the consultancy service without prior written consent. Proprietary interests on all materials and documents prepared by the consultants under the assignment shall become and remain properties of UNDP.

XI. ANNEXES TO THE TOR

ToR Annex A: Project Logical/Results Framework
ToR Annex B: Project Information Package to be reviewed by TE team
ToR Annex C: Content of the TE report
ToR Annex D: Evaluation Criteria Matrix template
ToR Annex E: UNEG Code of Conduct for Evaluators
ToR Annex F: TE Rating Scales
ToR Annex G: TE Report Clearance Form
ToR Annex H: TE Audit Trail

Annexure-II

Tentative Itinerary of Field Visits/Project Sites by National Consultant

Date	Time	Region	Zone	Activities	Remarks
Day 1	7:00 AM – 4:00 PM	Oromia	West Arsi	Travel to Dodola	
Day 2	9:00 AM – 10:00 AM	,,	(Dodola)	Conduct interview with Energy Bureau staff	
	10:00 - ``: 11:00 AM	,,	,,	Hold discussion with RETs providers and observe visible technologies	
	11:00 – 12:30 AM	,,	,,	Hold interview with some end user households	
	12:30 AM – 1:30 PM			***Lunch at Dodola***	
	02:00 – 6 PM			Travel to Shshemane	
Day 3	9:00 AM – 10:30 AM		(Shashemane)	Conduct interview with Energy Bureau staff	
	10:30 - ``: 12:30 AM			Hold discussion with RETs providers and observe visible technologies	
	12:30 1:30 PM			***Lanch at Shashemene***	
	02:00 – 10:30 PM			Hold interview with some end user households and observe techs in use	
	Pass night at Shashemene				
Day 4	6:00 AM – 10:00 AM	SNNPR	Silte Zone	Travel to Warabe	
	10:30 – 12;00	,,	(Warabe)	Conduct interview with Energy Office staff	
	12:30 – 1:30 PM	,,	,,	***Lunch at Warabe***	
	2:00 – 3:00 PM	,,	,,	Hold discussion with RETs providers and observe visible technologies	
	3:30 – 5:00 PM	,,	,,	Hold interview with some end user households and observe techs in use	
	5:00 – 6:30 PM	,,		Travel to Butajira	
	Pass night at Butajira				

Date	Time	Region	Zone	Activities	Remarks
Day 5	8:30 -10 AM	,,	Gurage zone (Meskan Woreda)	Conduct interview with Energy Office staff	
	10:30 – 12:00 AM	,,	(Butajira)	Hold discussion with RETs providers and observe visible technologies	
	12:30 – 1:30			***Lunch at Butajira***	
	2:00 – 4:00 PM	,,	,,	Hold interview with some end user households and observe techs in use	
	Pass night at Butajira				
Day 6	8:00 – 12: AM	,,	Gurage Zone	Travel to Wolkite	
	12:30 – 1:30 PM	,,	,,	***Lunch at Wolkite***	
	2:00 – 3:00 PM			Conduct interview with Energy Office staff	
	3:30 – 5:30 PM			Hold discussion with RETs providers and observe visible technologies	
		Pass night at Wolkite			
Day 7	8:30 – 10:30 AM	SNNP	Gurage zone (Wolkite)	Hold interview with some end user households and observe techs in use	
	11:00 – 12:30 AM	,,	,,	***Lunck at Wolkite***	
	1:00 – 7:00 PM			Travel back to Addis Ababa	
Day 8	6 AM -5 PM	Amhara	Bahir Dar	Travel to Bahir Dar	
Day 9	8:30 – 10:00	,,		Hold discussion with project team	
	10:30 – 12 AM	,,	South Gondar zone	Hold discussion with RETs providers and observe visible technologies	
	12:30 – 1:30 PM		***Lunch at Woreta***		
	2:00 - 4:00 PM	..	South Gondar zone	Hold interview with some end user households and observe techs in use	
	4:00 – 5:30			Travel back to Bahir Dar	
		Pass night at Bahir Dar			

