

**PROJECT DOCUMENT**  
**Lebanon**



Empowered lives.  
Resilient nations.

**Project Title:** Country Entrepreneurship for Distributed Renewables Opportunities (CEDRO 5).  
**Award Number:** 00120029 **Project Number:** 00118152  
**Implementing Partner:** UNDP (DIM)  
**Start Date:** 15 November 2019 **End Date:** 14 November 2023

**Brief Description**


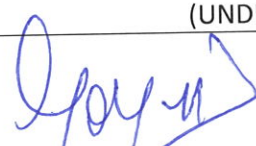

The CEDRO 5 project on the one hand, aims at assisting the Government of Lebanon to reach its Nationally Determined Contribution (NDC) targets for Renewable Energy and Energy Efficiency (RE/EE). On the other, it aims at assisting Lebanon in fostering growth for Small and Medium Enterprises (SMEs) and creating jobs from the momentum of existing value chains in RE/EE and creating new momentum in new RE/EE value chains. Technology transfer is done through the pilot projects – in both industrial and commercial sectors – demonstrating and disseminating different technologies / solutions in Lebanese context to support their commercial uptake, thereby creation of new jobs. All of which will be framed under the umbrella of one activity focused on fostering an innovation and entrepreneurship environment dedicated to find creative solutions to the energy sector, create new markets/value chains and attract strong buy-in from the existing energy SMEs.

The project will provide mentorship for existing SMEs and assist them in identifying potential for scaling up their operations. It will also assist new ventures (start-ups) to reach the marketplace, through the mentoring, seed funding, and networking platforms (through a procured incubator). The actions go in harmony with the country’s overall momentum in line with the strategy of the four main ministries (Ministry of Energy and Water, Ministry of Environment, Ministry of Economy and Trade and the Ministry of Industry).

This project document is elaborated to implement the agreement signed between the EU and UNDP (contract reference: ENI/2019/409-742) signed in November 2019.

<b>Contributing Outcome:</b> <b>UNSF Outcome 3.1</b> Environmental Governance Improved. <b>CPD Outcome 4.1</b> Low emission climate resilient actions initiated, <b>Indicator 4.1.2</b> Amount of energy saved from the implementation of decentralised and/or small scale mitigation projects. <b>Indicative Output(s)</b> with gender marker: Improved Lebanon’s energy security through the support to the country’s energy efficiency (EE) and renewable energy (RE) Intended Nationally Determined Contribution (INDC) targets while creating new employment opportunities and increasing women employment in the EE&RE sectors.– <b>GEN 2</b>	<b>Total resources required:</b>	USD 8,741,117	
	<b>Total resources allocated:</b>	<b>EU:</b>	USD 6,658,964
	<b>To be mobilised from Private Sector:</b>	USD 2,082,153	

Agreed by (signatures):

Council for Development and Reconstruction (CDR)	United Nations Development Programme (UNDP)
 Mr. Nabil El-Jisr President	 Ms. Celine Moyroud Resident Representative
Date: 18 FEB 2020 	Date: 10/12/2019





# 1. Development Challenge

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## 1.1 Background

The power sector in Lebanon has been a significant burden on the national economy and people. Lebanon imports over 98% of primary energy into the country, exposing Lebanon to the full impacts of international oil price fluctuations. Moreover, it excessively relies on expensive and polluting fuel oil and diesel (for self-generation) for most of the power (electricity and heat) demand. An inability of the national utility, EDL, to provide reliable power leads to daily outage as well as penetration of costly, polluting and unregulated private diesel generators. The situation has been exacerbated by the ongoing Syrian refugee crisis, increasing demand by 447 MW<sup>1</sup>. Between 40 - 45% of the national debt of Lebanon is due to subsidies that the government of Lebanon (GoL) has transferred to EDL to cover the cost of fuel (equal to \$1 - \$2.3 billion transfers per year). In total, approximately \$6 billion is spent on securing all the requirements of energy for the Lebanese economy per year (assuming \$70 per barrel and excluding transport). This constitutes 11% of Lebanon's total GDP, and 55.5% of total annual government revenues. While the necessary reform of the power sector is yet to be implemented, renewable energy (RE) and energy efficiency (EE) have potential to address these developmental challenges in a market-based manner while creating sustainable employment opportunities along its value chain.

In fact, investment in RE creates numerous job opportunities<sup>2</sup>. In Lebanon, driven by the significant growth of private investment, solar PV value chain has added at least 600 new jobs and the number of the companies has grown from 13 companies in 2010 to 55 companies by the end of 2016<sup>3</sup>. The UNDP study have shown that investment in solar PV system creates various local "direct" and "indirect" jobs in Lebanon<sup>4</sup>. Direct jobs include construction works, the design of the solar PV system, and other business activities such as financing, admission, legal services, consultation and planning. In addition, along the solar PV value chain, the demand for wiring, cabling, legal services etc. creates indirect jobs in the respective economic sectors. It is estimated that each \$1 million investment for 1 MW of solar PV installation creates at least 11 direct jobs (Full-Time Employment equivalent, FTE) and 20-25 indirect ones, amounting to 30-45 FTE jobs along the said value chain. This indicates that further acceleration of investment in the installation of solar PV will expand job-demand in the sector. Moreover, it is expected that once the markets for commercial solar thermal, biogas and EE measures (notably heat recovery) are initiated and promoted, new employment opportunities will be created in a similar manner.

Since the current Lebanese energy service providers (EDL & private generator) are unreliable, expensive and dependent on imported fuel, there are untapped market opportunities for RE and EE solutions albeit innovation, entrepreneurship, and technology transfer are necessary to open up these markets. Even though innovation and entrepreneurship have great potential to promote new energy markets, innovation via R&D is generally very weak due to insufficient and irregular funding. Strengthening linkages between university research and market/industrial needs can address this innovation challenge. In terms of entrepreneurship, the World Bank identified the most significant success factor for long-term success (hiring employees over time and continuing to do) of Lebanon's startup is additional work experiences<sup>5</sup>. Participation in acceleration programs has no significant effect on long-term hiring probability and serial entrepreneurs in Beirut are less likely to hire consistently. These issues imply that it is very critical to get buy-in from private companies for innovation and entrepreneur program and nurture sector-specific market/industrial insights within human capital for the sector (i.e. entrepreneurs, researchers, students) in order to promote innovation and entrepreneurship. Technology transfer can also make up for lack of R&D funding and available commercialized RE/EE technologies by introducing internationally viable solutions as proven by past UNDP's demonstration projects<sup>6</sup>.

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<sup>1</sup> MoEW & UNDP (2017). [The Impact of the Syrian Crisis on the Lebanese Power Sector and Priority Recommendations](#).

<sup>2</sup> IRENA (2018). Renewable Energy and Jobs – Annual Review 2018.

<sup>3</sup> UNDP/DREG (2017). 2016 Solar PV status report for Lebanon.

<sup>4</sup> UNDP (2018). Value chains in biogas, solar PV, and solar hot water systems for Lebanon., Unpublished.

<sup>5</sup> WB (2017). [Tech Start-up Ecosystem in Beirut: Findings and Recommendations](#).

<sup>6</sup> The opportunities in price reduction and increase in PV service providers witnessed from the EU funded



## 1.2 Relevance of the Action

The CEDRO 5 project on the one hand, aims at assisting the GoL to reach its NDC targets for RE / EE. On the other, it aims at assisting Lebanon in fostering growth for SMEs and creating jobs from the momentum of existing value chains in RE/EE and creating new momentum in new RE/EE value chains. Technology transfer is done through the pilot projects – in both industrial and commercial sectors – demonstrating and disseminating different technologies / solutions in Lebanese context to support their commercial uptake, thereby creation of new jobs. All of which will be framed under the umbrella of one activity focused on fostering an innovation and entrepreneurship environment dedicated to find creative solutions to the energy sector, create new markets/value chains and attract strong buy-in from the existing energy SMEs.

The project will provide mentorship for existing SMEs and assist them in identifying potential for scaling up their operations. It will also assist new ventures (start-ups) to reach the marketplace, through the mentoring, seed funding, and networking platforms (through a procured incubator). The actions go in harmony with the country's overall momentum in line with the strategy of the four main ministries (MEW, MOE, MOET and MOI). Certain activities have been designed to build on experience from previous initiatives (funded by the EU and other EU member states).

The relevance of each main activities (see below section 2 and 3) to the above-mentioned sector challenges including synergy with other EU initiatives is as follows:

**Activity 1** will be coordinated with existing incubators (through a competitive call for bidding) and will build on previous experiences gained from the aforementioned incubators (namely the UK-Tech hub, the Kingdom of the Netherlands funded Agrytech – & Berytech, the EU funded Fondation Diane, etc...). Activity 1 creates an 'Energy Hub' directly linking all stakeholders in the entrepreneurship value chain.

**Activity 2** (2.1 to 2.5) will ensure synergies are created with ongoing initiatives in the country and building on lessons learnt from previous initiatives. Under Act 2.1, synergy will be created with the winners of this present EU call for proposal (Lot 2). Actions of this activity have been designed building on experiences from the EU – funded CEDRO 4 and the EU ENPI – MEDSOLAR projects, based on what monitoring have shown in that adding storage (amongst other actions) would greatly increase the system's performance rendering it more financially viable. Under Act 2.2, which as a whole comes to complement previous work done for energy efficiency in the built environment by the GIZ MED-ENEC<sup>7</sup> and the German funded IKI<sup>8</sup> initiative, actions have been designed mirroring the EDGE tool – a collaboration between IFC and the World Bank – and the EU - Levels<sup>9</sup> reporting tool. The development of the ARZ tool aims at simplifying residential assessments for the end-user in order to increase awareness and demand; an observation gained from the past experience by LGBC. Under Act 2.3, synergies will be created with the World Bank initiative for CSP implementation for the LAF (in collaboration with the LCEC/Ministry of Energy and Water); this will ensure a higher coordination for data collection and dissemination of the results. As for the EE measures in the industrial sector, the actions have been designed following direct recommendations of the EU – funded MED-TEST II project, in particular the need for better data collection (creation of a data base) and the need for both financial and technical support for industries to venture into EE measures namely heat recovery.

Act 2.3 and **Activity 3** will create synergies with the winners of Lot 2 under this call for proposal in order to ensure the implemented actions under this CfP feed into their work plan. Under Act 2.4, and in an effort to introduce biogas technologies into the market, the actions are designed building on experiences from the Spanish funded CEDRO 1-3 and the EU – funded CEDRO 4.

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CEDRO 4 project

<sup>7</sup> <https://www.giz.de/en/worldwide/17540.html>

<sup>8</sup> <https://www.international-climate-initiative.com/en/about-the-iki/iki-funding-instrument/>

<sup>9</sup> [http://ec.europa.eu/environment/eussd/pdf/Level\\_publication\\_EN.pdf](http://ec.europa.eu/environment/eussd/pdf/Level_publication_EN.pdf)



Under Act 2.5, in addition to the synergy created with the EU-funded Clima-MED project, the project actions have been designed with the recommendations from the EU – funded SUDEP project, in particular when it comes to the crowd-funding platform which will ensure the sustainability of the both projects.

## 2. Strategy

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Taking into account the above-mentioned critical factors, as per the objectives for Lot 1, in 'developing innovative products and/or implementation of industrial processes to produce technology products, energy efficiency, and/or small-renewable energy equipment, to contribute to the 'green economy' concept, the CEDRO 5 proposal brings together a set of activities that work in synergy to improve Lebanon's energy security through the support to the country's (EE) and (RE) Intended Nationally Determined Contribution (INDC) targets while creating new employment opportunities and increasing women employment in the said sectors (EE & RE).

In specific, activities were designed to (1) foster innovation and entrepreneurship in the EE & RE sectors (under **Activity 1**) through technology transfer, i.e. (2) advancing existing and creating new value chains (under **Activity 2**), (3) assisting in the scale-ups of existing EE & RE companies (under **Activity 1**) and (4) ensuring the sustainability of knowledge transfer (under **Activity 4**). In addition, the project will support to pave the way for enabling incentives for RE (under **Activity 3**).

To create new green market opportunities, the project will bridge the gap between entrepreneurship and application of RE technologies. By piloting innovative green energy value chains, the market capacity can expand which would directly provide more jobs and support innovation in the sector, particularly for the youth and SMEs in Lebanon. By building on the previous experience of the CEDRO programme and its well-established and trusted network with energy-related companies and stakeholders, the operational approach and transfer of sound practices will be ensured. In parallel, the market growth and technology application will be further strengthened by using incubators and "Energy Hub" platform to link the production sector or SMEs with innovative products as well as to link new programmes that promote renewable energy credits (REC) to the Lebanese market. Last not but least, all actions under the proposed project will make sure to support gender equality to fill up a gender gap in the employment opportunities in the 'Science, technology, engineering and mathematics (STEM) field, with only 28% of employees being female, a value below the total share of female workers over the various economic activities (av. 32%) globally<sup>2</sup>.

Overall, CEDRO 5 will undertake the following five interlinked main activities with 5 sub-activities under Activity 2.

### ***Activity 1: Innovation, Entrepreneurship and Research***

(1) Create an 'Energy Hub' with a local incubator to foster collaboration between the available initiatives and stakeholders for the clean energy transition in Lebanon, (2) support green start-ups and entrepreneurs for clean energy transitions through synergies created with the main players in the energy sector, (3) establish 'scale-up' mentoring for selected local RE and EE companies to grow their businesses and introduce innovation to their operations, and (4) support women entrepreneurship and employment in the sector

### ***Activity 2: Technology Transfer***

Act 2.1. Advancing commercial-scale solar PV with storage, variable drive gensets, and modern control

Act 2.2. Advancing the local 'ARZ' green building certification through a free and new online portal and through paid official certification processes

Act 2.3. New value chain established for solar thermal and advancing existing energy efficiency for industry/manufacturing (

Act 2.4. New value chain established for biogas applications



Act 2.5. Advancing SEACAP / SEEAP applications through direct interventions (in coordination with Clima-MED <sup>10</sup> project team), and further support for innovative financing and regulatory schemes (e.g. crowdfunding and community V24 Initiative).

***Activity 3: Policy initiatives and enabling environment***

(1) Continue assistance to national utility to advance net metering and virtual community net metering, and (2) Establish the full innovative process for 'renewable energy credits' for Lebanon that has the potential to significantly accelerate RE uptake

***Activity 4: Vocational training and capacity building***

(1) Workshops for general professionals and municipalities on all Activity 2 implementations (2) policy training for Act. 3 and (3) Online courses for academic and professional participants for all implemented technologies (part 1 of train – the - trainer) for Act. 2.1 – 2.3 & 2.4.

***Activity 5: Awareness raising & donor visibility***

A combination of actions and materials to promote effective awareness on the benefits of the applications outlined above, and to ensure donor visibility in all activities.

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<sup>10</sup> The EU – funded Clima – MED project; website accessed here: <https://www.climamed.eu/>

### 3. Results and Partnerships

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#### 3.1 Objectives

Overall objective of this project is to improve Lebanon's energy security through the support to the country's energy efficiency (EE) and renewable energy (RE) Nationally Determined Contribution (NDC) targets while creating new employment opportunities and increasing women employment in the said sectors (EE & RE). Specific objectives of the project are to foster innovation and entrepreneurship in the EE & RE sectors through technology transfer, i.e. advancing existing and creating new value chains, assisting in the scale-ups of existing EE & RE companies and ensuring the sustainability of knowledge transfer.

The project's targets are as follows:

- 6,989 direct person-months and 2,200 indirect person-months jobs created
- 5 successful start-ups in EE/RE enabled
- 5 scale-ups in EE/RE
- 2 new value chains created
- 2 value chains enhanced
- 10 buildings certified to the local rating ARZ
- 2 policy initiatives supported
- 7 technical publications
- 8 workshops conducted 6 trainings
- 7 communication events
- 7 leaflets and brochures
- 10 visibility plaques
- 6 awareness and communication videos
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#### 3.2 Results

The objectives of this project will be achieved through the following 5 main activities:

##### ***Activity 1. Innovation, Entrepreneurship and research (led by UNDP)***

The UNDP will be the consortium partner that is leading and solely responsible for Activity 1. Activity 1 will promote synergies between entrepreneurs, innovation promoters and SME (E-I-SMEs), universities, and research organizations to accelerate new business creation by addressing key challenges the eco-system is facing at each stage of the innovation process (Ideation/R&D, Commercialization, Start-up/Early Stage, Growth). At R&D and commercialization stages, Lebanon remains challenged by lack of funding for green activities, disconnect between research activities and industrial/commercial demands and low volume of technology patents<sup>11, 12</sup>.

To address the challenges faced at the R&D and commercialization stages, Lebanon needs to combine its fragmented resources for a higher and wider impact in promoting innovation in the energy sector<sup>13</sup> and technology transfer (**Activity 2**) to compensate for the low number of already commercialized RE technologies. For this sake, this activity will establish an "Energy Hub", which works as a one-stop innovation and knowledge platform / meeting point for the EE and RE sectors to accelerate multi-stakeholder collaborations via the creation of shared tools and resources for SMEs, deployment of new business models and market solutions by bringing E-I-SMEs and research organizations together. To ensure the creation of new business models and market solutions, the activity will collaborate with local incubators<sup>14</sup> through competitive procurement to tap into their experiences and network, especially in the field of digital innovation.

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<sup>11</sup> MoET (2014). [Lebanon SME Strategy – A Road Map to 2020](#).

<sup>12</sup> MoET & McKinsey (2018). [Lebanon Economic Vision](#).

<sup>13</sup> UNDP (2018). [Value Chain Assessment and Analysis – Renewable Energy Sector in Lebanon](#).

<sup>14</sup> e.g. BERYTECH, UKTECH HUB, SMART ESA, BIAT, ALTCITY, SPEED, FLAT 6 LABS, SOUTH BIC, etc...



Through UNDP's established and trusted network of energy-related stakeholders (SMEs, academia, financing institutions, industrial and commercial facilities) which will be part of the hub's stakeholders / partners, the "Energy Hub" will support the incubator by providing technical and non – technical support (including, but not limited to: technical know-how transfer, regulatory support, customer needs analysis, etc..) and fostering synergies between existing and emerging entrepreneurs and various stakeholders in the energy sector. Shared tools and resources of the "Energy Hub" will attract strong buy-in from existing energy-related SMEs. Since the engagement of energy SMEs is a critical risk it is essential to set incentives for them to be active partners of the Energy Hub so that the platform can bring real market/industrial insights and needs to innovation promoters. The detailed business plan in Activity 1 is as follows.

