



Project Implementation Report

(1 July 2021 – 30 June 2022)

Project Title:	Strengthening of national capacities for the development of solar photovoltaic (PV) in Cuba
GEF ID:	9473
UNIDO ID:	160046
GEF Replenishment Cycle:	GEF- 6
Country(ies):	Cuba
Region:	LAC – Latin America and Caribbean
GEF Focal Area:	Climate Change Mitigation (CCM)
Integrated Approach Pilot (IAP) Programs¹:	Not applicable
Stand-alone / Child Project:	Not applicable
Implementing Department/Division:	ENE – Energy Systems and Infrastructure
Co-Implementing Agency:	Not applicable
Executing Agency(ies):	Electrical Union of Cuba (UNE – Unión Eléctrica de Cuba)
Project Type:	Medium-Sized Project (MSP)
Project Duration:	36
Extension(s):	1
GEF Project Financing:	811,050
Agency Fee:	77,050
Co-financing Amount:	4,880,000
Date of CEO Endorsement/Approval:	03-07-18
UNIDO Approval Date:	05-22-18
Actual Implementation Start:	07-08-18
Cumulative disbursement as of 30 June 2022:	554,834
Mid-term Review (MTR) Date:	Not applicable
Original Project Completion Date:	7/31/2021 <i>Insert the indicated project completion date as per CEO Approval / Endorsement document.</i>
Project Completion Date as reported in FY21:	2/12/2022 <i>Insert the project completion date as reported in the previous PIR for Fiscal Year 2021 (FY21)</i>

¹ Only for GEF-6 projects, if applicable

Current SAP Completion Date:	12/31/2022 <i>Insert the project completion date as currently seen in the system</i>
Expected Project Completion Date:	12/31/2022 <i>If the date is the same as above, please confirm; if you plan to extend the project completion date, please indicate here and elaborate further under section III.2</i>
Expected Terminal Evaluation (TE) Date:	1/12/2021 <i>Insert expected/actual date of TE submission to the GEF</i>
Expected Financial Closure Date:	12/31/2022 <i>Insert a date <u>no later than</u> 12 months after the TE submission date</i>
UNIDO Project Manager²:	Marco MATTEINI

I. Brief description of project and status overview

Project Objective
The project aims to reduce GHG emissions by enhancing the capacity, skills, and knowledge of relevant actors to successfully implement solar photovoltaic (PV) investments. The objective is to increase the use of local renewable energy sources in order to decrease the dependence on imported fossil fuels.

Baseline
<p>In recent years, the Cuban Government has given great importance to the development and exploitation of RE resources, where solar energy is confirmed as the preferred development industry that will be combined with other sources of RE.</p> <p>Cuba produces 96% of its electrical energy with the use of fossil fuels. The Cuban electricity generation system is characterized by a high dependence on imports, with high generation costs and a technological infrastructure with high greenhouse gas emissions. For this reason, the Council of Ministers, on June 21, 2014, approved the Policy for the Perspective Development of Renewable Sources and the Efficient Use of Energy, aimed at making the most of the renewable resources available in the country. The policy foresees the intensive introduction of low-emission technologies with the aim of generating 24% of its electrical energy from renewable energy sources (FRE) by 2030.</p> <p>As a consequence of the RE & EE Policy, UNE has prepared a detailed plan for the different energy technologies including identified macro or micro-locations for installation, capacities and pre-feasibilities. Site identification, stakeholder consultations and construction approval is completed by the Physical Planning Institute for all 191 PV sites and the approval documents for each site are already with UNE and the properties are also transferred to UNE. Some 71 projects are already into concrete planning or under implementation.</p> <p>As baseline at the beginning of the project, 22 parks for wind and PV were distributed on the island. 37 MW of PV were installed in 2016, another 87 MW were synchronized in 2017, and 124 MW of PV capacity in different parks were under preparation.</p> <p>To achieve the intended increase in solar PV generation, currently 3199 MW are programmed to be implemented by UNE as solar farms investments, 86% of them with direct foreign investments and private sector initiatives. The new project achievement consist in the strengthening of national capacities for developing more than 3000 MW in solar photovoltaic (PV) in Cuba until 2030 instead of 700 MW projected</p>

² Person responsible for report content

as power. Also, UNE develops 5 international cooperation projects of electrification in rural country regions with isolated photovoltaic systems.

The country has one solar panel manufacturing plant called Empresa de Componentes Electrónicos Ernesto Che Guevara to produce 150 and 250 W photovoltaic panels; located in Pinar del Río Province and with an annual production capacity of 15 MW. In 2018, the panel size was increased to 260 W. Nowadays the manufacturing plant can produce 380 W photovoltaic panels. It is foreseen that private generators could be granted rights to feed electricity back to the grid. This could include Cuban public and private sector entities, such as agricultural cooperatives, or building owners with large roof surfaces.

Please refer to the explanatory note at the end of the document and select corresponding ratings for the current reporting period, i.e. FY22. Please also provide a short justification for the selected ratings for FY22.