Date	Time	Region	Zone	Activities	Remarks
Day 10	9:00 – 10 AM	,,	Awi zone	Hold discussion with RETs providers and observe visible technologies	
	10:00 – 12:00 AM	,,	,,	Hold interview with some end user households and observe techs in use	
	12:30 – 1:30 PM		***Lunch at Bahir Dar***		
	2:00 – 4:00 PM	,,	Bahir Dar	Conduct wrap-up meeting with the REB project focal person and process owner	
Day 11	6:00 AM – 5:00 PM			Travel back to Addis Ababa	

Annexure-III

Indicative List of Organizations/Stakeholders to be Consulted for Inputs/Feedback

Government Officials

i) Ato Yesehak Soboka, Alternative Energy Technologies Development and Promotion Directorate (AETDPD), EREDPC, MoWIE
ii) GEF Operational Focal Point
iii) Same to (i) - National Project Director/Steering Committee Chair/ Secretary
iv) Ato Tilahun Andarge, Improved Cook Stoves Identification, Development and Promotion Directorate (ICSIDPD), EREDPC, MoWIE

UNDP Officials

v) W/ro Wubua Mekonnen, CRES Unit, wubua.mekonnen@undp.org
vi) GEF Specialist/Regional Technical Adviser
vii) Ato Berhanu Alemu,. M&E Specialist, berhanu.alemu@undp.org

Project Team

viii) Ato Yared Shumete, Project Manager, yared.shumete@undp.org
ix) Ato Anteneh Temesgen, Senior Bioenergy Expert, antenehtem@gmail.com
x) Ato Ayenew Assefa, Senior Bioenergy Expert, ayuabryaw@gmail.com
xi) Ato Lebanos Seyoum, M&E Officer, libanos27@gmail.com
xii) Ato Desalegn Senbeta, Consultant, GFMC Secretariat, DBE, desalegn.senbeta@undp.org
xiii) Ato Seifu Teshome, UNCDF Ethiopia Country Office Coordinator, seifu.teshome@uncdf.org

Energy Technology Design, Prototype Development and Testing Directorate

xiv) Ato Berhanu Woldu, berhanuw14@gmail.com

Regional Energy Bureau

xv) Ato Gena /Tesfaye Sorresa from Oromia region
xvi) Ato Teketel Matiwos from SNNP region
xvii) Ato wondimu from Amhara region

Financial Institutions (FIs)

xviii) Ato Elias Asnake, Energy Coodination Team Manager, Development Bank of Ethiopia
xix) Ato Tesfaye Deresa-Oromia International Bank (OIB), tesfayedh@yahoo.co. uk
Ato Melkamu Asebe, SNEF Division Manager
xx) Ato Mola Tikuye, Credit Director, Zemen Bank
xxi) Ato Samuel Assefa - Enat Bank, samuelassefa87@gmail.com

xxii) AtoTezera Kebede -PEACE MFI, tezera@peacemfi.org or kebedetezera@yahoo.co.in
Ato Feleka Borga, Vice Manager, PEACE MFI,

RET Suppliers

xxiii) W/ro Amsale Barega Lembeteret Alternative Energy Technology Enterprise, (SNNP- Wolkite), lembeteret@gmail.com
xxiv) W/ro Abaynesh Alemu, abayneshalemu360@gmail.com
xxv) Ato Adane G Michael, Tigist Tadese Solar Women PLC, adane201199@yahoo.com
xxvi) Ato Melaku Meaza- Green Hope PLC, meazamelaku321@yahoo.com
xxvii) Ato Kemal Kedir - Jitu Trading Enterprise, kemalkedir87@yahoo.com
xxviii) Ato Wondwosen Ketema-ICS Trading Enterprise, ketemawonde25@gmail.com
xxix) Ato Fakadu Abebe, Solar Trading PLC, Buta Jira, SNNP
xxx) Ato Mohamed Sheicha, Solar Supplier, Warabe, Silte Zone
xxxi) W/ro Genete Tadesse, ICS PLC, Bahir Dar,

