



Project Implementation Report

(1 July 2022 – 30 June 2023)

Project Title:	<i>Promoting Integrated Biomass and Small Hydro Solutions for Productive Uses in Cameroon</i>
GEF ID:	<i>4785</i>
UNIDO ID:	<i>120335</i>
GEF Replenishment Cycle:	<i>GEF-5</i>
Country(ies):	<i>Cameroon</i>
Region:	<i>AFR - Africa</i>
GEF Focal Area:	<i>Climate Change Mitigation (CCM)</i>
Integrated Approach Pilot (IAP) Programs¹:	<i>N/A</i>
Stand-alone / Child Project:	<i>Stand-alone</i>
Implementing Department/Division:	<i>ENE / ESI</i>
Co-Implementing Agency:	<i>UNIDO</i>
Executing Agency(ies):	<i>Ministry of Water and Energy (MINEE), Rural Electrification Agency (AER) Ministry of Economy (MINEPAT)</i>
Project Type:	<i>Full-Sized Project (FSP)</i>
Project Duration:	<i>48 months</i>
Extension(s):	<i>3</i>
GEF Project Financing:	<i>2,000,000 USD</i>
Agency Fee:	<i>200,000 USD</i>
Co-financing Amount:	<i>10,000,000 USD</i>
Date of CEO Endorsement/Approval:	<i>9/8/2014</i>
UNIDO Approval Date:	<i>8/4/2014</i>
Actual Implementation Start:	<i>10/8/2014</i>
Cumulative disbursement as of 30 June 2023:	<i>\$USD 1,994,270.21</i>
Mid-term Review (MTR) Date:	<i>3/4/2022</i>
Original Project Completion Date:	<i>12/31/2018</i>
Project Completion Date as reported in FY22:	<i>9/30/2022</i>

¹ Only for **GEF-6 projects**, if applicable

Current SAP Completion Date:	<i>9/30/2022</i>
Expected Project Completion Date:	<i>9/30/2022</i>
Expected Terminal Evaluation (TE) Date:	<i>3/30/2023</i>
Expected Financial Closure Date:	<i>9/30/2023</i>
UNIDO Project Manager²:	<i>LUGMAYR Martin</i>

I. Brief description of project and status overview

Project Objective		
<p><i>The objective of the project is to reduce GHG emissions through promotion of investments and a market in the scale up and replication of integrated renewable energy solutions for productive uses and industrial applications in Cameroon. The project helps in demonstrating renewable energy such as small hydropower as well as the biomass power solutions for rural areas and building confidence of the government officials, private stakeholders and local financing institutions developing projects to optimally utilize the locally available renewable energy resources, and meeting the desired growth objectives through increased rural energy access and increased industrial activities.</i></p> <p><i>The applicable GEF outcome indicators and GEF tracking indicators of the project are:</i></p>		
<i>Project Core Indicators</i>		<i>Expected at Endorsement/Approval stage</i>
<i>6</i>	<i>Greenhouse Gas Emissions Mitigated (metric tons of CO₂e)</i>	<i>163,656 tCO₂e emission reduction, as per the CEO endorsed project document.</i>
<i>11</i>	<i>Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment</i>	<i>7000 households, 50 micro and small industrial units, 20 schools, 20 health clinics, one technical college</i>
<i>11</i>	<i>Electricity units (kWh generated from execution of biomass and small hydropower and best practices of electricity uses for rural electrification and productive applications)</i>	<i>2.7 MW of SHP pilot project 0.125 MW of Biomass based power plant installed</i>

Baseline
<p><i>Cameroon has an installed power generation capacity of 1,593 MW³ (2011) (of which large hydropower represents 45%), and the rest is thermal (natural gas, heavy oil and diesel), which includes both public sector projects as well as private auto generation projects). The electricity use per capita in Cameroon is 226 kWh⁴, whereby 81.2% comes from hydroelectricity, from 15.4% biomass and the rest from petroleum products (oil, natural gas). Importantly, this situation exists in both rural and urban areas. Out of this, Cameroon primarily relies on approximately 30 ageing diesel power stations as back-up thermal plant facilities, the largest of which are located in Bamenda, Yaoundé,</i></p>

² Person responsible for report content

³ Report on Energy Situation of Cameroon, 2011, SIE-Cameroon

⁴ Source: African Development Fund report: "Project to Strengthen and Extend the Electricity Transmission and Distribution Network", 2009

Mbalmayo and Ebolowa⁵ and one natural gas run thermal power station, Kribi Power Station, with 216 MW of capacity, installed in the year 2011⁶.

In 2010 the energy generation was only 3.9 TWh (AES SONEL, 2011), the majority of which was consumed by medium and high voltage customers. According to AES SONEL (2011) the transmission network consists of two main systems - the Northern Interconnected Grid (NIG) Network and the Southern Interconnected Grid (SIG) with 480 km of 225 kV, 337 km of 110 kV, 1,067 km of 90 kV, 11,450 km of 5.5 to 33 kV and 11,158 km of 220 to 380 kV lines. There also is an Eastern Isolated Grid (EIG). The electricity supply is unevenly distributed, as these sub-grids are not synchronized. These isolated grids need interconnection, forming a unified national grid because it not only helps in catering to the urban consumers, allowing optimal use of generating capacity and modern management of interconnecting the grid, but it is also important for rural electrification.

Cameroon has substantial quantities of biomass energy resources and a very high potential for small hydro (second largest hydro potential country in the central African region). Potential for solar energy also exists in the region. There are many agro processing activities in Cameroon including palm oil mills, which have the theoretical potential to provide all the electricity needs of the country from energy generation using its biomass residues. At present, such residues are reused in the plantations and the excess residue is burned in the open air, thereby releasing CO2 to the atmosphere, and contributing to GHG emissions. Farmers depend on cutting large quantities of wood (in habitats that should be protected) for drying their cocoa, as well as palm oil production. The smoke from the burning wood reduces the quality of the cocoa. Also, the smoke gets released to the atmosphere, contributing to pollution and GHG emission. Apart from this, the in-efficient burning of wood is causing the increased GHG emission and un-sustainable utilization of forest biomass resources.

Construction of an integrated renewable energy based mini grid at such sites would reduce GHG emissions and land degradation while increasing the productive capacity and quality of the commodities involved. With many such regions existing in the country, it follows that successful demonstration of the technical and financial viability of such renewable energy solutions for productive applications such as palm oil extraction, flour mills, coffee grinding, carpentry, cocoa processing, bakery etc. which are currently using diesel generators for their electricity needs, has a high potential for replication and scaling-up nationwide. At present, the government understands the importance of these renewable energy resources, but no serious efforts have been undertaken for the development of these sectors. This is primarily due to a lack of specific policies and technical capabilities in the country. This project focuses on overcoming both the above-mentioned challenges by demonstrating the viability of SHP and biomass based mini grids in the country.

Please refer to the explanatory note at the end of the document and select corresponding ratings for the current reporting period, i.e. FY23. Please also provide a short justification for the selected ratings for FY23.

In view of the GEF Secretariat's intent to start following the ability of projects to adopt the concept of adaptive management⁷, Agencies are expected to closely monitor changes that occur from year to year and demonstrate that they are not simply implementing plans but modifying them in response to developments and circumstances or understanding. In order to facilitate with this assessment, please introduce the ratings as reported in the previous reporting cycle, i.e. FY22, in the last column.

Overall Ratings⁸	FY23	FY22
Global Environmental Objectives (GEOs) / Development Objectives (DOs) Rating	<i>Satisfactory (S)</i>	<i>Satisfactory (S)</i>

⁵ Source : <http://www.mbendi.com/indy/powr/af/ca/p0005.htm>

⁶ Source : http://en.wikipedia.org/wiki/List_of_power_stations_in_Cameroon

⁷ Adaptive management in the context of an intentional approach to decision-making and adjustments in response to new available information, evidence gathered from monitoring, evaluation or research, and experience acquired from implementation, to ensure that the goals of the activity are being reached efficiently

⁸ Please refer to the explanatory note at the end of the document and assure that the indicated ratings correspond to the narrative of the report

<i>The development objectives for the reporting period, notwithstanding certain implementation delays, remain satisfactory. This consideration comes from the fact that the project has already delivered on most of its development objectives, as evinced from the terminal evaluation.</i>		
Implementation Progress (IP) Rating	<i>Moderately Satisfactory (MS)</i>	<i>Satisfactory (S)</i>
<i>Despite UNIDO's best efforts in coordination and monitoring, there have been delays with the completion of two turn-key biogas units. The UNIDO team, both at the HQ and in Cameroon, is closely coordinating to mitigate these delays and complete the remaining work as soon as possible.</i>		
Overall Risk Rating	<i>Moderate Risk (M)</i>	<i>Moderate Risk (M)</i>
<i>The risk level remains moderate, mainly in view of the delays of the completion of the turn-key biogas units. At the aftermath of the COVID-19 pandemic, where the global supply chains got disrupted, the subcontractor has been struggling to source all the required pieces of the equipment for the biomass generator unit. To mitigate these risks, UNIDO has been mediating between the turn-key subcontractor and the third-party supplier to fast track the production and shipping of the remaining equipment.</i>		

II. Targeted results and progress to-date

Please describe the progress made in achieving the outputs against key performance indicator's targets in the project's **M&E Plan/Log-Frame at the time of CEO Endorsement/Approval**. Please expand the table as needed.