In view of the GEF Secretariat's intent to start following the ability of projects to adopt the concept of adaptive management³, 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. FY21, in the last column.

Overall Ratings ⁴	FY22	FY21
Global Environmental Objectives (GEOs) / Development Objectives (DOs) Rating	<i>Moderately Satisfactory (MS)</i>	<i>Moderately Satisfactory (MS)</i>
Implementation Progress (IP) Rating	<i>Moderately Satisfactory (MS)</i>	<i>Moderately Unsatisfactory (MU)</i>
Overall Risk Rating	<i>Moderate Risk (M)</i>	<i>Moderate Risk (M)</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.

Please fill in the below table or make a reference to any supporting documents that may be submitted as annexes to this report.

Project Strategy	KPIs/Indicators	Baseline	Target level	Progress in FY22
Component 1 – BUILDING OF CAPACITY AND DELIVERY SKILLS FOR SOLAR PV INVESTMENTS				
Outcome 1: Outcome 1: Capacity of national entities for development, financing, implementation, and operation of large scale RE investments (in particular PV) improved.				
Output 1.1: Competence Unit definition and job task analysis concerning the technical, financial and project management	Documentation package (report including annexes) available after 6	0	The Competence Unit is defined and submitted to UNE for validation Job	During the reporting period, the consulting firm Low Carbon has successfully delivered an assessment on skills and practices relevant to solar PV systems in Cuba. This assessment includes a survey throughout the UNE to identify

³ 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

⁴ 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

Project Strategy	KPIs/Indicators	Baseline	Target level	Progress in FY22
capacities within key entities, including UNE, INEL, EDIFRE amongst others, as they relate to solar PV investments.	months of project implementation		Task Analysis completed	potential knowledge and competencies gaps within its staff for further improvement. Moreover, Low Carbon was also tasked with the identification of PV software suitable for UNE to use – regarding project design, management, operation, etc.
Output 1.2: Design, development and establishment of comprehensive training programs for each specific target group at the UNE Training Center to enhance required capacities in close collaboration with other local institutions and ongoing investment activities.	Documentation package (report including annexes) of 3 trainings designed, developed and established available at end of year 1 of project implementation	0 Curriculum 0 training materials 0 tools 0 trainers have received specific training to be a trainer on PV	3 Curricula 3 packs of gender-sensitive training materials (script, presentation, examples) 10 trainers have received specific training to be a trainer on PV (at least 40% female trainers)	In FY2022 the following trainings/curricula were developed by the Research Center for Energy Resources and Consumption (CIRCE) of Spain in close consultation with UNE and UNIDO technical and management teams: 1. Training on Operations of Electric Power Systems The training was delivered by CIRCE <u>in Havana in June 2022</u> 2. Training on Operations of Electric Power Systems in Control Center of Operations of Power Plants of Renewable Energy Sources (COFRE) The training was delivered by CIRCE <u>in Havana in July 2022</u> 3. Management of investment projects in Solar Photovoltaic The training was delivered by CIRCE <u>in Havana in June 2022</u> 4. Evaluation of solar PV Project Feasibility Studies The training was delivered by CIRCE <u>in Havana in June 2022</u> . In partnership with Kyushu Electric Power Co, Inc. from Japan the following training was developed : 5. Training on design, implementation, maintenance and operations of battery energy storage system for frequency regulation. The training was delivered by Kyushu Electric Power Co <u>in Japan in June 2022</u> A total of 130 Cuban solar PV specialists were trained and certified by CIRCE and Kyushu Electric Power Co. Despite the project efforts to ensure gender balance, due to the specific roles and functions of UNE and INEL staff and other Cuban solar PV practitioners required to attend the trainings, women participation was so far 20% . UNE expects to use 10 of the certified trainees as trainers for replicating training delivery for September 2022. Work started to develop the curriculum of a training on Solar Photovoltaic and Renewable Micro-Grids. Delivery is planned for September 2022 and de replication for October/November 2022.
Output 1.3: 120 technicians individuals in 3 target groups received training in development, financing, implementation and maintaining national PV projects.	Number of trainees in 3 different target groups have received adequate training for PV in different stages of project realization by end of year 2 of project implementation	0 trainees have received adequate training for PV in different stages of project realization	120 trainees in 3 different target groups have received adequate training for PV in different stages of project realization (at least 40% female trainees)	Please see Output 1.2 above. As indicated there a total of XX were trained in FY2022. During the remaining project implementation period work to strengthen UNE and INEL institutional capacity and mean to better pursue their PV installation targets and better fulfil their PV systems design, installation, maintenance and operations management functions will include: 1. Delivery of the Solar Photovoltaic and Renewable Micro-Grid training 2. Replication of trainings by UNE trainers