Annexure IV

Evaluation Criteria Matrix by Questions, Indicators, Data Sources and Method of Collection

Evaluative Criteria Questions	Indicators	Sources	Methodology
Relevance: How does the project relate to the main objectives of the GEF Focal area, and to the environment and development priorities at the local, regional, and national level?			
▪ Was the project relevant to the needs and priorities of the target groups/beneficiaries? Were they consulted during design and implementation of the project? ▪ Did the project's theory of change clearly articulate assumptions about why the project approach is expected to produce the desired change? Was the theory of change grounded in evidence? ▪ To what extent was the project in line with the national development priorities, the country programme's outputs and outcomes, the UNDP Strategic Plan and the SDGs?	▪ **Alignment with government policies and priority areas** ▪ **Consistency with donor/ development partners country strategic frameworks** ▪ **Alignment with needs of beneficiary community.**	▪ **Project Document** ▪ **Progress Reports** ▪ **MTR Report** ▪ **Beneficiary Suppliers and Communities**	▪ **Desk Review of Documents** ▪ **Interview of Project Stakeholders**
Effectiveness: To what extent have the expected outcomes and objectives of the project been achieved?			
▪ To what extent did the project contribute to the country programme outcomes and outputs, the SDGs, the UNDP Strategic Plan, and national development priorities?	▪ **Type, Item Prices and Estimated Efficiency of Technologies directly sold at Road Shows**	▪ **Project Document** ▪ **Project Progress Report** ▪ **Project**	▪ **Desk Review of relevant Documents** ▪ **Interview of Stakeholders**

• To what extent were the project outcomes and outputs achieved? • What factors have contributed to achieving or not achieving intended country programme outputs and outcomes?	▪ **Status of Development and Enforcement of RET hardware standards by Government of Ethiopia (GoE)**	▪ **Implementation Review (PIR)**	▪ **Observation of Visible Project Outputs**
Efficiency: Was the project implemented efficiently, in line with international and national norms and standards?			
▪ To what extent have resources been used efficiently? Have activities supporting the strategy been cost-effective? ▪ To what extent have project funds and activities been delivered in a timely manner?	▪ **Timely delivery of inputs and budget** ▪ **Timely execution of planned activities** ▪ **Regular monitoring and follow up**	▪ **Performance planned activities** ▪ **Disbursement of funds as planned** ▪ **Monitoring & evaluation plan**	▪ **Review of Documents** ▪ **Interview of Key Informants and Focused Group Discussion of Beneficiaries**
Sustainability: To what extent are there financial, institutional, socio-political, and/or environmental risks to sustaining long-term project results?			
▪ To what extent does the interventions have well-designed and well-planned exit strategy? ▪ Are there any financial risks that may jeopardize the sustainability of project outputs? • To what extent will financial and economic resources be available to sustain the benefits achieved by the project?	▪ **Level of Result Ownership and Commitment in place** ▪ **Institutional Strength** ▪ **Potential Financial Strength and Risks** ▪ **Technical Skill Strength to carry over Project Results**	▪ **Project Stakeholders and Beneficiaries** ▪ **Project Quarterly and Annual Reports** ▪ **Monitoring and Evaluation Reports** ▪ **Project Sustainability and Exit Strategy Plans**	▪ **Review of Reports** ▪ **Interview of Key Informants** ▪ **Focused Group Discussion of Beneficiaries (suppliers & end users)** ▪ **Observation of Visible Results at**

