GEF-6 PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: Medium-sized Project
TYPE OF TRUST FUND:GEF Trust Fund

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PART I: PROJECT INFORMATION

Project Title:	Strengthening of national capacities for the development of solar photovoltaic (PV) in Cuba		
Country(ies):	Cuba	GEF Project ID:[1]	9473
GEF Agency(ies):	UNIDO	GEF Agency Project ID:	160046
Other Executing Partner(s):	Unión Eléctrica de Cuba (UNE)	Submission Date: Re-submission Date:	2016-04-12 2016-11-25
GEF Focal Area(s):	Climate Change	Project Duration (Months)	36
Integrated Approach Pilot	IAP-Cities ☐ IAP-Commodities ☐ IAP-Food Security ☐		Corporate Program: SGP ☐
Name of parent program:	[if applicable]	Agency Fee ($)	77,050

A. INDICATIVE FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES[2]

Objectives/Programs (Focal Areas, Integrated Approach Pilot, Corporate Programs)	**Trust Fund**	**(in $)**	
		GEF Project Financing	**Co-financing**
CCM-1 Program 1	GEFTF	811,050	4,800,000
Total Project Cost		**811,050**	**4,800,000**

B. INDICATIVE PROJECT DESCRIPTION SUMMARY

Project Objective: To reduce GHG emissions by enhancing the capacity, skills and knowledge of relevant actors to successfully implement solar photovoltaic (PV) investments.

Project Components	**Financing Type[3]**	**Project Outcomes**	**Project Outputs**	**Trust Fund**	**(in $)**	
					GEF Project Financing	**Co-financing**
1. Building of capacity and delivery skills for solar PV investments.	TA	1.1 Project management skills, technical know-how, business models and best practices for grid connected solar PV investments enhanced.	1.1.1 Validation and integration of baseline information concerning the technical, financial and project management capacities within key entities, including UNE, Empresa de Ingeniería de Proyectos (INEL), and Empresa Desarrolladora de Inversiones con Fuentes Renovables (EDIFRE) amongst others, as they relate to solar PV investments. 1.1.2 Design, development and implementation of comprehensive training programmes (including train-the-trainer approaches, targeted information) to enhance required capacities in close collaboration with local institutions and ongoing investment activities.	GEFTF	407,350	330,000

[1] Project ID number will be assigned by GEFSEC and to be entered by Agency in subsequent document submissions.
[2] When completing Table A, refer to the excerpts on GEF 6 Results Frameworks for GETF, LDCF and SCCF and CBIT guidelines.
[3] Financing type can be either investment or technical assistance.

			1.1.3 Strengthening of national capacities and streamlining of approaches to carry out feasibility assessments and implement projects.			
	Inv		1.1.4 Operationalization of the envisaged solar investments (at least 2 MW).		0	4,000,000
2. Supportive activities for RE investment promotion and dissemination.	TA	2.1 Awareness for the concept and benefits of RE and investments therein, (specifically in solar PV) raised.	2.1.1Assessment of regulatory framework conditions for admission of foreign capital for RE projects and development of targeted recommendations to facilitate such investments. 2.1.2 Compilation of operational experience and best practices from the solar PV investments. 2.1.3 Scoping and design of a technical assistance mechanism to coordinate incoming future, international RE investments and facilitate their successful execution. 2.1.4 Preparation of a communication and dissemination plan to interact with the general public on the topic of renewable energy (investments). 2.1.5 Carrying out of promotional activities including seminars, dissemination events, and preparation of manuals and guidelines.	GEFTF	300,000	320,000
3. Monitoring and evaluation.	TA	3.1 A monitoring and evaluation plan has been prepared and carried out.	3.1.1 Design and approval of a monitoring plan (incl. ESSPP and gender). 3.1.2 Monitoring of project progress on defined indicators and compliance with UNIDO and GEF guidelines. 3.1.3 Carrying out of project progress report(s), including a final evaluation.	GEFTF	30,000	50,000
				Subtotal	737,350	4,700,000
				Project Management Cost (PMC)[4]	GEFTF	73,700	100,000
				Total Project Cost		811.050	4,800,000

[4] For GEF Project Financing up to $2 million, PMC could be up to10% of the subtotal; above $2 million, PMC could be up to 5% of the subtotal. PMC should be charged proportionately to focal areas based on focal area project financing amount in Table D below.

For multi-trust fund projects, provide the total amount of PMC in Table B, and indicate the split of PMC among the different trust funds here: ( )

C. INDICATIVE SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE, IF AVAILABLE

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount ($)
Recipient Government	Union Electrica	In-kind	720,000
Donor Agency	IRENA/ADFD Project Facility, MOFCOM, etc.	Loans	4,000,000
GEF Agency	UNIDO	Grants	50,000
GEF Agency	UNIDO	In-kind	30,000
Total Co-financing			4,800,000

D. INDICATIVE TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES), FOCAL AREA AND THE PROGRAMMING OF FUNDS a)

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	(in $)		
					GEF Project Financing (a)	Agency Fee (b)b)	Total (c)=a+b
UNIDO	GEFTF	Cuba	Climate Change	(select as applicable)	811,050	77,050	888,100
Total GEF Resources					811,050	77,050	888,100

a) Refer to the Fee Policy for GEF Partner Agencies.

E. PROJECT PREPARATION GRANT (PPG)[5]

Is Project Preparation Grant requested? Yes ☒ No ☐ If no, skip item E.

PPG AMOUNT REQUESTED BY AGENCY(IES), TRUST FUND, COUNTRY(IES) AND THE PROGRAMMING OF FUNDS

Project Preparation Grant amount requested: $20,000				PPG Agency Fee: 1,900			
GEF Agency	Trust Fund	Country/ Regional/Global	Focal Area	Programming of Funds	(in $)		
					PPG (a)	Agency Fee[6] (b)	Total c = a + b
UNIDO	GEF TF	Cuba	Climate Change	(select as applicable)	20,000	1,900	21,900
Total PPG Amount					**20,000**	**1,900**	**21,900**

[5] PPG requested amount is determined by the size of the GEF Project Financing (PF) as follows: Up to $50k for PF up to$2m (for MSP); up to $100k for PF up to $3m; $150k for PF up to $6m; $200k for PF up to $10m; and $300k for PF above $10m. On an exceptional basis, PPG amount may differ upon detailed discussion and justification with the GEFSEC.

[6] PPG fee percentage follows the percentage of the Agency fee over the GEF Project Financing amount requested.

F. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS[7]
Provide the expected project targets as appropriate.

Corporate Results	Replenishment Targets	Project Targets
1. Maintain globally significant biodiversity and the ecosystem goods and services that it provides to society	Improved management of landscapes and seascapes covering 300 million hectares	*Hectares*
2. Sustainable land management in production systems (agriculture, rangelands, and forest landscapes)	120 million hectares under sustainable land management	*Hectares*
3. Promotion of collective management of transboundary water systems and implementation of the full range of policy, legal, and institutional reforms and investments contributing to sustainable use and maintenance of ecosystem services	Water-food-ecosystems security and conjunctive management of surface and groundwater in at least 10 freshwater basins;	*Number of freshwater basins*
	20% of globally over-exploited fisheries (by volume) moved to more sustainable levels	*Percent of fisheries, by volume*
4. Support to transformational shifts towards a low-emission and resilient development path	750 million tons of CO_{2e} mitigated (include both direct and indirect)	*0.9 million metric tons*
5. Increase in phase-out, disposal and reduction of releases of POPs, ODS, mercury and other chemicals of global concern	Disposal of 80,000 tons of POPs (PCB, obsolete pesticides)	*metric tons*
	Reduction of 1000 tons of Mercury	*metric tons*
	Phase-out of 303.44 tons of ODP (HCFC)	*ODP tons*
6. Enhance capacity of countries to implement MEAs (multilateral environmental agreements) and mainstream into national and sub-national policy, planning financial and legal frameworks	Development and sectoral planning frameworks integrate measurable targets drawn from the MEAs in at least 10 countries	*Number of Countries:*
	Functional environmental information systems are established to support decision-making in at least 10 countries	*Number of Countries:*

PART II: PROJECT JUSTIFICATION

1. *Project Description.* Briefly describe: 1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed; 2) the baseline scenario or any associated baseline projects, 3) the proposed alternative scenario, GEF focal area[8] strategies, with a brief description of expected outcomes and components of the project, 4) incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, CBIT and co-financing; 5) global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF); and 6) innovation, sustainability and potential for scaling up.

1) The global environmental and/or adaptation problems, root causes and barriers that need to be addressed
According to the Fifth Assessment Report of the International Panel for Climate Change (IPCC AR5), the atmospheric concentrations of carbon dioxide, methane, and nitrous oxide have increased to levels unprecedented in at least the last 800,000 years. Carbon dioxide concentrations have increased by 40% since preindustrial times, primarily from fossil fuel emissions and secondarily from net land use change emissions. These emissions will continue to grow over the next few decades if current climate change mitigation policies and related sustainable development practices are kept up. Cuba is party to the United Nations Framework Convention on Climate Change (UNFCCC) and as such committed to reducing GHG emissions through active mitigation measures such as greater deployment of renewable energy.

[7] Provide those indicator values in this table to the extent applicable to your proposed project. Progress in programming against these targets for the projects per the *Corporate Results Framework* in the *GEF-6 Programming Directions*, will be aggregated and reported during mid-term and at the conclusion of the replenishment period. There is no need to complete this table for climate adaptation projects financed solely through LDCF, SCCF or CBIT.

[8] For biodiversity projects, in addition to explaining the project's consistency with the biodiversity focal area strategy, objectives and programs, please also describe which Aichi Target(s) the project will directly contribute to achieving.

Today, Cuba's electricity is generated principally from low-grade domestic crude oil and oil imports from neighbouring Venezuela. However, like many other Caribbean islands, Cuba has great potential for renewables, including biofuels and biomass from the island's sugar cane production, hydroelectric from its many rivers, wind and photovoltaic solar. In an effort to reduce dependence on imports of expensive fossil fuels for power generation, Cuba has taken the decision to prioritize changing the energy matrix[9]; hence the use and development of renewable energy sources will be up-scaled and, at the same time, efficiency enhanced. Today, RE sources make up about 5% of generation capacity.

Supportive structures to attract and manage the kind of (foreign) investments needed to meet the aforementioned targets have been weak in Cuba. Particularly, grid-connected renewable energy generation plants are still facing a range of barriers, which are briefly described in the table below:

Type of Barrier	Description
1. Regulatory barriers	• Complex regulation and process for admission of foreign capital.
2. Technology barriers and delivery skills	• Limited grid capacity for greater RE uptake. • Qualified professionals and properly trained technicians are scarce, which affects project feasibility assessments, project design options and heightens perceived technical risks.
3. Economic barriers and business models	• Current energy system based on fossil fuel imports. • Potential business models are affected by weak economic drivers, lack of innovation and lack of a documented body of experiences allowing optimization of technology and operation. • Lack of successful showcase projects.
4. Financial barriers	• Limited experience with and lack of coordination of international investments. Project portfolio available but slow to move forward. • Lack of experience and tools to perform technical evaluations of RE projects (in the financial sector). • Complex currency conversion system.
5. Institutional barriers and promotion	• Limited institutional awareness of renewable energy options in general. • Lack of information about available options, best practices, benchmarks and related financing mechanisms and options.

2) The baseline scenario or any associated baseline projects

Baseline scenario

In the 1990's, the Government of Cuba (GoC) initiated efforts to enhance the use of renewable energy. Plans[10] included the use of distributed solar PV, primarily in inaccessible areas with no national grid connection. These systems were installed primarily in offices of family doctors, rural hospitals, social clubs, TV rooms and schools[11]. The focus on rural areas was also supported by recent technical cooperation projects[12]. In line with the

[9] According to "Cuba hacia 100% con energías renovables" by Mr. Conrado Moreno Figueredo, Professor at the Center for Study of Renewable Energy Technologies (CETER), published in Cubasolar. Available at http://www.cubasolar.cu/biblioteca/Energia/Energia62/HTML/articulo02.htm

[10] EcuRed: Enciclopedia cubana. Article "Energía solar en Cuba"

[11] Energía y tú Magazine: #70, April-June 2015.

[12] For example, the project "Clean Energy Technologies for the Rural Areas in Cuba (CleanEnerg-Cuba)" (GEF ID#5149, UNDP), which aims to increase access to bioenergy technology in Cuba by promoting the use of biodiesel and biogas technologies by rural farmers.

political changes that are taking place in the country, these initial efforts have been opened up and expanded to encompass also the use of renewable energy for grid-connected electricity generation; an expansion that will need the support of foreign investments to accomplish the goals that the Government of Cuba (GoC) has set for itself. With limited commercial experience, it is crucial that capacity is built to assure that new RE investments do not enter the country in an unsynchronized fashion but that they are coordinated and managed successfully. Furthermore, the increased capacity at government level will also benefit any future technical cooperation projects, especially those that aim to work closely with the (nascent) private sector.

Baseline projects

In 2012, the first megawatt of grid-connected solar power was installed in Cantarrana (Cienfuegos). Experiences gathered from this have been used as a guideline for consecutive investments. Electricity generation was originally estimated at 1,503,143kWh/year (with a performance factor of 77%), with actual generation during the first year (2013) exceeding this slightly. Following the initial installation, 2013 saw additional 22 MWp in plants going online as outlined below:

Name, Province	MW Power
Cantarrana 1	1
Cantarrana 2	1.6
Villa Clara	0.9
Isla	0.8
Guaímaro	1.6
Guantánamo	2.5
Santiago de Cuba	2.5
Expocuba	1
Guanabo	0.5
Naranjito	0.5
Santa Teresa 2	2
Marmol Isla	1
Pinar 220	3
Cruces	3

This trend is expected to continue. In fact, in November 2014, the Cabinet Council of Cuba approved an energy policy program ('Política para el desarrollo perspectivo de las fuentes renovables y el uso eficiente de la energía'), contributing to the goal of having 24% of electricity generated from renewable energy sources by 2030[13]. The policy programme foresees expenditure of about 3.5 billion USD[14] in the coming years to increase efficiency and the supply of renewable energy to support and develop industry. With regards to solar PV, the GoC aims to install 700MWp in PV parks until 2030[15]. With this installation capacity in place, Cuba expects to

[13] Key-note speech by Mr. Javier Rubén Cid Carbonell, Vice Minister of Energy and Mines, during 3rd session of the FIHAV 2014.
[14] Granma: November 6, 2014. "Abre camino de la actualización"
[15] Cartera de Oportunidades de Inversión Extranjera

produce over 1000 GWh/year, thereby reducing GHG emissions of over 874,000 tons of CO_2. To achieve the intended increase in solar PV generation, foreign investment is becoming increasingly important and the last year has seen a heightened interest in this area.

The International Renewable Energy Agency (IRENA) and the Abu Dhabi Fund for Development (ADFD)[16] have granted financing for solar PV worth 15 million USD as part of the second cycle of the IRENA/ADFD Project Facility –constituting a part of the baseline project. The investment is used to acquire about 97.7% of the import value, with the remaining 339,000 USD supported by central financing to manage the credit interest. The funding provided will go towards the import of mainly raw materials for the manufacture of the cells, inverters, transformers, control boards, etc., in Cuba while working with worldwide leading companies. Hence, better infrastructure and lesser reliance on imports is to be promoted in addition to the generation of more sources of employment and an enhancement of environmental sustainability. Equipment is expected to start to arrive towards the end of 2016 / the beginning of 2017.

The total installed power shall be 10 MW located in different areas as follows:

Name, Province	MW Power
Las Cuevas, Matanzas	3
Venegas, Sancti Spíritus	1
Planta Mecánica, Camagüey	2
Palma Soriano, Santiago de Cuba	4

Another of these investments – also a part of the baseline project – is currently being finalized between the GoC and the Ministry of Commerce of China (MOFCOM)[17]. MOFCOM shall donate 24.59 million USD coupled with a soft loan of 22.95 million USD to cover import value. The funding supports a project, anchored with the UNE, in which a generation capacity of 29 MW shall be installed throughout the country. Project start is expected for the second half of 2017. Moreover, an additional 100MW are currently being negotiated with the Bank of China.

The GoC has acknowledged the role played by foreign investment flows in contributing to the sustainable, economic development of the country and therefore published a "Portfolio of Opportunities for Foreign Investment"[18] to attract foreign investment, taking into account general and sectorial principles. The Law No. 118 "Law of Foreign Investment"[19] further details that such foreign investment can be conceived as a financial resource for the development of activities which are of interest to the country. The portfolio includes the use of renewable energy sources as one of the principal priorities for the country. It is considered essential for achieving the following objectives:

- Modifying the energy matrix of generation and consumption
- Decreasing inefficiencies in the electrical system
- Reducing dependency on fossil fuels
- Contributing to environmental sustainability
- Increasing the competitiveness of the economy as a whole
- Decreasing the high cost of energy delivered to consumers due to fuel prices

To help achieve these targets, several international investments shall need to be made in the near future. Considering the currently limited skill-set available in the country to manage these investments, achieving the targets will be difficult. The project thus aims to bridge the existing gaps in capacity to facilitate a greater and

[16] 24-06-2014 EPFTE 10 MW. Further info under: http://adfd.irena.org/Projectselected.aspx

[17] 09-06-2014 EPFTE 29 MW PSFV

[18] Cartera de Oportunidades de Inversión Extranjera. Further info under: http://www.granma.cu/file/sp/cartera-de-oportunidades-de-inversion-extranjera-23/datos/documentos/Cartera%20de%20Oportunidades%20de%20Inversi%C3%B3n%20Extranjera%202015.pdf

[19] Approved in Extraordinary Session of the National Assembly of the Peoples' Power of March 29th of 2014, and published on April 16th of 2014.

more effective uptake of international investments. These efforts shall also be supported by the Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE), which was inaugurated in October 2015, and should be considered part of the baseline project as it is a critical mechanism for up-scaling national efforts, particularly in the areas of project execution, capacity development, and knowledge and data management, as well as investment and business promotion, within the sustainable energy sector. While Cuba is currently not a formal member of the organization, UNIDO will assure though in-kind co-financing that the country benefits from relevant developments in the region.

3) The proposed alternative scenario, GEF focal area[20] strategies, with a brief description of expected outcomes and components of the project

As described, a range of barriers have been found in place in Cuba at the moment that impede attracting more international investments and executing these effectively to promote a timely development and implementation of renewable energy projects. These barriers extend to the knowledge and technical capacities, the financial and project management know-how, certification, a supportive policy framework and a lack of tested and viable business models. To address these barriers while actively promoting innovation, technology transfer, and supportive policies and strategies as well as demonstrating the viability of solar PV solutions for large-scale electricity generation (especially to potential investors), the proposed project will pursue three components as outlined below. The proposed approach is fully in line with Objective 1 of the GEF-6 Climate Mitigation Strategy, which aims to promote innovation, technology transfer, and supportive policies and strategies, with Programme 1 focusing specifically on the promotion of the timely development, demonstration, and financing of low-carbon technologies and mitigation options.

Component 1 - Building of capacity and delivery skills for solar PV investments. This component is central to the proposed project and aims to target a range of actors from various institutions in order to strengthen capacity and delivery skills necessary for successfully attracting and managing international investments in RE solutions, specifically solar PV. As such project management skills, technical know-how, business models and best practices for grid connected solar PV investments shall be enhanced. An initial mapping and assessment of technical, financial and project management capacities within key entities including UNE, Empresa de Ingeniería de Proyectos (INEL), and Empresa Desarrolladora de Inversiones con Fuentes Renovables (EDIFRE) amongst others, as they relate to such solar PV investments, will be carried out during the PPG phase. This baseline information will then be further validated and integrated during project implementation (output 1.1.1). Based on this analysis, comprehensive training programmes shall be designed, developed and implemented. This shall include training in energy storage technologies, thus facilitating the assessment of such project ideas. Here innovative teaching approaches such as train-the-trainer, web-based formats as well as practical interactions with ongoing international investments shall be explored to enhance required capacities in close collaboration with local institutions and on-going investment activities (output 1.1.2). In addition, a large emphasis will be placed on the strengthening of national capacities as they relate to assessing the feasibility of potential projects as well as on the streamlining of approaches to carry out such feasibility assessments and implement projects (output 1.1.3). Internationally accepted business practice will be promoted in order to facilitate ease of investing. The here outlined capacity building and technical feasibility activities aim to provide additional assurance so that of the currently viable solar PV investment portfolio of 39MW by IRENA/ADFD and MOFCOM, at least 2 MW [21] can be realized and made fully operational (output 1.1.4) during the project period. Moreover, they aim to facilitate that upscaling can take place and likely, additional megawatts successfully come online in future years.

Component 2 - Supportive activities for RE investment promotion and dissemination. This component aims to enhance awareness for and promote the uptake of the concept and benefits of renewable energy and investments therein, specifically in solar PV. Hence, an assessment of the regulatory framework conditions for the admission of foreign capital for renewable energy projects will be undertaken to assure that any existing gaps can be

[20] For biodiversity projects, in addition to explaining the project's consistency with the biodiversity focal area strategy, objectives and programs, please also describe which Aichi Target(s) the project will directly contribute to achieving.

[21] The indicative co-financing of USD 4,000,000 directly relates to the stated 2MW; overall financing for the 38MW is much larger.

identified and appropriate solutions in the form of recommendations proposed (output 2.1.1). Moreover, operational experiences and best practices from the ongoing solar PV investments and the activities undertaken under Component 1 will be compiled and made available for dissemination by the GoC (output 2.1.2), benefitting potential investors as well as any other interested party. The recommendations developed as part of output 2.1.1 shall also be considered in the scoping and design of the technical assistance mechanism to be developed under output 2.1.3. This organizational mechanism is to deliver technical assistance to coordinate future, incoming international RE investments and to enable their successful execution. It is to provide a coordinated approach to inquiries and practices and therefore could become the go-to platform for any party interested in investing or having to manage investment in RE (specifically solar PV) in the country. In this way, it is anticipated that international investors will not only be more easily attracted to Cuba but that national entities will also receive support for the successful execution of related investments – investments that are key to the country reaching its ambitious RE targets and associated GHG mitigation goals. Furthermore, the envisaged mechanism is expected to help enhance the sustainability of the project activities overall. To facilitate upscaling, the preparation of a communication and dissemination plan to interact with the general public on the topic of renewable energy (investments) is foreseen (output 2.1.4). Moreover, targeted promotional activities including seminars, dissemination events, information fairs, etc. will be conducted as well as manuals, guidelines and other relevant types of information materials created (output 2.1.5).

Component 3 - Monitoring and evaluation. Monitoring of project progress is essential for the adequate and timely delivery of results. This project component covers project monitoring and oversight by UNIDO in close coordination with country counterparts and project partners (output 3.1.2), as well as the terminal evaluation of the proposed project (output 3.1.3). A monitoring plan including consideration of ESSPP and gender aspects – both of which will be looked into during the PPG phase – will be established at the onset to assure compliance with UNIDO and GEF guidelines (output 3.1.1).

4) Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing

Baseline investments in Cuba in the field of solar PV currently lack integration into a holistic institutional and capacity building framework that actively supports upscaling of such investments. Taking into account the limited experience in international investments and transactions by national actors, the promotion and uptake of solar PV solutions still faces substantial barriers. Specifically, the lack of experience in management of international financial resources by government institutions, project developers and the nascent banking sector could impede achievement of the proclaimed targets. Therefore, the proposed UNIDO/GEF project aims to actively strengthen the institutional capacities and contribute to the development of an enabling framework that promotes and facilitates upscaling of international investments.

GEF assistance is requested for closing the identified gaps currently impeding the provision of further foreign investments for RE solutions (especially in the area of solar PV) through financing of the proposed project outputs. Support to institutions under this project will focus on mitigating risks that are associated with inefficient management of international financial resources, promoting investor confidence and thus helping to contribute to the GoC achieving its RE targets and GHG remission reduction goals. The project builds upon baseline activities sustained by UNE and by donor agencies such as the IRENA/ADFD Project Facility and MOFCOM in the form of (concessional) loans for solar PV installations; the associated co-financing resources amount to about USD 4,800,000. In order to implement the envisaged activities, a grant contribution of USD 811,050 is requested from the GEFTF. All the programmed activities are deemed fully incremental and eligible for GEF funding.

5) Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF)

The proposed project aims to achieve global greenhouse gas (GHG) emission reductions through enhancing the capacity to successfully execute international investments in RE, specifically solar PV. This is aligned with

national policies pursuing local and national environmental benefits. The project will deliver emission reductions in line with the investments facilitated. That is, since at least 2 MW are to be operationalized during the project period and assuming that plants generate electricity for 1,314 -1,752 hours[22] a year, with a combined margin of 0.841 tCO_2eq/MWh[23], direct GHG emission reductions are expected to amount to between approximately 2,210 - 2,947 tCO_2eq p.a.. Over an economic lifetime of 20 years for the investments made, this translates into avoided GHG emissions of between about 44,200 to 58,900 tCO_2eq by off-setting fossil fuel consumption for energy generation. The associated, indirect GHG emission reductions as a result of induced market transformation effects and taking into consideration that viable, international solar PV investments of 39MW are foreseen in the medium-term, the total emission reductions attributable to the project would amount to between approximately 900,000 and 1,200,000 tCO_2eq. All emission reductions will be evaluated in more detail during the PPG phase based on actual load data.

6) Innovation, sustainability and potential for scaling up

The planned training programmes are deemed to be innovative in the way that they target a problem area that is very specific to the national context. Only through a rapid enhancement of project management, technical and financial management capacities amongst local experts and entities involved with international RE investments can the goal of successfully installing 400MW in PV parks in the mid-term, ideally by 2018, be attainable. Trainings and knowledge sharing initiatives are going to be developed in close collaboration with local educational centers and universities to assure the sustainability and extension of the capacity development activities beyond project completion. The innovativeness of the planned activities shall leverage the required international investments by facilitating (i) the enhancement of institutional capacity and framework conditions to create an environment receptive to foreign investment; (ii) a strong focus on project management skills, standardized approach to feasibility assessments, analysis of investments, including how to attract and evaluate future investments; and (iii) the upgrading of technical capacity of RE project developers. The technical assistance mechanism planned under Component 2 is considered particularly crucial in providing a coordinated and standardized approach by the GoC towards incoming RE investments. It is expected that by streamlining currently existing information, procedures, assessments etc. with international business practice, the attractiveness for and successful uptake of RE investments can be rapidly enhanced, facilitating future government efforts in large scale RE investments as well as assuring that GHG emissions can be reduced significantly in the long term.

2. Stakeholders. Will project design include the participation of relevant stakeholders from civil society organizations (yes ☒ /no☐) and indigenous peoples (yes ☐ /no☒)? If yes, identify key stakeholders and briefly describe how they will be engaged in project preparation.

The project will engage with a broad range of key stakeholders on a national, regional as well as international level. Engagement with indigenous people is, however, specifically not applicable for this project. The main project stakeholders are:

The Ministry of Energy and Mines (MINEM), the creation of which, the GoC approved in November 2012. The ministry is solely responsible for proposing, and once approved, managing and overseeing the policies of the State and Government in the energy, geological and mining sectors of the country.

The Electrical Union of Cuba (Union Eléctrica, UNE), originally founded in 1977, is the national utility responsible for the electricity grid that covers 99% of the country. UNE is the main institution for the production, transmission and distribution of electricity in Cuba, and has been entrusted with the responsibility of signing the power purchase agreements with private power generating units. UNE is the project's executing partner and one of the project's main beneficiaries.

[22] Based on an assumed plant load factor of 15-20%.
[23] IGES List of Grid Emission Factor, November 2015

The Company of Project Engineering (Empresa de Ingeniería de Proyectos, INEL) and the Company for the Development of Investments with Renewable Sources (Empresa Desarrolladora de Inversiones con Fuentes Renovables, EDIFRE) are both engaged with the management of RE investments in Cuba. They constitute the additional, main beneficiaries of the project.

The Ministry for Economy and Planning (MEP) is responsible for evaluating the short-, medium- and long-term energy demand of the country and to allocate the economic resources needed to guarantee energy supply. The MEP also identifies opportunities and potential actions to improve the efficiency of energy use in the country.

The Ministry of Foreign Trade and Investment (MINCEX) is responsible for establishing relations with multilateral agencies, including UNIDO, for the realization of development projects. Within this, the Center for Promotion of Foreign Trade and Investment of Cuba (CEPEC) is one of the major players in the promotion and development of trade and investment in Cuba, according to the strategies established in the country, supporting international market and product trends research, the efficient management of business information, as well as the dissemination and promotion of Cuban companies and their exports of goods and services through strategic alliances and links.

The Ministry for Science, Technology and Environment (CITMA) hosts the GEF Operational Focal Point and also looks after renewable energy development in Cuba. CITMA manages the national R&D programme to support sustainable energy in the country and it is responsible for the coordination and the implementation of actions to mitigate and adapt to climate change at the national level.

International investors / funds such as the International Renewable Energy Agency (IRENA), operating with the Abu Dhabi Fund for Development (ADFD)[24], are envisaged to be attracted to and benefit from the increase in capacity and project planning and management skills promoted by the proposed project. IRENA is an intergovernmental organization that supports countries in their transition to a sustainable energy future, and serves as the principal platform for international co-operation, a center of excellence, and a repository of policy, technology, resource and financial knowledge on renewable energy. The ADFD was established in 1971 as a leading national entity to provide development aid to developing countries in the form of concessionary loans and the administration of grants on behalf of the Abu Dhabi government. IRENA and ADFD are collaborating to offer concessional loans worth USD 350 million over seven annual funding cycles to promising renewable energy projects in developing countries via the IRENA/ADFD Project Facility. These projects are recommended by IRENA to ADFD for final selection. The ADFD loans cover up to 50% of the projects costs and help leverage additional funding. Since 2012, USD 144 million of ADFD loans have already been allocated to 15 renewable energy projects recommended by IRENA, including the solar PV project of 10 MW for Cuba, which was announced in 2015, and whose implementation will be closely aligned with the proposed project.

National and regional academic and research institutions, universities and educational centers are envisaged to be some of the additional beneficiaries of the various capacity building activities that are foreseen and thus shall be consulted during their design. The idea being that the training programs developed can be integrated into the ongoing programmes at the respective institutions for future deployment – in this way assuring the sustainability of the project outputs beyond project completion. Particularly relevant are the Center for Electroenergetic Research and Testing (CIPEL) belonging to the Faculty o and f Electrical Engineering of the Polytechnic Institute "Jose Antonio Echeverria", which was created in 1988 to provide the necessary resources for carrying out research related to the National Electricity System (SEN); the Center for Solar Energy Research (CIES) under the Ministry of Science, Technology and Environment (CITMA), which was created in 1984 to research, produce and commercialize sustainable, integrated technologies, promote knowledge sharing and offer special technical-scientific services – all in relation to the greater uptake of renewable energies (solar PV, wind, solar thermal and solar biotechnology); the Institute of Science and Technology of Materials (IMRE) belonging to the Faculty of Physics at the University of Havana, which was created in 1985 and encompasses a line of work on environmental protection as well as one on the development of sustainable energy; and the Center for Atmospheric Physics belonging to CITMA.

[24] For further info on the IRENA/ADFD Project Facility, please refer to http://adfd.irena.org/facility.aspx

NGOs and social organizations related to environmental aspects and knowledge promotion are particularly relevant for supporting the scale up of the outcomes. Specialized associations with an educational focus shall be engaged to assure that the activities are being targeted to the correct groups.

UNIDO will oversee the implementation of the proposed project. It will be represented by a designated UNIDO staff member in the Project Steering Committee.

3. Gender Equality and Women's Empowerment. Are issues on gender equality and women's empowerment taken into account? (yes ☒ /no☐). If yes, briefly describe how it will be mainstreamed into project preparation (e.g. gender analysis), taking into account the differences, needs, roles and priorities of women and men.

Gender relevant aspects will be paid particular attention in order to assure that the final project design fully accounts for its implications on men and women. That is, the gender relevance of the proposed project will be further assessed and the gender context of the proposed project analyzed. This shall include the identification of the differentiated needs and roles of women and men with respect to the capacitation building interventions of the project. For these purposes, women's groups, associations or stakeholders concerned with gender and energy will be consulted to verify that the final project logical framework is gender mainstreamed.

UNIDO recognizes that gender equality and the empowerment of women have a significant positive impact on sustained economic growth and inclusive industrial development, which are key drivers of poverty alleviation and social progress. In addition to the 'UNIDO Policy on Gender Equality and the Empowerment of Women' (2009), which provides overall guidelines for establishing a gender mainstreaming strategy, UNIDO has also developed an operational energy-gender guide to support gender mainstreaming of its sustainable energy initiatives. All energy interventions are expected to have an impact on people and are, therefore, not gender-neutral20. In fact, due to diverging needs and rights regarding energy consumption and production, women and men are expected to be affected differently by the project (in terms of their rights, needs, roles, opportunities, etc.). Therefore, the project aims to demonstrate good practices in mainstreaming gender aspects into this biogas project, wherever possible, and avoid negative impacts on women or men due to their gender, ethnicity, social status or age. Consequently, gender dimensions will be considered to be included during the whole project cycle. Guiding principle of the project will be to ensure that both women and men are provided equal opportunities to access, participate in, and benefit from the project, without compromising the technical quality of the project results.

In practical terms: (a) gender-sensitive recruitment will be practiced at all levels where possible, especially in selection of project staff. Gender responsive TORs will be used to mainstream gender in the activities and tasks of consultants and experts. In cases where the project does not have direct influence, gender-sensitive recruitment will be encouraged. Furthermore, whenever possible existing staff will be trained and their awareness raised regarding gender issues; (b) all decision-making processes will consider gender dimensions. Also at the level of project activity implementation, efforts will be made to consult with stakeholders focusing on gender equality and women's empowerment issues. This is especially relevant in policy review and formulation as well as for capacity building activities; (c) to the extent possible, efforts will be made to promote participation of women in training activities, both at managerial and technical levels; (d) when data collection or assessments are conducted as part of project implementation, gender dimensions will be considered. This can include sex-disaggregated data collection and performing gender analysis as part of environmental and social management plans.

4 Risks. Indicate risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the project design (table format acceptable).

Risks	**Remedial actions**
Limited confidence about the benefits of investment focused capacity building activities or	The planned capacity building activities will be developed in close cooperation with relevant stakeholders to assure buy-in and commitment. Close cooperation with national universities, associations, training centres, etc. is intended to assure

lack of interest from relevant stakeholders would impede the development of further solar PV projects and private investment. *Likelihood: Medium*	activities can be institutionally anchored and continued after project closure. Hence, lack of interest is considered a manageable risk.
Lack of adequate technology support would affect the success of the Project. *Likelihood: 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 technical disruptions.
The outcomes of the project would be affected by climate change, environmental and social considerations. *Likelihood: Low*	As the majority of project activities will be centered around capacity building, they are unlikely to be impacted by climate change. 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 defense 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. As the project equally targets both men and women, social risks are expected to be low also. In adddition, an Environmental and Social Management Plan (ESMP) will be developed as a further mitigation measure.