Project Strategy	KPIs/Indicators	Baseline	Target level	Progress to-date
Component 1 – Strengthening the policy and regulatory framework for renewable energy and its enforcement				
Outcome 1: A renewable energy policy and regulatory framework in place, supporting a vibrant renewable energy sector with enhanced private sector confidence and participation in renewable energy generation				
Output 1.1: A renewable energy policy and regulatory framework in place, supporting a vibrant renewable energy sector with enhanced private sector confidence and participation in renewable energy generation	Policy and regulatory framework for renewable energy is well accepted among all stakeholders and the increased number of private sector players applying for renewable energy development under that framework.	Low capability and capacity of government institutions for formulating appropriate policy and regulatory guidelines for RE promotion in country.	<ol style="list-style-type: none"> 1) Policy and regulatory guidelines developed within 1 year of the project start 2) Policy adopted within 2 year of project approval (Q4, year 2). 3) Biomass extraction and utilization policy and water use policy developed and adopted by Q4 year2. 4) Local level monitoring tool and system to check biomass extraction sustainability and enforce restriction developed and enforced by Q4 year 2 	Building upon the progress achieved during the previous years, the final draft of bids documents for Small Hydro Power plants have been finalized by the UNIDO Field Office project team. Coordination follow-ups have been made and bidding documents transferred to MINEE for finalization and launching of tenders.

<p>Output 1.2: Institutional capacity developed for the formulation and implementation of policy and regulations for promotion of biomass and small hydro projects for rural electrification and productive applications through private sector participation.</p>	<p>i. Documented capacity building modules for government stakeholders related to policy, regulation and RE project implementation.</p> <p>ii. Number of capacity building programs conducted successfully on policy and regulations formulation for renewable energy systems and its implementation.</p> <p>iii. Number of government officers trained and given responsibility of preparation and implementation of RE related policies and regulations.</p> <p>iv. Number of stakeholders trained on sustainable biomass extraction policy and the biomass power projects following the guidelines of the policy.</p>	<p>Low capacity and capacity of government institutions for formulating appropriate policy and regulatory guidelines for RE promotion in country.</p>	<p>1) List of candidates received from each stakeholder by 1st year of the project. (Q2, Year1).</p> <p>2) Capacity building modules developed within 1 year of project start (Q4, Year1).</p> <p>3) Two to three capacity building programs for the government agencies conducted during the second to fourth year of the project.</p> <p>4) Two capacity building programs on policy for sustainable extraction and utilization of biomass resources for power generation.</p>	<p>After the preparations and drafting of ToRs to train stakeholders in policy and regulatory framework, the project ran into difficulties with executing this activity. Due to budgetary constraints (mainly caused from the lack of co-financing from the Cameroonian Gov. to the project as initially pledged) the budget had to be prioritized and shifted on other activities. More on this under the 'Stakeholder Engagement section no. V below).</p> <p>To mitigate this barrier, however, at least eight (8) biomass experts have been identified from various ministries and regional delegations in the country for knowledge transfer on the technicalities of biomass to electricity production. An initial capacity building training has been provided during the first mission of a senior international biomass expert in the country. A follow-up training is planned upon the final commissioning of the biomass and biogas sites in Essekou and Foyemtcha.</p> <p>During the reporting period, two dedicated operation and maintenance O&M trainings have been provided to 29 (twenty nine) technicians and site operators on biomass and gasification processes. From them at least two O&M operators will be assigned on each site to ensure the smooth running and daily maintenance of the units in Essekou and Foyemtcha.</p> <p>For further information on the trainings, please refer to the Annex entitled: "4785_2023_Rapport_des_ formations_a_Essekou_centre_et_Foyemtca_chefferie".</p>
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Component 2 – Developing mechanisms to promote and sustain private sector investments in renewable energy

Outcome 2:

- 2.1. Investment mechanism strengthened to support a viable renewable energy generation market
- 2.2. National institutions and key private sector market players have the financial and technical capacities, tools and support base needed to effectively promote and sustain a renewable energy market.

<p>Output 2.1: Guidelines, best practices, investment incentives, standardized PPAs, tariffs, pricing mechanisms, risk management instruments and viable renewable energy generation business models developed and put in place</p>	<p>i. Project developers and investors making use of experiences highlighted in the collected case studies and best practices of investment in renewable energy specially biomass and small hydropower projects.</p> <p>ii. Project viability evaluation framework developed and adopted.</p> <p>iii. Number of projects availing financial/fiscal incentives set under this project.</p> <p>iv. Number of power purchase agreement signed as per the standard PPA and tariff rates for renewable energy Number of renewable energy projects being implemented as per developed viable business models under the project.</p> <p>v. Number of local banks that accepted guarantee schemes</p> <p>vi. Number of RE</p>	<p>At present the financing instruments and tariff structure for making renewable energy projects viable in the country are not available.</p>	<p>1) Best practices prepared by end of 1 year from project start.</p> <p>2) Parameters for project evaluation identified and developed by end of 1st year of the project.</p> <p>3) Incentive structure including tax benefit guidelines are developed by end of 1.5 year of project start and put in place by end of year 2016</p> <p>4) PPA documents including tariff rates developed and adopted by at least 5 developers by end of 2nd year of the project.</p> <p>5) Viable business models developed and explained to various stakeholders (at least 10 by end of 2nd year of the project start.</p> <p>6) Identify partners with adequate experience in guarantee schemes and banks interested in entering the scheme to</p>	<ul style="list-style-type: none"> ▪ Most of the objectives under Outcome 2 have been achieved during the previous reporting years. There have not been any noteworthy developments under this component during the reporting period.
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	investments supported by local banks thanks to the loan guarantee scheme		lend to RE projects 7) Established guarantee schemes for banks interested to lend to RE projects 8) Start of implementation of at least 10 numbers of renewable energy projects utilizing the business model(s) developed and availing financial/ fiscal incentives by the end of the project	
Output 2.2: Training program implemented to strengthen the capacity of local banks and institutions in project finance and risk management instruments for renewable energy projects.	Financing risk reduction instruments which are available in the country are put in place for renewable energy project financing. ii. Number of private sector projects availing benefits of the developed financial risk management instruments and the amount of financing received by such projects. iii. Number of capacity building programs organized for financing institutions for sensitizing them about RE project viability and project risk management instruments are.	At present financing institutions do not consider renewable energy projects as their priority. They also have less capacity in understanding the RE projects and risk mitigation options for financing.	<ul style="list-style-type: none"> At least 5 local banks and other financing institution's capacity assessed by end of the 1st year. Financial risk management instrument identified and put in place for the RE projects in country by end of 1.5 year of the project. Two capacity building programs organized during year 2 and 3 of the project. 	<p>UNIDO, as a founding partner of the Cornerstone of Rural Electrification (CORE) Initiative has been collaborating with CORE to increase awareness among the financial institutions for the productive use of renewable energy (PURE) in Cameroon. To this end, CORE has launched a call for experts and media coordinators for the PURE Campaign in Benin, Cameroon & Madagascar: https://core-initiative.org/news/call-for-experts-and-media-coordinators-for-productive-use-of-renewable-energy-campaign-in-benin-cameroon-madagascar/</p> <p>Other than this, there haven't been any noteworthy developments under this component during the reporting period.</p>
Output 2.3: Renewable energy investment fora held to sensitize investors and promote investor confidence	<p>i. Important stakeholders which include government bodies, industries, private sector investors and project developers, financing institutions including national banks and international funding agencies etc. giving commitments for RE financing.</p> <p>ii. Number of investment forums organized, and the funding committed by the stakeholders.</p> <p>iii. Amount of funding leveraged from various investors/financers.</p>	At present there is less awareness, confidence, and linkages among various stakeholders for renewable energy development and its benefits. There are no funding/investment commitments for renewable energy projects.	<p>Candidate's list from identified stakeholders received within 6 months of the start of the project.</p> <p>Agenda and discussion points for investment fora developed by end of 1.5 year of the project start</p> <p>At least 2 numbers of investment foras organized during the year 2 and 3 of the project start.</p>	<ul style="list-style-type: none"> Considering that the project has operationally closed most of its activities, no noteworthy endeavours have been undertaken under this output during the reporting period, besides the ones reported previously.
Output 2.4: Targeted technical capacities developed for the design, operation,	<p>i. Number of training programs organized on the design, operation and maintenance of integrated renewable energy systems and number of people trained.</p> <p>ii. Number of trained people</p>	Lack of technical capacity for RE design, installation, and operation.	<p>Work plan developed by Q1 of the first year of the project start</p> <p>Stakeholders/participant's list received within 6 months of project start.</p> <p>Training modules</p>	<p>The company contracted to supply and install the two-biomass power plants – SOMCO SARM - and one of the subcontractors – Renewable Energy Cameroon – have been trained on the technical aspects concerning biogas digesters and bio gasification, including design, construction and maintenance and operation.</p> <p>The currently recruited Senior Biomass Expert and</p>