▪ Does the negative impacts of COVID-19 hinder the sustainability of the project gains?			**Field Level**
Gender: equality and women's empowerment: How did the project contribute to gender equality and women's empowerment?			
▪ To what extent does the project contribute to gender equality, the empowerment of women and the human rights-based approach? ▪ To what extent has the project promoted positive changes in women participation? Were there any unintended effects? ▪ What impacts COVID-19 brought to the gained women empowerment by the project?	▪ **Number of Women Benefitted from the Pproject** ▪ **Number of Women Participated in Awareness Creation Events**	▪ **Project Document and Annual Reports** ▪ **Women Participated in the Program** ▪ **Project Staff and Stakeholders**	▪ **Review of Documents** **Interview of Beneficiaries** **Observation of Men owned Businesses and Results**
Impact: Are there indications that the project has contributed to, or enabled progress toward reduced environmental stress and/or improved ecological status?			
▪ What positive or negative impact did the guarantee have on the financial institutions? ▪ Did the guarantee help RET suppliers to grow their business and improve profitability?	▪ **Positive or Negative Change in use of RETs** ▪ **Change Observed due to use of RETs (time, health, avoided biomass degradation)**	▪ **RETs Suppliers** ▪ **Beneficiary Households** ▪ **Study Documents**	▪ **Interview of RETs Suppliers and Beneficiary households** ▪ **Review of Study Documents**

Annexure-V

Evaluation Questions Matrix - Questionnaire/Interview Guide for Key Informants Interview (KIIs) and Focused Group Discussions (FGDs)

This matrix is to be used for building comparison between the project activities or outputs as were planned and outlined in the Project Document and the actual accomplishment after implementation. It takes a critical look at relevance of the project to the existing reality, effectiveness of the project intervention, efficiency in achieving value for money and appropriateness of the sustainability plan.

The TE Team will use the materials in the matrix to develop a topic guide for conducting the KIIs and FGDs with key stakeholders. Questions in the matrix, though not conclusive, will be the tools used for the field work.

A. Questionnaire/Interview Guide for National and Regional Level Project Stakeholders

A1 General

1. Have you been able to regularly visit project areas in the provinces or districts to monitor progress of the project and to understand constrains/challenges encountered by the field staffs?

A2 Project Design and Relevance

2. Was the project design appropriate and reflect the substantive problems on the ground? Probe for theory of change.
3. Did you observe any problems or gaps in the project design or approach that affected project implementation?
4. Was there adequate participation (consultation) of stakeholders and beneficiaries during project formulation process?
5. How does the project relate to the main objectives of the GEF Focal area, and to the environment and sustainable development priorities at local, regional, and national level?
    - Was the project relevant to the needs and priorities of the target groups/beneficiaries? Were they consulted during design and implementation of the project?

- Did the project's theory of change clearly articulate assumptions about why the project approach is expected to produce the desired change? Was the theory of change grounded in evidence?
- Were the lessons from other relevant national and international projects properly incorporated into the project design?
- To what extent was the project in line with the national development priorities, the country programme's outputs and outcomes, the UNDP Strategic Plan and SDGs, S4ALL?

6. Were the approaches and strategies used relevant to achieve intended outputs and outcomes of the programme/interventions?
7. Were relevant gender issues raised in the project design?
8. Have significant changes of interest happened in the country/local/global context since design of the project? Do they support or undermine the objective of the project?
9. Did the project log-frame capture intended or desired results adequately? If not, what need to have been changed?
10. Are the assumptions and risks listed in the log-frame realistic?
11. How does the log-frame been used to monitor results of the project and bring about course corrections?

A3 Project Implementation – Effectiveness

12. Have there been any changes made to the log-frame/project outputs during implementation, if yes, what has been changed?
13. Were there any changes made to the project as result of MTR recommendations? How did the changes affect project outcomes?
14. How effective and efficient was the Project Structure/implementation arrangements in facilitating project coordination, communications and implementation at national, regional and local levels?
15. If there were delays in project start-up, what were the cause of delays and what was the effectiveness of corrective measures undertaken? Do start-up problem persist?
16. How well is the project managed, and how could it be managed better?
17. To what extent did the project contribute to the country programme outcomes and outputs, the SDGs, the UNDP Strategic Plan, and national development priorities?
    - To what extent were the project outcomes and outputs achieved?