Project Strategy	KPIs/Indicators	Baseline	Target level	Progress in FY22
				<p>UNIDO and UNE will strive to ensure as gender balanced attendance as possible.</p> <p>Few procurements are also planned for the remainder of 2022. Replication trainings are planning for October-November 2022.</p>
Output 1.4: Investments in grid connected PV parks are realized faster and at higher quality and sustainability.	MW of PV have been synchronized to the grid during project implementation period	Planned 130 MW of PV will be synchronized to the grid in the baseline assumption	Additional 2 MW of PV will be synchronized to the grid	Nowadays, 238 MW are installed in PV. Only with IRENA project were installed 5 MW additional, 3 above that 2 MW planned.
Component 2 – SUPPORTIVE ACTIVITIES FOR RE INVESTMENT PROMOTION AND DISSEMINATION.				
Outcome 2: Awareness for the concept and benefits of RE and investments therein (specifically in solar PV) raised.				
Output 2.1: a study of local investment conditions for solar PV technology (importation, basic and detailed engineering, assembly, construction, startup), through a technical analysis of investment laws (n. 327) and foreign investment (118)	Methodology for project investment in solar PV is published	0 There are no domestic guides assessing the specific foreign investment conditions for RE investments	1 knowledge management system for RE investments in place at UNE 1 document is produced and published in English and Spanish	Diagnostic Study completed by Low Carbon includes assessment of investment conditions.
Output 2.2: a study to evaluate i) the constructive dimension of the investments made; ii) the selection criteria for the technologies; and iii) to propose an evaluation and monitoring methodology for future UNE projects	Documentation about knowledge management system for UNE available in year 2	0	1 1 document is produced and revised by UNE	<p>In agreement with UNE it was decided to pursue the achievement of this output and associated learning through the development of trainings complemented by the work under Output 2.6. The following trainings were developed and delivered also towards the attainment of Output 2.2.</p> <p>1. Management of investment projects in Solar Photovoltaic; delivered <u>in Havana in June 2022</u></p> <p>2. Evaluation of PV Project Feasibility Studies; delivered <u>in Havana in June 2022</u></p> <p>These trainings pursued a gender balanced attendance.</p>
Output 2.3: Dissemination campaign for general public implemented	<p>Frequency of systematic gender-sensitive public dissemination activities for the national investments and achievements in the RE sector to the general public</p> <p>Number of the people which increased awareness of adoption the RE in their community</p>	<p>No systematic public dissemination activities for the national investments and achievements in the RE sector.</p> <p>Baseline not established.</p>	<p>5 gender-sensitive public dissemination activities in 5 provinces in which solar PV investment are planned are conducted, each for 50 people.</p> <p>A total of 250 people have increased awareness, whereof at least 40 % women</p>	<p>The scale-model of the renewable energy based grid developed in FY2021 was installed in Q4 2021 in the "Centro de Entrenamiento de la UNE" and since then it is used for general public awareness raising, related to renewable energy. This center provide training services to enterprises from UNE and others companies of the country.</p> <p>A promotional campaign targeted to children and schools was carried out in FY2022 through the dissemination of the short-story book and video "Ciro y el Sol". The video was concluded and will be propagated also on Cuban TV for September 2022. It is estimated that more than 500,000 Cubans, especially kids, will have been reached by the "Ciro y el Sol" campaign.</p> <p>In FY2022 UNE continued the dissemination campaign of brochures and other project visibility material for promoting and raising awareness about solar PV, in the Renewable Energy Fair held in June 2022.</p> <p>It is estimated that 3200 participants and experts of 30 countries of this campaign were sensitized</p>

Project Strategy	KPIs/Indicators	Baseline	Target level	Progress in FY22
				by the project, more of the new stakeholders, especially in the residential and commercial sector. Province specific gender-sensitive dissemination events have been planned by UNE for Q4 2022. . Project team has planning to visit rural communities of Holguin, Camagüey, Ciego de Avilla, Sancti Spíritus y Villa Clara for October and November 2022. .
Output 2.4: international seminar on best practices in renewable energy investment	Number of international seminar organized in Cuba and number of participants in international events abroad on best practices in renewable energy investment by year 3	Currently no international investment specific exchange of RE sector experiences	1 international seminar organized in Cuba and 6 participants in international events abroad on best practices in renewable energy investment (at least 40% female participants)	In FY2022 the project worked with UNE and Ministry of Energy and Mine towards the organization and delivery of the 2 nd Cuba International Renewable Energy Fair from 22-24 June 2022. An international roundtable on Solar Photovoltaic Systems and Investments was organized on 24 June. UNE's technicians will participate in virtual and in-person international seminars during Q3 and Q4 2022.
Output 2.5: Elaboration of dissemination materials (500 brochures) for communication to the general public	Number of brochures distributed Number of brochures downloaded	0 brochures available	500 brochures distributed 1000 downloads from website	The project continued to disseminate material developed in F2021 and some new promotional materials was produced for dissemination at the final workshop for 40 participants.
Output 2.6: Updated and enhanced methodological guides for the Basic Business Units (UEBEs) of the UNE	Number of different technical manuals and guides for the Basic Business Units (UEBEs) updated in year 3	1 technical manual for the Basic Business Units (UEBEs) exists without specific and updated guidance on PV investment project cycle	A revised technical manual and guide for the Basic Business Units (UEBEs) are produced, with specific and updated guidance on PV investment project cycle	In FY2022 UNIDO and UNE started to work with consultants to review the technical manual and guide of the Basic Business Units of UNE. This work is ongoing.
Component 3 – MONITORING AND EVALUATION.				
Outcome 3: Project's progress towards objectives continuously monitored and evaluated				
Output 3.1: Project monitoring and evaluation	Output 3.1: Project monitoring and evaluation	Output 3.1: Project monitoring and evaluation	Output 3.1: Project monitoring and evaluation	A monitoring mission took place in June 2022. The 4 th Project Steering Committee took place on 21 June 2022. Agreements reached for the remaining period of the project were: - Increase of UNE's participation in international events (in person, remote and/or hybrid). - Sensitization of at least 250 people in 5 different provinces. - Identify potential synergies with other solar PV related projects (e.g., Former (Canada) and FRE Local). - PV Software identification and selection for possible purchase for UNE's constant capacity and skillset building. - Training course on solar PV micro-grids to be organized by CIRCE in Zaragoza, Spain.