<p>and maintenance of integrated renewable energy systems.</p>	<p>engaged in different activities of RE project implementation, operation, and management.</p> <p>iii. Number of people making use of the training</p>		<p>developed within 1.5 year of the project start</p> <p>2 training programs for turbine manufacturers organized during 2nd and 3rd year of project and at least 5 number of people/prospective turbine manufacturers trained</p> <p>2 training programs on designing and implementation of renewable energy projects for private sector organized during 2nd and 3rd year of the project. (also, the in-plant training during commissioning of the plant) and at least ten (10) people trained.</p> <p>2-3 training programs organized for the operation and maintenance service providers during 3rd and 4th year of the project and at least 15-20 number of people/service providers trained</p> <p>Two training programs organized for the management of RE mini-grid distribution projects in rural areas by the Q2, Y4 and at least 15-20 number of people trained</p> <p>30-40 People making use of the trainings</p> <p>Future training plan developed by the end of the project</p>	<p>these companies are both mandated to train at least eight (8) biomass engineers nationwide and at least two (2) site operators each for the operations and maintenance of the power plants. This process is ongoing, in parallel with the installations.</p> <p>As mentioned under Output 1.2 above, SOMCO Sarl has provided two dedicated O&M trainings to 29 (twenty nine) technicians and site operators on biomass and gasification processes. From them at least two O&M operators will be assigned on each site to ensure the smooth running and daily maintenance of the units in Essekou and Foyemtcha.</p> <p>For further information on the trainings, please refer to the Annex entitled: "4785_2023_Rapport_des_formation_a_Essekou_centre_et_Foyemtca_chefferie".</p> <p>A follow-up O&M training from the Senior Biomass Expert to the local operators is planned upon the final commissioning of the biomass and biogas sites in Essekou and Foyemtcha.</p>
<p>Output 2.5: An investment guide/toolkit on renewable energy investment potential in Cameroon published to support investors and project developers.</p>	<p>i. Developed toolkit for assessing benefits of investment in renewable energy.</p> <p>ii. Growth in number of interested private sector investors/financiers utilizing the toolkits to assess the investment potential in the country.</p>	<p>At present no such toolkit available in the country.</p>	<p>Toolkit developed by end of 2nd year of the project (This will be based on the need assessment and various policy and incentive mechanisms developed under different output activities).</p> <p><input type="checkbox"/> Dissemination of the toolkit through workshop to at least 10-15 persons by 2.5 to 3 year of the project.</p> <p><input type="checkbox"/> At least 5-10 numbers of Private sector investors/financiers using the toolkit to assess the investment potential in renewable energy projects in</p>	<p>As agreed with the Project Monitoring Committee, the plan to develop the tool kit for the spectrum of RE has not been undertaken, due to financial limitations of the project.</p>

			Cameroon.	
<p>Output 2.6: A special window dealing with renewable energy established and operational within CREF (Cameroon Rural Energy Fund).</p>	<p>i. Estimated amount of fund needed to support renewable energy projects to meet certain targets, and the amount of such fund established within REF to support the RE projects.</p> <p>ii. Special window having dedicated fund for renewable energy investment in the Cameroon under REF is established and made operational.</p> <p>iii. Number of projects receiving support and services from the special window till the end of the GEF project period.</p>	<p>Present CREF have no specific arrangement or mechanism for long term financing resource for renewable energy projects.</p>	<p>Assessment of present CREF and interaction with relevant stakeholders completed within 6 months of the estimated within 1 year of project start.</p> <p><input type="checkbox"/> Mechanism for special window under CREF developed within 1.5 Year of project start.</p> <p><input type="checkbox"/> One training for the implementation of the mechanism of operation of special window under RE organized and at least 5 number of people trained by Q1 Year2.</p> <p><input type="checkbox"/> Operation and services of the special window starts immediately after its establishment and at least 20-30 number of projects approach the window for support</p>	<p>There haven't been any noteworthy developments under this component during the reporting period.</p>

Component 3 – Demonstration of the technical and commercial viability of integrated renewable energy mini grids

Outcome 3:

3.1 Renewable energy mini grids are replicated and become an integral part of Cameroon's electrification program

3.2 Installed capacity of renewable energy systems increased.

<p>Output 3.1: Four integrated electricity mini grids of a combined capacity of up to 2.825 MW and optimising local renewable energy resources installed and operated to demonstrate the technical and commercial viability of renewable energy systems.</p>	<p>i. Functional commissioned demonstration projects. ii. Amount of financing or incentives utilized by the demonstration projects through the financing risk management instruments put in place under component 2 of this project.</p>		<p>1) Work plan developed by Q1 of year 1 of the project. 2) DPRs for all projects prepared within 9 months of the project start, with the identification of electricity distribution route and financial closure achieved clearly indicating the share of financing/investment by different stakeholders 3) Selection of all the vendors and technology providers completed within 1 year of the project start. 4) EPC contract awarded within 1 year of the project start. 5) Projects commissioning completed within 2 years of the EPC contract award. 6) Plant O&M training modules ready within 2 year of the project start. 7) Operation and management plan adapted within 2.5 year of the project start. 8) Operating parameters set by the time of the commissioning of the plants.</p>	<ul style="list-style-type: none"> ▪ A Cameroonian turnkey solution provider, named SOMCO SARL – has been selected and contracted on 09 March 2022 to supply, install and commission two biomass power plants respectively in Essekou (25 kWe) and Foyemtcha (15 kWe) ▪ The work is divided in 4 components: boreholes, civil work, productive uses equipment and energy generation equipment ▪ The grid distribution and connections falls under the responsibility of MINEE, which has officially committed to finance the grid connectivity of the plants. A call for tender document for the distribution grid in the two villages has been completed by the section of renewable energy and transmitted to the procurement services of the MINEE. The tendering process has been slow, however, and caused considerable delays with the ultimate completion of the distribution grids for the two sites. ▪ The boreholes had been already completed into the two sites. The civil works, and the installation of the equipment for the energy generation has been mostly completed. The only pending piece of equipment is the 25 kW biomass generator, which is currently being shipped from the supplier All Power Labs from USA to SOMCO SARL in Cameroon. At the aftermath of the COVID-19 pandemic, where the global supply chains got disrupted, they have been struggling to source all the required pieces of the equipment for the biomass generator unit. UNIDO have been closely following up on this matter, mediating to expedite the process. The biomass generator unit is scheduled to be shipped and installed within July-August 2023.
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<p>Output 3.2: Existing and new productive uses identified, and value chains promoted for renewable energy utilization.</p>	<p>i. Number of Identified productive applications being powered through the demo project. ii. Number of people sensitized and trained about productive applications of biomass and small hydroelectricity. iii. Number of entrepreneurs which would show their interest to get power from any such future mini grid project.</p>		<p>Existing and future productive applications and interested users identified. Estimated target is About 40 palm oil extraction units About 5 cassava processing units About 5 coffee processing units. Two awareness and training programs for productive usage organized among villagers in the project area by the end of 2nd year of the project start.</p>	<p>Two sensitization sessions have been conducted by the chief of villages and SOMCO SARL, in consultation with palm oil producers, on the benefits of using biomass generated electricity, in place of diesel, to power their installations. Respectively five (5) and seven (7) palm oil producers have been sensitized in Foyemtcha and Essekou. In total, at least ten (10) entrepreneurs have shown their interest to get power from the grid connection projects, as soon as these have been completed from MINEE.</p>
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Component 4: Monitoring and evaluation

Outcome 4:

- 4.1 Project deliverables are tracked and achieved and
- 4.2 Best practices learnt from this project prepared for future replication and scaling up of projects based on biomass and small hydropower.

