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اللجنة الاقتصادية والاجتماعية لغربي آسيا

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PROMOTING ENERGY EFFICIENCY INVESTMENTS FOR CLIMATE CHANGE  
MITIGATION AND SUSTAINABLE DEVELOPMENT

## EE Project Portfolio

State of progress / Final report

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# I. Call for projects process

## 1 CONTEXT

Within the framework of the cooperation with the other UN Economic Commissions, the ESCWA is developing a capacity building project in the region aiming, among other, at developing energy efficiency (EE) investment in the country members.

Through this project it is intended mainly to identify EE project holders and support them in structuring the business plan of their projects in order to allow them access to finance at national level.

Hence, it is intended to build up an EE Investment projects portfolio and providing assistance to energy efficiency project developers from the region to produce bankable project proposals.

## 2 THE ASSISTANCE PROCESS

During the development of the EE projects portfolio, ESCWA has contracted a financial expert (Rafik Missaoui) in order to provide technical assistance to energy efficiency project developers / sponsors and contribute to their capacity building in project development, financing and business planning.

This assistance has been provided through the following activities:

- Produce a practical guidebook on EE projects business plan development and financing. It serves as a support for local project developers to prepare EE investment projects. Moreover, the guidebook will be a valuable tool to update policy-makers and government officials as well as representatives of project developers, owners, private companies and banking community on the current EE investments potentials and challenges, and existing financing tools and opportunities in the field
- Develop a specific tool for financial analysis and business plan simulation of energy efficiency projects
- Carry out a training for the project holders (Gouna, June 2014) on the base of the guidebook and the use of the financial analysis tool
- Provide a technical assistance to the project holders to develop their business plan and structure their project in a bankable way

## 3 CALL FOR PROJECT PROPOSALS PROCESS

To develop the EE project portfolio, ESCWA has launched in May 2014 a call for proposals in the member Countries for public institutions, civil societies and the private sector in order to invite them to submit projects proposals to be included in the EE investment projects pipeline. The call for project nomination process is conducted amongst ESCWA Member Countries to build a pipeline of energy efficiency projects at national levels and consolidate them into an ESCWA energy efficiency portfolio.

ESCWA has provided to the potential project holders a template for the project identification including technical and financial information to be submitted by the end of May 2014.

On the base of received project identification forms, a selection list is adopted by the ESCAW in order to be part of the project portfolio that will be supported.

## **4 LIST OF PROJECTS**

Seventeen projects have been selected including the following sectors:

- 9 in the building sector
- 4 street lighting
- 1 industry
- 1 transport
- 1 Distribution grids
- 1 District Cooling

The following table gives summary of the project list.

Project portfolio

N°	Country	Sent by	Contact Person	Category	Technology	Title	Sponsor
10	Tunisia	Fethi Hanchi	Mehdi TARRES	Building	CTM (Centralized Technical Management)	Implementation of CTM in 17 Units	Directorate- General El Mouradi Hotel
5	Libya	Ahmed Akrim	Ahmed Akrim	Building	Green Building (feasibility phase)	REAoL HQ Building (New)	Renewable Energy Authority of Libya
17	Sudan	Hana Mohamed	Hana Mohamed	Building	lighting - CFL replacement	إستبدال لمبات التنجستن بلمبات الفلورسنت المضغوطة (CFL)	Ministry of Water Resources and
11	Tunisia	Fethi Hanchi	Lotfi Sinene	Building	lighting - fluorescent tubes T5	Replacement of 1.3 Million Light Points T8	Ministry of Education + ANME
2	Lebanon	Marc Daoud	Dr. Bassam Saad	Building	lighting & shading	Lebanese Order of Physicians Building	Lebanese Order of Physicians board
3	Lebanon	Marc Daoud	Jihad Renno	Building	lighting, motion detectors, solar	USJ – Campus of Human Sciences (CSH)	USJ
4	Libya	Ahmed Akrim	Loay Burwais	Building	Solar power, treatment of used water, efficient	ALWSAITA Sustainable Housing	ALNAFIDA for Real Estate and
1	Lebanon	Adel Mortada	Adel Mourtada	Building	solar water heaters	Collective Solar Water Heater For The	Lebanese University
8	Sudan	Abed El Hafiz Babikir	Abed El Hafiz Babikir	Building	test lab for home appliances	Laboratory Testing for Energy Efficiency of	Ministry of Water Resource and
12	Tunisia	Fethi Hanchi	Fethi Hanchi	District Cooling	district cooling	District Cooling Network	Tunis Municipality + ANME
7	Palestine	Nader Bitar	Ayman Hassouneh	Street Lighting	LED	Street Lighting Project	Hebron Municipality
13	Tunisia	Fethi Hanchi	Fethi Hanchi	Street Lighting	LED	Substitution of SHP Street Light Lamps with	Tunis Municipality + ANME
16	Yemen	Abdel Salam Mansour	Abdel Salam Mansour	Street Lighting	LED	Street Lamps Improvement	Governorates Public Works Offices
6	Morocco	Abdelali Dakkina	Chouaib Benquilou	Street Lighting	networked LED	High Efficiency Lighting Online System	ADEREE
15	Yemen	Abdel Salam Mansour	Abdel Salam Mansour	Industry	Waste Heat Recovery Power Generation	Albarh Cement Factory Improvement	Governorates Public Works Offices
14	Yemen	Abdel Salam Mansour	Abdel Salam Mansour	Distribution Grids	Smart Meters	SMART Grid	Public Electricity Corporation (PEC)
9	Tunisia	Fethi Hanchi	Abdel Hamid Ganouni	Transport	monitoring and energy management	Technical Assistance of SNCFT for the	Société Nationale des Chemins de Fer

	advanced data
	average data
	below average data
	basic to no data

## 5 FOLLOWING STEPS

It was asked to the selected project holders to develop the business plan of their projects using the report template provided by the technical assistance expert (see annex).

Although the several exchanges between the project holders and the technical assistance expert, no business plan document has been submitted by the developers up to now.

The expert commits himself to continue with the assistance to project holders for the projected that will be received before 15 January 2015.