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 at CEO stage	(i) Risk level FY 21	(i) Risk level FY 22	(i) Mitigation measures	(ii) Progress to-date	New defined risk ⁵
1	Lack of adequate institutional support would affect the success of the Project.	Low	Low	The development, installation and operation & maintenance of solar PV plants demand a certain level of active management. Hence, it will be vital that any existing gaps and needs will be addressed within Component 2 of the project through the strengthening of the in-country knowledge and skill base. That way, management and scaling-up of solar PV should be without major disruptions.	Diagnostic study including an assessment of competencies and capacity building needs was completed and used to complement UNE self-assessments.	<input type="checkbox"/>
2	Limited confidence about the benefits of investment focused capacity building activities would impede the development of further solar PV projects and private investment.	Low	Low	The planned capacity building activities will be developed in close cooperation with relevant stakeholders to assure buy-in and commitment. Close cooperation with national training centers is intended to assure activities can be institutionally anchored and continued after project execution	The project has maintained close communication and collaboration with UNE and INEL to advise them on capacity building activities.	<input type="checkbox"/>
3	No immediate demand of services for trained experts	Low	Low	In particular for the government agencies the risk is low, but since the training is institutionalized in the own training centre of UNE, the retraining of new and additional staff is not a problem.	Renewable energy and PV remain a near/medium/ long-term top priority in the energy security agenda of the Cuban Government. The availability of more competent and skilled workforce for PV project and systems will certainly be levered.	<input type="checkbox"/>
4	Trainings will be using tools, equipment and software that are not practical or available for everyday use to the trained teams.	Low	Low	With the help of the project and during preparation of the training programme (job-task-analysis) wishes by staff and trainers for tools, software and other equipment will be evaluated carefully. After thorough assessment the project will invest in special equipment required for design, engineering, management and maintenance of PV power plants, and to be used by the trained staff after the project.	The project team (and some project contractors with specialized knowledge) has closely collaborated and advised with UNE and INEL colleagues on all decisions made related to tools, equipment and software to procure, and it will continue to do so until the projects operational closure.	<input type="checkbox"/>
5	Very few women are involved in the project, so that the project serves to reinforce the gender gap rather than reduce it	Low	Low	As the project equally targets both men and women, social risks are expected to be low. In addition, an Environmental and Social Management Plan (ESMP) has been developed as a further mitigation measure.	The project has ensured that gender mainstreaming and equality themes are taken in due account during activities planning. The ESMP is regularly monitored.	<input type="checkbox"/>

⁵ New risk added in reporting period. Check only if applicable.

	(i) Risks at CEO stage	(i) Risk level FY 21	(i) Risk level FY 22	(i) Mitigation measures	(ii) Progress to-date	New defined risk ⁵
6	Vulnerability to climate events.	Medium		As the majority of project activities will be centered on capacity building, they are unlikely to be impacted by climate change. Further, the capacity building will among many things target especially the potential risks of hurricanes and other climate change induced disasters and mitigation measures in terms of siting, design, engineering and operation of the RE power plants. The solar PV investments that are to be promoted via these activities are also not expected to be directly impacted. Cuba has incorporated disaster risk reduction to its governmental structures through a civil defence system with national and supra-institutional scope and a structure according to the political-administrative division of the country. Hence, in the case of natural disasters, preventive measures should come into force. Environmental aspects are considered as part of the due diligence carried out for the investments being made.	The project is and will be following Cuba's disaster risk reduction guidance and procedures when and as applicable.	

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.

N/A

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

The COVID-19 pandemic continued also in FY2022 to pose challenges to the project due to its substantial trainings activities. Nevertheless the project succeeded to organize a number of trainings: three in person trainings were held in Havana in June (one more in early July); in June also a training and study tour were held in Fukuoka and Tokyo, Japan; and one more training and study tour is planned for September to Zaragoza, Spain. Training preparation required in general more staff time than what use to be and travel costs for trainers or Cuban delegates were significantly higher than pre-Covid time.