- a. **'Energy Hub'**: CEDRO 5 will create an 'Energy Hub' platform dedicated to facilitating communication and collaboration between the available initiatives (implemented, under implementation and forthcoming projects), incubators, entrepreneurs, programs, academics and financing institutions. The platform (green ecosystem) seeks to foster collaboration for the clean energy transition in Lebanon. The 'Energy Hub' is both a virtual space with a complete directory on the EE / RE sector in Lebanon, and a physical space provided by the incubator when needed; the hub support the three remaining below mentioned activities.
- b. **Support to green start-ups and entrepreneurs**: CEDRO 5 will promote innovation and entrepreneurship in support to Lebanon's clean energy transition, through synergies created with the main players in the energy sector in order to bridge the existing gap between the R&D sector (green entrepreneurs, innovation promoters, universities and research organizations) and local industries and SMEs. The project will launch a series of call for ideas for new ventures in support of the energy sector and will provide the required support as identified by the MOET's strategy to enable green economy growth and job creation. The project will also provide support to the winning bidder (in this case an incubator) to properly identify start-ups and innovative business models that answer local market needs.
- c. **Scale up of selected local RE and EE companies**: Mirroring the Eurofound approach<sup>15</sup>, in particular the 'Workforce Innovation', the CEDRO 5 will support SMEs in growing their business and introducing innovation to their operations. First, a market assessment of the problems faced by leading RE&EE companies will be completed. Second, CEDRO 5, along with the winning bidder (in this case the incubator), will design managerial, operational and technical training programs - for local companies competitively shortlisted by both the incubator and the project based on a call for participants launched to list of ESCOs identified by LCEC<sup>16</sup> - based on the market assessments results. Third and where applicable, a business plan along with guidance for the implementation will be developed. Synergy with the winner of Lot 2 under this Call for Proposals will be created.
- d. **Supporting Women Entrepreneurship**: CEDRO 5 will empower women in the energy sector through a call of applications of new business ideas where business plan proposals on topics related to RE&EE are submitted for review by a professional committee (incubator representative, CEDRO 5 representatives, professionals from the technical/ SME sector). After the selection phase, successful business ideas would receive mentoring on technical, financial, legal and project development topics and would be supported through a matching phase with potential investors, financing entities (such as Kafalat, BLF<sup>17</sup>, Bank Audi, etc...) and other interested enterprises. Further support will include the integration of the successful women entrepreneurs into university alumni networks or women co-op networks for increase support and market exposure.

Furthermore, and in line with the Eurofound key identified topics ("upskilling and strategic employee sharing")<sup>18</sup>, the CEDRO 5 project will pave the way for local universities researchers (through a technically competitive call for interest for researchers), to accompany the project implementations and policy initiatives for the purpose of research and publications from the

<sup>15</sup> Eurofund (2019). [Innovations and job creation in companies.](#)

<sup>16</sup> <http://www.lcec.org.lb/en/LCEC/DownloadCenter/Others#page=1>

<sup>17</sup> [We Initiative web site](#) (checked in May 15, 2019)

<sup>18</sup> Eurofund (2019). [Skills and Training.](#)



respective researchers and institutions (in addition to capacity building actions – see Activity 4). Strong linkages – building on the network the UNDP has amassed over the past phases of the CEDRO implementations and other projects in the energy sector - will be created between researchers from the academic sector and the industries in order to help the latter in reducing their high costs for R&D and the former in providing hands-on professional experience and exposure in the energy sector. The extensive network complemented by co-applicants networks (ALI, LGBC and I-REC) will support in facilitating buy-in, synergies and cooperation. Particular interest will be on life-cycle assessment, policy research, techno-economic assessments, and innovation frontiers. This has been done in previous CEDRO programs (for example through the collaboration with the University of Balamand on life-cycle assessment of Green Roofs and Solar Street Lighting applications).

### **Activity 2. Technology Transfer (advancing existing and creating new value chains)**

To compensate for the low number of already commercialized RE technologies and lack of applied R&D funding in Lebanon, technology transfer is vital for E-I-SMEs to reach the confidence level and open up currently untapped markets and new value chains. To this end, this component will undertake technology transfer supporting E-I-SMEs to be able to target new markets and value chains with new RE solutions and advancing existing EE / RE solutions. In addition, the Activity will target the certification of buildings in terms of energy performance in accordance with the ARZ certification. These market opportunities are driven by three main aspects (i) commercial buildings still rely on expensive diesel generators, which can be offset by advanced solar-PV-storage system (**Act 2.1**), (ii) 40% of the buildings in Beirut and 30% in the Suburbs are built prior to 1970<sup>19</sup>, and therefore consume excessive amount of electricity due to lack of EE measures, hence featuring high potential for improvement with commercially viable measures and actions (**Act 2.2**), (iii) the Lebanese industrial sector (accounting for 15% of the GDP<sup>20</sup>) consumes vast amounts of thermal energy for heat and steam generation. Approximately 50% of the final energy demand of industries is thermal energy, amounting to \$300 million paid by industry each year (assuming \$70 per barrel) (**Act 2.3**). In particular the agro-food sector presents another untapped potential for sustainable energy systems. Unutilized residues from dairy and other livestock sector can be utilized for energy production (**Act 2.4**). As identified by both IRENA<sup>2</sup> and the UNDP<sup>4</sup> both CSP and Bioenergy (i.e. Biomass and Biogas) showed a promising potential for local job creation, which further strengthen the choice of activities 2.3 and 2.4 especially that it assists Lebanon in reaching their targets and it also assists the CEDRO 5 project in creating new job opportunities. Lastly, innovative approaches such as customer aggregation schemes (e.g. community solar PV) and crowdfunding can catalyze collective action and benefit-sharing, unlocking the market potential by bringing more affordable green power options to more customers (**Act 2.5**).

As was done for the PV, the project will provide the technical know-how through the foreseen implementations under this activity. This will not only ensure the transfer of know-how for professionals (partners of the “Energy Hub”) but will also ensure access and post-implementation monitoring for the performance of the introduced solutions in the Lebanese setting, allowing for professional exchange and cooperation between various stakeholders of the “Energy Hub” and fostering a positive environment for innovation, growth and collaborations. The commercial and/or industrial sites will be chosen for pilot project through a combination of partial grant support (and full technical support, as well as interventions in villages/communities. Based on these implementations, approximately 7 guideline reports are expected to be published. The activities foreseen herein are divided into 5 sub-activities, described below.

For responsibilities of each partner, Act 2.1, 2.2 and 2.3 will be led by UNDP in terms of overall management and implementation of RE/EE systems and ALI will be responsible for reaching out to industries in Lebanon to identify and select beneficiaries, assessing the technologies to be transferred, disseminating the piloted technologies to other industrial institutions through their “energy expert” and “outreach expert”. In addition, ALI will be responsible for development of

<sup>19</sup> LCEC (2018). The First Energy Indicators Report of the Republic of Lebanon.

<sup>20</sup> IDAL (2017). [Lebanon's Industry in Numbers](#).



energy data collection portal on Act 2.3. Act 2.2 will be led by the LGBC for technical development of Arz certification and creation of web portal and UNDP will be overseeing/following-up the implementation process. Lastly, Act 2.5 will be led solely by the UNDP.

**Act 2.1. Advancing commercial-scale solar PV through storage, variable drive generators, and intelligent control (led by UNDP, supported by ALI)**

The hybrid solar PV-diesel system has the largest share of solar PV installations in Lebanon and is one of the most successful distributed RE generating sources in the country. The EU UNDP-CEDRO 4 and MEDSOLAR projects have contributed substantially to the development of the solar PV-diesel architecture, through showcasing 9 such projects, totally more than 1.4 MWp of projects. However, these installations and others done in the market are constrained by the need to protect the diesel generator during blackout operation (each generator cannot run below 30% of its nominal size or capacity) and thus partially shutting down solar PV power (known as curtailment) is not only unavoidable, yet the UNDP has monitored significant curtailment (up to 20%). There are four categories based on PV energy annual fraction (i.e. the percentage of PV energy consumed by the load/demand in relation to the total energy consumed); (1) Less than 20%; (2) Between 20% and 50%; (3) Between 50% and 80%, & (4) greater than 80%<sup>21</sup>. The 1<sup>st</sup> category requires little to no PV power curtailment is expected and there is no need for an energy management system. The 2<sup>nd</sup> category requires a simple energy management system, or a small storage device is needed in order to account for spinning reserve. However, for types (3) and (4), a battery energy storage and more complex energy management systems are needed to fully optimize energy use between electricity demand and battery storage.

Given that the load of any particular facility changes throughout the year (depending on facility demand) and given that on particular days during the week (i.e., weekends) the load/demand of facilities drop significantly, the rationale and the potential benefits of integrating advanced storage systems becomes highly pertinent and significant. Sites that are categorized as category 1 or 2 (i.e., PV energy fraction between 20% and 50%), will on some days and instances be working as if they are category 3 and 4. Although in total the solar PV still delivers major savings, there are losses that can be avoided with pushing the frontiers of solar PV hybrid systems and services. These services include introducing new diesel gensets that can operate at near zero load (i.e., they can idle), introducing advanced storage technologies, and monitoring and control strategies.

The CEDRO 5 project will reassess the technical performance and economic viability of solar-PV systems in different circumstances and implement demonstration projects that can showcase the improvement potential of solar PV-diesel systems. The pilot projects will aim to consider one or more (simultaneously) of the following per selected site:

- Introduce variable speed gensets that are able to better function with RE sources, as they are able to operate on idle mode (i.e., without giving any power), without any significant wear and tear on the gensets;
- Introduce advanced solar storage technologies, particularly focusing on Li-ion battery energy storage as a durable means of advancing the overall performance of RE integration. This is vital for shutting down completely diesel gensets during certain times of the week (e.g. Sunday).
- Advance monitoring and control strategies that optimize the operation of solar PV with diesel gensets, with the potential to include demand-side management strategies (e.g. in some circumstances, the facilities will have a series of loads/demand that can be turned off or on without impacting their performance and/or the facilities overall production and/or outputs).

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<sup>21</sup> UNDP (2016). [Solar PV Hybrid Power Plants – A Guideline Report](#).



A guideline report based on various deployable methods (mentioned above) to advance solar power for Lebanon, including the outputs and experiences gained from the demonstration projects, will be published and disseminated as indicated in Activities 4 and 5.

## Act 2.2. Advancing the ARZ Rating System (led by LGBC)

The ARZ Green Building Rating System (GBRS) was first launched in 2011 as the result of a cooperation between the International Finance Cooperation (IFC) and the LGBC. It was developed by Lebanese architects and engineers to suit the Lebanese built environment and is applied to existing office buildings. It is an evidence-based tool relying on an on-site evaluation by trained assessors. However only 5 projects were assessed to date. The main factors that played against a more widespread application of the tool are (1) the lack of awareness in the country about the sustainability performance of a locally tailored certification system, (2) the lack of well-established and institutionalized regulatory and fiscal incentives at the national level to improve on buildings performance, (3) the limited outreach of LGBC due to scarce financial resources, and (4) the costs and administrative complexity involved in carrying out an in-situ ARZ assessment by a trained assessor. The building sector consumes approximately 78% of the total electrical demand and 24% of the total thermal demand<sup>19</sup>. Under Lebanon's INDC targets, the GoL has pledged a 10% 'conditional' reduction in energy demand by 2030.

The MEW/LCEC NEEAP 2016 – 2020 details a handful of measures to be implemented by end-users, amongst which is an energy performance certification for buildings (coded B05). Advancing and supporting a locally developed rating scheme would ensure environmental, social and geographical variables are taken into account and would lead to a rippling effect in job creation at all levels of the building sector, as identified by the EU funded MED-ENEC project in August 2013 (see Figure 1).

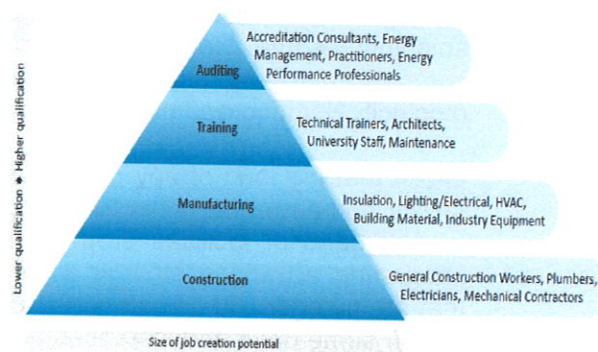


Figure 1. Impact of Energy Efficiency in the building sector on job creation (EU MED-ENEC)<sup>22</sup>

Building on previous successes, the CEDRO 5 project, through the LGBC, will support the development of the local rating system on the one hand and work on identifying the appropriate incentive(s) to fulfill the overall project's objectives. To this end, Act 2.2 involves developing a web based GBRS for commercial buildings (offices, malls, hospitals, hotels, schools) in order to allow free and unrestricted access (by the largest possible audience) to a user-friendly tool tailored to the Lebanese market. This approach will mitigate, to varying degrees, most of the barriers outlined above. The proposed ARZ GBRS will offer the following services;

- Evaluation of the environmental performance of existing commercial buildings and guidance on improvements to reach a specific rating level proper to ARZ GBRS
- Evaluation of the amount of energy/water saved per measure being selected
- Evaluation of the Carbon footprint of the environmental performance measures being selected
- Evaluation of the cost impacts of the environmental performance measures being selected
- Capacity building for engineers aiming to improve their skills in Green building design
- Awareness to the importance of environmental performance in buildings

<sup>22</sup> MED-ENEC. (2013). [Energy Efficiency and Employment: A Win-Win Opportunity](#).



The GBRS web application, allows users to get an unofficial web-based rating for their buildings. Moreover, Act 2.2 will also work to ensure that in case an official certification is sought, then a building owner could register the building / project in order to have an assessment performed by an ARZ assessor to obtain an official certificate (Gold, Silver, Bronze, & Certified). A guideline report will be published on all the process of the ARZ GBRS.

Lastly and building on experiences from other initiatives (such as Germany’s experience as reviewed in the MED-ENEC publication), where it was indicated that the introduction of blended finance, coupled with the minimum building energy performance acceptable level, have helped create up to 250,000 jobs in the building sector in Germany (as an example), Act 2.2 will undertake an assessment on the required regulatory and fiscal measures and actions needed to design a similar scheme. The recommendations will be communicated as per Activity 5.

### Act 2.3 Energy efficiency & solar thermal for industrial and/or manufacturing sectors (led by UNDP, supported by ALI)

World-wide, industry is among the largest consumer of energy, and most of this energy goes to generating heat for steam and/or for the manufacturing processes (Figure 2).

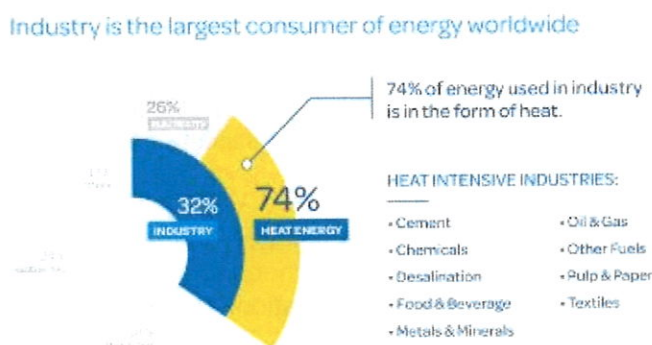


Figure 2. World-wide industrial heat’s share of final energy<sup>24</sup>

In Lebanon, the Second National Energy Efficiency Action Plan (NEEAP 2016-2020) estimated that the Lebanese industrial sector consumed approximately 18,642 GWh of the country’s primary energy demand (2015 data). Surveyed data showed that electric energy and thermal energy demand formed, respectively, approximately 4,201 GWh and 4,210 GWh of the industrial sector total final energy consumption<sup>23</sup>. High costs of energy have had a direct impact on inflating the operational costs of industries, impacting the industry’s competitiveness.

Industrial processes contribute to approximately 10% of the total greenhouse gas emissions of the country<sup>25</sup>. Utilizing new RE solutions to directly supply the energy load of industries (especially in Lebanon where the use of expensive diesel is the norm) has thus, on the one hand, a double-dividend effect on the balance of trade and can lead to new innovative frontiers and value chains, on the other. In both cases, this would lead to direct and indirect job creation. Industrial thermal energy demand is still primarily met by centralized boilers and conventional systems burning diesel oil and other fossil fuels and feeding a heat network with high levels of inefficiencies. EE and solar thermal energy are still an un-tapped resource with significant potential to assist the industrial and/or manufacturing sector in lowering their respective operating costs, in improving environmental performance, and in creating new markets and jobs in the Lebanese market. In 2018, for example, only 7% of the total soft loans obtained from NEEREA went

<sup>23</sup> MoEW & LCEC (2016). The Second National Energy Efficiency Action Plan for the Republic of Lebanon (NEEAP).

<sup>24</sup> Moss., S. (2019). [Solar Energy Isn’t Just for Electricity](#).

<sup>25</sup> UNDP (2017). [Lebanon's Second Biennial Update Report](#).

to industrial sector applications for EE<sup>26</sup>. Act 2.3 will focus on increasing this share, where partial grants will be provided and the remaining amount will be obtained from the available soft loans (LEEREFF & EBRD GEFF) or other sources.

To date, the efforts that have been done to establish and advance these sectors has had negligible on-ground impacts. One noteworthy project, led by the World Bank Group, has been the Middle East and North Africa Concentrating Solar Power Knowledge and Innovation Program<sup>27</sup>. In Lebanon, this project has led to a 5-day training on solar process heat assessment, design and specifications for various contractors and potential beneficiaries, and has managed to fly out a group of potential beneficiaries to Jordan to see an actual concentrated solar thermal system installed on an industry. However, given mainly the perceived high investment costs required, no such installation has happened in Lebanon yet. Over the past few years, several EU supported initiatives have targeted the industrial sectors through introducing resource and/or EE measures and technologies, and environmental protection activities. Namely these are (1) the Lebanese Cleaner Production Centre (LCPC)<sup>28</sup>, (2) the EU UNDP CEDRO 4 project, and the (3) Switch-MED project<sup>29</sup> & MED-TEST II initiative.