## II. Project received

## 6 LEBANON

### 6.1 USJ – Campus of Human Sciences (CSH) building

#### **PROJECT IDENTIFICATION FORM**

#### **SHORT FORM**

(Please add additional pages as necessary)

The purpose of this form is to identify projects which have a viable investment need in the short term for further discussion. Any follow on discussion will require further detail.

**This page is to be completed for all projects**

Project name: USJ – Campus of Human Sciences (CSH) building		Project sponsor <sup>1</sup> : Mr. Jihad Renno	
Contact person: Mr. Jihad Renno			
Address: USJ – CAH Campus		Telephone:01-421501	
City: Beirut		Mobile number:	
Country:Lebanon		E-mail: <a href="mailto:jihad.renno@usj.edu.lb">jihad.renno@usj.edu.lb</a>	
Country: Lebanon		Location:Mathaf area	
Sector: <sup>2</sup> Energy Efficiency through energy consumption reduction			
Type of technology: LED lighting, motion detectors, solar protection film and cooling tower efficiency improvement.		Equipment supplied by: local suppliers	
Sponsors experience with the technology <sup>3</sup> : 3-15 years			
Name of operator: Mr. jihad Renno			
Operator's previous experience <sup>4</sup> : 10 years			
Name of owner: USJ		Location: Damascus Road - Mathaf	
What will the owners investment in the project be? <sup>5</sup> Self-financing			

<sup>1</sup> This is a person or entity that initiates, owns and promotes the project and has decision-making power on borrowings or the allocation of equity.

<sup>2</sup> The project should require financing, including mezzanine and equity investments in energy efficiency and/or renewable energy projects or companies developing, manufacturing, distributing or installing energy efficiency and/or renewable energy equipment or services which have or are expected to have a quantifiable impact on the reduction of greenhouse gas emissions, are environmentally beneficial and/or generate energy savings, carbon credits and/or tradable renewable energy certificates.

<sup>3</sup> The answer should provide the track record or prior experience the sponsor has with the technology, including the numbers of years experience and in which capacity.

<sup>4</sup> The answer should provide the track record or prior experience of the operator in the sector and with the technology, including the numbers of years experience and in which capacity

<sup>5</sup> Owner's investments in projects can vary by type and amount to be invested, so details should be stated. A project with no owner's equity will have a low chance of success in obtaining investment by others.

What is the project's source of cash flow? Students tuition fees.

Is this under a fixed contract and if so, for how many years? No

### **PROJECT IDENTIFICATION FORM**

#### **GENERAL COMMENTS AND ADDITIONAL INFORMATION**

(Please add additional pages as necessary)

***This page is to be completed for all projects***

#### **Brief project description**

ESTABLISHMENT NAME: USJ – Campus des Sciences Humaines

ACTIVITY SECTOR: Educational

CAPACITY: 1000 students

OPERATION YEAR: 2002

The campus is composed of 3 blocks A, B and C with a 4 levels common basement serving as parking, technical and storage area. Block A is composed of 9 levels and block C of 5 levels that includes classes, offices and libraries mainly. While block B is the Pierre Bou Khater amphitheater, having a capacity of around 500 persons.

<b>Area</b>	<b>Floor Surface (m<sup>2</sup>)</b>	<b>Number of floors</b>	<b>Total Surface (m<sup>2</sup>)</b>
Block A	1653	9	14877
Block B	570	1	570
Block C	1040	5	5200
Basement A-B	1930	4	7720
Basement C	1600	4	6400
<b>Total Campus Surface</b>		<b>34,767 m<sup>2</sup></b>	

The establishment is air conditioned by a water source heat pump system. Indoor units are connected to a centralized water loop insuring heat exchange with the outside. Water pipes are made of black steel and the water loop is not insulated.

The loop also includes 2 fuel boilers and 2 cooling towers that automatically intervene to keep the water temperature between 15 and 30 degrees. Block A contains around 300 indoor units, for a total refrigeration capacity of 860 tons. Block C contains around 97 units for a total refrigeration capacity of 340 tons. And block B contains 4 units of a total refrigeration capacity of 40 tons.

All above ground levels are naturally ventilated thanks to façade openings. Underground levels are

mechanically ventilated with supply and exhaust fans insuring air change in the parking.

The site is connected to the medium voltage power network through 2 dedicated transformers of 1MVA each

Different kinds of lighting technologies are used on site depending on the location; but most of them are energy saving:

- Compact fluorescent lamps (CFL) replacing traditional incandescent small lamps where possible
- Fluorescent lamps (18-36-58W modules) for internal large areas and offices equipped with magnetic ballasts
- Metal halide (MH) and halogen projectors for exterior lighting
- Incandescent lamps for decorative lighting
- Halogen projectors for theaters lighting

Offices occupy a large part of the site and as a result we have a large number of office equipment.

Sector	Electrical Power (kW)	Energy Consumption (kWh/year)
Office Equipment	228,58	210600,5
Mechanical Equipment	488,365	660086,8417
Lighting	493,771	845882,989
Miscellaneous	186,25	111728
Air Conditioning Equipment	1711,35	639050
Hot Water Production	31,2	32412

A full energy audit was performed for the campus during the period of December 2011 till February 2012. During this audit, several potential energy conservation measures were assessed, and interesting measures retained.

The most interesting energy conservation measures were the following:

- 1 - Replacement of conventional lighting technologies (fluorescent tubes, halogen spots...) with more efficient LED retrofits

Old technology	Fixtures to be	Estimated Power Saving	Estimated Energy Saving	Initial Investment	Total Saving (\$/year)	Simple Payback period

	installed	(kW)	(kWh/yr)	(\$)		(yr)
<b>Fluorescent tubes</b>	4,724	339	620,049	708,600	86,807	8
<b>Halogen spots</b>	84	3.6	3,295	2,940	461	7
<b>Incandescent lamps</b>	186	8.8	21,917	930	3,070	0

2 - Motion detectors may be used in the campus to reduce unnecessary electrical consumption for lighting unoccupied locations. Such detectors can be used for stairs, common corridors and bathrooms.

3 - The installation of solar protection films on windows and glass facades facing south would help reducing the cooling load needed in summer. The installation of the protection films on glass facades and windows can help reduce up to 80% of solar radiations and 99% of UV rays penetrations.