<p>Output 4.1: Demonstration projects monitored throughout project cycle and independently evaluated.</p>	<p>i. List of all the progress report prepared ii. Number of review meetings and steering committee meetings.</p>		<p>Project Management Unit Formed and operational within 1 month of the start of the project. M&E plan ready within 3 months of the project start. Mid-term evaluation completed by end of the year 2 of project start. Final evaluation completed by end of project closing time. Project Terminal Report completed by end of the project.</p>	<p>The Project Terminal Evaluation has been conducted and completed in March 2023. The key findings and recommendations have been summarized under Part III, Section 5 below. Besides the ad hoc exchanges with MINEE and the other project stakeholders, no formal project monitoring committee meetings have been held under the reporting period, considering that the project closed operationally by 30 September 2022.</p>
<p>Output 4.2: Lessons learned are disseminated nationwide to relevant stakeholders to benefit further.</p>	<p>i. Number of dissemination materials (pamphlets, project success report, case study etc.) and it's printed for dissemination.</p>		<p>Lessons learnt from the project drafted by the 3.5 years from project start. Dissemination materials ready by the end of the project.</p>	<p>Lessons learnt from the project, based on the findings and recommendations of the project terminal evaluation have been shared with the project monitoring committee, (as summarized under Part III, Section 5 below).</p>

III. Project Risk Management

1. Please indicate the overall project-level risks and the related risk management measures: (i) as identified in the CEO Endorsement document, and (ii) progress to-date. Please expand the table as needed.

	(i) Risks	(i) Risk level (FY 22)	(i) Risk level (FY 23)	(i) Mitigation measures	(ii) Progress to-date	New defined risk ⁹
1	<p>Institutional Risks In the absence of institutional capacity for renewable energy planning the replication expected from this project may not be achieved</p>	Moderate risk (M)	Moderate risk (M)	<p>This project envisages involving government agencies, private sector as well as NGOs since the inception of the project. Project activities are designed to build the capacity of government institutions for planning and designing appropriate policy and schemes for renewable energy projects and their implementation.</p>	<p>Government institutions, private sector and NGO have been involved in the project since the inception and launching. National stakeholders, municipal councils, private sectors and local populations are consulted, informed and trained.</p>	<input type="checkbox"/>
2	<p>Technology Risks No demonstrated project in the</p>	Low risk (L)	Low risk (L)	<p>SHP and Biomass based mini-grids for rural electrification have been demonstrated successfully in many</p>	<p>At least three mini grid developers, designers and manufacturers of SHP equipment have been identified nationally during the project lifespan. One of the manufacturers is an owner of a modern workshop in the city of Douala and confirms capability of building 10 Pelton turbines within a year.</p>	<input type="checkbox"/>

⁹ New risk added in reporting period. Check only if applicable.

	country for distributed generation using RE based minigrids.			developing countries. Technology know-how and Technology know-how and experience from these installations will be used while designing and implementing the project		
3	Implementation Risk There is a delay in implementation of the project impacting the project success	Low risk (L)	Low risk (L)	"UNIDO has long-standing direct experience in the development and implementation of SHP and biomass based projects and it has a strong knowledge of the key variables that determine the success and the failure of project implementation. UNIDO will mitigate this risk through detailed development of activities plans in close cooperation with in-country project partners, stakeholders and developers. The government and the other stakeholders including the NGO such as ADEID, Halleson Dureen Nzene (Global Village Cameroon), Evangelischer-Entwicklungsdienst (EED), CDCV, GREEN STEP, NCIG etc. are regularly being updated and appraised by UNIDO about the progress being made, and the importance of their involvement in this project which is well appreciated by the government. The cooperation and the involvement of the government agencies will be made sure for the timely clearances and the implementation of project activities. Agreed and transparent modus operandi and the well planned monitoring activities will be defined before the start of the project implementation."	Full-fledged feasibility studies for two SHP sites of Bafang and Manjo have been developed, validated and transmitted to the ministry (i.e. MINEE) by UNIDO. A turnkey solutions provider has been recruited to install the biomass to energy systems. The construction and installation are ongoing. The call for tender for the distribution grids has been drafted by the MINEE, approved by the commission of call for tenders within the Ministry and will be launched in the coming weeks.	<input type="checkbox"/>
4	Economic and Financial Risks SHP and biomass based mini-grid may not become economically viable in rural areas	Moderate risk (M)	Moderate risk (M)	Focus will be on use of the renewable energy for productive purposes where the energy generated is used to create value/service for the communities so that they can	1. On SHP Villagers that will benefit from the project are eager for the project realization and are willing to contribute in their own way for the sites to be set up. Villagers have always cooperated with consultants and project team visiting the sites and wish for the project to be completed and commissioned soon. Also local authorities are very cooperative and are willing to assist UNIDO	<input type="checkbox"/>

				<p>use the income generated to pay for the electricity received.</p> <p>During the preparatory studies it has been identified that there are existing as well as new potential productive applications such as palm oil extractor, coffee grinder, flour mill, bakery units, saw mill etc. which can use the electricity from the proposed plants. Though the preliminary socioeconomic survey indicates about willingness and paying capacity of villagers for electricity services, proper mechanism for revenue collection will be developed while designing and implementing the project.</p>	<p>in the project implementation. During the development of the feasibility studies, the best economic and financial option identified was to inject the electricity produced by the SHPs schemes in to the existing grid, while connecting the villages around either with the main grid or with the minigrids. This option was validated by the key stakeholders of the project (MINEE, AER, ARSEL)</p> <p>2. On biomass</p> <p>Villagers that will benefit from the project are eager for the project realization and are willing to contribute in their own way for sites to be set up. Villagers have always cooperated with consultants and project team visiting the sites and wish for the project to be put in place soon. Also local authorities are very cooperative and are willing to assist UNIDO in the project implementation. The local population is willing to pay electricity consumed and be involved in the management of the biomass plants. Most of the farmers and palm oil extractors are ready to provide biomass residues.</p> <p>A turnkey solutions provider was recruited to install the biomass to energy system. The construction and installations are ongoing.</p> <p>The call for tender for the distribution grids has been drafted by the MINEE, approved by the commission of call for tenders within the Ministry and will be launched in the coming weeks.</p>	
5	Financial/credit constraints and high capital costs that prevent the private sector from investing in renewable energy projects.	Low risk (L)	Medium risk (M)	<p>The renewable energy project focuses on productive uses where there are real economic benefits and value chains to encourage private sector participation. Selected demonstration projects have been design considering the optimal utilisation of electricity. Stakeholders including financial institutions have been appraised about the project and its status in order to ensure buy-in by stakeholders and promotion of a transparent and systematic framework for project development and delivery. The co-financing for the pilot projects have already been secured and project demonstration will make sure of attracting investors for replication and scale-up opportunities identified under the project.</p>	<p>The private sector has been sensitized through workshops and trainings about the benefits of investing in RE. This pilot project will bring a real motivation for the private sector in order to ensure its replication.</p> <p>The development of full-fledged feasibility studies, incl. the financial and economic analysis and the risk appraisal, showcase the viability of investments in SHP.</p>	<input type="checkbox"/>
6	Market/Financing Risks Lack of post project market	Low risk (L)	Low risk (L)	<p>"The project involves working with the government and financial institutions in the early stages to help promote the</p>	<p>1) Sensitization and promotion of investment in RE have been done through workshops with the involvement of private sector and financial institutions.</p> <p>2) The Rural Electrification Agency (AER) continues to promote investment in RE by following the results of investigations on</p>	<input type="checkbox"/>