CEDRO 5 will work on diffusing innovative solar thermal energy production and EE technologies and their associated value chains into the Lebanese industrial and/or commercial sectors. For solar thermal systems, CEDRO 5 will aim to select several beneficiaries from the different local industrial and/or manufacturing sectors for the implementation of solar thermal demonstration projects. The focus will be on beneficiaries with a relatively high heat demand. For EE and heat recovery, the project will build on work completed through the above initiatives by assisting competitively short-listed facilities belonging to the identified sectors by:

- Completing a level 2 ASHRAE energy audit for their facilities
- Selecting, evaluating and setting up facilities under the needed guidelines (depending on the identified measure for support in EE implementation) to follow the ISO 5001 structure
- Implementing the no cost / low cost measures identified in the Energy Audit
- Implementing one medium cost or high cost measure identified in the Energy Audit

The Association of Lebanese Industrialists (ALI), co-applicants to this proposal, will play a vital role in (1) reaching out and encouraging industries to participate, (2) disseminating the results and outcomes to all the sector to ensure replicability, and (3) assisting in lobbying policy-makers to remove the identified barriers that prevent more rapid up-take of these measures and/or technologies.

Furthermore, ALI will take the lead in establishing an online portal for the consistent (annual) collection of disaggregated data on energy consumption, use, and energy analysis in industry. ALI will undertake an assessment of various methodologies used in different countries to collect systematic energy data from the industrial sector, as well as assess the current conditions and players in Lebanon that are charged with and/or involved in the collection of industrial energy data, as a pre-requisite to setting up the online portal for energy data collection in industry.

Two guideline reports based on the outcomes of the various deployable methods to advance solar thermal energy and EE for commercial and industrial sectors in Lebanon, including the outputs and experiences gained from the targeted

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<sup>26</sup> BDL (2018). [BDL's Green Loans – NEEREA Financial Mechanism](#).

<sup>27</sup> MENACSP Knowledge and Innovation Program (web site: <https://cmimarseille.org/menacspkip/>)

<sup>28</sup> LCPC (web site: <http://www.lebanese-cpc.net/>)

<sup>29</sup> Switch MED Project (web site: <https://www.switchmed.eu/en/> )



demonstration projects, will be published and disseminated as per Activities 4 and 5 below.

#### **Act 2.4 Biogas technology transfer & value chain (Led by UNDP, supported by ALI)**

Given the need to develop innovative products and/or small-scale RE equipment, as well as the need to create employment, biogas also presents significant potential benefits to these objectives. Unlike variable RE sources such as wind and solar, biogas offers reliable, flexible and storage capabilities that, if and when demonstrated, can be replicated widely.

Biogas implementations need to be developed through piloting as a necessary first step that increases knowledge and confidence in this technology and reduces investment costs. To our knowledge, there are no such applications in Lebanon to-date; due to the relatively high capital investment required to develop a functioning biogas system, particularly given the lack of market for it yet, and given the limited technical know-how for this technology. In the EU, for example, biogas plants grew by an average of 16% annually between 2009 and end of 2016, yielding 1 GW of electric power<sup>30</sup>. Therefore, the potential to introduce and expand this market for Lebanon is substantial.

Biogas offers very good potential synergies with other sectors such as forestry, agriculture, wastewater treatment and solid waste management. Of particular importance for Lebanon is the synergies that biogas valorisation creates with the waste sector. Biogas systems can effectively manage organic waste streams like bio-waste, food leftovers, manure and agricultural residues. Additionally, biogas is an important source to consider because it has the potential to completely replace the dependence on expensive diesel generators in certain sectors such as agricultural farms and certain industries (agro-food industry, municipal solid waste sorting facilities and wastewater treatment plants). The heat by-product produced by biogas plants can also be harnessed and utilized for heating application on the facility's premise, but also natural gas can be stored in liquefied gas tanks and sold in the market. Furthermore, biogas processing plants produce digestate that can be sold as fertilizers, thus creating a local production of high-quality bio-fertilizer that decreases the agricultural sector's dependence on imported products. The development of this new digestate market and other markets discussed above creates new value chains, creates jobs and enhances the well-being of rural citizens.

In 2012, the UNDP CEDRO 3 project, through funding from the Spanish Agency for International Development Cooperation, published the "National Bioenergy Strategy for Lebanon" where the prioritization of bioenergy waste streams was identified. The EU funded UNDP CEDRO 4 project implemented 1 demonstration project in biomass briquettes from forestry residues in the village of Bkessine, South Lebanon. Many other projects have been developed since in Lebanon, paving the way for new employment opportunities. These projects were supported by the EU and by other donors, however the CEDRO 4 implementation was a key cornerstone from which lessons learned and experiences gained enabled a better replication of this technology.

The current project proposes the demonstration of biogas systems (from animal farms and/or slaughterhouses, from agro-food industry or the commercial sector such (supermarkets, caterers,...), and/or from municipal solid waste sorting plants (where sorting at source has taken place).

The main expected outcome of the project is to pilot different biogas technology options, promote innovation and entrepreneurship in the sector and develop a policy and knowledge framework that would allow this sector to create local value chain. In this regard, we would identify sites that would allow us to test different technologies suitable

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<sup>30</sup> EBA (2017). [European Biogas Association Statistical Report 2017](#).



for different climatic conditions, different waste streams, different flexibilities and different storage options. Specifically, we would strive to implement at least two types of biogas technologies (e.g. stirred tank reactor (CSTR), plug flow reactor, up-flow anaerobic sludge blanket (UASB), and/or One project using an expanded granular sludge bed (EGSB).

A guideline report based on the outcomes of the biogas implementations will be published and disseminated as per A4 and A5.

### **Act 2.5. Community initiatives (SEACAPS / SEEAPS)**

The UNDP will lead this activity in cooperation with other institutions outside the current consortium, and in particular in collaboration with the EU Clima-Med project.

The Global Covenant of Mayors (GCOM)<sup>31</sup> is a bottom-up EU initiative created to mobilize local governments (cities / villages) to decarbonize their respective cities (and/or villages), strengthen their respective capacity to adapt to climate change and provide residents with access to sustainable and affordable energy. The signatory members in the GCOM commit to a carbon dioxide equivalent (CO<sub>2e</sub>) reduction of at least 40% by 2030 through various actions under the Energy Efficiency and Renewable Energy umbrellas.

The EU funded Clima-MED project was established in 2018 with a mandate to identify beneficiary villages or cities (or union of municipalities) in order to assist them in developing their local SEACAP<sup>32</sup> (local Energy Access & Climate Action Plan). Furthermore, the Clima-MED project aims at identifying, fund raising and implementing 5 priority actions. To date (i.e., as of April 2019), 9 signatory beneficiaries have been identified in Lebanon (Moukhtara, Baakline, Batoul, Hasbaya, Jezzine, Kab Elias, Kawkaba, Kherbet Rouha, Menjez)<sup>33</sup>. Following the UNDP's communication with the EU – funded Clima-MED project (April 2019), it has been indicated that the SEACAPS for the 9 above-mentioned beneficiaries are still at their early stages and first drafts of these SEACAPS are expected towards the end of 2019. Therefore, adopting particular actions as prescribed by SEACAPS and indicating them within this proposal is not possible. An alternative approach is adopted to indicate the actions that will be implemented, under the SEACAP Activity, taking into account the below;

- The CEDRO program, since its inception in 2007, focuses on energy interventions related to climate change mitigation and will therefore focus on projects identified in the eventual SEACAPS that have a direct or indirect energy impact and/or implication
- If, for any reason, the SEACAPS are not ready by the time the project effectively commences (expected in early 2020), and if any delay is foreseen that may undermine an acceptable time frame needed to undertake the necessary due diligence (in terms of drafting the design and specifications, procurement, and implementation), then the CEDRO 5 project will focus on the recommendations of the Sustainable Energy Efficiency Action Plans (SEEAPS), developed by the EU – funded CES-MED project<sup>34</sup>, and completed for beneficiary villages, towns and cities (Baakline, Beirut, Kab Elias, Menjez and Achkout).

The CEDRO 5 program will coordinate closely with the Clima-MED project in selecting the interventions that will be undertaken through two different methods (discussed below).

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<sup>31</sup> Global Covenant of Mayors for Climate & Energy (Web link: <https://www.globalcovenantofmayors.org/>)

<sup>32</sup> In the EU guidelines for this proposal, SECAPS are mentioned (Sustainable Energy and Climate Change Action Plans). However, in the newly established website of the Clima-MED project, the term used is SEACAPS.

<sup>33</sup> GCOM (2019). [Covenant Community](#).

<sup>34</sup> CES-MED (2019). [SEAPS](#).



### **1. Full Implementation of selected activities listed under the 5 priority actions**

The CEDRO 5 project proposes to select 1 to 2 key implementation measures (directly or indirectly related to energy) within 5 villages. These measures will be as identified in the SEACAPS, once they are published (or adopted from the existing SEEAPs if SEACAPS are not available). In this way, the CEDRO 5 project will signal to as many villages and towns as possible, that the SEACAP (or SEEAPs if SEACAPS are not published) has enabled the beginning of financial mobilization for the actions that better the town or village's mitigation of greenhouse gas emissions and/or climate change adaptation.

### **2. Utilizing (and empowering the use of) crowd-funding platform(s) that could help all Lebanese COM and GCOM affiliates in implementing their SEACAP / SEEAPs**

Lebanese small to medium sized municipalities receive limited funding from the Government of Lebanon (GoL), and they themselves can only raise limited local funds from property taxes. These funds cover basic wages of employees of the municipality and some operating costs (mainly). Furthermore, the annual due funding from the central GoL to the municipalities is not being delivered on time. This undermines the ability of a municipality to borrow as well. This situation is leaving most small to medium sized villages and towns reliant on donor funding, particularly in lieu of the Syrian refugee crisis.

The UNDP – Live Lebanon project<sup>35</sup> has had several success stories in crowdfunding for various initiatives across Lebanese villages. Some of these initiatives cover energy, such as the Marjeyoun solar street lighting project that has managed to crowd-fund approximately 107,000 USD for the implementation of 60 solar streetlights<sup>36</sup>. The Live Lebanon project provides a platform through which the Lebanese diaspora worldwide can get involved in supporting the Lebanese communities in implementing their initiatives. The CEDRO 5 project (proposal), in coordination with the Clima-MED project, will explore the use of either the Live Lebanon platform (on condition that the CEDRO 5 project and the EU as donor will establish their own unique and visible profile) or other crowdfunding platforms in order to strive to secure further funding for some of the identified projects of the EU – funded Clima-MED and/or EU – funded CESMED projects. The aim would be to select one additional project from each of the villages identified under the Clima-MED and/or CESMED projects. CEDRO 5 will also explore, in coordination with Clima-MED, the option of tapping into or at least learning from European Crowd-funding networks (e.g. <https://eurocrowd.org/prodesa/>), exploring cooperation to better achieve CEDRO 5's and Clima-MED's objectives. In parallel, the CEDRO 5 project will develop promotional tools to be used on the platforms (including yet not limited to; project brief, project budget, and a 30 seconds video). CEDRO 5 will aim to run the crowd-funding campaigns for an average of 6 weeks. Once the budget is secured, the CEDRO 5 project will manage the turnkey process, including detailed design, procurement, implementation, and commissioning.

The CEDRO 5 project will also publish a crowd-funding guidelines report that is tailored to Lebanese municipalities and will aim to disseminate the findings of this report to several municipalities across Lebanon, using the union of municipalities as an entry and outreach point (please see Activities 4 and 5).

### **3. Continued support for the V-24 Initiative<sup>37</sup> launched by the EU – funded UNDP CEDRO 4 project**

The EU funded CEDRO 4 project has established the roadmap of setting up a community-led (dubbed V-24 Initiative) renewable energy system for Lebanon that has the potential to benefit residents and institutions of villages and towns in a more

<sup>35</sup> UNDP Live Lebanon (Web site: <http://www.livelebanon.org/>)

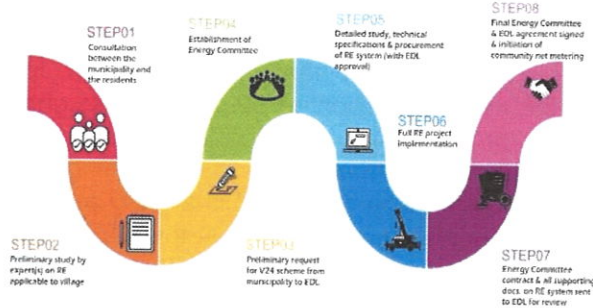
<sup>36</sup> UNDP Live Lebanon (2014). [Installing 60 Solar Power Panels In Marjeyoun.](#)

<sup>37</sup> UNDP (2018). [Sustainable Energy For Lebanese Villages and Communities: The Village 24 Initiative.](#)



cost-effective way, given the economies of scale that are created. Community RE, and specifically solar, is one of the four axes of development of distributed solar promoted by the NREAP, aiming to use the community-led approach to assist the target of 150 MWs of distributed solar power.

The process of setting up the V-24 Initiative was a long and difficult one, particularly as its success and replication hinges on the national utility's efforts and abilities. To date (as of May 2019), EDL is still to formally adopt this initiative and carry out virtual net metering on Kabrikha (the village that the CEDRO 4 project implemented a 250 kWp system). The CEDRO 5 project will continue its support to EDL's Net Metering Committee to ensure that any remaining and/or new barriers that arise from the implementation of virtual net metering are removed. In specific, the CEDRO 5 team will observe and monitor the actual data collection, transfer and the net metered billing of Kabrikha by EDL, assess the effectiveness and simplicity of the process, and actively support any amendment or modification based on these lessons learned. Furthermore, the CEDRO 5 project will assist the beneficiaries themselves (particularly the EU – funded Clima – MED and / or CES-MED identified towns and villages wishing to implement a centralized RE plant and where such an action is found technically and financially viable) in setting up the complete V-24 Initiative prerequisites, as shown in Figure 3, if and when EDL officially calls for the replicability of the V-24 scheme.



**Figure 3. The V24 Initiative (EU UNDP CEDRO 4)**

The V24 Initiative must rely on funds raised from the ascribed beneficiaries. However, tapping crowdfunding to partly finance this scheme in any one village will also be considered, in coordination with the Clima-MED project. CEDRO 5 will assist the selected beneficiaries to tap into the crowd-funding networks (as above) for the V-24 initiative, if and only if EDL has opened up the replicability of the scheme. If EDL has opened up the V-24 scheme, it is hoped that at least 1 further project is implemented using the V24 Initiative through the technical support of the CEDRO 5 team.

**Activity 3. Policy Initiatives & Enabling Environment (Led by UNDP, Supported by I-REC)**

CEDRO 5 aims to strengthen the supporting environment for sustainable energy and energy efficiency, continuing the policy advocacy work done by various EU projects (mentioned above). In specific, the project will work on existing and new policies and investigate the establishment of new policy pathways. CEDRO 5 will begin with an assessment of the current support mechanisms for distributed sustainable energy and energy efficiency measures in Lebanon, and recommend innovative and yet tested ways (i.e., best practices) to promote this sector, such as the use of rebates, tax credits, and accelerated depreciation. The focus will be on promoting green electricity, green heat provision, and energy efficiency measures, through various policy recommendations that target fiscal instruments. A publication (EE/RE energy policy review) of the finding will disseminated as per Activities 4 and 5.

For responsibilities of each partner, sub-activity on EDL support will be solely led by the UNDP. Sub-activity on REC Establishment will be led by the I-REC and UNDP will be overseeing/following-up the implementation process.

For the policy initiative, the CEDRO 5 will undertake the following 2 sub-activities:



- **EDL Support:** Continue assistance to the national utility EDL to better implement its net metering process, specifically for private or medium voltage beneficiaries. The EU funded CEDRO 4 assisted in setting up the net metering process of EDL online (see <http://www.edlnetmetering.com/>), and has worked with EDL to set up virtual net metering (see V24 initiative above). EDL requires more support, through trainings, capacity building, and technological transfer to ensure that they are running effectively. For the V24 initiative, CEDRO 5 will work closely with EDL to continue testing of the scheme. The goal is to assist EDL in effectively metering Kabrikha and allowing 1 further installation at least in 2020. This sub-activity will be led by the UNDP alone.
- **REC Establishment:** Assess, first, the applicability and the needed infrastructure for the introduction of voluntary Renewable Energy Certificates (RECs). This sub-activity will be led by the I-REC, and will be overseen/followed-up by the UNDP. RECs unbundle electricity generating renewable energy into systems that provide 'electricity' and provide a 'green' attribute. The 'green attribute' component can be certified and sold to beneficiaries that can claim its 'green' credentials. The process is shown in Figure 4.

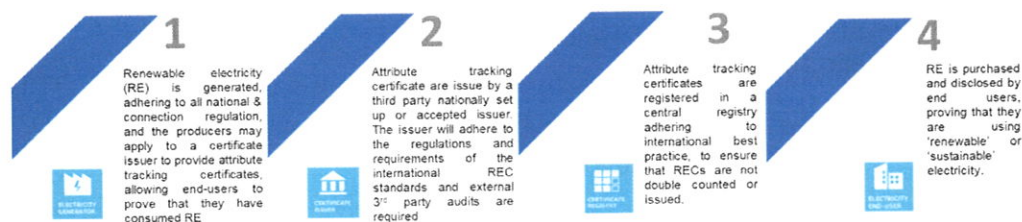


Figure 4. I-REC process

The RECs have a potential to incentivise further renewable energy in Lebanon, through;

- Creating further value, beyond electricity, for 'green' power that can be sold in the local and international marketplace
- Can be used by various companies' corporate social responsibility strategies
- Companies don't have roof space for RE can achieve 100% RE through certificate buying scheme
- Many of the international companies have branches in Lebanon and have committed to 100% RE and can buy certificates equal to their electricity demand in Lebanon (see, for e.g., [www.re100.org](http://www.re100.org))

Setting up the system of RECs for Lebanon, even on the envisioned voluntary basis, is an innovation that has the potential to significantly expand the renewable energy market in Lebanon. Commonly, REC prices range from 5 – 10 Euros per REC (each REC is equal to 1 MWh). Therefore, this process can add up to 0.5 – 1 Euro cents per kWh. For levelized cost of distributed solar power, this will add at least 10% in the value of the systems installed. RECs will therefore expand the market for renewables in Lebanon, expanding opportunities and employment, and will bring in new players in the sector, like international companies based in Lebanon, into the renewables market. CEDRO 5, in coordination with the International I-REC organization (EU based NGO) as co-applicant, will work on investigating, first, the applicability and needed requirements to set up this RECs for Lebanon (and publish a report on the findings), and upon the outcome of this assessment will move to (2) establish the system of REC generation, in coordination with the Government of Lebanon (through the Ministry of Energy and Water and possibly through the introduction of the required decree or law), and (3) disseminate information on RECs and market its benefits to the corporate sector to encourage take-up.