Every 10 m<sup>2</sup> of solar film would reduce around 1 cooling ton of AC needs. The approximate cost of the solar film is 25\$/m<sup>2</sup>.

4 - De-scaling or eventually replacing the cooling towers would help increase the AC system efficiency and as a result reduce its power consumption

The main generated benefits would be by reducing the building's electrical energy consumption, and thus generating financial profits. Electrical energy is provided from the national grid and from backup diesel generators during blackout hours.

By reducing electrical energy consumption, both from the grid and from the backup generators; major greenhouse gas emission reductions would be generated. Considering a baseline of 0.65KgCO<sub>2</sub> per kWh, the implementation of LED lighting all alone would allow the reduction of CO<sub>2</sub> emissions by 419 tons. Additional savings would be generated by the other ECMs as well.

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**PROJECT IDENTIFICATION FORM**

**PROPOSED INVESTMENT AND FINANCING NEEDS**

(Please add additional pages as necessary)

**This page is to be completed for all projects**

<u>Investment &amp; Financing needs</u>	<u>Detail</u>	<u>Estimated investment cost</u> in USD	<u>Estimated revenues</u> in USD/year
<u>Design and Engineering</u>	Motion detectors installation layouts and wiring	Not available	Not available
<u>Land, infrastructure</u>			
Equipment	<ul style="list-style-type: none"> <li>1- LED lighting implementation</li> <li>2- Motion detectors installation</li> <li>3- Solar film installation</li> <li>4- Maintenance or replacement of cooling towers</li> </ul>	<ul style="list-style-type: none"> <li>1- 712,470</li> <li>2- Not available</li> <li>3- Not available</li> <li>4- Not available</li> </ul>	<ul style="list-style-type: none"> <li>1- 90,338</li> <li>2- Not available</li> <li>3- Not available</li> <li>4- Not available</li> </ul>
Construction			
Operation cost			
Others			
<b>Total investments and revenues</b>		<b>712,470+</b>	<b>90,338+</b>

<u>Lifetime of the project</u>	<u>Proposed start of implementation</u>	<u>Expected implementation time</u>	
20 Years	01/08/2014 (day/month/year)	Years	3 Months

**PROJECT IDENTIFICATION FORM**

**SPECIFIC PROJECT INFORMATION**

(Please add additional pages as necessary)

**This page should only be completed if relevant to proposed project**

Building category (Hospital, apartments, office, school): University campus	Year of construction:2002									
	Heated floor area: 20,647 m <sup>2</sup>									
	Cooled floor area: 20,647 m <sup>2</sup>									
Type of heating system:water source Heat pumps combined with diesel boilers										
Type of cooling system:water source Heat pumps combined with cooling tower										
Type of ventilation system: natural ventilation mainly with mechanical ventilation for underground spaces.										
Type of domestic hot water system: small electric water heaters and central hot water tanks heated by diesel boilers.										
Type of automatic control system: BMS system for lighting										
Other energy consuming installations? Office equipment, lighting and mechanical equipment										
<b>Legal status of owner/sponsor (mark appropriate box):</b>										
Public Institution	<table border="1"> <tr> <td><input type="checkbox"/></td> <td>Municipality</td> <td><input type="checkbox"/></td> <td>To be privatized</td> <td><input type="checkbox"/></td> <td>Private Institution</td> <td><input checked="" type="checkbox"/></td> <td>Other (specify):</td> <td></td> </tr> </table>	<input type="checkbox"/>	Municipality	<input type="checkbox"/>	To be privatized	<input type="checkbox"/>	Private Institution	<input checked="" type="checkbox"/>	Other (specify):	
<input type="checkbox"/>	Municipality	<input type="checkbox"/>	To be privatized	<input type="checkbox"/>	Private Institution	<input checked="" type="checkbox"/>	Other (specify):			

**Energy Consumption**

	<b><u>Energy meters installed?</u></b> (Yes/no?)	<b><u>Annual consumption</u></b>		<b><u>Today's price</u></b>
		Year Before	Last Year	in USD
Electricity, total energy	Yes	1,866,981	1,812,978kWh	0.12 /kWh
Electricity, max power	No		2,000kW	/kW
District heating			MJ	/MJ
Oil for electrical production	No	135	128 tons	900/tons
Gas			m <sup>3</sup>	/m <sup>3</sup>
Other				

Energy bill based on (measurement X, m<sup>3</sup> X, m<sup>2</sup>     ):

## 6.2 Lebanese Order of Physicians building

### PROJECT IDENTIFICATION FORM

#### SHORT FORM

(Please add additional pages as necessary)

The purpose of this form is to identify projects which have a viable investment need in the short term for further discussion. Any follow on discussion will require further detail.

**This page is to be completed for all projects**

Project name: Lebanese Order of Physicians building		Project sponsor <sup>6</sup> : Lebanese Order of Physicians board	
Contact person: Dr. Bassam Saad			
Address: Tahwita		Telephone: 01/610710	
City: Furn el Chebbak		Mobile number:03/278292	
Country: Lebanon		E-mail: <a href="mailto:basaad@hotmail.fr">basaad@hotmail.fr</a>	
Country: Lebanon		Location: Tahwita	
Sector: <sup>7</sup> Energy Efficiency through energy consumption reduction			
Type of technology: Led lighting and rolling solar shades for the main facade		Equipment supplied by: Yelloblue company for LED lighting, Technoshade company for solar shades	
Sponsors experience with the technology <sup>8</sup> : Yelloblue 3 years, Technoshade 10 years			
Name of operator: Dr. Bassam Saad			
Operator's previous experience <sup>9</sup> :			
Name of owner: Lebanese Order of Physicians		Location: Furn el Chebbak - Tahwita	
What will the owners investment in the project be? <sup>10</sup> Self-financing			
What is the project's source of cash flow? Physicians subscription fees			
Is this under a fixed contract and if so, for how many years ? No			

### PROJECT IDENTIFICATION FORM

<sup>6</sup> This is a person or entity that initiates, owns and promotes the project and has decision-making power on borrowings or the allocation of equity.

<sup>7</sup> The project should require financing, including mezzanine and equity investments in energy efficiency and/or renewable energy projects or companies developing, manufacturing, distributing or installing energy efficiency and/or renewable energy equipment or services which have or are expected to have a quantifiable impact on the reduction of greenhouse gas emissions, are environmentally beneficial and/or generate energy savings, carbon credits and/or tradable renewable energy certificates.