<p>environment to attract growth in renewable energy generation replication and scale up of investments</p>			<p>development of the enabling policy and regulatory framework to encourage private sector investments in RE. During the preparation of feasibility studies, apart from the selected demonstration project, the technical feasibility and demand assessment for such kind of projects have also been carried out in the region as well as overall country and it is observed that once successfully demonstrated, this type of project can be replicated with appropriate policies and financing structures. Project preparation team took care of these things and had discussions with the ministry and CREF officials to identify what kind of capacity development needed for them to develop conducive policies to develop conducive policies and financing mechanisms for creating large market of RE. Project proposes to establish a special window under CREF with the help of government and partners to accelerate the RE expansion. That would strengthen CREF working for electrification in general with one additional specialised window to support RE sector in the country. This will help to ensure funds available or mechanism to receive benefit and funding beyond the GEF funded project. Also, the project will help to build expertise of project developers in designing and structuring bankable renewable energy projects that together with the impact of the policy and regulatory framework</p>	<p>SHP and biomass sites. Under the UNIDO-GEF project, AER envisages to accelerate the expansion of SHP projects. New policies have been adopted by AER such as financing of projects, which have reached maturity (DPRs completed with a financial analysis showing the feasibility of a project and business model ensuring its sustainability).</p>	
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				should help to ensure a good degree of post GEF project replication and scale up of renewable energy generation investments."		
7	Regulatory Risk Regulatory framework to promote renewable energy based mini-grid for rural electrification has not been enacted	Moderate risk (M)	Moderate risk (M)	The Government will play a central role in this project and hence the chances of the proposed policy and regulatory framework not being enacted are low. Also, the recently released National Electricity Law of Cameroon focuses on the promotion of rural electrification projects through easy clearances and less complicated processes for licenses and concessions. This will create good regulatory environment for the promotion of renewable energy.	The government is highly committed to develop renewable energy technologies. The Ministry of Water and Energy (MINEE) has a department of RE, which directly handles all RE related aspects. The Rural electrification Master Plan is ongoing. Meanwhile there is a law of RE that was adopted since 2011 which includes elements regarding FIT and PPA. The government is committed to increase up to 25%, RE in the energy mix by 2035. The share is currently 11% for SHP and 7% for biomass. Moreover, the General code of Decentralized Territories, which gave the possibility for the local Councils to generate their own electricity without referring to ENEO (i.e. the national electricity utility), has been promulgated since December 2019.	<input type="checkbox"/>
8	Sustainability Risks Failure to achieve project outcomes and objective after successful delivery of outputs	Low risk (L)	Low risk (L)	Establishing a monitoring, tracking and benchmarking program, the project would create the conditions to produce and sustain a policy driven push for renewable energy development for rural electrification. In parallel, by making local and national government, industry chamber, electricity users and civil society fully aware of the economic potential of the project and equipping them with capacity and tools to realize and reap the benefits of such potential, the project would generate a self-reinforcing market pull for renewable energy development.	During the site visit in January 2020, the project team realized that a Power Plant with household's connection constructed and installed by HUAWEI in Ekom Nkam Village. This plant will be managed by AER. While officially informed by UNIDO that the project will continue its activities, MINEE did not give any objection for the installation of a biomass plant in the same village. However, the installation of 2 plants in a small village can induce competition between the two plants. An analysis was made and the project site relocated to Essekou, which is much more dynamic and feasible.	<input type="checkbox"/>
9	Climate Change risk Climate change could change Cameroon's hydrological systems sufficiently so as to render SHP projects economically unviable during	Moderate risk (M)	Moderate risk (M)	"Keeping in mind that this adverse situation might arise, the project is designed and developed with more safety and sustainability factors, considering the monthly and annual variability of water flow in the river. The technical feasibility study report of the project (Refer Appendix-A1)	Observatory institutions of climate change are in charge of collecting data and analysing information about the climate impacts. 1. On SHP The hydrological and hydraulic studies have taken into account the climate and hydrology of the site during the last 30 years. Site surveys will be made during the Execution Studies to refine the data. Climate data modelling prepared to ensure a proper capacity installed. 2. On biomass	<input type="checkbox"/>

	<p>their lifetime. And also the biomass availability may be impacted.</p>		<p>considers the lean period flow too while calculating the designed SHP capacity as well as the power generation estimates. Further the climate change database from World Bank30 indicates that in Cameroon The average annual precipitation (1961-1990) is 1604 mm and the projected annual percentage change (2045-2065) in precipitation is ranging from -71 mm to +115 mm which indicates Cameroon will not be much effected in terms of change in precipitation and will have sufficient water availability to sustain the projects for longer period. Literature and meteorological data indicates the country is having significant trends in precipitation at Kribi and Douala in the coastal region, and Batouri in the forest savanna; marginally significant trends occur in Mamfe in the rainforest and Bafoussam in the Guinean savanna zone. This indicates country is having good rainfall distributed all over its territory, except in northern region where the rainfall is comparatively lesser than the other regions. However the current projects are not located in the northern region. To avoid any possible risk of climate change, the trainings will also cover this particular aspect so that national consultants and trained experts can do appropriate designing of any future project capacity and better management of the plant Further, as explained above, the rainfall in Cameroon is not</p>	<p>The government has been informed that the project will not result in forest degradation. Villagers have been sensitized through several awareness raising meetings. The local stakeholders have been involved in the project and are ready to collaborate and partake in the site management.</p>	
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				<p>much being affected, and hence the impact on vegetation too is expected to be minimal. In case draught situation arises, then the plant may look for an option the plant may look for an option of integrating it with other minigrids running on biomass based plant. Globally smart technologies are available to do necessary integration of different mini-grids.</p>		
10	<p>Social risk</p> <p>The SHP project can affect the other water uses downstream such as irrigation and may also face competition with water uses by large hydro up-stream</p>	Low risk (L)	Low risk (L)	<p>"The projects envisaged to be developed as run of the river project without creating any large dam. Further, integrating small hydro development in the local development planning through capacity building and harmonization of programs by government agencies along with local participation will be focused to enhance local level adaptation of SHP projects. The project site has been identified considering these factors and the project is so designed that there will be no impact on the availability of water downstream for irrigation purpose and hence no specific competition. Only impact will be in the northern</p>	<p>The two SHP sites retained cannot affect the other uses of water, since the considered SHP plants would be built on a run of river scheme. It is not necessary for such plants to be built on large dams that could impact the other water uses. Inquiries have been made by the Government, before the signing of the MoU. Videos of the sites can also be checked by following the link to the project blog: http://repcameroon.blogspot.com/p/videos.htm</p>	<input type="checkbox"/>

2. If the project received a sub-optimal risk rating (H, S) in the previous reporting period, please state the actions taken since then to mitigate the relevant risks and improve the related risk rating. Please also elaborate on reasons that may have impeded any of the sub-optimal risk ratings from improving in the current reporting cycle; please indicate actions planned for the next reporting cycle to remediate this.

NA

3. Please indicate any implication of the **COVID-19** pandemic on the progress of the project.

Despite the COVID-19 constraints, SOMCO SARM, (a Cameroonian turkey solution provider) has been progressing well with the construction of the civil works, the completion of boreholes and the installation of equipment. Notwithstanding, certain bottlenecks with the global supply chains have created considerable delays with the provision of biomass and biogasifier equipment from abroad to the Foyemtcha and Essekou sites. Especially a 25 kW biomass generator, which is currently being shipped from the supplier All Power Labs from USA to SOMCO SARM in Cameroon, has proven to be challenging. At the aftermath of the COVID-19 pandemic, where the global supply chains got disrupted, All Power Labs struggled to source all the required pieces of the equipment for the biomass generator unit. UNIDO have been closely following up on this matter, mediating to expedite the process. The biomass generator unit is scheduled to be shipped, installed and commissioned within July-August 2023. UNIDO and the project partners have been following closely with the suppliers to expedite and complete the delivery and installation processes the soonest.

4. Please clarify if the project is facing delays and is expected to request an **extension**.

N/A

5. Please provide the **main findings and recommendations of completed MTR** and elaborate on any actions taken towards the recommendations included in the report.

Following the mid-term evaluation of the project, its main recommendations are summarized below:

- Reinforce partnership for training with Academia by means of protocols and co-funding.
- Develop a specific roadmap for the implementation of on-grid projects;
- Clearly separate the elaboration of engineering studies for technical and economic feasibility from the environmental and social studies for impact assessment;
- Promote transparent and openly shared information about the most interesting sites for development of small hydropower facilities, in the shape of a web-based portal;
- Launch (or assist the MINEE in launching) an international open tender to identify interested parties to develop hydropower project such as BOT projects;
- Promote coordination of efforts by Development Funding Agencies and International Funding Institutions in the renewable power sector in Cameroon to avoid conflicts and foster synergetic action;
- Develop specific fast-track mini-grid project activities around existing biomass plants own/operated by private entities for their self-consumption;
- Use a general work plan/schedule for the remaining time of the project, detailing the activities for each component, showing the responsible party, milestones and deliverables;
- Include tendering in project objectives, to guarantee that the study phase leads to an effective completion of a sufficient set of documents and instruction and completion of specific tenders.