#### **Activity 4. Vocational training & capacity Building (Led by UNDP, supported by ALI and LGBC)**

A key activity in ensuring sustainability of the actions funded under this call is the transfer of know-how. Continuing in the footsteps of the various previous internationally funded initiatives, namely the Spanish – funded CEDRO 1-3, the EU – funded CEDRO 4, the EU ENPI – MEDSOLAR, the EU – funded Switch-MED project, and many other successful projects, the



CEDRO 5 will undertake different types of capacity building trainings to cover the various activities implemented under the project (biogas, concentrated solar thermal, energy efficiency, Arz Rating system, advanced storage and management techniques for PV, and policy initiatives. There will be two different types of trainings provided by the CEDRO 5 project. The 1st training set will be directly related to the demonstration project interventions (1A, 1B and 1C), and policy initiatives (1D) as listed in table 1 below.<sup>38</sup>

**Table 1. Training related directly to CEDRO 5 implementation of projects and policy interventions**

Training category	Audience	Subject	No. expected	Responsible Partner
1-2 day event	Open to all, esp. RE contractors	Biogas, PV + storage, CS thermal, EE (specifications, design, installation, & O&M)	4 events (1A)	UNDP, supported by ALI
Half day event	Union of municipalities &/or municipalities	RE & EE interventions, fund raising training, and V24 Process (if applicable)	4 events (1B)	Led by UNDP
Half-day event	Private beneficiaries	ARZ Rating system	4 events (1C)	Led by UNDP and LGBC
Half-day event	Open to all	I-REC & RE/EE Policy Review report	2 events (1D)	Led by UNDP, by supported I-REC

A recent IRENA publication shows that the share of women is the lowest in ‘science, technology, engineering and mathematics’ (STEM) jobs, with approximately 28% of the total market share. The highest share of women employed are employed in administrative jobs (app. 45% of the total administrative jobs)<sup>39</sup>. Access to training and skills have been identified as the main barrier for gender equality in the renewable energy field. A preliminary study conducted by the Livelihood Programme at the UNDP (Lebanon) identified lack of STEM education awareness for women as one of the challenges. Although a study completed by the UNDP in 2016 had placed Lebanon “in the high human development category, positioning it at 76 out of 188 countries and territories”<sup>40</sup>; women participation in various social, economic and political activities remained low with a female participation of “23.5% compared to 70.3% for men”. Furthermore, an EU – funded “Gender Analysis in Lebanon” report recommends “promote[ing] a new type of training that includes accounting, IT, language, and technical skills.”<sup>41</sup> To this end, significant attention during the implementation of this activity by the CEDRO 5 program will be put to encourage female participants to apply and complete the various capacity building activities proposed. Moreover, the creation of new value chains and/or the transfer of technology cannot be sustained without the adequate knowledge and experience required for optimal operation and maintenance. Although a lot of this experience will be transferred to the winning contractors, and through the workshops to be conducted (Table 1), there will still be important missing segments to reach out to. The CEDRO 5 project will obtain, through competitive procurement, the services of an international training and certification institution, to undergo the following program:

- Train the Trainers (TtT): This component will ensure that the applied design and performance know-how in the various CEDRO 5 activities will be replicable through the transfer of the

<sup>38</sup> In the concept note, 1A and 1C are grouped together with an expected 140 individuals reached, while 1B and 1D sets are grouped together to reach an expected 120 individuals.

<sup>39</sup> IRENA (2019). [Renewable Energy: A Gender Perspective](#).

<sup>40</sup> Avis, W.R., (2017). [Gender Equality and Women's Empowerment in Lebanon](#). UK Department for International Development.

<sup>41</sup> Carreras, E.F. and Wakim, G., (2017). [Gender Analysis in Lebanon](#). European Union Delegation to Lebanon.



required set of skills (i.e., designers, contractors / installers, operators and maintenance personnel). The TtT will have the following 2 components (2<sup>nd</sup> set):

- A theoretical segment through online courses with exams at the end (aiming for 4 different courses on the applied implementations of Activity 2. Furthermore, training women managers in the energy sector will be targeted through the online training (covering topics in the field of marketing, decision making, entrepreneurship and leadership in the public and private sector – see Act1). The trainings would be followed by an online performance assessment exam.
- A practical TtT workshops to university professors and professionals (e.g. training institutions). Material for lecturers and teachers will be provided to the attendees.

Last, the CEDRO 5 project will aim to have at least 4 interns (from multiple disciplines) per annum (16 in total) working with the project throughout its life-stages and activities.

#### **Activity 5. Awareness raising & donor visibility (Led by UNDP)**

Donor visibility will be ensured throughout the various work packages with dynamic ways of highlighting its support and the positive results of the partnership. The visibility plan will communicate the project's objective, progress and impact by focusing on the achievements and the impact of the actions to ensure replicability. In addition to customizing and regularly updating the website to report the EU as the project's donor in addition to the various participants (lead and co-applicants), formal and informal channels will be utilized to cater for the levels of target audience and the intended message throughout the project's implementation. Media channels will be used in order to ensure the widest outreach by the applicants (and Donor) and all other project participants (i.e., beneficiaries, winning bidders...).

Please refer to the Communication and Visibility (Annex 4)

### **3.3 Risks and Assumptions**

Lebanon is still subject to political instability due to regional conflicts, however the institutional efforts to buffer Lebanon internally from such regional instability have led to the formation of a government that may last the entire length of this project. Therefore, the current political climate can be considered as fairly stable and the probability of impacting this project's implementation remain negligible. Lebanon is also facing financial instability that has become more prominent in the last 6 months which may impact the availability of financing from the private sector and/or from lenders. This could be risk to the project financially given that the full financing for the action is not fully secured by UNDP at the time of signature of the present EU-UNDP Contribution Agreement. The table below lists the potential risks that the project may face and the counter measures that will be taken.

**Table 2. Project Risks and Mitigation**

Level	Risk	Mitigation
Physical	Damage to purchased equipment and material (Act 2.1, 2.3 – 2.5)	Memorandums of understanding will be signed with beneficiaries to ensure the operation and maintenance of the equipment installed against all risks or potential damage.
Environmental	Natural disasters and environmental degradation (Act 2.1, 2.3 – 2.5)	Ensure all outdoor equipment can withstand severe weather conditions expected in Lebanon. Ensure that an environmental statement is undertaken for all projects with significant installations.
Security	Instability in the security situation in the country	Isolated security incidences may occur. These incidences will be identified and communicated by the UN Security Information Operations Center (SIOC); appropriate measures will be taken accordingly. These could include the postponement of some of the works on site, the coordination with the Internal Security Forces as needed.
Legal / regulatory	Legal framework requirements	Ensure that all the installed systems work well regardless of the gap in the country's regulatory framework (i.e. systems are equipped to work on-grid and benefit from financial policy incentives such as the net-metering and off-grid without the need of the national utility network). Ensure that the I-REC platform / market is pegged to international

		market for sale of credits of RE electricity in addition to promoting local RECs purchase market. Ensure that community solar adopts innovative techniques (e.g. storage integration) if EDL virtual net metering (V24 Initiative) is not enabled.
Economic	Economic situation of Lebanon deteriorates	Ensure the collaboration of development banks such as the EBRD and EIB in the co-financing share of the required costs for implementation. Potentially focus on crowdfunding from outside Lebanon to assist in funding community projects under the SEACAPs.
Financial	Financial challenges at the national level (Activity 2)	Although related to the economic situation in Lebanon, indicators on fiscal health are also declining which may reduce the capacity of UNDP to leverage the contribution from the beneficiaries through the lending programmes available at the national level. UNDP will continue to work closely with the Central Bank and the relevant IFIs in this regard to mitigate risks.
Social	Cultural obstacles in Jobs creation, women empowerment, & community involvement	The project will work closely with the community and existing organizations to ensure community involvement (and acceptance) and encourage women empowerment.
Technical	Activity 1: Absence of the correct frameworks and processes for innovation and entrepreneurship  Act 2.1, 2.3 - 2.4: Difficulties integrating new value chains	The project will ensure the highest standard of project development, from drafting the terms of reference (including specifications and design, were applicable), to ensuring a 2-year performance guarantee for implementation activities (and bid bond during implementation). International expertise will be utilized to assist in the new value chains in order to minimize technical problems with the pilot systems.

Should any situation arise where the project faces any of the above risks, UNDP will consult with the EU on the required mitigation action or if alternative solutions are available, including the amendment of this agreement where deemed appropriate.



#### 4. Methodology (Project management)

This project builds on the previous EU funded renewable energy and energy efficiency projects in Lebanon, most notably the CEDRO 4 project, in addition to other completed and ongoing EU projects, including the Switch-MED and Med-Test 2 projects and the Clima-Med program.

The UNDP, as lead applicant, will implement and monitor the progress towards intended results, and will ensure high-quality managerial, technical and financial implementation of the project, including the activities undertaken by partner entities. UNDP will fully engage with the private sector beneficiaries for the implementation of the pilot activities while also coordinating closely with national counterparts including the Ministry of Energy and Water, Ministry of Environment, Ministry of Economy and Trade, Ministry of Industry and other public sector entities that may be implicated in this programme. Given UNDP's historic and on-going presence in various ministries, the technical work can also be disseminated extensively to a wide scope of national partners. This approach ensures the adoption of the project policy recommendations and that all technical knowledge is absorbed at the government level and mainstreaming of knowledge is enhanced at various ministerial levels given the cross-cutting nature of the project in terms of job creation, climate impact, benefit to industries and innovation.

In the CEDRO 4 project, UNDP gained insight on how to engage with the private sector as beneficiaries to gain their trust in new renewable energy technologies and became a trusted technical partner that introduces new technologies to the sector in Lebanon. UNDP will build on this experience to reduce risks and overcome barriers in the sector so that the action is successful and sustainable. Furthermore, UNDP has extensive experience, albeit in other sectors such as local-level livelihood development, in job creation and market expansion. The successes of other programmes in the sector of job creation will be tapped into to also build on previous project activities. Policy-level work and sectoral governance, particularly on climate change, is a strength of UNDP. The project will build on on-going projects in this field to frame the policy recommendations from this action and to ensure the uptake of recommendations by the national government. Linkage to the Low Carbon Emission Development Strategy (LEDS) which is currently being developed by the Ministry of Environment in consultation with various other ministries will be ensured so that the job creation and development of new markets can be integrated and sustained in the future.

Since the inception of the local ARZ rating system, LGBC has gained insight on people behaviour leading the building sector. Through the close collaborations with both the Order of Engineers and Architects and LIBNOR (the national standardization institution), the LGBC is actively working on improving the construction codes to include thermal performance and feed into the National Energy Efficiency Action Plan - NEEAP's <sup>42</sup>larger recommendations (notably B01, B02 and B03). The project will build on the momentum gained from the previous GIZ – funded initiative MED-ENEC<sup>43</sup> and the German funded IKI (International Climate Initiative) <sup>44</sup>which tackle new-build and will target the low hanging fruits which affect over 40% of existing buildings all the while supporting the LCEC and MEW in implementing recommendation B05.

The project implementation approach will combine both in-house execution of many components and activities of the project by the project partners (UNDP, ALI, LGBC, & I-REC), with the procurements of many services to contractors and institutions. In general, the activities will follow a rigorous process of implementation, as shown in Table 3.

**Table 3. Methods of implementation of activities**

Activity	Description	A call for beneficiaries' application	Competitive procurement contractors	competitive procurement consultants	Competitive procurement institutions
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<sup>42</sup> <http://climatechange.moe.gov.lb/viewfile.aspx?id=229>

<sup>43</sup> <https://www.giz.de/en/worldwide/17540.html>

<sup>44</sup> <https://www.international-climate-initiative.com/en/nc/details/?projectid=502&cHash=543f14069fe300f9b3f60281faf3b12e>



1	Innovation & entrepreneurship				▲
2.1	Solar PV advancement	▲	▲	▲	
2.2	ARZ certification			▲	
2.3	EE & Solar thermal	▲	▲	▲	
2.4	Biogas	▲	▲	▲	
2.5	SECAP / SEEAP	<i>Clima-Med</i>	▲	▲	
3	Policy Initiatives			▲	
4	Vocation training & capacity building			▲	▲
5	Awareness raising & donor visibility		▲	▲	

For all implementation of the activities (Act 2.1, 2.3 and 2.4), a call for beneficiaries will be announced and advertised on all social media and in Lebanese newspapers, along with a detailed description of the criteria for selection and the respective evaluation method. In parallel, consultants for the new value chains, in specific Activities 2.3 and 2.4, will be hired to assist the project team in the selection, design, and specifications of the renewable energy systems such as the energy efficiency (heat recovery component), solar thermal and biogas technologies to be implemented, aiming for the highest quality..

International and/or local consultants will also be hired, to varying extents, to assist the project team in the terms of reference for Activities 1, 2.1, 2.2, and 3 (writing the technical specifications, design, and specifics of actions/activities with milestones required). For activity 4, some specific activities can be implemented by consultancies. For the SEACAP / SEEAP (act 2.5), coordination with the Clima-Med project will take place for the selection of the municipalities (from the list of identified beneficiaries of the project) , the selection of the implementation measures (from the identified in the SEACAP / SEEAPs) to carry out (competitively) and any activity in communication and outreach.

Competitive procurement will then take place for all activities. For Activity 1 and 4, the procurement will be for established institutions in the respective fields (e.g. incubators and training institutes) to carry out the pre-defined actions and will also be evaluated on their approach/methodology, their ability to go beyond the stated requirements, their experience in the respective field and the team allocated for the task. For Activity 5, although a lot of work will be done by all the partners in CEDRO 5 (ALI, LGBC & UNDP), there will be several companies and individuals competitively hired to produce videos, material, and other services as specified.

Table 4 relists CEDRO 5 Activities and indicates the roles and participation extent of the related lead and co-applicants.

**Table 4. Distribution of activity responsibilities per partner**

Activity	Description	Leading institution	Support institution	Summary of Lead Partner role
1	Innovation & entrepreneurship	UNDP		UNDP to procure and work with local incubator to create 'energy hub', support start-ups and scale-up, and support women empowerment
2.1	Solar PV advancement	UNDP	ALI	UNDP to lead on all site selection, technology design, procurement & implementation. ALI to support in reviewing technical solutions, and support in outreach and dissemination



2.2	ARZ certification	LGBC	UNDP	LGBC to carry out all the work to kick-off the Arz rating through procuring and implementing the online portal and re-establishing the certification procedures. UNDP will support LGBC to ensure all actions are undertaken in line with UNDP and EU eligibility criteria.
2.3	EE & Solar thermal	UNDP	ALI	UNDP to lead on all site selection, technology design, procurement & implementation. ALI to support in reviewing technical solutions, and support in outreach and dissemination
2.4	Biogas	UNDP	ALI	UNDP to lead on all site selection, technology design, procurement & implementation. ALI to support in reviewing technical solutions, and support in outreach and dissemination
2.5	SEACAP / SEEAP	UNDP		UNDP will lead alone in this initiative, in close coordination with external partners, namely the EU Clima-Med project
3	Policy Initiatives	UNDP	I-REC	UNDP will lead on various policy incentives (such as enabling further net metering), while I-REC will lead with establishing the requirements for RECs in Lebanon.
4	Vocational training & capacity building	UNDP	LGBC, ALI, I-REC	UNDP will lead in this initiative, supported by all project partners in accordance with their respective actions and deliverable
5	Awareness raising & donor vis.	UNDP	LGBC, ALI, I-REC	UNDP will lead on ensuring awareness and donor visibility, yet this objective will also be supported by all project partners.

The CEDRO 5 project is aiming to implement the projects in Act 2.1, 2.3, 2.4, Act 2.5. The implementations are distributed in accordance to Table 5..

**Table 5. Number of implementation sites**

Activity	Specific technology/service	No of sites		
2.1	Solar PV advancement	2		
2.3	Solar heat Flat / Evacuated tubes	1		
	Solar heat Small Parabolic trough / linear Fresnel	1		
	Solar heat Large Parabolic trough / linear Fresnel	1		
	Energy efficiency for industry	3		
2.4	Biogas	2		
2.5	SEACAP / SEEAP interventions	5		
* Contributions are expected to come from existing and/or forthcoming soft loan programs, such as the EBRD GEFF and the EU/EIB/AFD LEEREFF or other sources as deemed necessary and will be secured during the implementation of the project				

The lead applicant, UNDP, will undertake periodic monitoring of the implementation progress through regular meetings with the project team and its local and international co-applicants. This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely fashion and to ensure smooth implementation of project activities. Furthermore, UNDP will be responsible for financial monitoring and reporting on all disbursements of the project. Monitoring will be a continuous and systematic process review of the various activities and will be intended to;

- Measure input, output, and performance indicators;
- Provide regular and up-to-date information on the progress towards meeting the overall Project Objectives;
- Alert the implementing partners with problems in implementation, and provide basis on which performance may be improved, and
- Determine whether the relevant stakeholders are responding as expected.

An annual review will be conducted during the fourth quarter of each year or soon after, to assess the performance of the action and appraise the work plan for the following year. The indicators listed in the logical framework will be used to assess the performance and impact of the project. This review is driven by the lead applicant (UNDP) and will involve all the co-applicants (LGBC, ALI and I-REC). It shall focus on the extent to which the action has achieved the set objectives and targets and also look at the overall sustainability, efficiency, management and efficacy of the action.