<sup>8</sup> The answer should provide the track record or prior experience the sponsor has with the technology, including the numbers of years experience and in which capacity.

<sup>9</sup> The answer should provide the track record or prior experience of the operator in the sector and with the technology, including the numbers of years experience and in which capacity

<sup>10</sup> Owner's investments in projects can vary by type and amount to be invested, so details should be stated. A project with no owner's equity will have a low chance of success in obtaining investment by others.



**GENERAL COMMENTS AND ADDITIONAL INFORMATION**

(Please add additional pages as necessary)

**This page is to be completed for all projects****Brief project description**

The building consists of 5 basements and 6 floors above ground, distributed as follow:

<b>Floor</b>	<b>Usage</b>
<b>Basements 5-4-3</b>	Parking area + technical rooms
<b>Basement 2</b>	Auditorium (750 seats)
<b>Basement 1</b>	Auditorium's control room and toilets
<b>Ground Floor</b>	Entrance + offices
<b>Mezzanine</b>	Offices + halls
<b>Floors 1 till 4</b>	Offices
<b>5<sup>th</sup> floor</b>	Empty space

The building's total area is around 17,000 m<sup>2</sup>, with an atrium extending from the ground floor up to the 3<sup>rd</sup> floor on the building's main façade.

Working hours in the building are between 8 am and 3 pm during weekdays; with an occupancy of around 70 persons. Some sections of the building are also open outside working hours if any meetings or presentations are organized in the halls or the auditorium.

An initial energy consumption assessment was performed in July 2013, and the study concluded that the building presents a good potential for energy consumption reduction by implementing different energy conservation measures, mainly related to lighting and HVAC.

A full energy audit of the building is being performed currently to better estimate the benefits of different energy conservation measures.

The main points of interest are:

- The replacement of CFL and T8 fluorescent tubes powered by magnetic ballasts, with LED retrofits.
- The installation of roller shades on the main building façade in order to reduce solar radiations infiltrations, and thus reducing the need for cooling.

The main generated benefits would be by reducing the building's electrical energy consumption, and thus generating financial profits. Electrical energy is provided from the national grid and from backup diesel generators during blackout hours.

By reducing electrical energy consumption, both from the grid and from the backup generators; major greenhouse gas emission reductions would be generated.

Considering a baseline of 0.65KgCO<sub>2</sub> per kWh, the implementation of LED lighting all alone would allow the reduction of CO<sub>2</sub> emissions by 123 tons. Additional savings would be generated by the roller shades, which would be quantified at the end of the energy audit study.

**PROJECT IDENTIFICATION FORM****PROPOSED INVESTMENT AND FINANCING NEEDS**

(Please add additional pages as necessary)

***This page is to be completed for all projects***

<u>Investment &amp; Financing needs</u>	<u>Detail</u>	<u>Estimated investment cost</u> in USD	<u>Estimated revenues</u> in USD/year
<u>Design and Engineering</u>			
<u>Land, infrastructure</u>			
Equipment	1- LED Lighting implementation 2- Solar Shades	104,681  38,760	37,860  Not available for the moment
Construction			
Operation cost			
Others			
Total investments and revenues		<b>143,441</b>	<b>37,860 +</b>

<u>Lifetime of the project</u>	<u>Proposed start of implementation</u>	<u>Expected implementation time</u>	
<u>20 Years</u>	<u>01/08/2014 (day/month/year)</u>	<u>Years</u>	<u>3 Months</u>

**PROJECT IDENTIFICATION FORM****SPECIFIC PROJECT INFORMATION**

(Please add additional pages as necessary)

***This page should only be completed if relevant to proposed project*****A. ENERGY EFFICIENCY IN BUILDINGS**

Building category (Hospital, apartments, office, school): <u>Office</u>	Year of construction: 2000
	Heated floor area: 11,000 m <sup>2</sup>
	Cooled floor area: 11,000 m <sup>2</sup>
Type of heating system: Diesel boilers serving AHUs and FCUs	
<u>Type of cooling system:</u> Air cooled, screw type chillers serving AHUs and FCUs	
<u>Type of ventilation system:</u> Fans for kitchen and toilets	
<u>Type of domestic hot water system:</u> Central hot water tank supplied from the boiler	
Type of automatic control system: BMS system not functional	
Other energy consuming installations? Office equipment and lighting	
<b>Legal status of owner/sponsor (mark appropriate box):</b>	
Public Institution	Municipality
	To be privatized
	Private Institution
	Other (specify):
	Order of Physicians

**Energy Consumption**

	<b><u>Energy meters installed?</u></b> (Yes/no?)	<b><u>Annual consumption</u></b>		<b><u>Today's price</u></b>
		Year Before	Last Year	in USD
Electricity, total energy	Yes		<u>686,170 kWh</u>	<u>9 cUSD/kWh</u>
<u>Electricity, max power</u>	No		<u>kW</u>	<u>/kW</u>
<u>District heating</u>	No		<u>MJ</u>	<u>/MJ</u>
<u>Oil</u>	Yes		<u>137 tons</u>	<u>800 USD/tons</u>
<u>Gas</u>	No		<u>m<sup>3</sup></u>	<u>/m<sup>3</sup></u>
Other	No			

Energy bill based on (measurement X, m<sup>3</sup> X, m<sup>2</sup> \_\_\_\_):

### 6.3 Collective Solar Water Heater For The Lebanese University Dorms.

#### PROJECT IDENTIFICATION FORM

##### SHORT FORM

(Please add additional pages as necessary)

The purpose of this form is to identify projects which have a viable investment need in the short term for further discussion. Any follow on discussion will require further detail.