Travel restrictions continued to pose constraints to the work of project consultants. While work could be performed also remotely, the pace was slower and it required significant more time, also because the ICT situation in Cuba regarding connection and security issues remains unstable and not always predictable.

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

No further extension of the project is envisaged.

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

N/A

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	Waste management	The project will consider the sustainable management of waste and used materials	Logs of the monitored results
	Expansion in land use	Monitoring of agricultural activities and productivity as well as livestock	Feasibility studies and monitoring logs
	Increased transportation, GHG emissions and local air quality	Monitoring of transport distance to minimize the carbon footprint caused by the transportation of materials	Logs of fuel use by transport vehicle
	Emissions to soil and groundwater	Adequate storage of materials	Logs of the monitored results
(ii) New risks identified during project implementation (if not applicable, please insert 'NA' in each box)	N/A	N/A	N/A

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 project has continued to work closely with its Cuban executing partners and beneficiaries: Union Eléctrica, (UNE), Empresa de Ingeniería de Proyectos, (INEL), Empresa Ejecutora de Fuentes Renovables de Energía (EMFRE) previously Hidroenergía. During the reporting period of FY2022, collaboration went smoothly, with the UNIDO team and UNE jointly working on development of terms of reference, consulting on adjustments to work plans, reviewing deliverables of international and national service providers, and Project Steering Committee meetings.

The project team has held regular meetings and dialogue also with project counterparts such as the Ministry of Energy and Mines (MINEM), Ministry of Foreign Trade and Investments (MINCEX) and GEF OFF office.

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

N/A

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

- 1) Agenda of PV event during the Renewable Energy Fair 22-24 June 2022
- 2) Low Carbon's Diagnostic

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),.

The project continues to make efforts to mainstream the gender dimension through:

- Promotion of women's participation in training activities, both at managerial and technical levels.
- Gender-sensitive recruitment.
- Consideration of gender dimensions in all decision-making processes
- Collection and inclusion of sex-disaggregated data and indicators wherever possible.
- Gender balanced participation, to the extent feasible, of men and women in training courses, workshops, and certifications.

Aligned with the UNE gender guidelines, a target of at least 40 percent of women involved in work related to the projects has been pursued for trainings carried out as well as for those planned for Q3 and Q4 of 2022.

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.

Knowledge products so far generated by the project are retained and administered according with UNE's practices and policies.

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

No mechanism or tool has been generated.

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.

During the reporting period, the project made good implementation progress overall.

Component 1 - Building of capacity and delivery skills for solar PV investments

During the reporting period, the consulting firm Low Carbon has successfully delivered an assessment on skills and practices relevant to solar PV systems in Cuba. This assessment includes a survey throughout the UNE to identify potential knowledge and competencies gaps within its staff for further improvement.

Moreover, Low Carbon was also tasked with the identification of PV software suitable for UNE to use – regarding project design, management, operation, etc.

The following trainings/curricula were developed by the Research Center for Energy Resources and Consumption (CIRCE) of Spain in close consultation with UNE and UNIDO technical and management teams:

1. Training on Operations of Electric Power Systems

The training was delivered by CIRCE in Havana in June 2022

2. Training on Operations of Electric Power Systems in Control Center of Operations of Power Plants of Renewable Energy Sources (COFRE)

The training was delivered by CIRCE in Havana in July 2022

3. Management of investment projects in Solar Photovoltaic

The training was delivered by CIRCE in Havana in June 2022

4. Evaluation of solar PV Project Feasibility Studies

The training was delivered by CIRCE in Havana in June 2022.

In partnership with Kyushu Electric Power Co, Inc. from Japan the following training was developed :

5. Training on design, implementation, maintenance and operations of battery energy storage system for frequency regulation.

The training was delivered by Kyushu Electric Power Co in Japan in June 2022

A total of 130 Cuban solar PV specialists were trained and certified by CIRCE and Kyushu Electric Power Co. Despite the project efforts to ensure gender balance, due to the specific roles and functions of UNE and INEL staff and other Cuban solar PV practitioners required to attend the trainings, women participation was so far 20%. UNE expects to use 10 of the certified trainees as trainers for replicating training delivery.

Work started to develop the curriculum of a training on Solar Photovoltaic and Renewable Micro-Grids. Delivery is planned for September 2022.

During the remaining implementation period, the project will work towards strengthening UNE and INEL institutional capacity and means to better pursue their PV installation targets and better fulfil their PV systems design, installation, maintenance and operations management functions will include:

1. Delivery of the Solar Photovoltaic and Renewable Micro-Grids training

2. Replication of trainings by UNE trainers

UNIDO and UNE will strive to ensure as gender balanced attendance as possible.

Few procurements are also planned for the remainder of 2022.

Finally, UNE is currently reviewing the latest data on installed solar PV systems, both on-grid and off-grid.

Component 2 - Supportive activities for RE investment promotion and dissemination.

The diagnostic study was completed by Low Carbon, it includes an assessment of investment conditions.