With respect to donor visibility and as stipulated in Activity 5, donor visibility will be thoroughly examined in every action undertaken by the CEDRO 5 project. The UNDP, as lead applicant and ALI, LGBC and I-REC as co-applicants, will ensure that the project and the European Union as the donor will receive the maximum visibility possible with dynamic ways of highlighting its support and the positive results of the partnership. The approach will follow the requirements in the General Conditions of this agreement (Article 8) and the Joint visibility guidelines for EC-UN actions in the field.<sup>45</sup> Communication and donor visibility activity that will be followed includes, yet is not limited to, creating and updating the project website (all Activities), leaf-lets (all Activities), banners (displaced in Activity 4 events) and visibility plaques (displaced on all Activity 2 implementations), animation and/or short videos (all activities), publications (all activities), and official press releases and social media posting (all activities).

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<sup>45</sup> [https://ec.europa.eu/europeaid/joint-visibility-guidelines-ec-un-actions-field\\_en](https://ec.europa.eu/europeaid/joint-visibility-guidelines-ec-un-actions-field_en)



## 5. Indicative Action Plan (Multi-year workplan complemented with annex 3 - Multiyear budget plan)

The tables below illustrate the major steps and actions that are foreseen in the project implementation over the span of 4 years for each month.

Year 1	Year 1												Responsible Partners	
	1	2	3	4	5	6	7	8	9	10	11	12		
Setting up office and staff														UNDP
<b>Activity</b>														
Activity 1: Competitive procurement of incubator and evaluation														UNDP
Activity 1: Sustainable energy market innovation needs assessment														UNDP
Activity 2.1, 2.3 & 2.4: Backstopping consultancy firm competitive procurement & selection														UNDP/ALI
Activity 2.1, 2.3 & 2.4: Call for beneficiaries and preliminary beneficiary selection														UNDP/ALI
Activity 2.1, 2.3 & 2.4: Beneficiary site inspection & final selection														UNDP
Activity 2: Energy audits competitive procurement														UNDP/ALI
Activity 2.1, 2.3 & 2.4 Preliminary design of selected sites														LGBC/UNDP
Activity 2.2 (Arz): Advancing the existing ARZ certification														LGBC/UNDP
Activity 2.2 (Arz): Development of TORs for development of web application														LGBC/UNDP
Activity 2.2 (Arz): Competitive procurement of web application company														UNDP
Activity 2.5 (SECAP): Selection of Actions (with Clima-MED)														UNDP
Activity 2.5 (SECAP): Preparation of bidding documents and competitive procurement														UNDP
Activity 2.5 (SECAP): Execution of fully funded activities														UNDP
Activity 2.5 (SECAP): Crowdfunding platform & uploading select projects for funding														UNDP
Activity 2.5 (SECAP): Fund raising for selected implementation														UNDP
Activity 2.5 (SECAP): Fund raising for selected implementation														UNDP
Activity 3: Assessment of applicability of I-REC in Lebanon														I-REC/UNDP
Activity 3: TOR drafting, bidding and evaluation for consultants / consultancies														I-REC/UNDP
Activity 3: Setting up legal framework for I-REC														I-REC/UNDP
Activity 3: Development of net metering policy initiatives														UNDP
Activity 5: Preparation of leaflets and banners & website development														UNDP

Year 2	Year 2												Responsible Partners	
	1	2	3	4	5	6	7	8	9	10	11	12		
<b>Activity</b>														
Activity 1: Call for Scale-ups and scale-up diagnostic sessions														UNDP
Activity 1: Recommendations for Scale-Up activities														UNDP
Activity 1: Draft & dissemination of call for applicants (start-ups & gender)														UNDP
Activity 1: Assessment of applicants and design of the start-up & gender tracks														UNDP
Activity 1: Defining and Structuring the "Energy Hub"														UNDP
Activity 1: Development of "Energy Hub"														UNDP



Activity 1: Implementation start-ups and gender tracks																		UNDP
Activity 2: Energy audits competitive procurement																		UNDP
Activity 2: Energy audits Implementation																		UNDP
Activity 2.1, 2.3 & 2.4 Preliminary design of selected sites																		UNDP/ALI
Activity 2.1, 2.3 & 2.4 Competitive procurement of contractors, evaluation & contractors selection																		UNDP/ALI
Activity 2.1, 2.3 & 2.4 Aid beneficiaries in loan application (NEEREA, LEEREFF, etc.)																		UNDP
Activity 2.1, 2.3 & 2.4 Implementation phase and commissioning of pilot																		UNDP
Activity 2.2 (Arz): Competitive procurement of web application company																		LGBC/UNDP
Activity 2.2 (Arz): Development of web application																		LGBC/UNDP
Activity 2.2 (Arz): Testing and integration of the web application																		LGBC/UNDP
Activity 2.2 (Arz): Competitive procurement of consultants for ARZ guideline report																		LGBC/UNDP
Activity 2.2 (Arz): Regulatory & Fiscal Instruments Assessment and guideline report																		UNDP/LGBC
Activity 2.5 (SECAP): Execution of fully funded activities																		UNDP
Activity 2.5 (SECAP): Fund raising for selected implementation																		UNDP
Activity 2.5 (SECAP): Competitive procurement of contractors, evaluation & contractors selection																		UNDP
Activity 2.5 (SECAP): Implementation phase and commissioning of crowd-funded pilot projects																		UNDP
Activity 2.5 (SECAP): Guideline report on Crowd-funding																		UNDP
Activity 3: Setting up of IREC process and the coordination unit with GoI																		UNDP
Activity 3: Setting up legal framework for I-REC																		I-REC/UNDP
Activity 3: Development of net metering policy initiatives																		UNDP
Activity 4: Delivery of ARZ trainings																		UNDP/LGBC
Activity 4: Workshops on policy initiatives																		UNDP

Year 3 Activity	Year 3												Responsible Partner					
	1	2	3	4	5	6	7	8	9	10	11	12						
Activity 1: Implementation start-ups and gender tracks																		UNDP
Activity 1: Launch of "Energy Hub"																		UNDP
Activity 1: Evaluation/assessment scale-ups, start-ups & gender track																		UNDP
Activity 1: Transfer of the Energy Hub to the incubator																		UNDP
Activity 2.1, 2.3 & 2.4 Implementation phase and commissioning of pilot																		UNDP
Activity 2.1, 2.3 & 2.4. Monitoring of all pilot implementations																		UNDP
Activity 2.1, 2.3 & 2.4. Guideline reports per Technology																		UNDP
Activity 2.2 (Arz): Regulatory & Fiscal Instruments Assessment and guideline report																		UNDP/LGBC
Activity 2.2 (Arz): Raising awareness and certifying buildings																		UNDP/LGBC
Activity 2.5 (SECAP): Implementation phase and commissioning of crowd-funded pilot projects																		UNDP



Activity 2.5 (SECAP): Monitoring of all crowd-funded implemented sites																			UNDP
Activity 2.5 (SECAP): Guideline report on Crowd-funding																			UNDP
Activity 3: Setting up legal framework for I-REC																		I-REC/UNDP	
Activity 3: Launch the system of REC generation																		I-REC/UNDP	
Activity 3: Guideline report																		UNDP/I-REC	
Activity 4: Workshops on policy initiatives																		UNDP	
Activity 4: Conduct trainings for municipalities																		UNDP	
Activity 4: TOR drafting, bidding and evaluation for consultants for TtT training																		UNDP	
Activity 4: Designing of TtT Act. 2.1, 2.3 & 2.4																		UNDP	
Activity 4: Call for participants Act. 2.1, 2.3 & 2.4																		UNDP	
Activity 4: Execution TtT for transfer of knowledge 2.1, 2.3 & 2.4																		UNDP	

Year 4	Year 4												Responsible Partners						
	1	2	3	4	5	6	7	8	9	10	11	12							
<b>Activity</b>																			
Activity 2.1, 2.3 & 2.4 Implementation phase and commissioning of pilot																			UNDP
Activity 2.1, 2.3 & 2.4. Guideline reports per Technology																			UNDP
Activity 2.5 (SECAP): Monitoring of all crowd-funded implemented sites																			UNDP
Activity 4: Workshops on implementations 2.1, 2.3 & 2.4																			UNDP/ALI
Activity 5: Implementation of videos																			UNDP
Activity 5: Closing events and workshop																			UNDP
Final project document																			UNDP

## 6. Project Implementation Arrangements (Governance and management arrangements)

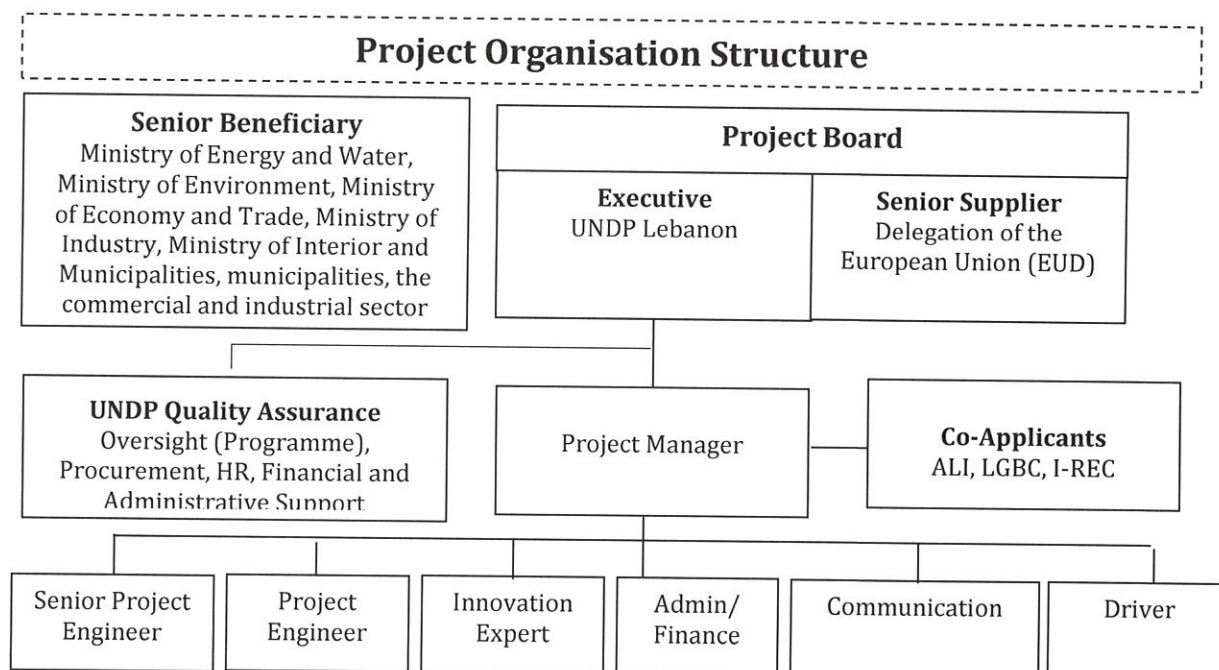
### 6.1 Implementation Modality

This project will be implemented under the Country Programme Action Plan using UNDP Direct Implementation Modality (DIM). Further, the project's mandates cross between those of various ministries, such as: the Ministry of Energy and Water for the development of renewable energy; the Ministry of Environment for climate change mitigation action; the Ministry of Economy and Trade for job creation and SME support; the Ministry of Industry for RE / EE support for industries; the Ministry of Interior and Municipalities for municipality support. Thus, it must therefore remain equidistant from all the national stakeholders and for all reasons mentioned above, DIM is considered as the most appropriate mechanism for the Project implementation.

### 6.2 Governance and Overall Management

The UNDP will monitor the progress towards intended results, and will ensure high-quality managerial, technical and financial implementation of the project, and will be responsible for monitoring and ensuring proper use of administrated funds to the assigned activities, timely reporting of implementation progress as well as undertaking of mandatory and non-mandatory evaluations for each of their respective components. Furthermore, the procurement of goods and services and the recruitment of personnel shall be provided in accordance with UNDP guidelines, procedures and regulations.

A 'Project Board' will be set up and will be responsible for making, by consensus, management decisions for the project when guidance is required by the Project Manager, including recommendation for UNDP approval of project plans and revisions. The Project Board will meet every year or more frequently as needed by the project. The Project Board will also provide expertise and ensure that the various interventions are in line with the national priorities and are well coordinated with other on-going activities within the sector.





### Figure 5. Project Governance Structure

In specific, the responsibilities of the Project Board include:

- Provide overall guidance and direction to the project, ensuring it remains within any specified constraints;
- Address project issues as raised by the project manager;
- Provide guidance on new project risks, and agree on possible countermeasures and management actions to address specific risks;
- Agree on project manager's tolerances as required;
- Review the project progress, and provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to plans;
- Appraise the annual project implementation report, including the quality assessment rating report; make recommendations for the work-plan;
- Provide ad hoc direction and advice for exceptional situations when the project manager's tolerances are exceeded; and
- Assess and decide to proceed on project changes through appropriate revisions.

### 6.3 Project Management Team and Resources Required to Achieve the Expected Results (Project Office Costs)

#### 6.3.1 Project Office

The project office is located in Beirut and will include staff responsible for project management, implementation, technical oversight and administration. It will comprise of full-time and part-time dedicated specialized staff, charged for the time directly attributable to the implementation of the Action. Co-applicants (ALI, LGBC, and I-REC) can make use of the office space when needed; however they will use their respective offices in the most part.

#### 6.3.2 Personnel

As per Figure 5, the personnel that will be involved, as well as their responsibilities, in the CEDRO 5 project are indicated in Table 6 below:

**Table 6. Full HR personal (with respective roles) on project**

Institution	Position	No.	Status	Key responsibilities
UNDP	Programme Manager	1	Part-time (15%)	Project quality assurance, assist project manager in progress reports, management of project risks, oversight of the implementation of the project activities.
	Programme Associate	1	Part-time (10%)	Project operational and financial oversight duties, financial monitoring and reporting, assist the project in financial transactions and related project reports, processing of payments and management of project operations such as office logistics, management of equipment, etc
	Procurement Officer	1	Part-time (10%)	Support in identification of procurement modalities, facilitating quality, transparent, effective and fast procurement processes; supporting the project in the launch and publicity of procurement processes; advising in

				project procurement evaluation processes; supporting in negotiations with potential contractors (as needed); assisting in the process of contracting, monitoring of contracts
	Operations Manager	1	Part-time (5%)	Administrative quality assurance, advising and verifying procurement and human resources processes, and managing external relations related to all operational aspects of project.
	Project Manager	1	Full-time	Day-to-day management, financial, administrative & procurement control, coordination between all applicants, focal point to key stakeholders
	Senior Project Engineer	1	Full-time	Technical focal point. Responsible for key demonstration activities through life-cycle of project (incl. site inspection, follow-up and supervision of the contractors during the installation of the systems).
	Project Engineer	1	Full-time	Technical on-ground assistance on all key stages of project implementation project (incl. site inspection, follow-up and supervision of the contractors during the installation of the systems)
	Innovation specialist	1	Full-time	Activity 1 focal point. Promotes and develops relationships with procured institutes of innovation, entrepreneurship, and R&D.
	Finance & Administration Assistant	1	Full-time	Administrative and logistical support & liaising with the Country Office on financial, administrative and operational activities
	Graphic Designer & Communication	1	Full-time	All communication and outreach activities (planning, organization, design...)
	Driver	1	Full-time	Driver for project vehicle(s), maintains vehicle logs & the vehicles
ALI	Outreach Expert	1	Part-time (50%)	Ensure project reaches all industrial and manufacturing facilities, including involvement in capacity building and assist in replicability of project outcomes
	Energy specialist	1	Part-time (60%)	Have a particular role in devising and setting up an annual energy data collection system (online) for industries in Lebanon.
LGBC	Coordinator	1	Part-time (In-kind)	LGBC to use CEDRO 5 funds to hire consultants to undertake Activity 2.2 deliverables (updating ARZ, training assessors, web-portal set-up...), however an in-kind coordinator (for a total of 24 months) will be hired for this task alone.



### **6.3.3 General Expenses**

The Budget for the Action will also provide for the office rental costs, assets for the operation of the office, maintenance and repair contracts, furniture, consumables and supplies for the operation of the office, costs of IT and telecommunication services, costs of electricity and water, facility management, vehicles costs and insurance costs as well as local and international travel.

## 7. Sustainability and Scaling Up

The UNDP Program has gained a lot of experience in the project implementation process. To ensure sustainability, a performance guarantee from the contractors will be requested (for a period of at least 2 years), and consultants/institutions will only be paid upon successful delivery of defined milestones. Furthermore, all beneficiaries that are recipients of the grant for implementation will sign a memorandum of understanding (MOU) to (1) well operate and maintain the system (as will be defined in MOU), (2) to assist in awareness raising and capacity building for replicability, and (3) assist in donor visibility. The CEDRO 5 project activities have been selected and outlined in this call for proposals in line with the National targets, the Ministerial strategies / plans and lessons learnt from previous initiatives; in particular, building on the previous work of the CEDRO projects funded by the EU as well as other bilateral donors, while taking into account other related EU funded project in the sector to support the Government of Lebanon's energy policy paper (MEW, 2010, MEW, 2019), and taking into account Lebanon's Intended Nationally Determined Contribution (INDC) targets on the one hand and the support for new and existing value chains for economic development and job creation on the other. Furthermore, the activities selection under the CEDRO 5 project were based on a thorough evaluation of the National Energy Assessments completed by the previous phases of the CEDRO project (CEDRO 1 – 4) and which have contributed to the drafting of the National Renewable Energy Action Plan - NREAP 2016 - 2020. The activities designed under the CEDRO 5 project (Activities 1 to 4) are expected to tackle SDG 5, and SDGs 7 – 13.<sup>46</sup>

The major impact of the project will be both direct and indirect on the Lebanese commercial and industrial sectors. For direct impacts, the project will implement demonstration or pilot projects. This means that a considerable amount of financing will be introduced into the sustainable energy market in Lebanon which would create economic momentum that becomes sustainable once the benefits of these new technologies are observed. This is similar to the previous experience of the introduction of commercial scale solar PV systems through the EU funded CEDRO 4 (2014 – 2018) and the GEF DREG projects (2015 – 2018) that was then continued through the Central Bank NEEREA programme and continues on up till today.