**This page is to be completed for all projects**

Project name : Collective Solar Water Heater For The Lebanese University Dorms.		Project sponsor <sup>11</sup> : Lebanese University	
Contact person: Dr. Adel Mourtada			
Address: Rafic Hariri University City		Telephone:	
City: Hadeth		Mobile number: + 961 3 60 75 90	
Country: Lebanon		E-mail: <a href="mailto:ecotech@inco.com.lb">ecotech@inco.com.lb</a>	
Country: Lebanon		Location: Beirut	
Sector: <sup>12</sup> Renewable Energy			
Type of technology: Solar Water Heater		Equipment supplied by:	
Sponsors experience with the technology <sup>13</sup> :			
Name of operator: Kharafi national			
Operator's previous experience <sup>14</sup> : More than 20 years in operation and maintenance			
Name of owner: Lebanese University		Location: Rafic Hariri Campus - Hadeth	
What will the owners investment in the project be? <sup>15</sup> 20% of the total amount of the project			
What is the project's source of cash flow? University Budget			
Is this under a fixed contract and if so, for how many years ?			

<sup>11</sup> This is a person or entity that initiates, owns and promotes the project and has decision-making power on borrowings or the allocation of equity.

<sup>12</sup> The project should require financing, including mezzanine and equity investments in energy efficiency and/or renewable energy projects or companies developing, manufacturing, distributing or installing energy efficiency and/or renewable energy equipment or services which have or are expected to have a quantifiable impact on the reduction of greenhouse gas emissions, are environmentally beneficial and/or generate energy savings, carbon credits and/or tradable renewable energy certificates.

<sup>13</sup> The answer should provide the track record or prior experience the sponsor has with the technology, including the numbers of years experience and in which capacity.

<sup>14</sup> The answer should provide the track record or prior experience of the operator in the sector and with the technology, including the numbers of years experience and in which capacity

<sup>15</sup> Owner's investments in projects can vary by type and amount to be invested, so details should be stated. A project with no owner's equity will have a low chance of success in obtaining investment by others.

## **PROJECT IDENTIFICATION FORM**

### **GENERAL COMMENTS AND ADDITIONAL INFORMATION**

(Please add additional pages as necessary)

***This page is to be completed for all projects***

#### **Brief project description**

The University City of the Lebanese University (Hadeth) has dorms for 2045 students. A district heating system (the biggest one in the Middle East) provides heat and hot water for the dorm and the 15 faculties in the campus. During 8 months of the year heating is not required but the need for sanitary hot water obligate the use of the district heating system ( a loop of 4 km with high thermal losses), with results a high consumption of diesel and high emission of GHG.

The global irradiation at Hadeth of 4793 Wh/m<sup>2</sup>.day allows the use of solar thermal energy to reduce energy consumption and GHG emissions. A feasibility study developed by the Faculty of Engineering shows that a centralized solar water system of 640 m<sup>2</sup> of solar panel can produce 74% of hot sanitary hot water need (125000 litres/day).

The overall cost of the project is 420 000 US\$ and the payback period is around 4 years.

#### **The nature of the market for the enterprise's products or services**

(Briefly discuss the nature of the market, its location and size, type of consumers, financial position of buyers, advantages of your product or service over the competition).

#### **Benefits details**

(Describe the benefits to the national and local economy expected from the project, covering the specific impact on: energy and environmental improvements, export promotion, import substitution, job creation, productivity improvements, technology transfer)

The project will reduce the energy consumption of the Lebanese University. GHG and air pollution emissions will be significantly reduced by up to 70%.

Each year 35000 students transit by the campus of the Lebanese University (Hadeth) more than 2500 students of them use the dorms.

The project will have a high visibility and impact for the promotion of the solar thermal technologies.

The project will be equipped by an energy management systems that can measures and archive all parameters of the systems. These results could be used for research purpose and awareness campains.

#### **Greenhouse gas emission reduction**

(Describe how the project will contribute to this providing an indication of volume.)

The project will avoid each year the emission of 239 TeCO<sub>2</sub> and 3885 TeCO<sub>2</sub> over 15 years

**PROJECT IDENTIFICATION FORM****PROPOSED INVESTMENT AND FINANCING NEEDS**

(Please add additional pages as necessary)

***This page is to be completed for all projects***

<u>Investment &amp; Financing needs</u>	<u>Detail</u>	<u>Estimated investment cost</u> in USD	<u>Estimated revenues</u> in USD/year
<u>Design and Engineering</u>	Detailed study	10000	
<u>Land, infrastructure</u>			
<u>Equipment</u>	Collective solar water system + BMS management system	380000	105000
<u>Construction</u>	With metallic structure to support the solar panels	30000	
<u>Operation cost</u>	The operation cost will be included under the overall contract of Kharafi National		
<u>Others</u>			
<b>Total investments and revenues</b>		<b>420000</b>	<b>105000</b>

<u>Lifetime of the project</u>	<u>Proposed start of implementation</u>	<u>Expected implementation time</u>	
<u>More than 15 Years</u>	<u>January 2015(day/month/year)</u>	<u>Years</u>	<u>6 Months</u>

**PROJECT IDENTIFICATION FORM****SPECIFIC PROJECT INFORMATION**

(Please add additional pages as necessary)

***This page should only be completed if relevant to proposed project*****A. ENERGY EFFICIENCY IN BUILDINGS**

Building category (Hospital, apartments, office, school): University	Year of construction: 2005
	Heated floor area: 320000 m <sup>2</sup>
	Cooled floor area: 320000 m <sup>2</sup>
Type of heating system: District heating	
Type of cooling system: District cooling	
Type of ventilation system:	
Type of domestic hot water system:	
Type of automatic control system: Honeywell	
Other energy consuming installations?	
<b>Legal status of owner/sponsor (mark appropriate box):</b>	
Public Institution	<input checked="" type="checkbox"/> Municipality <input type="checkbox"/> To be privatized <input type="checkbox"/> Private Institution <input type="checkbox"/> Other (specify):

**Energy Consumption**

	<b><u>Energy meters installed?</u></b> (Yes/no?)	<b><u>Annual consumption</u></b>		<b><u>Today's price</u></b>
		Year Before	Last Year	in USD
Electricity, total energy	Yes		<u>kWh</u>	<u>/kWh</u>
<u>Electricity, max power</u>	Yes		<u>kW</u>	<u>/kW</u>
<u>District heating</u>	Yes		<u>MJ</u>	<u>/MJ</u>
<u>Oil</u>	Yes		<u>tons</u>	<u>/tons</u>
<u>Gas</u>	No		<u>m<sup>3</sup></u>	<u>/m<sup>3</sup></u>
Other				