- What factors have contributed to achieving or not achieving intended country programme outputs and outcomes?
- Did the Assumptions and the Theory of Change hold true? If not, why?

A4 Project Implementation – Efficiency

18. To what extent have resources been used efficiently? Have activities supporting the strategy been cost-effective?
    - To what extent have project funds and activities been delivered in a timely manner?
    - What are the reasons for difference in expected and actual co-financing?
    - Have the project management bodies and partners been sufficiently active in guiding and responding to issues?
    - Were services provided in timely manner and impacts achieved within an appropriate time period?
    - Were the financial resources and other inputs disbursed and utilized in timely manner as planned?
    - Did targeted activities and interventions implement in timely manner?
19. Is there appropriate and timely monitoring and evaluation mechanism put in place? Is there joint monitoring and evaluation of planned results?
20. How is M&E mechanism different at design stage and in implementation?
21. What are the financial controls in place to reduce error and fraud, ensure timelines and quality information? What is the level of compliance with the financial controls?
22. Has the reporting been adequate to meet the reporting requirements of the Project Board and that of GEF? Has follow-up been made for feedback from GEF?

A5 Sustainability

23. What is needed for the project intervention to be adopted/replicated further?
24. Will the financial institutions, RET suppliers and other implementing agencies continue to work in the field after the project supports end? What has been done and what needs to be done to this end?
25. To what extent are there financial, institutional, socio-political, and/or environmental risks to sustaining long-term project results?
26 Are there any financial risks that may jeopardize the sustainability of project outputs?

- To what extent will financial and economic resources be available to sustain the benefits achieved by the project?
- Does the negative impacts of COVID-19 hinder the sustainability of the project gains?

A6 Impact

27. Are there indications that the project has contributed to, or enabled progress toward increased access to clean energy, reduced environmental stress and/or improved ecological status?
    - How did the project interventions impact increased access to clean energy products and improved environmental status of the landscape in which the beneficiary groups live and survive?
    - Is there evidence(s) that project outcomes have contributed significantly in achieving the goals in terms of dissemination of RET products/capacity building/awareness?
    - How have women/men, girls/boys as well as vulnerable groups such as people with disabilities benefitted from the project activities?
    - In what ways has the project intervention affected the communities socially (social impacts)?

A7 Gender Equality and other Cross-Cutting Issues

28. Did gender equality and other cross-cutting issues considered during the design and implementation of the project interventions?
    - To what extent has the project benefited women, enhanced their participation?
    - To what extent have poor, indigenous and physically challenged women and other disadvantaged and marginalized groups benefited from the project?
    - How has the project contributed in knowledge transfer and/or in incubating new entrepreneurs in RET sector?
    - Has environmental and climate change issues considered?

A8 Lessons Learned

29. What lessons and good/worst practices are learned/achieved from project design, implementation, and monitoring mechanisms that can be considered in the design and implementation of similar projects?

30. What has been done by the project to share lessons learned and ensure internalization of those lessons for potential replication and/or scale-up in the future?

A9 Challenges and Constraints Faced

31. What major factors have influenced the implementation and operations of the programme for achievement or non-achievement of results?
32. What were the major challenges and risks and how efficiently were these addressed by the project?
33. What measure do you recommend to address such challenges in future project design and implementation process?

B. Lead Questions/ Interview Guides for Beneficiary FGDs

1. Have you been consulted during project design phase?

2. Do the program implemented in the area reflect you real needs and problems?

3. What interventions and activities were undertaken by the project?

4. How have women/men, girls/boys as well as vulnerable groups such as people with disabilities benefitted from the project activities?

5. How has the project improved or changed your livelihoods and wellbeing?

6. How did the project interventions impact the environmental status of the landscape in which the beneficiary groups live and survive?