A detailed qualitative and quantitative impact analysis featuring: a technical, an economic, a societal and a policy component per each of the targeted beneficiary group for the overall project and for the specific activities (when applicable) has been conducted. The summary of this is detailed as follows (Table 7):

**Table 7. Expected impact of the CEDRO 5 project**

Category	CEDRO 5 Impact
Technical	<ul style="list-style-type: none"> <li>▪ Introduce and demonstrate new technologies that help in reducing the overall energy consumption from fossil fuel and increase the share of energy from renewable sources (assisting MEW/LCEC NEEAP and NREAP objectives)</li> <li>▪ Support the Ministry of Industry (MOI) in its plan for energy Efficiency and Cleaner production (MOI integrated visions objective 5: Encourage green industry)</li> <li>▪ Continued essential support national utility, EDL, in medium voltage net metering, virtual net metering, and other RE aspects.</li> <li>▪ Empowering the country with new technical know-how &amp; options through associated guideline reports, capacity building and training, and awareness activities.</li> </ul>
Economic*	<ul style="list-style-type: none"> <li>▪ The project will pave the way for new solutions that may be established through investing in innovation, entrepreneurship and new &amp; existing value chains,</li> </ul>

<sup>46</sup> <https://sustainabledevelopment.un.org/sdgs>



	<p>creating new direct &amp; local employment opportunities amounting to app. 6989 person-months.</p> <ul style="list-style-type: none"> <li>▪ The project will directly save app. 273,690 Euros (559 tons) in diesel fuel imports per year.</li> <li>▪ The indirect employment impact of CEDRO 5 will be approximately 2200 person-months over 20 years.<sup>47</sup></li> <li>▪ The long-term job creation potential of CEDRO 5, through the creation of new start-ups, scale-up activity, and new and advanced value chains is potentially significant, however difficult to measure.</li> </ul>
Environment*	<ul style="list-style-type: none"> <li>▪ The project will save approximately 1664 tons of CO2e emissions annually (directly), and pave the way for replicability and more CO2 savings (indirectly), assisting Government of Lebanon (and Ministry of Environment's) INDC targets.</li> </ul>
Social	<ul style="list-style-type: none"> <li>▪ Distributed RE offers social benefits in the form of producing your energy at proximity</li> <li>▪ The project will increase the energy security situation of Lebanon</li> <li>▪ The project will create new job opportunities providing many benefits such as income security, health insurance and professional development opportunities.</li> <li>▪ The project will centralize women empowerment in all the activities</li> </ul>
Policy	<ul style="list-style-type: none"> <li>▪ The ARZ rating system, the support to net metering and virtual net metering, the dissemination of crowd-funding methodologies and possibilities for financing, and the introduction of the RECs, along with the outcomes (and lobbying) of the studies on policy and regulations required, promise to further expand the renewable energy and energy efficiency markets and create longer sustainability.</li> </ul>
<ul style="list-style-type: none"> <li>▪ The values herein are tentative, and the actual values cannot be determined pending the selection of the beneficiaries and the exact technologies and scale of technologies.</li> </ul>	

Four types of sustainability have been differentiated (Financial, Institutional, Policy and Environment) in the Table 8 below.

**Table 8. Post project sustainability**

Sustain-ability	Description
Financial	<ul style="list-style-type: none"> <li>• A plan will be devised under Activity 1 to ensure reliability of the actions undertaken in promoting creation of green start-ups and new jobs in the market.</li> <li>• All implementation sites will have (1) 2-year performance guarantee, (2) an agreement signed with the respective beneficiaries to ensure continued operation and maintenance, (3) training of all beneficiary facility and municipalities teams on the respective installations</li> </ul>
Institutional	<ul style="list-style-type: none"> <li>• Activity 1: 'Energy hub' created and embedded in winning incubator that will integrate the theme (and other themes of scalability) in its annual future modus operandi. The creation of this hub will in itself ensure the sustainability of the value chains created in this sector by linking them up with the market demand.</li> <li>• Activity 2.1, 2.3 – 2.4: (1) Coordination with LCEC, LEEREFF, EBRD GEFF, and other current institutions or projects will ensure that all lessons learned can be transformed to</li> </ul>

<sup>47</sup> Lebanon GDP was \$51.84 billion in 2017 with an associated employment of 2.2293 million people (World Bank indicators). The employment elasticity with respect to national income is approximately 0.8 for Lebanon (Slimane, S.B., 2015. The relationship between growth and employment intensity: Evidence for developing countries. Asian Economic and Financial Review, 5(4), pp. 680 - 692.). Therefore, the savings accrued from the \$0.2737 million of annual savings (i.e. of money not being exported to buy fuel) is the generation of 10 indirect employment opportunities per annum. If the systems installed are to operate for 20 years, or a total of 2200 person-months.

	<p>all soft-loan seeking applicants in particular.</p> <p>(2) ALI will be empowered through this project to set-up, in coordination with Mol, a rigorous annual energy data collection and analysis process for industrial facilities (through an online portal data system) and to ensure that EE &amp; RE stay high on the agenda of industrial facilities and the Mol.</p> <p>(3) Coordination with the MEW/LCEC, the Industrial Research Institute (IRI) and LIBNOR will be undertaken where required to ensure that the required standards for key components of the new value chains are established to ensure quality of service and technology.</p> <ul style="list-style-type: none"> <li>• Activity 2.2: The project will empower LGBC as an existing Lebanese NGO institution that has a key role to play in achieving a 'greener buildings stock for Lebanon</li> <li>• Activity 2.5: The project aims to assist in empowering municipalities in innovative financing mechanisms, esp. through crowdfunding platforms and will coordinate the work with the central Ministry of Interior and Municipalities to ensure institutional sustainability of the SEACAP projects.</li> <li>• Activity 4: Train the trainers programs will ensure that knowledge transfer will be an on-going activity beyond CEDRO 5's project's timeline</li> </ul>
Policy	<ul style="list-style-type: none"> <li>• Empower the net metering committee at EDL to undertake its responsibility with continued support through workshops, on-call expert support, and technology transfer</li> <li>• Establish the REC system for Lebanon and define the responsible national (local) institutions for its management</li> <li>• Assess and lobby for the policy (including possible fiscal incentives) requirements to advance building rating (ARZ) incentives, industrial energy efficiency, and RE.</li> </ul>
Environmental	<ul style="list-style-type: none"> <li>• Data logging of all implementations will ensure that the benefits (economic and environmental) will be well recorded and disseminated through guideline reports to ensure that all systems meet or exceed the minimum required environmental standards</li> <li>• The Arz Rating system would encourage the adoption of a local rating system for buildings taking into consideration the weather and geographical characteristics of the country</li> <li>• An environmental statement will be requested before the implementation of all significant technologies (specifically concentrated solar thermal, advanced solar PV with storage, and biogas) to ensure they meet or exceed the minimum required environmental standards in terms of emissions, operations and end of life characteristics</li> <li>• Build synergies with Lot 3 winners ("for the develop / repair and recycling process [...] (focus is on solar PV panels)") for end of life disposal of Activity 2.1 storage components.</li> </ul>

As per Activity 5, the CEDRO 5 project (proposal) will ensure that all outcomes are disseminated to ensure a higher probability of replication. This will be done through various visibility actions (Activity 5) and capacity building and training (Activity 4).

In addition to full coordination with the Ministry of Energy and Water and the LCEC, CEDRO 5 will aim for targeted and effective communication to ensure maximum replicability potential through the direct involvement of the Ministry of Industry and ALI (Act 2.1, 2.3 – 2.4), the Ministry of Economy and Trade and the Chamber of Commerce and Trade (Act 2.1 & 2.2 – with LGBC), the Minister of Interior and Municipalities, the Ministry of Foreign Affairs (for possible crowdfunding), the Union of Municipalities and key municipalities (Act 2.5), and the Ministries of Energy and Water and Ministry of Finance (Activity 3).



## 8. Logical Framework (Results framework)

<p><b>Intended Outcome as Stated in the UNSF/Country Programme Results and Resources Framework</b></p>	<p>3.1. Environmental Governance Improved.</p>								
<p><b>Outcome indicators as stated in the CP Results and Resources Framework including baseline and targets</b></p>	<p>CPD Outcome:4.1 Low emission climate resilient actions initiated CPD Indicator 4.1.2 Amount of energy saved from the implementation of decentralized and/or small-scale mitigation projects.</p>								
<p><b>Applicable outputs form the UNDP Strategic Plan</b></p>	<p>1.5.1. Solutions adopted to achieve universal access to clean, affordable and sustainable energy 2.51. Solutions developed, financed and applied at scale for energy efficiency transformation to clean energy and zero carbon development for poverty eradication and structural transformation</p>								
<p><b>Expected outputs</b></p>	<p><b>Output Indicators</b></p>	<p><b>Baseline 2019</b></p>	<p><b>Targets year 1</b></p>	<p><b>Targets year 2</b></p>	<p><b>Targets year 3</b></p>	<p><b>Targets year 4</b></p>	<p><b>Targets total</b></p>	<p><b>Data Source</b></p>	<p><b>Assumptions / comments</b></p>
<p><b>Outcome:</b> Improved Lebanon's energy security through the support to the country's energy efficiency (EE) and renewable energy (RE) intended Nationally Determined Contribution (INDC) targets while creating new employment opportunities and increasing women employment in the EE&amp;RE sectors.</p> <p><b>Impact Indicators:</b> Reduction in amount of fossil fuel import (tons) - Baseline: 49,749 million tons (2014) - Target: 559 tons of fuel imports reduced per annum (2023) Reduction in CO2 emissions (tons CO2) - Baseline: 23.2 million tons CO2 (2016) - Target: 1664 tons of CO2 reduce per year (2023) Direct additional employment (person months) - Baseline: 0 - Target: 6,989 (2023) Indirect additional employment (person months) - Baseline: 0 - Target: 2,200 (2023) Share of women 'managers' in the RE/EE sector (%) - Baseline: 19.8% (2017) - Target: 25% (2023)</p> <p><b>Outcome Indicators:</b> New value chains created - Baseline: 0</p>	<p><b>Activity 1. Entrepreneurship, innovation &amp; Research</b></p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>2</p>	<p>3</p>	<p>5</p>	<p>UNDP &amp; Incubator reporting</p>	<p></p>
<p><b>Impact Indicators:</b> Reduction in amount of fossil fuel import (tons) - Baseline: 49,749 million tons (2014) - Target: 559 tons of fuel imports reduced per annum (2023) Reduction in CO2 emissions (tons CO2) - Baseline: 23.2 million tons CO2 (2016) - Target: 1664 tons of CO2 reduce per year (2023) Direct additional employment (person months) - Baseline: 0 - Target: 6,989 (2023) Indirect additional employment (person months) - Baseline: 0 - Target: 2,200 (2023) Share of women 'managers' in the RE/EE sector (%) - Baseline: 19.8% (2017) - Target: 25% (2023)</p> <p><b>Outcome Indicators:</b> New value chains created - Baseline: 0</p>	<p><b>Activity 2. Technology Transfer</b></p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>1</p>	<p>1</p>	<p>2</p>	<p>UNDP, ALI and LGBC reporting</p>	<p></p>
<p><b>Impact Indicators:</b> Reduction in amount of fossil fuel import (tons) - Baseline: 49,749 million tons (2014) - Target: 559 tons of fuel imports reduced per annum (2023) Reduction in CO2 emissions (tons CO2) - Baseline: 23.2 million tons CO2 (2016) - Target: 1664 tons of CO2 reduce per year (2023) Direct additional employment (person months) - Baseline: 0 - Target: 6,989 (2023) Indirect additional employment (person months) - Baseline: 0 - Target: 2,200 (2023) Share of women 'managers' in the RE/EE sector (%) - Baseline: 19.8% (2017) - Target: 25% (2023)</p> <p><b>Outcome Indicators:</b> New value chains created - Baseline: 0</p>	<p><b>Activity 3. Policy initiatives &amp; enabling environment</b></p>	<p>0</p>	<p>0</p>	<p>0</p>	<p>1</p>	<p>1</p>	<p>2</p>	<p>UNDP, ALI and LGBC reporting</p>	<p></p>
<p><b>Impact Indicators:</b> Reduction in amount of fossil fuel import (tons) - Baseline: 49,749 million tons (2014) - Target: 559 tons of fuel imports reduced per annum (2023) Reduction in CO2 emissions (tons CO2) - Baseline: 23.2 million tons CO2 (2016) - Target: 1664 tons of CO2 reduce per year (2023) Direct additional employment (person months) - Baseline: 0 - Target: 6,989 (2023) Indirect additional employment (person months) - Baseline: 0 - Target: 2,200 (2023) Share of women 'managers' in the RE/EE sector (%) - Baseline: 19.8% (2017) - Target: 25% (2023)</p> <p><b>Outcome Indicators:</b> New value chains created - Baseline: 0</p>	<p><b>Activity 4. Vocational training &amp; capacity building</b></p>	<p>0</p>	<p>0</p>	<p>2</p>	<p>3</p>	<p>3</p>	<p>8</p>	<p>UNDP, IALI, LGBC, IREC &amp; Incubator reporting</p>	<p></p>

<ul style="list-style-type: none"> <li>- Target: 2 (2023)</li> <li>Number of SMEs involved in the Action</li> <li>- Baseline: 0</li> <li>- Target: 5 (2023)</li> <li>Number of communities implementing SECAPs</li> <li>- Baseline: 0</li> <li>- Target: 5 (2023)</li> <li>Number of professionals &amp; stakeholders trained</li> <li>- Baseline: 0</li> <li>- Target: 260 (2023)</li> <li>Number of trainers trained</li> <li>- Baseline: 0</li> <li>- Target: 20 (2023)</li> </ul>	4.2 Number of trainings	0	0	2	2	2	6	UNDP, IALI, LGBC, IREC & Incubator reporting	Public activities to be cleared by EU	
	<b>Activity 5. Awareness raising and donor visibility</b>									
	5.1 Number of communication events	0	1	2	3	1	7	UNDP, IALI, LGBC, IREC & Incubator reporting	Public activities to be cleared by EU	
	5.2 Number of leaflets and banners	0	1	2	3	1	7	UNDP, IALI, LGBC, IREC & Incubator reporting	Public activities to be cleared by EU	
	5.3 Number of technical publications	0	0	1	2	4	7	UNDP, IALI, LGBC, IREC & Incubator reporting	Public activities to be cleared by EU	
	5.4 Visibility plaques	0	0	2	3	5	10	UNDP, IALI, LGBC, IREC & Incubator reporting	Visuals to be cleared by EU	
	5.3 Number of awareness & communication videos	0	0	1	2	3	6	UNDP, IALI, LGBC, IREC & Incubator reporting	Stories to be cleared by EU	



## 9. Monitoring and Evaluation

Monitoring Activity	Purpose	Frequency	Expected Action
<b>Track results progress</b>	Progress data against the results indicators in the RRF will be collected and analysed to assess the progress of the project in achieving the agreed outputs.	Quarterly Beginning and end of Project	Slower than expected progress will be addressed by project management. The results of the surveys will be used to provide baseline data and for project's monitoring and evaluation
<b>Monitor and Manage Risk</b>	Identify specific risks that may threaten achievement of intended results. Identify and monitor risk management actions using a risk log. This includes monitoring measures and plans that may have been required as per UNDP's Social and Environmental Standards. Audits will be conducted in accordance with UNDP's audit policy to manage financial risk.	Quarterly	Risks are identified by project management and actions are taken to manage risk. The risk log is actively maintained to keep track of identified risks and actions taken.
<b>Learn</b>	Knowledge, good practices and lessons will be captured regularly, as well as actively sourced from other projects and partners and integrated back into the project.	Quarterly	Relevant lessons are captured by the project team and used to inform management decisions.
<b>Annual Project Quality Assurance</b>	The quality of the project will be assessed against UNDP's quality standards to identify project strengths and weaknesses and to inform management decision making to improve the project.	Annually	Areas of strength and weakness will be reviewed by project management and used to inform decisions to improve project performance.
<b>Review and Make Course Corrections</b>	Internal review of data and evidence from all monitoring actions to inform decision making.	Annually	Performance data, risks, lessons and quality will be discussed by the project board and used to make course corrections.
<b>Project Progress Report</b>	Project Progress Reports (including final report) will be submitted to the EU in line with Article 3 of the GCs.  A summary of annual Project Progress Report will be presented to the Project Board and key stakeholders, consisting of progress data showing the results achieved against pre-defined annual targets at the output level, the annual project quality rating summary, an updated risk log with mitigation	Semi-annually, annually, and at the end of the project (final report)	

	measures, and any evaluation or review reports prepared over the period.		
<b>Project Review (Project Board)</b>	The project's governance mechanism (i.e., Project Board) will hold regular project reviews to assess the performance of the project and review the Multi-Year Work Plan to ensure realistic budgeting over the life of the project. In the project's final year, the Project Board shall hold an end-of project review to capture lessons learned and discuss opportunities for scaling up and to socialize project results and lessons learned with relevant audiences.	Annually	Any quality concerns or slower than expected progress should be discussed by the Project Board and management actions agreed to address the issues identified.



## **10. Legal Context**

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This project document shall be the instrument referred to as such in Article 1 of the Standard Basic Assistance Agreement between the Government of Lebanon and UNDP, signed in 1986. All references in the SBAA to “Executing Agency” shall be deemed to refer to “Implementing Partner.”

This project will be implemented by UNDP in accordance with its financial regulations, rules, practices and procedures only to the extent that they do not contravene the principles of the Financial Regulations and Rules of UNDP. Where the financial governance of an Implementing Partner does not provide the required guidance to ensure best value for money, fairness, integrity, transparency, and effective international competition, the financial governance of UNDP shall apply.

## 11. Risk Management

UNDP as the Implementing Partner will comply with the policies, procedures and practices of the United Nations Security Management System (UNSMS.)

UNDP as the Implementing Partner will undertake all reasonable efforts to ensure that none of the project funds are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via [http://www.un.org/sc/committees/1267/aa\\_sanctions\\_list.shtml](http://www.un.org/sc/committees/1267/aa_sanctions_list.shtml). This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.