In agreement with UNE it was decided to pursue the achievement of the planned activities related to the constructive dimensions of the investments made; selection criteria for technologies and for a monitoring and evaluation methodology for future solar PV projects in UNE. The latter was done through the following trainings⁶:

1. Management of investment projects in Solar Photovoltaic; delivered in Havana in June 2022
2. Evaluation of PV Project Feasibility Studies; delivered in Havana in June 2022

The scale-model of the renewable energy based grid developed in FY2021 was installed in Q4 2021 in the "Centro de Entrenamiento de la UNE" (UNE Training Center) and it is used for general public awareness raising, related to renewable energy. This center provides services of training to enterprises from UNE and other companies in the country.

A promotional campaign targeted to children and schools was carried out in FY2022 through the dissemination of the short-story book and video "Ciro y el Sol". The video was concluded and will be disseminated on Cuban TV for September 2022. It is estimated that more than 500,000 Cubans, especially kids, will have been reached by the "Ciro y el Sol" campaign.

In FY2022 UNE continued the dissemination campaign of brochures and other project visibility material for promoting and raising awareness about solar PV. During the Renewable Energy Fair held in June 2022.

It is estimated that 3200 participants and experts of 30 countries were sensitized by the project, as well as new stakeholders, especially in the residential and commercial sector.

Province specific gender-sensitive dissemination events have been planned by UNE for Q4 2022. Project team has planning to visit rural communities of Holguin, Camagüey, Ciego de Avilla, Sancti Spiritus y Villa Clara for October and November 2022.

2. Please briefly elaborate on any **minor amendments**⁷ 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	NA
<input type="checkbox"/>	Components and Cost	NA

⁶ These trainings pursued a gender balanced attendance.

⁷ 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%.

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

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

UNIDO PROJECT DELIVERY REPORT		Project:	160046 - STRENGTHENING OF NATIONAL CAPACITIES FOR THE DEVELOPMENT OF SOLAR PHOTOVOLTAIC (PV) IN CUBA		Project Manager:	Marco Matteini	Project Validity Status:	30.05.2017 - 31.12.2022 Implement			
Reporting Period:	30.01.2017 - 30.06.2022	Project Theme:	Energy and Environment	Country:	Cuba	Region:	The Americas				
Sponsor Nr.	Sponsor	Grant	Grant Description	Fund	Currency	Grant Status	Grant Validity				
400150	GEF - Global Environment Facility	2000003658	CUBA SOLARPV	GF	USD	Closed	30.05.2017 - 30.05.2018				
400150	GEF - Global Environment Facility	2000003935	CUBA_PHTOVOLTAIC	GF	USD	Authority to implement	08.07.2018 - 31.12.2022				
		Current Year				Cumulative to Date					
	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 Expenditures (j=g+i)
2000003935	Status: Authority to implement										
160046-1-01-01	1.1 Capacity building for PV investment	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
1100	Staff & Intern Consultants	33,946.89	3,289.77	1,611.10	4,900.87	37,500.00	37,500.00	8,453.98	29,046.02	0.00	8,453.98
1500	Local travel	63,000.00	54,400.51	2,037.51	56,438.02	63,000.00	63,000.00	56,438.02	6,561.98	0.00	56,438.02
1700	Nat.Consult./Staff	28,109.26	3,442.80	2,782.53	6,225.13	33,000.00	33,000.00	11,115.87	21,884.13	0.00	11,115.87
2100	Contractual Services	116,088.89	106,593.28	34,283.04	140,876.32	140,000.00	140,000.00	164,787.43	(24,787.43)	0.00	164,787.43
3000	Train/Fellowship/Study	25,000.00	0.00	0.00	0.00	25,000.00	25,000.00	0.00	25,000.00	0.00	0.00
4500	Equipment	20,308.29	(29,327.28)	45,365.32	16,038.04	144,100.00	144,100.00	139,829.75	4,270.25	0.00	139,829.75
5100	Other Direct Costs	4,804.00	641.74	2,620.13	3,261.87	10,750.00	10,750.00	9,207.87	1,542.13	0.00	9,207.87
9300	Support Cost	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37,034.16	37,034.16
160046-1-01-01	Total	291,257.33	139,040.62	88,699.63	227,740.25	453,350.00	453,350.00	389,832.92	63,517.08	37,034.16	426,867.08
160046-1-02-01	2.1 Awareness raising for RE investment	USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
1100	Staff & Intern Consultants	38,223.42	3,289.77	1,611.10	4,900.87	40,000.00	40,000.00	6,677.45	33,322.55	0.00	6,677.45
1500	Local travel	23,000.00	4,558.18	0.00	4,558.18	23,000.00	23,000.00	4,558.18	18,441.82	0.00	4,558.18
1700	Nat.Consult./Staff	25,589.40	3,442.80	2,850.07	6,292.87	31,000.00	31,000.00	11,703.27	19,296.73	0.00	11,703.27
2100	Contractual Services	99,870.98	42,519.00	15,747.97	58,266.97	107,000.00	107,000.00	65,395.99	41,604.01	0.00	65,395.99
3000	Train/Fellowship/Study	45,000.00	0.00	0.00	0.00	45,000.00	45,000.00	0.00	45,000.00	0.00	0.00
5100	Other Direct Costs	7,687.06	11,291.70	30.85	11,322.55	8,000.00	8,000.00	11,635.49	(3,635.49)	0.00	11,635.49
9300	Support Cost	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9,497.21	9,497.21
160046-1-02-01	Total	239,370.86	65,101.25	20,239.99	85,341.24	254,000.00	254,000.00	99,970.38	154,029.62	9,497.21	109,467.59

* Does not include Unapproved Obligations

		PROJECT DELIVERY REPORT		Project:	160046 - STRENGTHENING OF NATIONAL CAPACITIES FOR THE DEVELOPMENT OF SOLAR PHOTOVOLTAIC (PV) IN CUBA	Project Manager:	Marco Matteini	Project Validity Status:	30.05.2017 - 31.12.2022 Implement
Reporting Period:	30.01.2017 - 30.06.2022	Project Theme:	Energy and Environment	Country:	Cuba	Region:	The Americas		
Sponsor Nr.	Sponsor	Grant	Grant Description	Fund	Currency	Grant Status	Grant Validity		
400150	GEF - Global Environment Facility	2000003958	CUBA SOLARPV	GF	USD	Closed	30.05.2017 - 30.05.2018		
400150	GEF - Global Environment Facility	2000003935	CUBA_PHTOVOLTAIC	GF	USD	Authority to implement	08.07.2018 - 31.12.2022		

	Description	Current Year				Cumulative to Date					
		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 Expenditures (j=g+h)
		USD	USD	USD	USD	USD	USD	USD	USD	USD	USD
160046-1-51-01	Project Management										
1100	Staff & Intern Consultants	1,237.27	0.00	0.00	0.00	6,700.00	6,700.00	5,462.73	1,237.27	0.00	5,462.73
1500	Local travel	4,500.00	0.00	0.00	0.00	4,500.00	4,500.00	0.00	4,500.00	0.00	0.00
1700	Nat.Consult./Staff	1,557.89	0.00	0.00	0.00	40,000.00	40,000.00	38,442.11	1,557.89	0.00	38,442.11
4300	Premises	2,675.53	3,231.00	0.00	3,231.00	8,000.00	8,000.00	8,555.47	(555.47)	0.00	8,555.47
4500	Equipment	1,900.00	0.00	0.00	0.00	1,900.00	1,900.00	0.00	1,900.00	0.00	0.00
5100	Other Direct Costs	63.30	0.00	33.77	33.77	12,600.00	12,600.00	12,570.47	29.53	0.00	12,570.47
9300	Support Cost	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6,177.84	6,177.84
160046-1-51-01	Total	11,933.99	3,231.00	33.77	3,264.77	73,700.00	73,700.00	65,030.78	8,669.22	6,177.84	71,208.62
160046-1-53-01	3.1 Monitoring and Evaluation										
1100	Staff & Intern Consultants	20,000.00	0.00	0.00	0.00	20,000.00	20,000.00	0.00	20,000.00	0.00	0.00
1700	Nat.Consult./Staff	5,000.00	0.00	0.00	0.00	5,000.00	5,000.00	0.00	5,000.00	0.00	0.00
3000	Train/Fellowship/Study	5,000.00	0.00	0.00	0.00	5,000.00	5,000.00	0.00	5,000.00	0.00	0.00
160046-1-53-01	Total	30,000.00	0.00	0.00	0.00	30,000.00	30,000.00	0.00	30,000.00	0.00	0.00
2000003935	Total	572,562.18	207,372.87	108,973.39	316,346.26	811,050.00	811,050.00	554,834.08	256,215.92	52,709.21	607,543.29

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.

Outputs by Project Component	2022				GEF Grant Budget Available (US\$)
	Q1	Q2	Q3	Q4	
Component 1 – BUILDING OF CAPACITY AND DELIVERY SKILLS FOR SOLAR PV INVESTMENTS.					
Outcome 1: Capacity of national entities for development, financing, implementation and operation of large scale RE investments (in particular PV) improved.					
Output 1.1: Competence Unit definition and job task analysis concerning the technical, financial and project management capacities within key entities, including UNE, INEL, EDIFRE amongst others, as they relate to solar PV investments.					63,517 USD
Output 1.2: Design, development and establishment of comprehensive training programs for each specific target group at the UNE Training Center to enhance required capacities in close collaboration with other local institutions and ongoing investment activities.					
Output 1.3: 120 technicians individuals in 3 target groups received training in development, financing, implementation and maintaining national PV projects.					
Output 1.4: Investments in grid connected PV parks are realized faster and at higher quality and sustainability.					
Component 2 – SUPPORTIVE ACTIVITIES FOR RE INVESTMENT PROMOTION AND DISSEMINATION.					
Outcome 2: Awareness for the concept and benefits of RE and investments therein (specifically in solar PV) raised.					
Output 2.1: a study of local investment conditions for solar PV technology (importation, basic and detailed engineering, assembly, construction, start-up), through a technical analysis of investment laws (n. 327) and foreign investment (118)					136,646 USD
Output 2.2: a study to evaluate i) the constructive dimension of the investments made; ii) the selection criteria for the technologies; and iii) to propose and evaluation and monitoring methodology for future UNE projects					
Output 2.3: Dissemination campaign for general public implemented					
Output 2.4: international seminar on best practices in renewable energy investment					