Energy bill based on (measurement  X, m<sup>3</sup>, m<sup>2</sup>):



## 7 LIBYA

### 7.1 ALWSAITA Sustainable Housing Project

#### **PROJECT IDENTIFICATION FORM**

##### **SHORT FORM**

***This page is to be completed for all projects***

Project name: ALWSAITA Sustainable Housing Project		Project sponsor <sup>16</sup> :ALNAFIDA for Real Estate and Construction	
Contact person:LoayBurwais			
Address: Ben Ashour		Telephone:	
City: Tripoli		Mobile number: 00218-(0)913719987	
Country: Libya		E-mail: loay@burwais.com	
Country: Libya		Location:Shahat	
Sector: <sup>17</sup> Construction of effective-energy houses			
Type of technology:Complete range of concepts related to energy efficiency: Solar power, treatment of used water, and Efficient heating, cooling and plumbing.		Equipment supplied by: - SUNSET SOLAR - UPONOR - BIO-MICROBICS	
Sponsors experience with the technology <sup>18</sup> : - SUNSET: 35 years of experience. - UPONOR: 60 years of experience. - BIO-MICROBICS: 17 60 years of experience.			
Name of operator: ALNAFIDA for Real Estate and Construction			
Operator's previous experience <sup>19</sup> : 20 years of experience. 24 construction projects and 75 design projects			
Name of owner:ALJabal		Location:AlSiahya, Tripoli	
What will the owners investment in the project be? <sup>20</sup> 8,500,000 USD			
What is the project's source of cash flow? Private sector			
Is this under a fixed contract and if so, for how many years ?No			

<sup>16</sup> This is a person or entity that initiates, owns and promotes the project and has decision-making power on borrowings or the allocation of equity.

<sup>17</sup> The project should require financing, including mezzanine and equity investments in energy efficiency and/or renewable energy projects or companies developing, manufacturing, distributing or installing energy efficiency and/or renewable energy equipment or services which have or are expected to have a quantifiable impact on the reduction of greenhouse gas emissions, are environmentally beneficial and/or generate energy savings, carbon credits and/or tradable renewable energy certificates.

<sup>18</sup> The answer should provide the track record or prior experience the sponsor has with the technology, including the numbers of years experience and in which capacity.

<sup>19</sup> The answer should provide the track record or prior experience of the operator in the sector and with the technology, including the numbers of years experience and in which capacity

<sup>20</sup> Owner's investments in projects can vary by type and amount to be invested, so details should be stated. A project with no owner's equity will have a low chance of success in obtaining investment by others.

**PROJECT IDENTIFICATION FORM**

**GENERAL COMMENTS AND ADDITIONAL INFORMATION**

(Please add additional pages as necessary)

***This page is to be completed for all projects***

<p><b>Brief project description</b></p> <p><b>Overview on Shahat (Aka: Cyrene - A UNESCO World Heritage site)</b> It was an ancient Greek and Roman city, and the oldest and most important of the five Greek cities in the region. It gave eastern Libya the classical name Cyrenaica that it has retained to modern times. Cyrene lies in a lush valley in the Jebel Akhdar uplands. The plant communities of this portion of Cyrenaica include forest, woodland, maquis, garrigue, steppe, and oak savanna.</p> <p><b>ALWSAITA Sustainable Housing Project.</b> The project is built on an area of 6 hectares to build 50 houses. The project is genuinely focusing on the reservation of the value of the location. The impact of the project on the environment is minimized by using friendly and affordable housing construction methods; with all environmental, social and economic considerations</p> <p>The nature of the market for the enterprise's products or services</p> <p>(Briefly discuss the nature of the market, its location and size, type of consumers, financial position of buyers, advantages of your product or service over the competition)</p> <p>Libya has a culture of random and under-planned construction styles. The reference and stereotyped construction pattern in Libya is very basic and irrelevant with regards to adoption to the surroundings. Energy is cheap, therefore people think it is OK to waste it rather than reserve it.</p> <p><b>Benefits details</b></p> <p>(Describe the benefits to the national and local economy expected from the project, covering the specific impact on: energy and environmental improvements, export promotion, import substitution, job creation, productivity improvements, technology transfer)</p> <p>Our sustainable method applied for these projects endorses the concepts of recycling, reusing and restoring. Solar power is a main component to ensure a healthy environment. Moreover, efficient heating, cooling and plumbing approaches are present on a variety of options and conditions.</p> <p>The houses will be part of a tourism project and will be rented to Libyans to promote for local tourism. The main objective of this project is to establish an attraction point where people come to nature and enjoy education and awareness-raising of this method of construction.</p> <p>Plans are prepared to include special tours for architects, planners, designers, engineers and construction companies.</p> <p><b>Direct benefits:</b></p> <ul style="list-style-type: none"><li>• Saving of energy by reducing of consumption of oil and gas,</li><li>• Excellent environmental impact by lessening of Co2 emission.</li><li>• High potential savings of up to 50% of energy consumption</li></ul>
---

- Creation of local technical staff

**Greenhouse gas emission reduction**

(Describe how the project will contribute to this providing an indication of volume.)

Average of 70% less than any other existing housing projects.

**PROJECT IDENTIFICATION FORM**

**PROPOSED INVESTMENT AND FINANCING NEEDS**

(Please add additional pages as necessary)

**This page is to be completed for all projects**

Investment & Financing needs	Detail	<u>Estimated investment cost</u> in USD	<u>Estimated revenues</u> in USD/year
<u>Design and Engineering</u>	7,600 sqm		
<u>Land, infrastructure</u>	57,000 sqm	1,900,000 USD	
Equipment	Furniture and Equipment	750,000 USD	
Construction	7600 sqm	5,000,000 USD	
Operation cost	Annual	400,000 USD	
Others	Cars	42,000 USD	
<b>Total investments and revenues</b>			

<u>Lifetime of the project</u>	<u>Proposed start of implementation</u>	<u>Expected implementation time</u>	
<u>Years</u>	<u>(day/month/year)</u>	<u>Years</u>	<u>Months</u>