Following the recommendations of the MTR, a work plan for the rest of the activities has been drafted, component by component, with milestones and deliverables. Relevant discussions have been held with NGOs, academia and the Ministry of Energy to contracting third parties to follow up on the rest of the project activities after the closure of this project.

IV. Environmental and Social Safeguards (ESS)

1. As part of the requirements for **projects from GEF-6 onwards**, and based on the screening as per the UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP), which category is the project?

Category A project

Category B project

Category C project

(By selecting Category C, I confirm that the E&S risks of the project have not escalated to Category A or B).

Notes on new risks:

- *If new risks have been identified during implementation due to changes in, i.e. project design or context, these should also be listed in (ii) below.*
- *If these new/additional risks are related to Operational Safeguards # 2, 3, 5, 6, or 8, please consult with UNIDO GEF Coordination to discuss next steps.*
- *Please refer to the UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP) on how to report on E&S issues.*

Please expand the table as needed.

	E&S risk	Mitigation measures undertaken during the reporting period	Monitoring methods and procedures used in the reporting period
(i) Risks identified in ESMP at time of CEO Endorsement			
(ii) New risks identified during project implementation (if not applicable, please insert 'NA' in each box)			

V. Stakeholder Engagement

1. Using the previous reporting period as a basis, please provide information on **progress, challenges and outcomes** regarding engagement of stakeholders in the project (based on the Stakeholder Engagement Plan or equivalent document submitted at CEO Endorsement/Approval).

The Cameroonian Government has been consulted regularly, mainly through the project focal point within the MINEE, and other local authorities (Municipal Council Mayors). Regular meetings have been held on project progress to review the outcomes and to take action on resolving the challenges. All the others stakeholders concerned (AER, MINEPAT, MINEPDED, Village Chiefs etc.) have collaborated for the smooth execution of the project. The MoU signed in April 2016 with MINEE will remain in force until the project end.

Challenges

The pledged co-financing from the Cameroonian Government to the project has failed to materialize.

MINEE has also fallen behind in validating the tender documents for the electricity distribution grids. The department in charge of validating this tender documentation only cleared it in June 2022.

The grid distribution extension to the biomass and biogas sites in Foyemtcha and Essekou is yet to be finished. MINEE has pledged to complete the grid as soon as possible, and has announced the official procurement tender at the beginning of 2023. However, the completion of the works may incur delays.

Outcome

The tender documents for the distribution grids have been validated by the dedicated team within MINEE.

The procurement tenders have been announced by MINEE.
Regular coordination meetings have been held with the Project Focal Point at MINEE and AER.

2. Please provide any feedback submitted by national counterparts, GEF OFP, co-financiers, and other partners/stakeholders of the project (e.g. private sector, CSOs, NGOs, etc.).

- AER and MINEE suggested as SHP reach maturity (feasibility studies completed, financial and economic analysis show the feasibility of the power plants, and business model ensure its sustainability), a call for tenders can be launched by the government of Cameroon to recruit an IPP.
- MINEE has received the bids documents from ARSEL to launch the call for tenders for the 2 SHP sites.
- The Small Hydro Power Centre installed by UNIDO in the National Advanced School Engineering Yaoundé, has been confirmed as full Laboratory within the School, thus enabling PhD and Masters students to undertake relevant research.

3. Please provide any **relevant stakeholder consultation** documents.

- 4785_2022_UNIDO_Terminal_Report_Cameroon
- 4785_2023_Progress_Report_SOMCO_Sarl_WP1
- 4785_2023_Progress_Report_SOMCO_Sarl_WP2
- 4785_2023_Rapport_des_formation_a_Essekou_centre_et_Foyemtca_chefferie
- 4785_2023_ALL_Power_Labs_Communication_to_SOMCO_Sarl
- 4785_2023_Lettre MINEE Prise_en_charge_financière_des_mini_centrales
- 4785_2023_Work plan

VI. Gender Mainstreaming

1. Using the previous reporting period as a basis, please report on the **progress** achieved **on implementing gender-responsive measures** and **using gender-sensitive indicators**, as documented at CEO Endorsement/Approval (in the project results framework, gender action plan or equivalent),.

All activities have been conducted with representation of both males and females. Despite our best efforts, male participants always had the larger majority in many situations. However, at least two women are members of the Local Follow Up Committee on the biomass and biogas project sites.

VII. Knowledge Management

1. Using the previous reporting period as a basis, please elaborate on any **knowledge management activities / products**, as documented at CEO Endorsement / Approval.

A website (<http://repcameroon.blogspot.com/>) was created and all information related to the project are regularly updated there.

A toolkit on steps to invest in SHP in Cameroon has been developed during the preparation of the SHP feasibility studies and the document has been shared with relevant stakeholder, including MINEE, AER and private developers.

A factsheet has been elaborated, and the document shared with relevant stakeholders in various meetings and fora.

2. Please list any **relevant knowledge management mechanisms / tools** that the project has generated.

- The SHP center in National Advanced School of Yaoundé was confirmed as a full laboratory. Now the center can deliver Masters and PhD programmes under the coordination of the School and University of Yaoundé I. The center can also conduct training for professionals.
- A website (<http://repcameroon.blogspot.com/>) was created and all information related to the project is regularly updated there.

All attachments are to be named as per the GEF required format, i.e.: “GEF4785_Promoting Integrated Biomass and Small Hydro Solutions for Productive Uses in Cameroon”_Docx type.

VIII. Implementation progress

1. Using the previous reporting period as a basis, please provide information on **progress, challenges and outcomes achieved/observed** with regards to project implementation.

Progress

- Activities have been progressing despite the challenges caused by the restrained project budget.
- The TE has been completed, and its recommendations have been shared with the various stakeholders.
- SOMCO SARL, the turnkey solutions provider has been working on the construction and installation of the biomass power plants in Foyemtcha and Essekou. The works have been almost completed.
- The distribution grid call for tender document was approved by the dedicated team within MINEE and the procurement process has been launched.
- The project Terminal Evaluation has been completed, with the following recommendations:

Recommendations to UNIDO:

- It is recommended that UNIDO through its UNIDO Representative in Cameroon continue to actively take part beyond the project end in the IPP Procurement Committee established by MINEE, by providing guidance and technical insight on the selection of IPPs, development of O&M and governance arrangements, and construction and installation of the two planned SHP plants in Bafang and Manjo. Since project funding has already finished, considering the critical importance of this support for sustainability of project activities as well as in the interest of long-term development of renewable energy mechanisms in Cameroon, other resources such as UNIDO core funding, etc. may be used for this purpose.
- Furthermore, to build on the project's key outcomes achieved so far, including the developed technical capacity and bid-ready SHP sites, etc., it is recommended that UNIDO facilitate further development and financial linkages for the Government of Cameroon with donors. In this regard, partnership with international financial institutions is likely to be most beneficial based on a results-based lending approach.
- In order to widely disseminate the knowledge products and lessons learned under the project, it is recommended that UNIDO make the DPRs for the two SHP and two biomass sites, along with training modules on SHP design, EIAs, and GIS mapping of SHP sites available to other relevant government ministries in addition to MINEE.
- When designing future projects, to ensure country-level ownership, it is critical to get formal letters of commitment from relevant ministries/institutions for co-financing and other cooperation. Also, a mix of co-financing modalities should be sought from national and local stakeholders, rather than reliance on only in-cash co-financing. In addition, there is a need for a mechanism to measure and formally track in-kind co-financing received from partners such

as land from local communities for the construction of plants and for construction of roads for transport of machinery for the construction of plants, etc. Similarly, it is critical to engage key development stakeholders, especially when planned project outcomes, such as the REF window, are contingent upon cooperation from these organizations, such as the World Bank's ownership of the REF.