Output 2.5: Elaboration of dissemination materials(500 brochures) for communication to the general public					
Output 2.6: Updated and enhanced methodological guides for the Basic Business Units (UEBEs) of the UNE					
Component 3 – MONITORING AND EVALUATION.					
Outcome 3: Project's progress towards objectives continuously monitored and evaluated					
Output 3.1: Project monitoring and evaluation					30,000 USD
Project Management					8,669 USD

X. Synergies

1. Synergies achieved:

In FY2022 the project has continued to engage with colleagues of other UNIDO projects in Cuba in order to identify and whenever possible capture opportunities for possible synergies.

Through UNE the project could build on and benefit from past and ongoing collaborative work carried out by UNE and MINEM with the Japanese International Cooperation Agency and with Spanish International Technical Cooperation.

For the remaining time of the project, UNIDO and UNE will seek engagement and possible synergies with other renewable, SPV and gender projects now operational in Cuba and financed by the European Union and the Canadian government.

3. Stories to be shared (Optional)

N/A

EXPLANATORY NOTE

1. **Timing & duration:** Each report covers a twelve-month period, i.e. 1 July 2021 – 30 June 2022.
2. **Responsibility:** The responsibility for preparing the report lies with the project manager in consultation with the Division Chief and Director.
3. **Evaluation:** For the report to be used effectively as a tool for annual self-evaluation, project counterparts need to be fully involved. The (main) counterpart can provide any additional information considered essential, including a simple rating of project progress.
4. **Results-based management:** The annual project/programme progress reports are required by the RBM programme component focal points to obtain information on outcomes observed.

Global Environmental Objectives (GEOs) / Development Objectives (DOs) ratings	
Highly Satisfactory (HS)	Project is expected to achieve or exceed <u>all</u> its major global environmental objectives, and yield substantial global environmental benefits, without major shortcomings. The project can be presented as “good practice”.
Satisfactory (S)	Project is expected to <u>achieve most</u> of its <u>major</u> global environmental objectives, and yields satisfactory global environmental benefits, with only minor shortcomings.
Moderately Satisfactory (MS)	Project is expected to <u>achieve most</u> of its major <u>relevant</u> objectives but with either significant shortcomings or modes overall relevance. Project is expected not to achieve some of its major global environmental objectives or yield some of the expected global environmental benefits.
Moderately Unsatisfactory (MU)	Project is expected to achieve <u>some</u> of its major global environmental objectives with major shortcomings or is expected to <u>achieve only some</u> of its major global environmental objectives.
Unsatisfactory (U)	Project is expected <u>not</u> to achieve <u>most</u> of its major global environmental objectives or to yield any satisfactory global environmental benefits.
Highly Unsatisfactory (HU)	The project has failed to achieve, and is not expected to achieve, <u>any</u> of its major global environmental objectives with no worthwhile benefits.

Implementation Progress (IP)	
Highly Satisfactory (HS)	Implementation of <u>all</u> components is in substantial compliance with the original/formally revised implementation plan for the project. The project can be presented as “good practice”.
Satisfactory (S)	Implementation of <u>most</u> components is in substantial compliance with the original/formally revised plan except for only few that are subject to remedial action.
Moderately Satisfactory (MS)	Implementation of <u>some</u> components is in substantial compliance with the original/formally revised plan with some components requiring remedial action.
Moderately Unsatisfactory (MU)	Implementation of <u>some</u> components is <u>not</u> in substantial compliance with the original/formally revised plan with most components requiring remedial action.
Unsatisfactory (U)	Implementation of <u>most</u> components is <u>not</u> in substantial compliance with the original/formally revised plan.
Highly Unsatisfactory (HU)	Implementation of <u>none</u> of the components is in substantial compliance with the original/formally revised plan.

Risk ratings	
Risk ratings will assess the overall risk of factors internal or external to the project which may affect implementation or prospects for achieving project objectives. Risk of projects should be rated on the following scale:	
High Risk (H)	There is a probability of greater than 75% that assumptions may fail to hold or materialize, and/or the project may face high risks.
Substantial Risk (S)	There is a probability of between 51% and 75% that assumptions may fail to hold or materialize, and/or the project may face substantial risks.
Moderate Risk (M)	There is a probability of between 26% and 50% that assumptions may fail to hold or materialize, and/or the project may face only moderate risk.
Low Risk (L)	There is a probability of up to 25% that assumptions may fail to hold or materialize, and/or the project may face only low risks.