## 7.2 REAoL HQ Building (New)

### PROJECT IDENTIFICATION FORM

#### SHORT FORM

***This page is to be completed for all projects***

Project name: REAoL HQ Building (New)		Project sponsor <sup>21</sup> : Renewable Energy Authority of Libya (REAoL)	
Contact person: Ahmed Akrim			
Address: Al Nofleen		Telephone: 00218-(21)-3409997	
City: Tripoli		Mobile number: 00218-(0)926481436	
Country: Libya		E-mail: <a href="mailto:ahmed.akrim@reaol.ly">ahmed.akrim@reaol.ly</a>	
Country: Libya		Location: Tajoura	
Sector: <sup>22</sup> Public			
Type of technology: Complete range of concepts related to energy efficiency (Green Building).		Equipment supplied by: Awaiting feasibility study to initiate vendors	
Sponsors experience with the technology <sup>23</sup> : Established in 2007 and new to the technology			
Name of operator: REAoL			
Operator's previous experience <sup>24</sup> : Established in 2007 and new to the technology			
Name of owner: REAoL		Location: Al Nofleen, Tripoli	
What will the owners investment in the project be? <sup>25</sup> Funds allocation according to Ministry of Electricity and Renewable Energy resolution.			
What is the project's source of cash flow? Government funding			
Is this under a fixed contract and if so, for how many years? No			

<sup>21</sup> This is a person or entity that initiates, owns and promotes the project and has decision-making power on borrowings or the allocation of equity.

<sup>22</sup> The project should require financing, including mezzanine and equity investments in energy efficiency and/or renewable energy projects or companies developing, manufacturing, distributing or installing energy efficiency and/or renewable energy equipment or services which have or are expected to have a quantifiable impact on the reduction of greenhouse gas emissions, are environmentally beneficial and/or generate energy savings, carbon credits and/or tradable renewable energy certificates.

<sup>23</sup> The answer should provide the track record or prior experience the sponsor has with the technology, including the numbers of years experience and in which capacity.

<sup>24</sup> The answer should provide the track record or prior experience of the operator in the sector and with the technology, including the numbers of years experience and in which capacity

<sup>25</sup> Owner's investments in projects can vary by type and amount to be invested, so details should be stated. A project with no owner's equity will have a low chance of success in obtaining investment by others.

**PROJECT IDENTIFICATION FORM**

**GENERAL COMMENTS AND ADDITIONAL INFORMATION**

(Please add additional pages as necessary)

***This page is to be completed for all projects***

<p><b>Brief project description</b> Construction of REAoL HQ building with high energy efficiency methods applied. The project will be the first of a series of governmental buildings projects as exemplary project.</p> <p><b>The nature of the market for the enterprise's products or services</b> (Briefly discuss the nature of the market, its location and size, type of consumers, financial position of buyers, advantages of your product or service over the competition)</p> <p><b>Benefits details</b> (Describe the benefits to the national and local economy expected from the project, covering the specific impact on: energy and environmental improvements, export promotion, import substitution, job creation, productivity improvements, technology transfer)</p> <ul style="list-style-type: none"><li>• Saving of energy by reducing of consumption of oil and gas,</li><li>• Excellent environmental impact by lessening of Co2 emission.</li><li>• High potential savings of up to 50% of energy consumption</li><li>• Creation of local technical staff.</li><li>• Public sector to be play exemplary role.</li></ul> <p><b>Greenhouse gas emission reduction</b> (Describe how the project will contribute to this providing an indication of volume.)</p> <p>Average of 50 - 70% less than any other existing traditional governmental building.</p>
---

**PROJECT IDENTIFICATION FORM****PROPOSED INVESTMENT AND FINANCING NEEDS**

(Please add additional pages as necessary)

***This page is to be completed for all projects***

<u>Investment &amp; Financing needs</u>	<u>Detail</u>	<u>Estimated investment cost</u> <u>in USD</u>	<u>Estimated revenues</u> <u>in USD/year</u>
<u>Design and Engineering</u>	Building design 3000 sqm		
<u>Land, infrastructure</u>	Land: 15,000 sqm In.st: 1500 sqm	2,000,000 USD	
Equipment			
Construction	Building construction 3000 sqm	7,000,000 USD	
Operation cost			
Others			
Total investments and revenues			

<u>Lifetime of the project</u>	<u>Proposed start of implementation</u>	<u>Expected implementation time</u>	
<u>25 Years</u>	<u>(1/1/2015)</u>	<u>1 Years</u>	<u>6 Months</u>

## 8 MOROCCO

### 8.1 High Efficiency Lighting Online System

#### **PROJECT IDENTIFICATION FORM**

#### **SHORT FORM**

***This page is to be completed for all projects***

Project name: High Efficiency Lighting Online System		Project sponsor <sup>26</sup> : ADREE	
Contact person: DAKKINA ABDELALI			
Address: Espace les Patios 1er Etage, Angle Av Anakhil et Av Ben Barka			
Hay Riad		Telephone: (212) 5 37 28 73 53	
City: Rabat		Mobile number: (212) 6 61 83 39 48	
Country: Morocco		E-mail: adakkina@gmail.com	
Country: Morocco		Location: Rabat	
Sector: <sup>27</sup> street lighting			
Type of technology: networked LED		Equipment supplied by: IHMAN	
Sponsors experience with the technology <sup>28</sup> : 1 years			
Name of operator: IHMAN			
Operator's previous experience <sup>29</sup> 4 Years			
Name of owner: Municipality		Location: Morocco	
What will the owners investment in the project be? <sup>30</sup> 20%			
What is the project's source of cash flow? From the energy saving			
Is this under a fixed contract and if so, for how many years? According to the public private partnership and the payback time period			

<sup>26</sup> This is a person or entity that initiates, owns and promotes the project and has decision-making power on borrowings or the allocation of equity.

<sup>27</sup> The project should require financing, including mezzanine and equity investments in energy efficiency and/or renewable energy projects or companies developing, manufacturing, distributing or installing energy efficiency and/or renewable energy equipment or services which have or are expected to have a quantifiable impact on the reduction of greenhouse gas emissions, are environmentally beneficial and/or generate energy savings, carbon credits and/or tradable renewable energy certificates.

<sup>28</sup> The answer should provide the track record or prior experience the sponsor has with the technology, including the numbers of years experience and in which capacity.