7. How did the project improve the coping/adaptation capacity of the beneficiary groups against climate change impacts?

8. Do you think project interventions and results will continue after the project stops support?

9. In case drought and related problems prevail in the future, how do you overcome it?

ANNEXURE VI

TE Ratings Scale

Development Objective Progress Ratings Definitions

(i) **(HS) Highly Satisfactory**: Project is on track to exceed its end-of-project targets, and is likely to achieve transformational change by project closure. The project can be presented as 'outstanding practice'.

(ii) **(S) Satisfactory:** Project is on track to fully achieve its end-of-project targets by project closure. The project can be presented as 'good practice'.

(iii) **(MS) Moderately Satisfactory**: Project is on track to achieve its end-of-project targets by project closure with minor shortcomings only.

(iv) **(MU) Moderately Unsatisfactory:** Project is off track and is expected to partially achieve its end-of-project targets by project closure with significant shortcomings. Project results might be fully achieved by project closure if adaptive management is undertaken immediately.

(v) **(U) Unsatisfactory:** Project is off track and is not expected to achieve its end-of-project targets by project closure. Project results might be partially achieved by project closure if major adaptive management is undertaken immediately.

(vi) **(HU) Highly Unsatisfactory**: Project is off track and is not expected to achieve its end-of-project targets without major restructuring.

Implementation Progress Ratings Definitions

(vii) **(HS) Highly Satisfactory**: Implementation is exceeding expectations. Cumulative financial delivery, timing of key implementation milestones, and risk management are fully on track. The project is managed extremely efficiently and effectively. The implementation of the project can be presented as 'outstanding practice'.

(viii) **(S) Satisfactory:** Implementation is proceeding as planned. Cumulative financial delivery, timing of key implementation milestones, and risk management are on track. The project is managed efficiently and effectively. The implementation of the project can be presented as 'good practice'.

(ix) **(MS) Moderately Satisfactory:** Implementation is proceeding as planned with minor deviations. Cumulative financial delivery and management of risks are mostly on track, with minor delays. The project is managed well.

(x) **(MU) Moderately Unsatisfactory**: Implementation is not proceeding as

planned and faces significant implementation issues. Implementation progress could be improved if adaptive management is undertaken immediately. Cumulative financial delivery, timing of key implementation milestones, and/or management of critical risks are significantly off track. The project is not fully or well supported.

(xi) **(U) Unsatisfactory:** Implementation is not proceeding as planned and faces major implementation issues and restructuring may be necessary. Cumulative financial delivery, timing of key implementation milestones, and/or management of critical risks are off track with major issues and/or concerns. The project is not fully or well supported.

(xii) **(HU) Highly Unsatisfactory:** Implementation is seriously under performing and major restructuring is required. Cumulative financial delivery, timing of key implementation milestones (e.g. start of activities), and management of critical risks are severely off track with severe issues and/or concerns. The project is not effectively or efficiently supported.

Annexure -7

UNEG Code of Conduct for Evaluators

Independence entails the ability to evaluate without undue influence or pressure by any party (including the hiring unit) and providing evaluators with free access to information on the evaluation subject. Independence provides legitimacy to and ensures an objective perspective on evaluations. An independent evaluation reduces the potential for conflicts of interest which might arise with self-reported ratings by those involved in the management of the project being evaluated. Independence is one of ten general principles for evaluations (together with internationally agreed principles, goals, and targets: utility, credibility, impartiality, ethics, transparency, human rights and gender equality, national evaluation capacities, and professionalism).

Evaluators/Consultants:

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

Evaluation Consultant Agreement Form

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

Name of Evaluator : **VINOD KUMAR JAIN**

Name of Consultancy Organization (where relevant): **Terminal Evaluation of "Promoting Sustainable Rural Energy Technologies (RETs) for Household and Productive Uses" Project**.

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

Signed at **NEW DELHI, INDIA** (Place) on **10.11.2021** (Date)

Signature: