PROJECT IDENTIFICATION FORM (PIF) [1]

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

PART I: PROJECT IDENTIFICATION

Project Title:	Small Decentralized Renewable Energy Power Generation		
Country(ies):	Lebanon	GEF Project ID:[2]	4749
GEF Agency(ies):	UNDP	GEF Agency Project ID:	4695
Other Executing Partner(s):	Ministry of Energy and Water	Submission Date: Re-submission Date: Re-submission Date:	11/30/11 12/22/11 01/09/12
GEF Focal Area (s):	Climate Change	Project Duration (Months)	48
Name of parent program (if applicable): ➢ For SFM/REDD+ ☐		Agency Fee ($):	145,000

A. FOCAL AREA STRATEGY FRAMEWORK[3]:

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Indicative Grant Amount ($)	Indicative Co-financing ($)
CCM-3 (select)	Favorable policy and regulatory environment created for renewable energy investments	Renewable energy policy and regulation in place	GEFTF	477,500	1,427,500
CCM-3 (select)	Investment in renewable energy technologies increased	Renewable energy capacity installed	GEFTF	900,000	7,800,000
		Sub-Total		1,377,500	9,227,500
		Project Management Cost[4]	GEFTF	**72,500**	**497,500**
		Total Project Cost		1,450,000	9,725,000

B. PROJECT FRAMEWORK

Project Objective: Removal of barriers to widespread application of decentralized renewable energy-based power generation in Lebanon

Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Indicative Grant Amount ($)	Indicative Cofinancing ($)
Financing for decentralised RE power generation	Inv	Investments in decentralized renewable energy (RE) power generation increased	1.1 Approved and operational financing scheme tailored to support small, decentralized RE investments by building on the already-operational National Energy Efficiency and Renewable Energy Account (NEEREA), with completed implementation of selected pilot and demonstration projects on grid-connected PV power generation applications 1.2 Established complementary	GEFTF	900,000	7,800,000

[1] It is very important to consult the PIF preparation guidelines when completing this template.
[2] Project ID number will be assigned by GEFSEC.
[3] Refer to the reference attached on the Focal Area Results Framework when filling up the table in item A.
[4] GEF will finance management cost that is solely linked to GEF financing of the project. PMC should be charged proportionately to focal areas based on focal area project grant amount.

			support scheme to decentralized RE that is offered through climate finance (NAMAs, voluntary carbon market) and other sources			
Establish-ment of an enabling policy framework	TA	An enforced supportive policy and regulatory environment for attracting investments for privately owned, grid-connected power generation by RE sources	2.1 Completed analysis of possible technical constraints associated with connecting new decentralized RE power generation units onto the grid 2.2 Finalized grid code to serve as one of the implementation decrees of the laws regulating the activities of private RE power producers 2.3 Adopted final legal and regulatory package to facilitate net-metering and the sale of electricity to the grid by private RE power producers 2.4 Enhanced knowledge of the cost efficiency of different RE and EE measures at the macroeconomic and final consumer level 2.5 Amended construction and building management norms to promote increased application of different solar energy technologies in buildings' energy supply	GEFTF	302,000	648,750
Market monitoring and quality control	TA	Monitoring and quality control for RE-based decentralized power generation established and operational	3.1 Completed public awareness-raising campaigns, seminars and published and disseminated stakeholder group-specific technical guides, handbooks and other related training materials on the design, evaluation, financing, installation, operation and maintenance of the targeted RE technologies 3.2 Adopted and operational quality control scheme with related market surveillance and enforcement mechanisms for both the targeted RE products and installations 3.3 Completed complementary training and other capacity development programmes for professional groups that are directly affected by the proposed quality control schemes 3.4 Agreed methodology and institutional arrangements for market monitoring	GEFTF	175,500	778,750

			3.5 Annual market monitoring reports on the installed capacity and electricity produced by renewable energy and the institutional and financial arrangements in place to continue the market monitoring after the project 3.6 Regularly updated project website and interactive online training tool that can continue to operate after the project			
				Sub-Total		1,377,500	9,227,500
				Project Management Cost[5]	GEFTF	72,500	497,500
				Total Project Costs		1,450,000	9,725,000

C. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME IF AVAILABLE, ($)

Sources of Cofinancing	Name of Cofinancier	Type of Cofinancing	Amount ($)
National Government	Central Bank of Lebanon	Soft Loan	5,000,000
National Government	Ministry of Energy and Water	Grant	100,000
National Government	Ministry of Energy and Water	In-kind	500,000
Bilateral Aid Agency (ies)	Lebanon Recovery Fund	Grant	4,000,000
GEF Agency	UNDP	Grant	125,000
Total Cofinancing			9,725,000

D. GEF/LDCF/SCCF/NPIF RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY[1]:

[1] In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table

[2] Please indicate fees related to this project.

N/A

PART II: PROJECT JUSTIFICATION

A. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

A.1.1 the GEF focal area/LDCF/SCCF strategies /NPIF Initiative:

In accordance with Objective 3 of the GEF Climate Change Focal Area Strategy for GEF-5, the project will promote investments in renewable energy. It combines technical assistance for creating an enabling policy environment and sustainable renewable energy services with support for developing and expanding the use of the financing mechanisms for the promotion of small, decentralized RE applications.

The technology focus will be on building integrated PV systems. However, other small scale, decentralized RE power generation technologies such as wind, hydro and biogas will not be entirely excluded from the project scope of support should these options present more feasible options in some locations and among some customer groups.

[5] Same as footnote #3.

A.1.2. For projects funded from LDCF/SCCF: the LDCF/SCCF eligibility criteria and priorities:

N/A

A.1.3 For projects funded from NPIF, relevant eligibility criteria and priorities of the Fund:

N/A

A.2. national strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NAPAS, NAPs, NBSAPs, national communications, TNAs, NIPs, PRSPs, NPFE, etc.:

The proposed project is in line with the measures elaborated in the Policy Paper for Electricity Sector Development in Lebanon that was released by the Ministry of Energy and Water (MEW) in June 2010. This Policy Paper represents a hitherto unprecedented effort in Lebanon to present a well elaborated strategy and implementation programme to address the current power sector problems in Lebanon with concrete and quantified targets to be achieved in the short, medium and long term. The targets set for renewable energy are discussed in further detail in Section B.1 of the PIF. Other proposed measures in the Paper include the establishment of a smart grid and the National Energy Efficiency and Renewable Energy Account (NEEREA) as a financing mechanism to support energy efficiency and renewable energy investments. The paper also encourages private sector involvement and the promotion of green buildings.

During a meeting of the Council of Ministers on 10 November 2011, the Lebanese Government officially adopted the Lebanese National Energy Efficiency Action Plan (NEEAP) (Decision No. 26) for the years 2011-2015. The NEEAP is the first comprehensive strategy in energy efficiency and renewable energy to be adopted by a Lebanese Government. The adoption of the NEEAP makes Lebanon the first country to take this step out of 22 Arab countries. With its 14 national initiatives, the adopted NEEAP paves the way for a structured approach towards achieving the national target of 12% renewable energy by 2020. Among its objectives, the NEEAP calls for the development of solar, wind, and hydro energy; the adoption of the energy conservation law; the banning of incandescent lamps; and the development of financing mechanisms for renewable energy and energy efficiency projects, including net-metering. In furtherance of the NEEAP, on December 22nd 2011 Electricité du Liban (EDL), the Ministry of Energy and Water and the Ministry of Finance announced that net-metering is now applicable in Lebanon, available to residential, commercial and industrial customers.

The proposed project will contribute to the targets outlined in Lebanon's Second National Communication (SNC), submitted to the UNFCCC COP in February 2011, including Lebanon's voluntary commitment, announced in Copenhagen in 2009 and followed up by a Ministerial Declaration in 2010 and the adoption of the NEEAP in 2011, to increase the share of renewable energy in Lebanon to 12% by 2020. Together with the Ministry of Environment's proposed policy to continue "greening" all production sectors, these provide the basis for expansion of clean energy production at all levels.

Lebanon is also a leading participant in the implementation of the EU-supported "Mediterranean Solar Plan", with the Beirut Declaration (September 2009) forming a centerpiece of this initiative. In the Declaration, Lebanon commits "to take an active role within the MSP, which aims at increasing the use of solar energy and other renewable energy

sources for power generation in the Mediterranean region". The Declaration also includes an agreement relating to the establishment of a National Steering Committee for the MSP, which will lead and coordinate the national activities in the MSP. The UNDP-supported Lebanese Center for Energy Conservation (LCEC) is the Executive Secretariat for this Committee.

The project fits into a key objective within the 2010 – 2014 UNDAF framework for Lebanon, which aims at developing and adopting a national sustainable energy strategy to mitigate climate change as well as to increase awareness on climate change.

B. PROJECT OVERVIEW:

B.1. Describe the baseline project and the problem that it seeks to address:

Background

Lebanon is suffering from severe power shortages. The combined power generation capacity and imports in Lebanon in 2009 was 1,500 MW, while the average demand was 2,100 MW, with a peak in the summer of 2,450 MW. The estimated total energy demand in 2009 was 15,000 GWh (a 7% increase from 2008), whereas total electricity production and purchases amounted to only 11,522 GWh (a 6% increase from 2008). Due to this deficit, the greater Beirut area suffers from power cuts for 2.8 hours per day on average, the South for 8.2 hours per day and the whole country for about 6 hours per day.

The average power generation costs of Lebanon's electric power utility, EDL (Electricité Du Liban), are estimated to be 17.14 US cents per kWh, while the frequent power cuts have forced the population to rely on even more expensive back-up arrangements, typically consisting of diesel generators. According to World Bank estimates, about one-third of Lebanon's total electricity demand is met by these privately-owned small diesel generators, with typical costs of 23.33 US cents per kWh.

Baseline project

The baseline project consists of three components: the MEW Policy Paper, the ongoing UNDP CEDRO project (Country Energy Efficiency and Renewable Energy Demonstration Project for the Recovery of Lebanon), and the National Energy Efficiency and Renewable Energy Account (NEEREA).

In order to overcome the acute power shortages, the MEW Policy Paper has set a target to increase the total available power generation capacity in Lebanon to 4,000 MW by 2014 and to 5,000 MW after that. This is mostly to be achieved by new and rehabilitated gas-fired power plants. For the installation of new renewable energy power generation capacity, the target has been set at 115-165 MW, including new hydro (40 MW), wind (60-100 MW) and waste to energy (15-25 MW).

The potential for smaller, decentralized renewable power generation can, with some support, become an important complementary source of power to help the population to cope with the current power shortages in Lebanon. In many areas with frequent black-outs or no electricity supply by the grid, small RE applications can already provide an interesting alternative to commonly-used small diesel generators. Such opportunities can be provided by PV, wind, small hydro and organic waste, depending on the location and the natural resources available.

Some early experiences from small, decentralized RE power generation have already been collected by the ongoing UNDP CEDRO project, funded by the Government of Spain. This project has facilitated the installation of PV-systems in 26 public schools and community centers in Akkar, Bekaa and the South of Lebanon, with sizes of 1.2-1.8 kWp each. These systems are currently monitored for their performance, and monitoring results will be available

during further project preparation. The CEDRO project has also supported the finalization of a wind atlas for Lebanon and is planning to undertake more detailed feasibility and resource assessments for PV, micro-wind and hydro during 2011/2012. The identification of sites for the first micro-wind installations is currently underway. The CEDRO project has also been instrumental in the recent (December 22nd) decision by EDL and the Government to allow net-metering in Lebanon.

The initial financial analysis undertaken during PIF preparation has indicated that, with the current PV system costs of about $7,000 per KWp in Lebanon (reduced from $10,500 per kWp for the first PV installations financed by CEDRO), the costs of electricity generated by PV without any grant support, but with a 0% interest loan provided by NEEREA, could be in the range of 0.20-0.39 $ per kWh – depending on the expected lifetime and other assumptions used in the calculations concerning, for instance, the need for additional battery replacement during the lifetime of the panels. With 15% or 25% GEF grant contributions, these costs could be reduced to 0.15-0.34 $/kWh, where the lowest figure represents a case with a 25% GEF grant, estimated panel lifetime of 25 years and no need for battery replacement (i.e. a grid-connected system with no significant grid black-outs expected after the end of the lifetime of the first battery) and the highest figure represents a 15% grant, a 15 year calculation period and replacement of the battery once during the 15 year calculation period.

The figures above are to be compared with the current 0.25-0.30 $/kWh electricity costs of small diesel generators typically used in Lebanon to cover the black-outs of the EDL grid, the estimated generation costs of EDL of 0.17-0.21 $/kWh and the expected EDL consumer tariff increase from the current 0.10 to 0.14 $/kWh by 2015.

Taking into account the above, it is evident that some additional grant support is still required to make the purchase of the PV systems sufficiently attractive for the targeted consumers. With expected further reductions of PV prices in line with the observed global trend, the growing size of the local market and related supply chain development that is expected to result from the initial market support, the costs of electricity generated by PV in attractive locations (such as in Lebanon) will in the future not be very different from the listed baseline options, and will have a realistic chance to go forward even without any additional grant support. After demonstrating the feasibility of grid-connected PV together with net metering, it should also be in EDL's / Government of Lebanon's interest to further support this technology – for example, by directly paying the difference between the prevailing consumer tariff and EDL's own generation costs. A more detailed analysis of the exact amount of the required GEF grant for each targeted RE technology to support the initial market development phase will be undertaken during further project preparation, but is not expected to exceed 25%.

For the financing component, the proposed GEF project will build on the NEEREA, which was established in 2010 as a joint initiative of the Central Bank of Lebanon (BDL), UNDP and the EU. In its current form, NEEREA can offer loans with a 0% interest rate for eligible energy efficiency and renewable energy investments by using a risk guarantee and an interest rate subsidy funded by Euro 2.1 and 11.9 million grant allocations respectively from the EU. No GEF funds are used in NEEREA's lending activities. The technical validation of the projects is done by UNDP's Lebanese Center of Energy Conservation (LCEC). The target of NEEREA is to leverage funding for energy efficiency and renewable energy investments amounting to US$ 100 million over the next 5 years.

As described above, some key measures to facilitate the development of small, decentralized RE power generation market are already recognized and implemented by the baseline projects. These include: i) the recognized need for the introduction of "smart, two-way metering" (applicable in Lebanon as of 22nd December 2011) and restructuring of tariffs and new

financing mechanisms included in the MEW policy paper; ii) the implementation of selected pilot projects and resource and feasibility assessments done under the CEDRO project; and iii) launching of new financing mechanisms and platforms such as NEEREA.

Through these baseline projects alone, however, the RE power generation market in Lebanon is not expected take off as rapidly and effectively as it has the potential to do.

The main additional support needs to expedite and sustain the development of the Lebanese RE market are in the area of: i) facilitating the actual implementation of the measures outlined in the MEW policy paper; ii) facilitating the move from 100% grant-financed pilot projects implemented under the CEDRO project to more sustainable financing models; and iii) addressing issues not covered by the listed baseline projects, such as leveraging new financing sources (e.g. climate finance) for small RE investments, strengthening the local supply-side capacity to sell, install and maintain the systems, and ensuring that adequate quality control mechanisms will be in place to sustain the market. These complementary support needs are further outlined in Section B.2 below as well as on the front page in Table B. With regard to point (ii) above, although the NEEREA has been operational for the past year the combination of the current cost of RE in Lebanon and the low level of awareness of RE applications (and their potential integration into buildings) has resulted in a very low level of RE applications to the NEEREA. Furthermore, it is only large investors wishing to 'green' their development projects for marketing purposes that are currently accessing the NEEREA, with smaller project developers and energy companies largely excluded.

Given the limited GEF resources available for actual investments, it is suggested that the GEF resources are primarily used to promote RE installations in the private sector by leveraging additional resources from the NEEREA, while CEDRO can continue to support public sector installations. The demonstration installations in public buildings financed by the CEDRO project have been, and continue to be, important in promoting and expanding the small decentralized RE market in Lebanon. As such, promoting RE in public and private buildings should not be regarded as being separate activities but, rather, as complementary activities which, together, will contribute to the goal of expanding the market towards a size that, among other beneficial outcomes, will encourage entrepreneurs to enter the RE business and thereby facilitate the required supply chain development to serve both sectors. As said, both projects will contribute to the overall market development of small decentralized RE installations in Lebanon in accordance with the project Objective Statement and Outcome 1. The difference is that CEDRO is financing public sector installations on a 100% grant basis, while with the proposed combination of GEF grants and NEEREA loans the goal of the GEF project is to facilitate a gradual move towards more sustainable financing arrangements and expand market development support to the private sector. This represents the incrementality of the GEF support.

In the absence of adequate support to address issues such as quality control and availability of qualified service providers, the RE market would also face a serious risk of early failures, thereby damaging the image of RE technologies and further delaying the growth process.

B. 2. incremental /Additional cost reasoning: describe the incremental (GEF Trust Fund/NPIF) or additional (LDCF/SCCF) activities requested for GEF/LDCF/SCCF/NPIF financing and the associated global environmental benefits (GEF Trust Fund/NPIF) or associated adaptation benefits (LDCF/SCCF) to be delivered by the project:

The project will catalyze the development of the small, decentralized RE power generation market in Lebanon, which is an area that has not been effectively harnessed in Lebanon to date. By doing this, the project will also contribute to clearing the path for larger RE power plants –

for example, by clarifying the technical and institutional aspects of connecting RE-based intermittent power generation sources into the grid, facilitating the introduction of supportive feed-in tariffs, and leveraging financing for RE investments from new sources such as carbon and climate financing. With the currently available support of the Government and from other donors, this is not going to happen on its own. The only renewable energy source currently used for power generation in Lebanon in any significant volume is hydro power, which contributed about 4.5% of total production in 2009.

The target set by the project is to facilitate the direct installation of at least 1 MW of new decentralized renewable energy power generation capacity during the lifetime of the project, resulting in direct GHG reduction benefits of approximately 17,000 tonnes of CO_{2eq} reduced over the 15-year lifetimes of the equipment. Additional indirect mitigation benefits can be expected from sustained market growth after the project, due to (a) the project's work on creating the enabling conditions for further decentralized RE generation capacity (200,000 tonnes of CO_{2eq} reduced over 15 years, assuming 12 MW of total decentralised capacity is leveraged by the project with a GEF causality factor of 0.8) and (b) utility-scale RE capacity through the project's work on the grid code and regulatory environment (515,000 tonnes of CO_{2eq} reduced, assuming 75MW of total utility-scale RE capacity is leveraged with a 30% utilization factor and a conservative GEF causality factor of 0.2). The grid emission factor of Lebanon is estimated to be 0.8 tCO_2/MWh. The assumptions underlying these estimates will be re-visited during the PPG phase.

The project and its proposed incremental activities are structured to deliver three outcomes:

Outcome 1: Investments in decentralized renewable energy power generation increased

Co-finance: CEDRO: US$ 2,800,000; NEEREA: US$ 5,000,000.

The activities under this component focus on supporting actual investments and sustaining market growth. In co-operation with the key stakeholders such as MEW, EDL, the Ministry of Finance and other donors, the GEF project will stucture and leverage funding for attractive financing conditions for the RE investments under consideration.

The costs of small RE systems, such as those using PV, have been falling consistently during the past 10 years and they can increasingly be considered as attractive options for stand-alone and back-up applications. For grid-connected renewable energy, however, some complementary financial and/or fiscal incentives are typically still required to make the investment attractive enough for the targeted investors. This support can be provided through: i) direct capital grants, interest rate subsidies, tax concessions or premium feed-in tariffs supported by the state budget; ii) spreading the costs of premium feed-in tariffs for RE across the overall energy production costs, e.g. through minimum RE purchase obligations by the utilities; and/or iii) creating additional revenue streams to investors, for example through climate finance. The most recent market monitoring reports of the US market have indicated an average price of US$ 7.5 per Wp for installed, grid-connected PV systems, while in 1998 it was US$ 10.5/Wp. In Lebanon, the cost of PV pilots planned for 2011 have dropped to US$ 7 per Wp in the most recent bids.

By starting with the implementation of selected pilot/demonstration projects supported jointly by the GEF and the project's co-financing resources, the activities will gradually move to leveraging more sustainable financing. The project will build on the National Energy Efficiency and Renewable Energy Account (NEEREA), launched in 2010 by the Central Bank of Lebanon (BDL). NEEREA is dedicated to supporting the financing of energy efficiency and renewable energy projects in Lebanon. The financing element is implemented by local

commercial banks, while the Lebanese Center of Energy Conservation (LCEC) serves as the technical arm to evaluate the projects and to provide other technical support. With financial resources leveraged from the Ministry of Finance and the EU, the commerial banks are able offer loans for energy efficiency and renewable energy investments with a risk guarantee and 0% interest rate

GEF financing in Outcome 1 (US$ 900,000) will be used as complementary grant co-financing to leverage NEERWA and other funding sources for the early market development phase of small RE investments. The GEF funds will not be mingled with the NEEREA resources, but they will be used as a complementary financial incentive (without expected pay-back). The intention is to channel the GEF grants to individual RE projects through the same private banks (or alternatively through one selected bank) that are/is issuing the NEEREA loans, after the projects have been technically cleared by the LCEC – all under the overall umbrella supervision of the Central Bank of Lebanon. However, this will need to be clarified at the PPG stage. The incrementality of the GEF funding derives from the fact that a NEEREA loan alone (although very soft) will likely still not attract significant investor interest; topped up by a complementary GEF grant, the investment will become sufficiently attractive. To date, only 3 projects have been approved through the NEEREA programme, all related to energy conservation measures for new residential or hotel buildings. The project will assist in expanding and promoting the NEEREA loans for PV applications and other RE systems, which are currently not sufficiently attractive for the market. The complementary GEF grant approach will facilitate a transition from the previous 100% grant-financed projects (as done in the CEDRO project) to a more sustainable financing model. With further market growth and expected price decreases of PV, a gradual move entirely out of grants will eventually take place, but during this transition period some external grant financing is still required.

By building on the early experiences and lessons learnt with NEEREA and the complementary GEF-funded grant support provided by the project, the project is expected to facilitate the establishment or continuation of a financing mechanism (or their combination), which will sustain market growth after the project. It will not necessarily be an entirely new financing window, but can also consist of agreements with new financing sources to recapitalize or expand those funding mechanisms that have shown success during project implementation.

The GEF project will also seek to open up new financing opportunities for grid-connected decentralised renewable energy projects, including climate finance. Different options, such as the voluntary carbon market (given that Lebanese CDM projects will not be eligible to supply CERs to the EU-ETS market after 2012) and supported NAMAs, will be explored during the project preparation phase. The project will additionally seek to catalyse follow-on investment in the Lebanese RE sector by formulating a NAMA (with required baseline, institutional and MRV support); this NAMA will be submitted to the UNFCCC by the Government of Lebanon and will act as a future channel for international funding for small-scale RE investments in the country. The NAMA to be developed under Output 1.2 is regarded as an investment vehicle (i.e. a platform to leverage climate finance investment during the project implementation period) and will be treated as such in the project. Clearly, the financing that can be channelled through the NAMA will be a function of the funding environment (e.g. the operational status of the Green Climate Fund) in the future, but the intention is very much to design, operationalise and channel funding through a NAMA during the 4-year lifetime of the GEF project. At this PIF stage (and in the current absence of detailed guidance from the UNFCCC COP regarding the form/structure of NAMAs and the workings of the Green Climate Fund), it is premature to try to describe in detail what the new financing mechanisms may look like. The conclusions and lessons learned from the implementation of the first financing mechanisms affiliated with the project (i.e. the NEEREA loans complemented by the proposed GEF-funded grant support) will be analyzed first.

Outcome 2: A supportive policy and regulatory environment enforced for attracting investments for privately-owned, grid-connected renewable energy power generation

Co-finance: CEDRO: US$ 448,750; MEW: US$ 100,000; UNDP: US$ 100,000.

The activities under the project component that will deliver Outcome 2 will support the establishment of an enabling legal and regulatory framework to attract investment for privately-owned, grid-connected power generation by renewable energy sources. While the adopted Government strategy sets the overall targets for renewable energy, the topics to be addressed by more detailed laws or regulations include:

- A grid-code, including technical requirements, procedures and division of responsibilities, for connecting different type of RE plants into the grid by private producers and for ensuring the problem-free operation of these plants;
- The conditions for selling electricity to the grid by private producers, addressing issues such as required licences, purchase obligations of the utility, feed-in tariffs and other possible financial and/or fiscal support mechanisms;
- Net/smart-metering and eventual changes required in the construction norms and other building regulations to facilitate better integration of renewable energy into buildings' energy supply; and
- Quality control of the products and services available in the market, especially for smaller-scale consumer products such as roof-top PV panels.

The project will support the required background analysis, consultations, awareness raising and capacity building of the key stakeholders to allow the drafting of the new regulations and facilitate their effective adoption and implementation. The project will build on and improve some initial analysis done in the context of the CEDRO project and other initiatives, including the preparation of this PIF. Cost-efficiency analysis, in particular, requires regular updating as both the costs and the other framework conditions influencing the technical and financial feasibility of the targeted RE technologies are evolving.

For Component 2, the contributions of the three baseline projects listed in the PIF can be summarized as follows: CEDRO: resource assessments and selected demonstration projects to gain further information on the costs and technical feasibility of different RE technologies and to serve as background information for the formulation of enabling policies. MEW policy paper and NEEAP: analysis and summary of the proposed policy measures at the general level. NEEREA: Operationalized financing instrument to implement the related provisions of the MEW policy paper.

Outcome 3: Monitoring and quality control of RE-based decentralized power generation introduced and sustained

Co-finance: CEDRO: US$ 253,750; MEW: US$ 500,000; UNDP: US$ 25,000.

The activities of this outcome will focus on: i) raising the awareness of the targeted stakeholders on what decentralized RE power generation systems can offer to them; ii) ensuring the quality of the products and installations through an effective quality control system and supply-side capacity building; and iii) establishing an agreed market monitoring methodology and mechanism to keep track of the annual sales and installed capacity of PV systems in Lebanon.

For Component 3, the contributions of the three baseline projects listed in the PIF can be

summarized as follows: CEDRO: For market monitoring, some activities have been and are planned to be implemented by the CEDRO project in order to keep track of local RE market development. This is not yet done in a systematic way, however, and has not been institutionalized to ensure its sustainability. For quality control, the GEF-funded solar water heating project has been developing a quality management scheme for solar thermal systems, but for other RE technologies no quality control schemes are currently under development. MEW policy paper and NEEAP: The MEW, as specified in the NEEAP, will monitor the use of decentralised power generation by PV and wind applications in the residential and commercial sectors, and, in particular, will adopt a quality control scheme with related market surveillance and enforcement mechanisms for RE products. NEEREA: For NEEREA, records are obviously kept for all the RE investments using the loans of NEEREA, which also partly serves the overall market monitoring needs. For quality control, no related criteria are yet included in NEEREA.

The technology-specific requirements for the performance and durability of the targeted RE technologies and their installation to meet the required quality criteria will be developed at the outset of project operation. Some general remarks and guidelines in this respect are that:
Mandatory minimum energy performance and quality requirements for the entire market should rely on well-elaborated, technology-specific market surveillance plans, which are to be enforced by supporting legislation and adequately capacitated market surveillance authorities.
A voluntary quality control scheme can be promoted: for instance, by embedding the agreed minimum performance and other quality requirements into the eligibility criteria of the available financial support schemes. The suppliers can prove their products meet the requirements by means of a certificate issued by an accredited authority either abroad or in Lebanon. For the quality control of installations, an in-country certification and inspection scheme will be required.

The applicable arrangements for quality control in Lebanon will be further clarified during final project development and at the outset of project operations. By doing this, the experiences and lessons learned from developing the quality control scheme for solar thermal systems in the context of the GEF-supported solar thermal project in Lebanon will be taken into account, together with the experiences and lessons learned in other countries.

Summary table of baseline outputs

Component	Co-financing Source	Indicative Co-Financing Amount	Outputs
Outcome 1: Investments in decentralized renewable energy power generation increased	CEDRO	$2,800,000	Funding for pilot PV applications
	NEEREA	$5,000,000	Zero-interest loans to eligible decentralized RE projects, providing baseline funding that will be topped-up by complementary GEF grants
Outcome 2: A supportive policy and regulatory environment enforced for attracting investments for	CEDRO	$448,750	Resource assessments and selected demonstration projects to gain further information on the costs and technical feasibility of

privately-owned, grid-connected renewable energy power generation			different RE technologies and to serve as background information for the formulation of enabling policies
	MEW	$100,000	Analysis and summary of the proposed policy measures
	UNDP	$100,000	regulatory and policy measures, assistance with grid stability analysis, report containing updated analysis of the cost-efficiency of different RE and EE measures at the macroeconomic and final consumer levels
Outcome 3: Monitoring and quality control of RE-based decentralized power generation introduced and sustained	CEDRO	$253,750	Market monitoring in order to keep track of local RE market development
	MEW	$500,000	Monitoring the use of decentralised power generation by PV and wind applications in the residential and commercial sectors, and the adoption of a quality control scheme with related market surveillance and enforcement mechanisms for RE products
	UNDP	$25,000	Public awareness-raising campaigns, technical guides, handbooks and capacity development
TOTAL		$9,227,500	

All baseline activities and associated co-financing amounts presented in the PIF relate to the period after the approval of the PIF. Baseline expenditures for activities already undertaken or which are expected to be undertaken after the end of the GEF project are not included in the PIF. Furthermore, the co-financing amounts stated in the PIF are considered to be conservative estimates.

Emphasis throughout will be placed on post-project sustainability – on building the capacity of the local supply-side to sell, install and maintain the systems, support the establishment of an adequate quality control scheme to ensure satisfactory consumer experience with the new technology, and a market monitoring mechanism to track progress and facilitiate ongoing targeted support for the sector. A more detailed list of the outputs under this Outcome is presented in Table B on the front page.

B.3. Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the

achievement of global environment benefits (GEF Trust Fund/NPIF) or adaptation benefits (LDCF/SCCF). As a background information, read Mainstreaming Gender at the GEF.":

The main socioeconomic benefits of the project stem from improving the electricity supply in areas that currently suffer from severe power shortages and black-outs. Furthermore, meeting the project market development objective can create new jobs in selling, installation and maintenance of the RE systems. The potential for this has been estimated at about 80 new jobs per installed MWp for PV and up to new 4,000 jobs in the entire RE sector, should the Government target to increase the share of renewable energy to 12% by 2020 be achieved. This would constitute about 0.3% of the total Lebanese workforce.

Positive RE market development will also provide new work opportunities for women, who until now have remained relatively marginal actors in this sector. Improved electricity supply from renewables for different household appliances will also improve women's quality of life at home, especially in the rural areas where electricity supply is very intermittent. Accurate disaggregated gender data is not available from Lebanese renewable energy studies at the moment, but the project will ensure that through a gender analysis the gender dimension will be fully included in the design and implementation of the project, thereby also lowering the risk of project failure by identifying gender-sensitive factors that can affect the success of an activity or technology in a specific context.

B.4 Indicate risks, including climate change 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:

Risk	Rating	Mitigation Approach
Political - Government failure to adopt the required legal and regulatory changes such as the grid code and financial /fiscal incentives to provide a basis for the proposed market promotion activities.	M	The fragile political situation in Lebanon will remain as a risk to expediently passing the required legal and regulatory changes. On the other hand, the necessity of continuing electricity sector reform and moving the renewable and energy efficiency markets forward has been broadly recognized by Lebanese politicians of all parties, hence the prominent inclusion of RE in the widely-accepted "Policy Paper for Electricity Sector Development in Lebanon". The recent Government adoption of the National Energy Efficiency Action Plan (NEEAP, November 2011) reaffirms the Government's commitment to the 12% renewable energy target by 2020. Together with the continuing and strong commitment of the current Minister of Energy and Water, the political risk is considered to be acceptable.
Technology risk – technical failures leading to the loss of trust by targeted customers on the performance of small, decentralized RE applications.	M	Small decentralized RE power generation systems such as PV, micro-wind and mini/micro-hydro can already be considered to be technically mature technologies, so the risk of their technical failure due to the early stage of their technical development is considered as low. This does not detract, however, from the importance of adequate quality control of both products and installations at all stages of market development. The quality control aspects are addressed under Outcome 1, with one sub-component focusing on the development of a "quality control scheme with related market surveillance and enforcement mechanisms" and another component focusing on training to ensure that

		the equipment is correctly installed and maintained.
Government and/or other donors will not provide support and funds for new financing instruments.	L	Comprehensive economic and financial analysis and early discussions with the Ministry of Finance, with the support of other relevant line ministries, will emphasise the macroeconomic benefits of the proposed financial and fiscal incentives, and will point to favourable experiences in – for example – Egypt, Tunisia and Jordan. For international donors, the demonstrable commitment of the Government of Lebanon to establish and effectively manage similar funding mechanisms, most notably NEEREA, will serve as evidence of the Government's commitment to the decentralized RE sector. The project will serve to 'prime' alternative sources of funding that are either not tied to donors (e.g. voluntary carbon market) or are only indirectly tied to donors (e.g. through the development of a NAMA as a conduit for international financing).
Climate risk	L	According to the vulnerability assessment undertaken for Lebanon's Second National Communication, climate change is not expected to dramatically alter the output from solar and wind installations. For hydro power plants, the uncertainties and risks are higher, which need to be taken into account in the design of the projects. In the design and installation of RE systems, adequate emphasis also needs to be placed on the systems' ability to survive extreme weather conditions (such as storms) at a level that may have not been typically observed before. Such thinking will be incorporated into all stages of project design and implementation.
Lack of adequate and reliable market data to facilitate the monitoring of project impacts and planning of further policy measures.	M	Close cooperation with the local RE technology dealers and the local utility to obtain the required data will be emphasised. Cross-checking of the reliability of the data by comparing the results from different sources and approaches (e.g. top-down and bottom-up) will be undertaken. Monitoring methodologies can include a survey of retail stores and importers, a review of import and customs statistics, meter readings of EDL (after introduction of two-way metering), etc.
Inadequate and/or non-capacitated human resources to successfully implement the project and support the mainstreaming of its results.	L	The project will be implemented within the management structure of the Lebanese Center for Energy Conservation, which has a proven track record of successfully managing similar initiatives.

B.5. Identify key stakeholders involved in the project including the private sector, civil society organizations, local and indigenous communities, and their respective roles, as applicable:

The project will be implemented within the management structure of the Lebanese Center for Energy Conservation (LCEC), hosted by the Ministry of Energy and Water, which will also serve as the national executing agency of the project. Other key line ministries and Government entities to be involved are the Ministry of Finance, Ministry of Environment, the local electric utility EDL, the Institute of Standardisation (LIBNOR), the Ministry of Education and Higher Education, and the Central Bank of Lebanon (BdL).

For the private sector, the RE equipment dealers, installers and commercial banks are among the key stakeholders to be involved in the project's joint marketing, training and capacity building activities. Furthermore, cooperation will be sought with building designers for the building integrated RE systems.

For the project's public awareness and marketing activities, cooperation will be sought with Lebanon's leading marketing companies, broadcasters and publishing houses by following the example of the recently-completed UNDP-GEF energy efficiency project[6].

B.6. Outline the coordination with other related initiatives:

The project will be closely co-ordinated with related initiatives in the country, including the Spanish-funded CEDRO project, the EU-funded Mediterranean Solar Plan and others.

The CEDRO project has already initiated and partly accomplished some important activities that will also contribute to meeting the objective of the proposed GEF project. These activities include the implementation of selected pilot projects to gain information on the cost and performance of different RE and EE technologies, finalization of related feasibility assessments; preparation of the first comprehensive wind atlas for Lebanon; and playing an instrumental role in facilitating the introduction of net-metering in Lebanon.

The overall goal of the CEDRO project is to support Lebanon's recovery, reconstruction and reform activities and to complement the national power sector reform strategy through the implementation of end-use energy efficiency and renewable energy projects and through the removal of barriers for the promotion of sustainable energy applications in Lebanon. The project is managed by UNDP and funded by the Spanish Government through the Lebanon Recovery Fund, with total funding of US$ 9.73 million. Of this total, project activities with an estimated budget of US $4 million will directly support and contribute to meeting the objective of the proposed GEF project and this budget is, therefore, presented as co-financing to this project.

During the implementation of the project, close cooperation and full exchange of information between the CEDRO and the proposed new GEF project will be facilitated by UNDP, which is managing the implementation of both projects. This shall optimize the use of the resources and avoid duplication of efforts.

Concerning the pilot/demonstration projects, CEDRO can only finance public sector projects on a 100% grant basis, while the GEF grant funding is expected to be used more as complementary grant co-financing to leverage funding from NEEREA and other possible funding sources for both private and public sector RE investments. UNDP is not expected to become involved any more than now in the management of NEEREA or any other non-grant financing instruments. The principal entity for the financial management of NEEREA will continue to be the Central Bank of Lebanon, while the role of the UNDP-supported Lebanese Centre of Energy Conservation (LCEC) is to serve as the "technical arm" to evaluate the investment proposals submitted and to raise awareness and promote the RE and EE investments in general.

[6] UNDP-GEF project, 'Lebanon - Cross Sectoral Energy Efficiency and Removal of Barriers to ESCO Operation'.

The other activities of mutual interest with NEEREA are expected to include: i) joint marketing campaigns; ii) technical assistance for establishing adequate quality control schemes and after-sales services together with training of installers and other RE professionals in order to minimize the technical risks of the RE investments financed through NEEREA; and iii) identifying and leveraging new financing sources such as climate finance to complement the current NEEREA and projected GEF funding.

Out of the total requested GEF funding of US$ 1.45 million, US$ 900,000 is expected to be used as direct investment support, with an average leveraging ratio of 1:9. Thus, the direct co-financing derived from the combined support of the NEEREA interest rate subsidy, the funding leveraged from commercial banks for the jointly-financed RE demo projects and leveraging of climate finance (e.g. through NAMAs) during the GEF project implementation is expected to reach at least US$ 7.8 million.

For the Mediterranean Solar Plan, the EU is currently supporting the preparatory phase of this initiative (through the 'Paving the Way to the Mediterranean Solar Plan', PW-MSP, project), so the co-operation opportunities at this stage are likely be more on the policy front. Further links and co-operation opportunities with this regional initiative will be elaborated during the project preparatory phase. Early discussions with the PW-MSP project team have been promising in this regard.

The success of the recently-completed GEF-funded UNDP energy efficiency (LCECP) project in Lebanon provides an excellent basis from which to broaden activities to renewable energy by building on the already-existing institutional co-ordination arrangements and trust created by this project among key stakeholders. The groundwork done, for instance, by supporting the establishment of the National Energy Efficiency and Renewable Energy Account, by raising the general public awareness on energy efficiency and renewable energy, and by using innovative and progressive approaches for projects' public awareness and marketing activities can be used as a basis and model of good practices for the proposed new project.

For organizing public awareness raising, supply-side capacity building and quality control, experiences and lessons learned can be drawn from the ongoing GEF-funded UNDP Solar Water Heaters project, which is currently proceeding well in Lebanon.

To ensure stakeholder coordination, the project will establish a steering committee that includes the main actors in the renewable energy sector as well as representatives from civil sector organisations, including municipalities and local authorities. Stakeholders will participate in roundtable discussions in the presence of the project, decision-makers and relevant ministries. The project will then ensure that all concerns are taken into consideration when developing policy recommendations.

C. DESCRIBE THE GEF AGENCY'S COMPARATIVE ADVANTAGE TO IMPLEMENT THIS PROJECT:

UNDP has a proven track record as being one of the leading agencies in Lebanon to promote the renewable energy and energy efficiency agenda. Successful implementation of the UNDP-GEF LCECP project and the institutional capacities created by that project have facilitated the incorporation of a number of energy efficiency and renewable energy measures into the current energy sector strategy of the Government of Lebanon.

The Lebanese Center for Energy Conservation (LCEC), established in the framework of the LCECP project and supported and staffed by UNDP, has become a focal point for new energy

efficiency and renewable energy related initiatives in the country. Affiliated to the Lebanese Ministry of Energy and Water, the LCEC is directly supporting the Government of Lebanon to develop and implement national strategies that promote the development of efficient and rational uses of energy and the use of renewable energy at the consumer level. The LCEC has also been nominated by the Government (in November 2011) to be the national energy agency of Lebanon; serves as the technical support unit for the implementation of NEEREA; and is the Executive Secretariat of Lebanon's National Steering Committee for the Mediterranean Solar Plan.

The UNDP Country Office in Lebanon currently manages a programme portfolio with an annual delivery target of over $20 million, covering the thematic areas of Governance, Social and Local Development, CPR and Energy and Environment. The latter portfolio comprises $7 million of the total annual delivery, a large portion of which focuses on green energy. This includes the CEDRO project, the ongoing global GEF-funded solar water heating project and climate change projects. With the Ministry of Environment, UNDP undertook the First and Second National Communications to the UNFCCC and will be initiating the Third National Communication in early 2012. UNDP has also partnered with UNEP Risoe Centre to complete the National Technology Needs Assessment (TNA). UNDP's energy projects are strategically implemented within different ministries, including the Ministry of Energy and Water and the Ministry of Environment. Coordination is maintained between the teams to ensure integration of energy policies in all sectors.

Given the above, the proposed new GEF project to promote decentralized RE power generation can be seen as highly complementary to UNDP's ongoing activities and strategic priorities in Lebanon. Consisting mainly of TA-type activities and complemented by an already-established, external financing mechanism, the proposed project is also in full accordance with the type of activities where UNDP is seen to have a comparative advantage among the GEF implementing agencies.

C.1 Indicate the co-financing amount the GEF agency is bringing to the project:

The UNDP Country Office will provide US$ 125,000 cash co-financing to this project in the form of TRAC (core) resources. This represents more than 10% of the Country Office's entire TRAC resources. If the CEDRO project, which is also implemented through UNDP's account (although the financial resources are originally from bilateral sources) is included, the UNDP co-financing can be reported as $4.125 million.

C.2. How does the project fit into the GEF agency's program (reflected in documents such as UNDAF, CAS, etc.) and staff capacity in the country to follow up project implementation:

The UNDAF and the UNDP Country Programme Action Plan (CPAP) both reflect the Government of Lebanon and UN Country Team's focus on responding to climate change at the national level as well as to meet Lebanon's need for increased energy supply. Output 5.2.1 of the UNDAF specifcally targets the development and adoption of a national sustainable energy strategy to mitigate climate change. Given that UNDP is the lead agency on this output, the project would build towards meeting this target. Furthermore, Output 5.2.4 aims at increasing awareness about the effects of climate change among the general public; a component of the proposed project would directly contribute towards this Output.

The Energy and Environment Programme in the UNDP Country Office consists of 3 dedicated staff members, who oversee the implementation of projects in the field and ensure sound quality control, monitoring and evaluation of activities. Furthermore, specialized team leaders work in the field – including a National Communication Project Manager based at the Ministry of

Environment, a Solar Water Heaters/Energy Conservation Expert who heads the energy project at the Ministry of Energy and Water, and a Renewable Energy and Economics Specialist who heads the CEDRO project along with 3 site engineers. Through close coordination of these initiatives with the proposed new project, the knowledge and expertise accumulated under these projects will be readily available to the new project. The Heads of Operations, Finance, HR and POS in the Country Office will assure compliance with the overall standards of UNDP, and the UNDP Resident Representative will liaise with the highest levels of government and will negotiate key policy and institutional changes proposed by the project. Furthermore, the project will be backstopped by a Regional Technical Advisor based in UNDP's Regional Centre in Bratislava, Slovakia.

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

A. RECORD OF ENDORSEMENT 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 OFP endorsement letter).

NAME	POSITION	MINISTRY	DATE *(MM/dd/yyyy)*
Nazem El-Khoury	Minister of Environment	**MINISTRY OF ENVIRONMENT**	**12/22/2011**

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for project identification and preparation.

Agency Coordinator, Agency name	Signature	DATE *(MM/dd/yyyy)*	Project Contact Person	Telephone	Email Address
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