Recommendations to MINEE:

- To encourage private sector investment in the RE sector, it is imperative that the Government of Cameroon focuses on providing an enabling environment through the endorsement of conducive policies and frameworks.
- It is also recommended that assistance is sought from international financial institutions with considerable experience in support to private-led RE development in Africa, such as BADEA, the World Bank, and AfDB, etc., in order to encourage private sector investment in the RE sector.
- At the activity-level, to ensure sustainability, it is recommended that management plans for the future biomass sites incorporate a mix of Operation and Maintenance (O&M) training for technical experts at MINEE and AER with the monitoring support from the communities and municipalities members. This can also result in assigning a dedicated manager for the installed SHP and biomass plants.
- In the interest of replication and upscaling, it is recommended that MINEE make the DPRs for the two SHP and any other similar knowledge products publicly available for the benefit of concerned stakeholders, , such as potential IPPs, financial institutions, and academia, etc.,

Following the recommendations of the TE relevant discussions have been held with MINEE, NGOs, academia and contracting third parties to follow the rest of the project activities after the closure of this project.

Challenges

- The Government of Cameroon has not managed to contribute with the co-financing that was pledged for the project. As a consequence, the available project budget could not fully cover all the planned activities, as per the project document. UNIDO, in close coordination with the Project Monitoring Committee and the local project stakeholders, have had to focus on certain activities that should provide the biggest impact for the given budget.
- Serious difficulties with finding a turn-key service provider (no initial offers could be obtained through an open UNIDO tender) resulted in a delay in the implementation of biomass power plant construction and installation activities, which only started in April 2022, instead of December 2021 as planned.
- With the rainy season having already started, the roads are very bad in the villages of Essekou and Foyemtcha, making their access difficult. Due to the post COVID-19 disruptions to global supply chains, the delivery of biomass and biogasifier equipment from international suppliers has been considerably delayed. Coupled to this, there have been international payment restrictions and checks from the Central Bank of Cameroon towards foreign suppliers. Such restrictions have in turn seriously impacted the project schedule.
- The lack of a site engineer makes it difficult to monitor the progress of plant construction. To mitigate this risk, the project management team has been coordinating with SOMCO SARL through biweekly meetings to monitor the progress of the project execution on the ground.

Outcome

- The Government of Cameroon is preparing to launch the calls for tender for small hydropower sites (*appel d'offres*), as a letter was already transmitted by MINEE to ARSEL for this purpose.
- Development of DPR will help Electricity Regulatory Agency and Ministry of Energy on minimal

technical specifications for SHP call for tender within the country.

- UNIDO has contributed to add about 8 MW within the Cameroonian electricity mix.
- Best practices will be got from the two bioenergy units and lessons learnt.
- The project Terminal Review has been conducted and delivered. The Terminal Review Report will serve in research and dissemination of lessons learnt.
- The construction of the two biomass units in Essekou and Foyemtcha is ongoing by SOMCO SARL.
- Tender documents for the distribution grids related to the biomass power plants have been validated by the dedicated team within the MINEE.
- The Small Hydro Power Centre installed by UNIDO in the National Advanced School Engineering Yaoundé, has been confirmed as a full Laboratory within the School and relevant research is performed by PhD and Masters students.

2. Please briefly elaborate on any **minor amendments**¹⁰ to the approved project that may have been introduced during the implementation period or indicate as not applicable (NA).

Please tick each category for which a change has occurred and provide a description of the change in the related textbox. You may attach supporting documentation, as appropriate.

<input type="checkbox"/>	Results Framework	
<input type="checkbox"/>	Components and Cost	
<input type="checkbox"/>	Institutional and Implementation Arrangements	
<input type="checkbox"/>	Financial Management	
<input type="checkbox"/>	Implementation Schedule	
<input type="checkbox"/>	Executing Entity	
<input type="checkbox"/>	Executing Entity Category	
<input type="checkbox"/>	Minor Project Objective Change	
<input type="checkbox"/>	Safeguards	
<input type="checkbox"/>	Risk Analysis	
<input type="checkbox"/>	Increase of GEF Project Financing Up to 5%	
<input type="checkbox"/>	Co-Financing	
<input type="checkbox"/>	Location of Project Activities	
<input type="checkbox"/>	Others	

3. Please provide progress related to the **financial implementation** of the project.

¹⁰ As described in Annex 9 of the *GEF Project and Program Cycle Policy Guidelines*, **minor amendments** are changes to the project design or implementation that do not have significant impact on the project objectives or scope, or an increase of the GEF project financing up to 5%.



GRANT DELIVERY REPORT

Grant:	200002851	Grant Status:	Authority to implement	Grant Validity:	08.10.2014 - 30.09.2022
Sponsor:	400150 - GEF - Global Environment Facility	Currency:	USD	Reporting Period:	08.10.2014 - 30.06.2023
Other Reference:	4785-U3-PJ-FS-GR-01	Fund:	GF	Prepared on:	04.07.2023

Project	Project Description	Country	Region	Project Manager	Project Validity
120335	PROMOTING INTEGRATED BIOMASS AND SMALL HYDRO SOLUTIONS FOR PRODUCTIVE USES IN CAMEROON	Cameroon	Africa	Martin Lugmayr	01.07.2012 - 30.09.2022

	Description	Released Budget Current Year (a)	Obligations Current Year (b)	Disbursements Current Year (c)	Expenditures Current Year (d=b+c)	Total Agreement Budget (e)	Released Budget (f)	Obligations + Disbursements (g)	Funds Available* (h=f-g)	Support Cost (i)	Total E
120335		USD	USD	USD	USD	USD	USD	USD	USD	USD	
120335-1-01-01	Component 1: RE Policy										
1100	Staff & Intern Consultants	0.00	0.00	0.00	0.00	17,799.84	17,799.84	10,799.84	7,000.00	0.00	
1500	Local Travel	0.00	0.00	0.00	0.00	33,680.29	33,680.29	33,663.97	16.32	0.00	
1600	Staff Travel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1700	Nat.Consult./Staff	0.00	0.00	0.00	0.00	128,597.50	128,597.50	126,597.49	2,000.01	0.00	
2100	Contractual Services	0.00	(7,573.42)	7,493.02	(80.40)	0.00	0.00	14,839.53	(14,839.53)	0.00	
3000	Train/Fellowship/Study	0.00	0.00	0.00	0.00	13,892.35	13,892.35	9,531.63	4,360.72	0.00	
3500	International Meetings	0.00	0.00	0.00	0.00	13,968.46	13,968.46	13,968.46	0.00	0.00	
4500	Equipment	0.00	0.00	0.00	0.00	10,365.65	10,365.65	10,365.65	0.00	0.00	
5100	Other Direct Costs	0.00	(61.20)	0.00	(61.20)	19,171.63	19,171.63	16,960.26	2,191.37	0.00	
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23,674.91	
120335-1-01-01	Total	0.00	(7,634.62)	7,493.02	(141.60)	237,475.72	237,475.72	236,746.83	728.89	23,674.91	
120335-1-01-02	Component 2: Investment & Promotion	USD	USD	USD	USD	USD	USD	USD	USD	USD	
1100	Staff & Intern Consultants	0.00	(9,635.00)	9,731.35	96.35	175,749.80	175,749.80	151,002.98	24,746.82	0.00	
1500	Local Travel	(1,864.50)	(1,864.41)	(0.09)	(1,864.50)	23,300.07	23,300.07	20,332.39	2,967.68	0.00	
1700	Nat.Consult./Staff	0.00	(869.64)	938.06	68.42	149,356.81	149,356.81	102,835.79	46,521.02	0.00	
2100	Contractual Services	249.61	(98,559.94)	98,567.39	7.45	406,066.25	406,066.25	569,333.45	(163,267.20)	0.00	
3000	Train/Fellowship/Study	0.00	0.00	0.00	0.00	80,097.08	80,097.08	70,097.08	10,000.00	0.00	
3500	International Meetings	0.00	0.00	0.00	0.00	10,241.55	10,241.55	3,241.55	7,000.00	0.00	
4300	Premises	(4,134.00)	(4,134.00)	0.00	(4,134.00)	17,670.10	17,670.10	3,143.19	14,526.91	0.00	
4500	Equipment	0.00	0.00	0.00	0.00	196,915.92	196,915.92	145,971.13	50,944.79	0.00	
5100	Other Direct Costs	(13.91)	(772.60)	1,571.94	799.34	17,724.10	17,724.10	20,401.31	(2,677.21)	0.00	
9300	Support Cost IDC	0.00	0.00	0.00	0.00	17,378.32	17,378.32	0.00	17,378.32	113,413.10	
120335-1-01-02	Total	(5,762.80)	(115,835.59)	110,808.65	(5,026.94)	1,094,500.00	1,094,500.00	1,086,358.87	8,141.13	113,413.10	
120335-1-01-03	Component 3: Project Development & Demo	USD	USD	USD	USD	USD	USD	USD	USD	USD	
1100	Staff & Intern Consultants	0.00	0.00	0.00	0.00	172,656.76	172,656.76	137,509.97	35,146.79	0.00	
1500	Local Travel	0.00	0.00	0.00	0.00	8,281.68	8,281.68	3,777.39	4,504.29	0.00	
1700	Nat.Consult./Staff	0.00	0.00	0.00	0.00	82,444.90	82,444.90	64,174.06	18,270.84	0.00	
2100	Contractual Services	0.00	(69,798.29)	69,872.73	74.44	40,000.00	40,000.00	142,104.31	(102,104.31)	0.00	
3000	Train/Fellowship/Study	0.00	(814.13)	0.00	(814.13)	39,921.13	39,921.13	24,109.69	15,811.44	0.00	
3500	International Meetings	0.00	0.00	0.00	0.00	3,997.04	3,997.04	3,925.07	71.97	0.00	
4500	Equipment	0.00	0.00	0.00	0.00	20,000.00	20,000.00	0.00	20,000.00	0.00	
5100	Other Direct Costs	0.00	0.00	(406.99)	(406.99)	13,637.85	13,637.85	11,230.38	2,407.47	0.00	
7100	Contingencies	0.00	0.00	0.00	0.00	7,060.64	7,060.64	0.00	7,060.64	0.00	
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38,683.11	
120335-1-01-03	Total	0.00	(70,612.42)	69,465.74	(1,146.68)	388,000.00	388,000.00	386,830.87	1,169.13	38,683.11	
120335-1-01-04	Component 4: Project Management and M&E	USD	USD	USD	USD	USD	USD	USD	USD	USD	
1100	Staff & Intern Consultants	0.00	(7,100.42)	7,190.89	90.47	80,367.12	80,367.12	84,432.11	(4,064.99)	0.00	
1500	Local Travel	0.00	0.00	0.00	0.00	722.98	722.98	5,615.13	(4,892.15)	0.00	
1600	Staff Travel	0.00	0.00	0.00	0.00	4,017.85	4,017.85	17.85	4,000.00	0.00	
1700	Nat.Consult./Staff	0.00	(869.64)	938.06	68.42	134,134.07	134,134.07	87,107.12	47,026.95	0.00	
2100	Contractual Services	0.00	(28,860.88)	28,702.12	(158.76)	37,500.00	37,500.00	85,202.75	(47,702.75)	0.00	
3000	Train/Fellowship/Study	0.00	0.00	0.00	0.00	7,934.70	7,934.70	2,934.70	5,000.00	0.00	
5100	Other Direct Costs	0.00	0.00	(407.02)	(407.02)	15,347.56	15,347.56	14,246.98	1,100.58	0.00	
9300	Support Cost IDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27,955.44	
120335-1-01-04	Total	0.00	(36,830.94)	36,424.05	(406.89)	280,024.28	280,024.28	279,556.64	467.64	27,955.44	
120335	Total	(5,762.80)	(230,913.57)	224,191.46	(6,722.11)	2,000,000.00	2,000,000.00	1,989,493.21	10,506.79	203,726.56	
200002851	USD Total	(5,762.80)	(230,913.57)	224,191.46	(6,722.11)	2,000,000.00	2,000,000.00	1,989,493.21	10,506.79	203,726.56	