Social and environmental sustainability will be enhanced through application of the UNDP Social and Environmental Standards (<http://www.undp.org/ses>) and related Accountability Mechanism (<http://www.undp.org/secu-srm>).

UNDP as the Implementing Partner will: (a) conduct project and programme-related activities in a manner consistent with the UNDP Social and Environmental Standards, (b) implement any management or mitigation plan prepared for the project or programme to comply with such standards, and (c) engage in a constructive and timely manner to address any concerns and complaints raised through the Accountability Mechanism. UNDP will seek to ensure that communities and other project stakeholders are informed of and have access to the Accountability Mechanism. All signatories to the Project Document shall cooperate in good faith with any exercise to evaluate any programme or project-related commitments or compliance with the UNDP Social and Environmental Standards. This includes providing access to project sites, relevant personnel, information, and documentation.

UNDP as the Implementing Partner will ensure that the following obligations are binding on each responsible party, subcontractor and sub-recipient:

Consistent with the Article III of the SBAA, the responsibility for the safety and security of each responsible party, subcontractor and sub-recipient and its personnel and property, and of UNDP's property in such responsible party's, subcontractor's and sub-recipient's custody, rests with such responsible party, subcontractor and sub-recipient. To this end, each responsible party, subcontractor and sub-recipient shall:

- put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
- assume all risks and liabilities related to such responsible party's, subcontractor's and sub-recipient's security, and the full implementation of the security plan.

UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of the responsible party's, subcontractor's and sub-recipient's obligations under this Project Document.

Each responsible party, subcontractor and sub-recipient will take appropriate steps to prevent misuse of funds, fraud or corruption, by its officials, consultants, subcontractors and sub-recipients in implementing the project or programme or using the UNDP funds. It will ensure



that its financial management, anti-corruption and anti-fraud policies are in place and enforced for all funding received from or through UNDP.

The requirements of the following documents, then in force at the time of signature of the Project Document, apply to each responsible party, subcontractor and sub-recipient: (a) UNDP Policy on Fraud and other Corrupt Practices and (b) UNDP Office of Audit and Investigations Investigation Guidelines. Each responsible party, subcontractor and sub-recipient agrees to the requirements of the above documents, which are an integral part of this Project Document and are available online at [www.undp.org](http://www.undp.org).

In the event that an investigation is required, UNDP will conduct investigations relating to any aspect of UNDP programmes and projects. Each responsible party, subcontractor and sub-recipient will provide its full cooperation, including making available personnel, relevant documentation, and granting access to its (and its consultants', subcontractors' and sub-recipients') premises, for such purposes at reasonable times and on reasonable conditions as may be required for the purpose of an investigation. Should there be a limitation in meeting this obligation, UNDP shall consult with it to find a solution.

Each responsible party, subcontractor and sub-recipient will promptly inform UNDP as the Implementing Partner in case of any incidence of inappropriate use of funds, or credible allegation of fraud or corruption with due confidentiality.

Where it becomes aware that a UNDP project or activity, in whole or in part, is the focus of investigation for alleged fraud/corruption, each responsible party, subcontractor and sub-recipient will inform the UNDP Resident Representative/Head of Office, who will promptly inform UNDP's Office of Audit and Investigations (OAI). It will provide regular updates to the head of UNDP in the country and OAI of the status of, and actions relating to, such investigation.

UNDP will be entitled to a refund from the responsible party, subcontractor or sub-recipient of any funds provided that have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of this Project Document. Such amount may be deducted by UNDP from any payment due to the responsible party, subcontractor or sub-recipient under this or any other agreement. Recovery of such amount by UNDP shall not diminish or curtail any responsible party's, subcontractor's or sub-recipient's obligations under this Project Document.

Where such funds have not been refunded to UNDP, the responsible party, subcontractor or sub-recipient agrees that donors to UNDP (including the Government) whose funding is the source, in whole or in part, of the funds for the activities under this Project Document, may seek recourse to such responsible party, subcontractor or sub-recipient for the recovery of any funds determined by UNDP to have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document.

*Note:* The term "Project Document" as used in this clause shall be deemed to include any relevant subsidiary agreement further to the Project Document, including those with responsible parties, subcontractors and sub-recipients.

Each contract issued by the responsible party, subcontractor or sub-recipient in connection with this Project Document shall include a provision representing that no fees, gratuities, rebates, gifts, commissions or other payments, other than those shown in the proposal, have been given, received, or promised in connection with the selection process or in contract execution, and that the recipient of funds from it shall cooperate with any and all investigations and post-payment audits.

Should UNDP refer to the relevant national authorities for appropriate legal action any alleged wrongdoing relating to the project or programme, the Government will ensure that the relevant national authorities shall actively investigate the same and take appropriate legal action against all individuals found to have participated in the wrongdoing, recover and return any recovered funds to UNDP.

Each responsible party, subcontractor and sub-recipient shall ensure that all of its obligations set forth under this section entitled "Risk Management" are passed on to its subcontractors and sub-recipients and that all the clauses under this section entitled "Risk Management Standard Clauses" are adequately reflected, *mutatis mutandis*, in all its sub-contracts or sub-agreements entered into further to this Project Document.



## **12. ANNEXES**

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1. Social and Environmental Screening
2. Risk Analysis
3. Multiyear Budget Plan
4. Communication and Visibility plan

## ANNEX 1 - Social and Environmental Screening

The completed template, which constitutes the *Social and Environmental Screening Report*, must be included as an annex to the *Project Document*. Please refer to the [Social and Environmental Screening Procedure](#) and [Toolkit](#) for guidance on how to answer the 6 questions.

### Project Information

Project Information	
1. Project Title	CEDRO5 - Country Entrepreneurship for Distributed Renewables Opportunities (CEDRO 5).
2. Project Number	00118152
3. Location (Global/Region/Country)	Lebanon

## Part A. Integrating Overarching Principles to Strengthen Social and Environmental Sustainability

### QUESTION 1: How Does the Project Integrate the Overarching Principles in order to Strengthen Social and Environmental Sustainability?

**Briefly describe in the space below how the Project mainstreams the human-rights based approach**

The project seeks to further the realization of human rights-based approach by ensuring the continued stability and security of Lebanon, which is fundamental for any human rights. There are no potential adverse impacts of this project that might affect human rights as the project will result in the further promotion of renewable energy solutions and the reduction of environmental degradation and its negative impacts on public health.

**Briefly describe in the space below how the Project is likely to improve gender equality and women's empowerment**

The project aims to improve gender equality in the field of renewable energy by specifically targeting women in the training component to ensure that more women are empowered to work in this sector. Also gender issues will be targeted in the work that is planned in the energy hub to promote the recruitment of women engineers in this field given that, to date, the statistics are low. Furthermore, all project activities will be mindful of gender participation.

**Briefly describe in the space below how the Project mainstreams environmental sustainability**

Environmental benefits of the RE systems to be installed target mostly the reduction of pollution from self-generation diesel use, mainly carbon dioxide (a green-house gas – GHG), carbon monoxide, particulate matter, nitrogen oxides, and sulphur dioxide among other. They also will target delivering cleaner energy in terms of kWh than that of the Lebanese grid, which is mostly composed of fuel oil generated power. In some occasions, the technologies selected will enable the complete shutting down of diesel generators, reducing thus the level of noise pollution as well. Therefore, the project not only targets climate mitigation action but also has environmental sustainability benefits and promotes the integration of SDG goals such as gender and sustainable cities as well (component related to SECAPS).






**Part B. Identifying and Managing Social and Environmental Risks**

<p><b>QUESTION 2: What are the Potential Social and Environmental Risks?</b>  <i>Note: Describe briefly potential social and environmental risks identified in Attachment 1 – Risk Screening Checklist (based on any “Yes” responses). If no risks have been identified in Attachment 1 then note “No Risks Identified” and skip to Question 4 and Select “Low Risk”. Questions 5 and 6 not required for Low Risk Projects.</i></p> <p><b>Risk Description</b></p>	<p><b>QUESTION 3: What is the level of significance of the potential social and environmental risks?</b>  <i>Note: Respond to Questions 4 and 5 below before proceeding to Question 6</i></p>	<p><b>QUESTION 6: What social and environmental assessment and management measures have been conducted and/or are required to address potential risks (for Risks with Moderate and High Significance)?</b></p>
<p><b>Impact and Probability (1-5)</b></p>	<p><b>Significance (Low, Moderate, High)</b></p>	<p><i>Description of assessment and management measures as reflected in the Project design. If ESIA or SESA is required note that the assessment should consider all potential impacts and risks.</i></p>
<p>No risk was identified as per the checklist</p>	<p>I = P =</p>	
	<p>I = P =</p>	
	<p>I = P =</p>	
	<p>I = P =</p>	
<p>[add additional rows as needed]</p>		
<p><b>QUESTION 4: What is the overall Project risk categorization?</b></p>		
<p>Select one (see <a href="#">SESP</a> for guidance)</p>		<p>Comments</p>
<p>Low Risk <input checked="" type="checkbox"/></p>		<p>The project has no identifiable social or environmental risks</p>
<p>Moderate Risk <input type="checkbox"/></p>		
<p>High Risk <input type="checkbox"/></p>		
<p><b>QUESTION 5: Based on the identified risks and risk categorization, what requirements of the SES are relevant?</b></p>		
<p>Check all that apply</p>		<p>Comments</p>

	<b>Principle 1: Human Rights</b>	<input type="checkbox"/>
	<b>Principle 2: Gender Equality and Women's Empowerment</b>	<input type="checkbox"/>
	<b>1. Biodiversity Conservation and Natural Resource Management</b>	<input type="checkbox"/>
	<b>2. Climate Change Mitigation and Adaptation</b>	<input type="checkbox"/>
	<b>3. Community Health, Safety and Working Conditions</b>	<input type="checkbox"/>
	<b>4. Cultural Heritage</b>	<input type="checkbox"/>
	<b>5. Displacement and Resettlement</b>	<input type="checkbox"/>
	<b>6. Indigenous Peoples</b>	<input type="checkbox"/>
	<b>7. Pollution Prevention and Resource Efficiency</b>	<input type="checkbox"/>

### Final Sign Off

Signature	Date	Description
 QA Assessor Jihan Seoud Programme Manager	04 Dec. 19	UNDP staff member responsible for the Project, typically a UNDP Programme Officer. Final signature confirms they have "checked" to ensure that the SESP is adequately conducted.
 QA Approver Mohammed Salih Deputy Resident Representative	04 Dec. 19	UNDP senior manager, typically the UNDP Deputy Country Director (DCD), Country Director (CD), Deputy Resident Representative (DRR), or Resident Representative (RR). The QA Approver cannot also be the QA Assessor. Final signature confirms they have "cleared" the SESP prior to submittal to the PAC.
 PAC Chair Mohammed Salih Deputy Resident Representative	04 Dec. 19	UNDP chair of the PAC. In some cases PAC Chair may also be the QA Approver. Final signature confirms that the SESP was considered as part of the project appraisal and considered in recommendations of the PAC.



SESP Attachment 1. Social and Environmental Risk Screening Checklist

<b>Checklist Potential Social and Environmental Risks</b>		
<b>Principles 1: Human Rights</b>		<b>Answer (Yes/No)</b>
1.	Could the Project lead to adverse impacts on enjoyment of the human rights (civil, political, economic, social or cultural) of the affected population and particularly of marginalized groups?	No
2.	Is there a likelihood that the Project would have inequitable or discriminatory adverse impacts on affected populations, particularly people living in poverty or marginalized or excluded individuals or groups? <sup>48</sup>	No
3.	Could the Project potentially restrict availability, quality of and access to resources or basic services, in particular to marginalized individuals or groups?	No
4.	Is there a likelihood that the Project would exclude any potentially affected stakeholders, in particular marginalized groups, from fully participating in decisions that may affect them?	No
5.	Are there measures or mechanisms in place to respond to local community grievances?	No
6.	Is there a risk that duty-bearers do not have the capacity to meet their obligations in the Project?	No
7.	Is there a risk that rights-holders do not have the capacity to claim their rights?	No
8.	Have local communities or individuals, given the opportunity, raised human rights concerns regarding the Project during the stakeholder engagement process?	No
9.	Is there a risk that the Project would exacerbate conflicts among and/or the risk of violence to project-affected communities and individuals?	No
<b>Principle 2: Gender Equality and Women's Empowerment</b>		
1.	Is there a likelihood that the proposed Project would have adverse impacts on gender equality and/or the situation of women and girls?	No
2.	Would the Project potentially reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?	No
3.	Have women's groups/leaders raised gender equality concerns regarding the Project during the stakeholder engagement process and has this been included in the overall Project proposal and in the risk assessment?	No
3.	Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services? <i>For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their livelihoods and well being</i>	No
<b>Principle 3: Environmental Sustainability:</b> Screening questions regarding environmental risks are encompassed by the specific Standard-related questions below		

<sup>48</sup> Prohibited grounds of discrimination include race, ethnicity, gender, age, language, disability, sexual orientation, religion, political or other opinion, national or social or geographical origin, property, birth or other status including as an indigenous person or as a member of a minority. References to "women and men" or similar is understood to include women and men, boys and girls, and other groups discriminated against based on their gender identities, such as transgender people and transsexuals.

<b>Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management</b>		
1.1	Would the Project potentially cause adverse impacts to habitats (e.g. modified, natural, and critical habitats) and/or ecosystems and ecosystem services? <i>For example, through habitat loss, conversion or degradation, fragmentation, hydrological changes</i>	No
1.2	Are any Project activities proposed within or adjacent to critical habitats and/or environmentally sensitive areas, including legally protected areas (e.g. nature reserve, national park), areas proposed for protection, or recognized as such by authoritative sources and/or indigenous peoples or local communities?	No
1.3	Does the Project involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods? (Note: if restrictions and/or limitations of access to lands would apply, refer to Standard 5)	No
1.4	Would Project activities pose risks to endangered species?	No
1.5	Would the Project pose a risk of introducing invasive alien species?	No
1.6	Does the Project involve harvesting of natural forests, plantation development, or reforestation?	No
1.7	Does the Project involve the production and/or harvesting of fish populations or other aquatic species?	No
1.8	Does the Project involve significant extraction, diversion or containment of surface or ground water? <i>For example, construction of dams, reservoirs, river basin developments, groundwater extraction</i>	No
1.9	Does the Project involve utilization of genetic resources? (e.g. collection and/or harvesting, commercial development)	No
1.10	Would the Project generate potential adverse transboundary or global environmental concerns?	No
1.11	Would the Project result in secondary or consequential development activities which could lead to adverse social and environmental effects, or would it generate cumulative impacts with other known existing or planned activities in the area? <i>For example, a new road through forested lands will generate direct environmental and social impacts (e.g. felling of trees, earthworks, potential relocation of inhabitants). The new road may also facilitate encroachment on lands by illegal settlers or generate unplanned commercial development along the route, potentially in sensitive areas. These are indirect, secondary, or induced impacts that need to be considered. Also, if similar developments in the same forested area are planned, then cumulative impacts of multiple activities (even if not part of the same Project) need to be considered.</i>	No
<b>Standard 2: Climate Change Mitigation and Adaptation</b>		
2.1	Will the proposed Project result in significant <sup>49</sup> greenhouse gas emissions or may exacerbate climate change?	No
2.2	Would the potential outcomes of the Project be sensitive or vulnerable to potential impacts of climate change?	No
2.3	Is the proposed Project likely to directly or indirectly increase social and environmental vulnerability to climate change now or in the future (also known as maladaptive practices)? <i>For example, changes to land use planning may encourage further development of floodplains, potentially increasing the population's vulnerability to climate change, specifically flooding</i>	No
<b>Standard 3: Community Health, Safety and Working Conditions</b>		
3.1	Would elements of Project construction, operation, or decommissioning pose potential safety risks to local communities?	No

<sup>49</sup> In regards to CO<sub>2</sub>, 'significant emissions' corresponds generally to more than 25,000 tons per year (from both direct and indirect sources). [The Guidance Note on Climate Change Mitigation and Adaptation provides additional information on GHG emissions.]



3.2	Would the Project pose potential risks to community health and safety due to the transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g. explosives, fuel and other chemicals during construction and operation)?	No
3.3	Does the Project involve large-scale infrastructure development (e.g. dams, roads, buildings)?	No
3.4	Would failure of structural elements of the Project pose risks to communities? (e.g. collapse of buildings or infrastructure)	No
3.5	Would the proposed Project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, erosion, flooding or extreme climatic conditions?	No
3.6	Would the Project result in potential increased health risks (e.g. from water-borne or other vector-borne diseases or communicable infections such as HIV/AIDS)?	No
3.7	Does the Project pose potential risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during Project construction, operation, or decommissioning?	No
3.8	Does the Project involve support for employment or livelihoods that may fail to comply with national and international labor standards (i.e. principles and standards of ILO fundamental conventions)?	No
3.9	Does the Project engage security personnel that may pose a potential risk to health and safety of communities and/or individuals (e.g. due to a lack of adequate training or accountability)?	No
<b>Standard 4: Cultural Heritage</b>		
4.1	Will the proposed Project result in interventions that would potentially adversely impact sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g. knowledge, innovations, practices)? (Note: Projects intended to protect and conserve Cultural Heritage may also have inadvertent adverse impacts)	No
4.2	Does the Project propose utilizing tangible and/or intangible forms of cultural heritage for commercial or other purposes?	No
<b>Standard 5: Displacement and Resettlement</b>		
5.1	Would the Project potentially involve temporary or permanent and full or partial physical displacement?	No
5.2	Would the Project possibly result in economic displacement (e.g. loss of assets or access to resources due to land acquisition or access restrictions – even in the absence of physical relocation)?	No
5.3	Is there a risk that the Project would lead to forced evictions? <sup>50</sup>	No
5.4	Would the proposed Project possibly affect land tenure arrangements and/or community based property rights/customary rights to land, territories and/or resources?	No
<b>Standard 6: Indigenous Peoples</b>		
6.1	Are indigenous peoples present in the Project area (including Project area of influence)?	No
6.2	Is it likely that the Project or portions of the Project will be located on lands and territories claimed by indigenous peoples?	No

<sup>50</sup> Forced evictions include acts and/or omissions involving the coerced or involuntary displacement of individuals, groups, or communities from homes and/or lands and common property resources that were occupied or depended upon, thus eliminating the ability of an individual, group, or community to reside or work in a particular dwelling, residence, or location without the provision of, and access to, appropriate forms of legal or other protections.