5. Coordination. Outline the coordination with other relevant GEF-financed and other initiatives.

The proposed project will build on the experience gained in GEF-funded projects with a regional focus such as, for example, the "Solar and Wind Energy Resource Assessment" (GEF ID# 1281; UNEP) and the "Caribbean Renewable Energy Development Programme" (GEF ID# 840; UNDP). It will also draw on experiences and lessons learnt from more recently completed projects such as the project "Generation and Delivery of Renewable Energy Based Modern Energy Services; the Case of Isla de la Juventud" (GEF ID# 1361; UNEP), in which capacity building measures on a national and local level aimed to create the enabling environment for the implementation of RE solutions. Capacity was further strengthened by the demonstration of various business models supporting renewable energy services.

Furthermore, the proposed project will collaborate closely with ongoing solar PV project investments financed by international donors such as the Ministry of Commerce of China (MOFCOM) and the International Renewable Energy Agency (IRENA), operating with the Abu Dhabi Fund for Development (ADFD), as outlined in previous sections. The anticipated schedule of the various investments foresees implementation, installation and commissioning to be completed within the next two years. As far as feasible, joint activities between these investments and the proposed project will therefore be promoted.

The International Cooperation and Development Office of the European Commission is currently carrying out an experts exchange programme between Cuba and the EU (20 January 2014 - 19 July 2017). This programme aims to support the process of economic renovation in Cuba through peer exchange of experiences, especially among officials of European public administrations and Cuban officials, from which synergies and joint activities will be brought forward during the PPG phase and shall be included in the final project design. Furthermore, the SDG Achievement Fund is supporting a Joint Programme with Cuba for new decentralization initiatives and the stimulation of productive activities in the country. Again, potential opportunities for collaboration between these initiatives and the proposed project shall be further detailed during the PPG phase.

In addition, synergies with UNIDO's focus on actively contributing to the Sustainable Development Goals, particularly (SDG) 9: "Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation", will be explored. The interrelated nature of the SDGs makes it imperative to promote industrialization patterns that are socially inclusive and environmentally sustainable and that reduce pollution and greenhouse gas emissions compared to traditional technologies and practices. Hence the proposed project also aims to contribute to the cross-cutting areas of SDG 7 on Sustainable Energy and SDG 13 to combat climate change and its impacts. Partnerships to achieve these contributions, especially with other UNIDO divisions in-house, will be further assessed during the PPG phase to assure that the objective of the project can be achieved in the most comprehensive manner.

6. Consistency with National Priorities. Is the project consistent with the National strategies and plans or reports and assessements under relevant conventions? (yes ☒ /no☐). If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

The proposed UNIDO/GEF project is consistent with the following national strategies and plans or reports and assessments under relevant conventions:

- First[25] and Second[26] National Communications;
- Guidelines for Economic and Social Policy of the Party and the Revolution[27], specifically guidelines #133 and #247;
- National Program to face Climate Change (National Environment Strategy 2011-2015);
- Technology Needs Assessment - Final Report on Mitigation[28];
- National Technical Scientific Programme entitled "Climate Change in Cuba: Impacts, Adaptation and Mitigation"[29];
- Intended Nationally Determined Contribution (INDC)[30], submitted in November 2015 .

Cuba released its First National Communication (FNC) in 2001, which established each sector's contribution to national emissions. In 1990, the energy sector contributed most of the emissions with 34 647.55 Gg, while in the land use change and forestry sector a net removal of 23 982.67 Gg took place. In 1994, the energy sector (22 259.56 Gg) also made the greatest contribution, while in the land use change and forestry sector there was a net removal of 26 469.6 Gg, a little higher than that of 1990. In the FNC, it was further estimated that if the carbon intensity levels and GDP are considered to be similar to those of 1990 and mitigation measures are not adopted, the gross emissions level would ascend to about 81.3 MMt for the year 2020. With regards to mitigation options, the study highlighted two elements to be taken into consideration: 1) the reduction of emissions as a consequence of the economic crisis, and 2) the relative reduction of emissions as a result of an energy policy that places special emphasis on a greater efficiency and a better use of the national energy sources. While these circumstances do not prevent the identification and design of concrete mitigation options, they constitute an obstacle for the design of a baseline that appropriately reflects the possible future scenarios of greenhouse gas emission, taking into consideration Cuba's fair aspirations to re-establish the standards of living and welfare reached before the present economic situation, and gradually increase them.

Cuba's Second National Communication (SNC), which was released in 2015, reported emissions in six major categories of sources / sinks including energy, industrial processes, solvent and other product use, agriculture, forestry and land use change as well as waste. With the priorities of National Energy Development in the medium- and long-term being closely related to the mitigation of climate change, the SNC also assessed 35 mitigation options, concluding that the estimated mitigation potential, i.e. reference minus mitigation emissions, is in the order of 715 million tons CO_2eq, while in 2050 the reduction is expected to be 40 million tons CO_2eq compared to the reference scenario. Moreover, within the framework of the SNC, the first preliminary assessment of national capacities for

[25] http://unfccc.int/resource/docs/natc/cubnc1.pdf
[26] http://unfccc.int/resource/docs/natc/cubnc2.pdf
[27] http://www.cuba.cu/gobierno/documentos/2011/ing/l160711i.html
[28] http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TNR_CRE/e9067c6e3b97459989b2196f12155ad5/b3a7418981954632a9aaa083597585df.pdf
[29] http://www.ama.cu/images/ficha.pdf
[30] http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Cuba/1/Republic%20of%20Cuba-INDCs-Nov2015.pdf

technology transfer associated with climate change was performed. Energy, water, forest and agricultural sectors were selected since they are part of the main development strategies in Cuba. The assessment identified various common barriers, among them most notably, limited access to sources of financing for new investments and to technology and spare parts providers, high transaction costs, and few incentives favoring resource saving and the implementation of the most appropriate technology.