* Does not include Unapproved Obligations
The above statement has been certified electronically by the designated officials in UNIDO's Financial Services.

IX. Work Plan and Budget

1. Please provide **an updated project work plan and budget** for the remaining duration of the project, as per last approved project extension. Please expand/modify the table as needed.

Please fill in the below table or make a reference to a file, in case it is submitted as an annex to the report.¹¹

Outputs by Project Component	Year 2023			GEF Grant Budget Available (US\$)
	Q1	Q2	Q3	10,506.79
Component 1 – Strengthening the policy and regulatory framework for renewable energy and its enforcement.				
Outcome 1: A renewable energy policy and regulatory framework in place, supporting a vibrant renewable energy sector with enhanced private sector confidence and participation in renewable energy generation.				
Output 1.1: Renewable energy policy and regulatory framework enforced	☒	☒	☒	728.89
Output 1.2: Institutional capacity developed for the formulation and implementation of policy and regulations for promotion of biomass and small hydro projects for rural electrification and productive applications through private sector participation.	☒	☒	☒	
Component 2 – Developing mechanisms to promote and sustain private sector investments in renewable energy generation.				
Outcome 2.1: Enhanced public - private partnerships investments and stakeholders' acceptance of viability of SHP based mini-grid projects 2.2: National institutions and key private sector market players have the financial and technical capacities, tools and support base needed to effectively promote and sustain a renewable energy market are developed.				
Output 2.1: Guidelines, best practices, investment incentives, standardized PPAs, tariffs, pricing mechanisms, risk management instruments and viable renewable energy generation business models developed and put in place	☒	☒	☒	8,141.13
Output 2.2: Training programmes implemented to strengthen the capacity of local banks and institutions in project finance and risk management instruments for renewable energy projects	☒	☒	☒	
Output 2.3: Renewable energy investment fora held to sensitize investors and promote investor confidence	☒	☒	☒	
Output 2.4: Targeted technical capacity developed for the design, operation and maintenance of integrated renewable energy systems	☒	☒	☒	
Output 2.5: An investment guide/toolkit on renewable energy investment potential in Cameroon published to support investors and project developers.	☒	☒	☒	
Output 2.6: Special window for renewable energy under CREF established and operational	☒	☒	☒	
Component 3 – Demonstration of the technical and commercial viability of integrated renewable energy mini grids.				
Outcome 3.1: Renewable energy mini grids are replicated and become an integral part of Cameroon's electrification program 3.2: Installed capacity of renewable energy systems increased.				
Output 3.1: Four integrated electricity mini grids of a combined capacity of up to 2.825 MW and optimizing local renewable energy resources installed and operated to demonstrate the technical and commercial viability of renewable energy systems.	☒	☒	☒	1,169.13
Output 3.2: Existing and new productive uses identified and value chains promoted for renewable energy utilization.	☒	☒	☒	
Component 4 – Project Management and M&E				
Outcome 4.1: Project deliverables are tracked and achieved				467.64

¹¹ Besides this table, please also refer to the annexed work plan for the reporting period.

Output 4.1: Demonstration projects monitored throughout project cycle and	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Outcome 4.2: Project deliverables are tracked and achieved			
Output 4.2: Lessons learned are disseminated nationwide to relevant stakeholders to benefit further	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

X. Synergies

1. Synergies achieved:

Several discussions have been held with other projects, such as the HYPOSO Project, funded by the European Union and the Plan VER program (Decentralized production of Electricity and Valorisation of Rural Electrification for Agriculture and Rural Development in Cameroon), and the Climate Finance Unit of the World Bank, Central Africa Office with the aim of sharing the projects' insights and knowledge. Furthermore, UNIDO has also collaborated with the alliance for Rural Electrification (ARE) under the CORE initiative, engaging with the private sector and increasing awareness on the productive uses of renewable energy in Cameroon. There are expectations to strengthen the ongoing collaboration with CORE in the future.

3. Stories to be shared (Optional)

NA

GEO LOCATION INFORMATION

The Location Name, Latitude and Longitude are required fields insofar as an Agency chooses to enter a project location under the set format. The Geo Name ID is required in instances where the location is not exact, such as in the case of a city, as opposed to the exact site of a physical infrastructure. The Location & Activity Description fields are optional. Project longitude and latitude must follow the Decimal Degrees WGS84 format and Agencies are encouraged to use at least four decimal points for greater accuracy. Users may add as many locations as appropriate. Web mapping applications such as [OpenStreetMap](#) or [GeoNames](#) use this format. Consider using a conversion tool as needed, such as: <https://coordinates-converter.com> Please see the Geocoding User Guide by clicking [here](#)

Location Name	Latitude	Longitude	Geo Name ID	Location and Activity Description
Foyemtcha Chefferie	5.194333 N	10.102250 E		Biogas from palm oil residues, palm oil and palm kernel oil production
Essekou Centre	5.210417 N	9.913139 E		Electricity from palm kernel shell gasification, palm kernel oil production

Please provide any further geo-referenced information and map where the project interventions is taking place as appropriate.