6.3	Would the proposed Project potentially affect the rights, lands and territories of indigenous peoples (regardless of whether Indigenous Peoples possess the legal titles to such areas)?	No
6.4	Has there been an absence of culturally appropriate consultations carried out with the objective of achieving FPIC on matters that may affect the rights and interests, lands, resources, territories and traditional livelihoods of the indigenous peoples concerned?	No
6.4	Does the proposed Project involve the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples?	No
6.5	Is there a potential for forced eviction or the whole or partial physical or economic displacement of indigenous peoples, including through access restrictions to lands, territories, and resources?	No
6.6	Would the Project adversely affect the development priorities of indigenous peoples as defined by them?	No
6.7	Would the Project potentially affect the traditional livelihoods, physical and cultural survival of indigenous peoples?	No
6.8	Would the Project potentially affect the Cultural Heritage of indigenous peoples, including through the commercialization or use of their traditional knowledge and practices?	No
<b>Standard 7: Pollution Prevention and Resource Efficiency</b>		
7.1	Would the Project potentially result in the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and/or transboundary impacts?	No
7.2	Would the proposed Project potentially result in the generation of waste (both hazardous and non-hazardous)?	No
7.3	Will the proposed Project potentially involve the manufacture, trade, release, and/or use of hazardous chemicals and/or materials? Does the Project propose use of chemicals or materials subject to international bans or phase-outs? <i>For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Conventions on Persistent Organic Pollutants or the Montreal Protocol</i>	No
7.4	Will the proposed Project involve the application of pesticides that may have a negative effect on the environment or human health?	No
7.5	Does the Project include activities that require significant consumption of raw materials, energy, and/or water?	No



## ANNEX 2 - Risk Analysis

### OFFLINE RISK LOG

Project Title: Country Entrepreneurship for Distributed Renewables Opportunities (CEDRO 5)	Award ID: 00120029	Date: 00118152
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#	Description	Date Identified	Type	Impact & Probability (1: low to 5: high)	Countermeasures / Mngt response	Owner	Submitted, updated by	Last Update	Status
1	Damage to purchased equipment and material (Act 2.1, 2.3 – 2.5)	15 November 2019	Physical	P = 2 I = 4	Memorandums of understanding will be signed with beneficiaries to ensure the operation and maintenance of the equipment installed against all risks or potential damage.	Project Manager	Programme Manager		
2	Natural disasters and environmental degradation (Act 2.1, 2.3 – 2.5)	15 November 2019	Environmental	P = 2 I = 4	Ensure all outdoor equipment can withstand severe weather conditions expected in Lebanon. Ensure that an environmental statement is undertaken for all projects with significant installations.	Project Manager	Programme Manager		
	Instability in the security situation in the country	15 November 2019	Security	P = 2 I = 4	Isolated security incidences may occur. These incidences will be identified and communicated by the UN Security Information Operations Center (SIOC); appropriate measures will be taken accordingly. These could include the postponement of some of the works on site, the coordination with the Internal Security Forces as needed.				
	Legal framework requirements	15 November 2019	Legal / regulatory	P = 3 I = 3	Ensure that all the installed systems work well regardless of the gap in the country's regulatory framework (i.e. systems are equipped to work on-grid and benefit from financial policy incentives such as the net-metering and off-grid without the need of the national utility network). Ensure that the I-REC platform / market is pegged to international market for sale of	Project Manager	Programme Manager		





### ANNEX 3 - Multiyear Budget Plan

Multiyear Budget Plan as per EU agreement

COAs for project ID 00118152	Fund	Donor	F&A					
EU	30079	10159	7%					
Other Contributors (Private Sector)			9%					
Costs	ATLAS Budget codes	Total	Year 1 (2019)	Year 2 (2020)	Year 3 (2021)	Year 4 (2022)	Year 5 (2023)	
<b>Activity 1: Human Resources</b>								
Salary cost NP staff (1.1)	61100	168,638.00	-	42,160.00	42,160.00	42,160.00	42,158.00	
Contractual Services (1.1)	71400	1,639,263.00	-	409,815.00	409,815.00	409,815.00	409,818.00	
Travel DSA (1.3)	71600	9,654.00	-	2,400.00	2,400.00	2,400.00	2,454.00	
Partners contractual services (ALJ) (1.1; 1.3)	72100	215,494.00	-	53,873.00	53,873.00	53,874.00	53,874.00	
F&A EU (7%)	75105	142,313.00	-	35,577.00	35,577.00	35,577.00	35,582.00	
<b>Subtotal Activity 1: Human Resources</b>		<b>2,033,049.00</b>	<b>-</b>	<b>543,825.00</b>	<b>543,825.00</b>	<b>543,826.00</b>	<b>543,886.00</b>	
<b>Activity 2: Office and Travel Expenses</b>								
Travel (tickets - terminal expenses) (2.1)	71600	33,318.00	-	8,000.00	8,000.00	8,000.00	9,318.00	
Equipment and Furniture (new vehicle) (3.1)	72200	33,768.00	-	33,768.00	-	-	-	
Materials and goods (tools, spare parts, other) (3.3; 3.4)	72300	4,820.00	-	1,220.00	1,200.00	1,200.00	1,200.00	
Consumables- office supplies (4.3)	72500	10,662.00	220.00	2,665.00	2,665.00	2,665.00	2,447.00	
IT equipment (computer equipment) (3.2)	72800	9,651.00	-	4,500.00	5,151.00	-	-	
4.4)	73100	81,296.00	-	20,325.00	20,325.00	20,325.00	20,321.00	
Rental and Maintenance other equipment (fuel vehicle costs) (2.2; 4.1)	73400	40,781.00	-	9,500.00	9,500.00	9,500.00	12,281.00	
F&A EU (7%)	75105	15,001.00	15.00	5,598.00	3,279.00	2,919.00	3,190.00	
<b>Subtotal Office and Travel Expenses</b>		<b>214,296.00</b>	<b>235.00</b>	<b>85,576.00</b>	<b>50,120.00</b>	<b>44,609.00</b>	<b>48,757.00</b>	
<b>Activity 3: Other costs, services</b>								
Translation, interpreters (5.4)	71300	13,883.00	-	1,388.00	3,240.00	4,628.00	4,627.00	
Contractual Services (5.2; 5.8 to 5.12)	72100	711,766.00	-	121,545.00	273,305.00	191,676.00	125,240.00	
Publications (5.1)	74200	77,742.00	-	-	-	38,871.00	38,871.00	
Visibility actions (5.6; 5.7)	75700	149,043.00	-	25,845.00	41,066.00	41,066.00	41,066.00	
Act2.2: Arz technical development		-	-	-	-	-	-	
Act2.2: Arz certification web portal & back office		-	-	-	-	-	-	
Act2.3: ALL energy data collection portal		-	-	-	-	-	-	
F&A EU (7%)	75105	66,670.00	-	10,414.00	22,233.00	19,337.00	14,686.00	
<b>Subtotal Other costs, services</b>		<b>952,434.00</b>	<b>-</b>	<b>159,192.00</b>	<b>339,844.00</b>	<b>295,578.00</b>	<b>224,490.00</b>	
<b>Activity 4: Implementation demonstration project / technology transfer</b>								
Contractual Services (6)	72100	3,002,867.00	-	838,894.00	1,279,234.00	563,952.00	320,787.00	
(Contingency NET)	74500	20,685.00	-	-	-	-	20,685.00	
F&A EU (7%)	75105	211,649.00	-	58,723.00	89,546.00	39,477.00	23,903.00	
<b>Subtotal Implementation demonstration project/technology transfer</b>		<b>3,002,867.00</b>	<b>-</b>	<b>897,617.00</b>	<b>1,368,780.00</b>	<b>603,429.00</b>	<b>365,375.00</b>	
<b>Total EU</b>		<b>6,658,964.00</b>	<b>235.00</b>	<b>1,686,210.00</b>	<b>2,302,569.00</b>	<b>1,487,442.00</b>	<b>1,182,508.00</b>	
Contractual Services from Private Sector to be added to A4 (6)	72100	1,903,883.00	-	570,000.00	570,000.00	381,942.00	381,941.00	
Contingency Private Sector	74500	6,349.00	-	-	-	-	6,349.00	
F&A other contributions (9%)	75100	171,921.00	-	51,300.00	51,300.00	34,375.00	34,948.00	

EU Agreement		
Other Contribution	2,082,153.00	USD
EU Contribution	6,658,964.00	USD
<b>Total Contributions</b>	<b>8,741,117.00</b>	<b>USD</b>

Other Contribution to direct costs	1,910,232.11	USD
Other Contribution 9% Indirect costs	171,920.89	USD
Contingency	6,921.00	USD
<b>Total Other Contribution</b>	<b>2,082,153.00</b>	<b>USD</b>

EU Contribution to direct costs	6,202,645.00	USD
EU 7% Indirect costs	434,185.00	USD
Contingency	22,134.00	USD
<b>Total EU Contribution</b>	<b>6,658,964.00</b>	<b>USD</b>

<b>EU contribution</b>	<b>6,658,964.00</b>	<b>USD</b>
	5,995,826.00	EURO

Euro Inforate for November 2019

\$ 1.1106

## ANNEX 4 - Communication and Visibility plan

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### 1. Context

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The CEDRO 5 project is to bring together a set of activities that work in synergy to improve Lebanon's energy security through the support to the country's energy efficiency (EE) and renewable energy (RE) Intended Nationally Determined Contribution (INDC) targets, while creating new employment opportunities and increasing women employment in the said sectors (EE & RE). The project has a set of clear activities, namely:

- (1) Activity 1: To foster innovation and entrepreneurship in the EE & RE sectors through technology transfer and scale-ups of existing EE & RE companies
- (2) Activity 2: To advance existing and creating new value chains through select pilot projects in solar PV, energy efficiency for industry, solar thermal for industry, biogas, select projects under the Sustainable Energy and Climate Action Plan (SECAP), and enhancing the ARZ building rating system.
- (3) Activity 3: To support the establishment and/or advancement of enabling policies for RE & EE
- (4) Activity 4: To ensure the transfer of knowledge (know-how) and capacity for EE & RE
- (5) Activity 5: To ensure maximum project and donor visibility

The CEDRO 5 project will aim to focus on multiple levels of communication and visibility within each of the above stated activities in order to ensure adequate communication and visibility of EU support to the action, as well as the project objectives and outcomes.

All project partners, namely the United Nations Development Program (UNDP), the Association of Lebanese Industrialists (ALI), the Lebanese Green Building Council (LGBC) and the International Renewable Energy Certificate (I-REC) institution will be involved in the communication and visibility actions.

The EU Delegation involvement and agreement of any visibility and communication, particularly press releases, invitation and agenda for events, banners, videos, key messages, etc. will be ensured prior to issuance of any material.

### 2. Objectives of Communication Plan

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The main objective of the communication plan is to ensure that the European Union along with other donors as the donor will receive the maximum visibility possible and communicate the project's objective, progress and impact by focusing on the achievements and the impact of action and all its targeted activities.

#### 2.1 Targets Groups

In order to do so, the target groups will be categorised as follows:

- **Industrial and commercial sectors (namely SMEs):** One of the main objectives of this project is to replicate sustainable technology and services that will also have a strong financial benefit to the Lebanese economy in general, and to industrial and commercial sector institutions in particular. The project will target these sectors through various channels, particularly relying on the support of the Ministry of Industry, the Ministry of Energy and Water, the project partners (in particular ALI), and the Chambers of Commerce in various regions (among others) to disseminate opportunities, outcomes, and experiences.
- **Innovators & Entrepreneurs (all ages and gender):** Through activity 1, CEDRO 5 will assist in creating or strengthening an existing hub for innovation and entrepreneurship for sustainable energy. Throughout this process that will take place with the collaboration of procured incubator, several media outlets will be used to disseminate opportunities for innovators and entrepreneurs to showcase and develop their ideas that will service the sustainable energy sector for Lebanon.



- **Research & education institutions:** CEDRO 5 will set up strong links with various research institutions who may have a keen interest to support the project through a research angle. The project will also be targeting students for training and capacity building, as well as internship opportunities. Throughout this process, the process will ensure donor visibility.
- **Government:** CEDRO 5 will be coordinating closely with the Ministry of Energy and Water, the Ministry of Industry, and the Ministry of Interior and Municipalities in order to ensure outreach of the opportunities CEDRO 5 delivers, as well as ensuring that experiences and outcomes are effectively adopted and nationally
- **Local communities:** CEDRO 5 will reach out to the various villages and communities that are part of the Clima-Med project and who have done their SEEAP and are doing their SECAPs. The project will ensure donor visibility throughout the process, including yet not limited to setting up the crowd-funding portal and the training for municipality staff.
- **Civil society organizations (CSOs) and local NGOs:** CEDRO 5 will place a lot of effort in collaborating with CSOs and NGOs in order to ensure grass root actions that bring about the required change at the required scale to combat climate change and to pave the way for a more sustainable energy system.
- **Related projects:** CEDRO 5 will strive to create synergies with other projects working on sustainable energy, notably Lot 2 of the current EU funded initiative. (EuropeAid/163032/DD/ACT/LB)
- **General Public (through Media):** to ensure general public are aware of the CEDRO 4 project and its results. All media outlets will be targeted, namely, newspaper and magazines (printed and online), television, and radio.

## 2.2 Key Messages

A message for the visibility of the EU partnership will be included in all the communication material in English and Arabic, mentioning that the European Union is the main donor of the project. The UNDP Communication Department will upload posts on Facebook, Instagram and Twitter tagging the EU accounts (@EUinLebanon) on all platforms and using the hashtag #EUinLebanon.

The list of key messages is as follows:

- o **General:** The roles of the EU and all partners in the action(s) being reported.
- o **Promoting clean energy transition and job creation:** The efforts of the European Union and the CEDRO 5 project participants in supporting sustainable energy and clean energy transition through innovation to support in job creation and economic growth of Lebanon.
- o **Promoting gender equality:** The EU and the CEDRO 5 project participants' work towards gender equality and the enhancement of women's participation in the labor market as a whole and the energy sector in specific.
- o **Promoting innovation:** The European Union and the CEDRO 5 project participants' role in encouraging innovation and expansion in technology.
- o **Good practices dissemination:** The European Union and the CEDRO 5 project participants will encourage the replication of the technologies used and initiatives undertaken under both European funded projects (CEDRO 4 and 5).

## 3. Communication Activities

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The main activities proposed to be executed under the communication plan are as follows:

- a. **Communication Events:** the project will implement numerous events of which some will be covered by the media and are classified for the purposes of the Communication and Visibility annex as "Communication Events". The related indicator would be the issuance of related press releases through various media outlets. 7 Press releases will be issued cover the following events:
  - Inaugural event of the CEDRO 5 project (1 press release)

- Inauguration of at least 2 implemented pilot projects (2 press releases)
  - Trainings / workshops for various stakeholders will be implemented of which 3 will be covered in the press (3 press releases)
  - Closing event (1 press release)
- b. **Leaflets and Banners:** Leaflets and banners (up to 7 different types) will be issued covering different topics related to EE and/or RE technologies or to innovative approaches of the project. These leaflets will be tailored to the target audience and focusing on awareness raising related to the topic at hand.
- c. **Technical Publications:** 7 technical reports will be prepared and published based on the project activities. These technical reports will have an executive summary) and will be accompanied by short briefs to attract a wider audience.
- d. **Website:** The project's website will be updated regularly throughout the implementation of the project. All reports, progress on technologies, site information and other such material will be published on the website (at least 18 updates). Number of webpage visits will also be measured to effectiveness of the tools reach.
- e. **Visibility plaques:** bilingual plaques will be placed at the entrance of each main selected beneficiary (a total of 10 visibility plaques will be designed and prepared). The plaques will be installed at locations that are visible to the public and will include information about the project, the EU's logo and its role in the project as well as technical information (as relevant)
- f. **Awareness & Communication Videos:** 6 videos will be produced:
- The first video (in long 2-3 minutes and short – up to 1 min - versions) will focus on project outcomes and beneficiary testimonials. This video will showcase the results of the project activities and how it has benefited local people; it will also make reference to the EU's contribution to the renewable energy sector in Lebanon and how EU financing has supported the local economy or people.
  - The second video will be through a competition for a selected municipality for crowd-funding purposes.
  - The four remaining videos will focus on the various types of technologies that will be implemented by the project, specifically (a) solar thermal technologies, (b) biogas, (c) energy efficiency for industry, and (d) solar PV with lithium. The messages in these videos will be the introduction of the respective technology, it's benefits and positive impacts in Lebanon to promote further uptake and/or to showcase how the project implemented it.

The videos will be disseminated on the website and all social media platforms (facebook, Instagram, Twitter and Youtube) tagging the European Union (@EUinLebanon) and using the hashtag #EUinLebanon, and tagging the relevant institutions and municipalities that the project has worked with. The videos will have a clear message to a wider audience and will ensure to direct the audience to institutions that can assist in replication.

#### **4. Rules for visibility and communication actions:**

All publications, reports, press releases, videos, leaflets, brochures, and anything related to the CEDRO 5 project that will be disseminated to the public will mention that the European Union has provided the financial resources for the project, unless otherwise agreed on.

#### **5. Communication Resources**

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##### **Human Resources**

Communication and visibility activities will be undertaken by the Graphic Designer and Communication



Assistant from UNDP in close collaboration with the Outreach Expert designated by ALI. The activities will be assumed with the direct supervision of the CEDRO 5 project manager and in close collaboration with the project team. The communication officer will allocate 100% and the Outreach Expert 50% of their time to undertake all CEDRO 5 communication and outreach activities and liaise with different participants in the project. They will be responsible for online as well as traditional marketing and outreach activities, ensuring that the information is transferred to the target audience in the best possible way, following the guidelines mentioned by the European Union.

### **Financial resources**

The total allocated budget for communication and visibility actions is estimated as USD 385,000 (refer to Action Budget) divided over a period of 48 months. The budget lines reflecting the communication activities are the following: 1.1.2 Graphic Designer and Communication Assistant and Outreach Expert, 5.6 Costs of conferences/seminars 5.7 Visibility actions.