Many of these barriers were also identified in the Guidelines for Economic and Social Policy of the Party and the Revolution, which were adopted by the Sixth Congress of the Communist Party of Cuba in 201 as part of the process of updating the Cuban economic model. Specifically guidelines 133 and 247 give way to new policies and strategies, including tackling climate change and disaster risk reduction with guideline 133 calling for the prioritization of studies aimed at tackling climate change and sustainable development in the country, while guideline 247 supports the use of various renewable energy sources, primarily biogas, biomass, and solar, wind and hydro. The GoC's reliance on soft-law instruments and mainstreaming of climate change-related provisions into existing environmental legislation to regulate climate change mitigation and adaptation can also be seen in the National Environment Strategy 2011-2015, part of the National Programme to Face Climate Change, which is run by the Ministry of Science, Technology and Environment (CITMA) and constitutes a set of agreements approved in 2007 that focus mainly on adaptation measures.

Furthermore, Technology Needs Assessment (TNAs) focusing on adaptation as well as mitigation have been developed by CITMA via Cubaenergía in 2013. These assessments help provide concrete and relevant responses to climate change mitigation and adaption, aligned with national policies and sustainable development priorities. With regards to mitigation, the report (i) identifies, analysis and prioritizes technology needs that can contribute to the mitigation of GHG emissions, (ii) identifies barriers to the acquisition, deployment and diffusion of relevant technologies, and (iii) develops Technology Action Plans as well as (iv) project ideas. The TNA Final Report – Mitigation established that the largest contribution of GHG emissions comes from the energy sector (71%), followed by agriculture (19%), waste (7%) and industrial processes (3%). As CO_2 emissions from electricity generation are expected to continue to grow – even with greater uptake of renewables – the evaluation of mitigation options in this sub-sector remains highly valid. Electricity generation via grid-connected solar PV is identified as one of the eight technological options to pursue. With 9624 photovoltaic panels totaling 2.5 MWp installed in the country at the time of the report being complied and average daily solar radiation in the country being 5.16 kWh / m2 day, the estimated potential that can installed amounts to 2100 MW. Despite investment costs being high (around $ 4000 / kWe installed according to the IEA in 2010 as cited in the report, the long-term cost savings as well as potential for GHG emission reductions cannot be underestimated. In fact, as investment costs and O & M are compensated with no fuel costs at an annual rate of savings of $ 3.6 million, 261 ktCO_2eq annually can be avoided at a cost of tCO_2eq avoided of - $ 14.

Cuba's recent Intended Nationally Determined Contribution (INDC, submitted in November 2015) highlights the country's overall priority in continually improving the quality of life of the population by growing economically, while preserving the environment and social equality. The INDC identifies actions for adapation and mitigation, among which is the proposal to install 700MW of solar photovoltaic systems. With this installation capacity in place, Cuba expects to produce over 1000 GWh/year, thereby reducing GHG emissions of over 874,000 tons of CO_2e. To achieve this goal, the INDC stresses the imporatance of the support of international cooperation and of the financial mechanisms for climate change technology transfer. At the moment of resubmission of this PIF, Cuba had not ratified the Paris Agreement.

7. Knowledge Management. Outline the knowledge management approach for the project, including, if any, plans for the project to learn from other relevant projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.

Knowledge management is inherent to UNIDO's operating modality by sharing experiences across its interventions worldwide. This has been demonstrated through many high-quality publications, organization of events, webinars, and more. The establishment of and/or support to regional expert centers is one of the key elements to secure technology transfer, strengthen regional and global exchange and for locally building human capital and institutions. Examples are UNIDO's support for National Cleaner Production Centers, the International Centre on Small Hydro

Power (ICSHP) in China, various Centers for Renewable Energy and Energy Efficiency in African regions (ECREEE, EACREEE, SACREEE) and the Caribbean (CCREEE), collaboration in the hosting of the Climate Technology Center and Network (CTCN), and the Biogas Centre in Brazil. Particularly relevant for the proposed project is the International Solar Energy Center for Technology Promotion and Transfer (ISEC) in China, whose main objective is to facilitate the promotion and transfer of solar and other renewable energy technologies. It promotes South-South Cooperation as well as economic and social sustainable development and with its vast experience in hosting training workshops, developing tool books and technical papers can provide valuable support.

The proposed project foresees the development and implementation of various training programmes and capacity building activities specifically for actors involved with solar PV investments. As such a comprehensive knowledge management plan will be designed, which will function as the basis for gathering and distributing all data, information and lessons learnt generated during the implementation of the project. The final aim is to create a community of knowledge around the management of RE investments. As a first step, the plan will foresee a local, regional and international stock-tacking of available and relevant information, paying particular attention to the networks of the stakeholders involved. The plan will also include the development of a knowledge management system (potentially integrated in the proposed technical assistance mechanism); the final format shall be decided taking into consideration the nature of the information gathered, but could constitute a website and associated platform with information accessible by the public as well as direct stakeholders.

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT[31] OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):

(Please attach the Operational Focal Point endorsement letter(s) with this template. For SGP, use this SGP OFP endorsement letter).

NAME	POSITION	MINISTRY	DATE *(MM/dd/yyyy)*
Mr. Enrique Moret Hernández	Director/Cuba, GEF Political and Operational FoPoint	Ministry of Science Technology and Environment (CITMA)	03/04/2016

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies[32] and procedures and meets the GEF criteria for project identification and preparation under GEF-6.

Agency Coordinator, Agency name	Signature	Date *(MM/dd/yyyy)*	Project Contact Person	Telephone	Email
Mr. Philippe R. Scholtès, Managing Director, Programme Development and Technical Cooperation - PTC, UNIDO GEF Focal Point		11/25/2016	Ms. Nina Zetsche, Industrial Development Officer, PTC/ENE/RRE, UNIDO	+43 (1) 26026 3569	n.zetsche@unido.org

[31] For regional and/or global projects in which participating countries are identified, OFP endorsement letters from these countries are required even though there may not be a STAR allocation associated with the project.

[32] GEF policies encompass all managed trust funds, namely: GEFTF, LDCF, SCCF and CBIT

C. ADDITIONAL GEF PROJECT AGENCY CERTIFICATION (APPLICABLE ONLY TO NEWLY ACCREDITED GEF PROJECT AGENCIES)

For newly accredited GEF Project Agencies, please download and fill up the required **GEF Project Agency Certification of Ceiling Information Template** to be attached as an annex to the PIF.