<sup>29</sup> The answer should provide the track record or prior experience of the operator in the sector and with the technology, including the numbers of years experience and in which capacity

<sup>30</sup> Owner's investments in projects can vary by type and amount to be invested, so details should be stated. A project with no owner's equity will have a low chance of success in obtaining investment by others.

**PROJECT IDENTIFICATION FORM**

**GENERAL COMMENTS AND ADDITIONAL INFORMATION**

(Please add additional pages as necessary)

***This page is to be completed for all projects***

<p><b>Brief project description</b> Outdoor public street lighting systems can account for as much as sixty percent of a municipal government’s total electricity use. Our project aim is to replacing existing street lights with LED-based lamps and to perform an efficient lighting management using Helios (High Efficiency Lighting Online System) to cut energy and operations costs by 60 percent or more.</p> <p><b>The nature of the market for the enterprise's products or services</b>  (Briefly discuss the nature of the market, its location and size, type of consumers, financial position of buyers, advantages of your product or service over the competition)  Our main clients are all major cities and municipalities in morocco,  Helios technology is a comprehensive management lighting system that manages any type of lighting installation. It is made up of devices that are integrated into the elements of any lighting installation: lights and electrical distribution panels. Those devices use different variables that allow you to adjust the lighting without reducing service quality in order to optimize power consumption. Helios system includes also different function such as control, measurement and supervision that can achieve the necessary installation parameters to ensure proper operation and maintenance.  The Helios system is based on a free radio frequency module which enables communication between elements of the system without any data transmission costs.</p> <p><b>Benefits details</b>  The Kingdom of Morocco imports approximately 95% of it needs in electricity. Street lighting consumes as much as 40 percent of Moroccan cities energy budget in terms of lighting and management. Replacing existing street lights with networked LED-based lamps, cut energy and operations costs cut by at least 60 percent.  With this project the ADEREE can succeed in it strategic territorial approach (JIHA TINOU) and they can also have a great contribution in the MENA energy award.  These project can be implemented in different cities in morocco throughout ADEREE  This project will be a training test and a promotion of capacity building for different actors in the street lighting field in a sustainable way.</p> <p><b>Greenhouse gas emission reduction</b>  (Describe how the project will contribute to this providing an indication of volume.)  Implementing this plan will reduce carbon dioxide emissions by 43,000 metric tons per year annually</p>
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**PROJECT IDENTIFICATION FORM****PROPOSED INVESTMENT AND FINANCING NEEDS**

(Please add additional pages as necessary)

***This page is to be completed for all projects***

<u>Investment &amp; Financing needs</u>	<u>Detail</u>	<u>Estimated investment cost</u> <u>in USD</u>	<u>Estimated revenues</u> <u>in USD/year</u>
<u>Design and Engineering</u>		100 000,00	
<u>Land, infrastructure</u>			
Equipment	LED Lamps + HELIOS module	1 600 000.00	412 000.00
Construction			
Operation cost		90 000.00	
Others		10 000.00	
<b>Total investments and revenues</b>		<b>1 800 000.00</b>	<b>412 000.00</b>

<u>Lifetime of the project</u>	<u>Proposed start of implementation</u>	<u>Expected implementation time</u>	
<u>12 Years</u>	<u>01/01/2015(day/month/year)</u>	<u>1 Years</u>	<u>Months</u>

**PROJECT IDENTIFICATION FORM**  
**SPECIFIC PROJECT INFORMATION**

**This page should only be completed if relevant to proposed project**

## F. STREET LIGHTING

Type of street lighting: Legacy high-pressure sodium and mercury street lamps						
Year of construction: 2000						
Total installed capacity (kW):						
Number of light fittings: 3000						
Prevailing types and capacities (W):						
Type of control (manual, timer, day light control):						
Manual and timer						
<b>Legal status of owner/sponsor (mark appropriate box): National Agency</b>						
Public Company		Municipality		To be privatized		Private Company
						Other (specify):

### Energy Consumption

	<b><u>Energy meters installed?</u></b>  (Yes/no?)	<b><u>Annual consumption</u></b>		<b><u>Today's price</u></b>
		Year Before	Last Year	in USD
<u>Electricity, total (energy)</u>			<u>kWh</u>	<u>/kWh</u>
<u>Electricity, total (power)</u>		8 686 290	8 413 283 <u>kWh</u>	<u>0.07-0.14 /kW</u>
<u>Electricity, day</u>			<u>kWh</u>	<u>/kWh</u>
<u>Electricity, night</u>			<u>kWh</u>	<u>/kWh</u>

Who pays the energy bills, and from what source(s)?:

Municipality

Own resources

Date: <u>23/05/2014</u>	Name: <u>DAKKINA ABDELALI</u>	Signature: _____
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## 9 PALESTINE

### 9.1 Street Lighting Project

#### **PROJECT IDENTIFICATION FORM**

#### **SHORT FORM**

***This page is to be completed for all projects***

Project name: Street Lighting Project		Project sponsor <sup>31</sup> : Hebron Municipality	
Contact person: Eng. Ayman Hassouneh			
Address: Ein Sarah Street		Telephone: +970 2 2292819	
City: Hebron		Mobile number: +970 59 9222566	
Country: Palestine		E-mail: Ayman@hepco-pal.com	
Country: Palestine		Location: Hebron	
Sector: <sup>32</sup> Energy saving, Losses reduction, Reduction of gas emission			
Type of technology: LED		Equipment supplied by:	
Sponsors experience with the technology <sup>33</sup> :			
<ol style="list-style-type: none"> <li>1. In last two years Hebron Municipality replace all the chock coils in neon luminaries with electronic one in all municipal buildings.</li> <li>2. Using thermal panels in heating water in municipal building using latest technology.</li> <li>3. Using SCADA system in controlling the electrical network.</li> <li>4. Using smart energy meters.</li> <li>5. Using VCD devices in saving energy in street lighting which reduce the consumption by 6%</li> </ol>			
Name of operator: HEPCO			
Operator's previous experience <sup>34</sup>			
<ol style="list-style-type: none"> <li>1. Since 1950 Hebron municipality generating, supplying and responsible for providing the electric energy to the Hebron city and the surrounding area.</li> <li>2. In 1973, it was started importing the electricity from Israel through IEC Company at 33 KV and feeding the distribution transformers at 6.6 KV.</li> <li>3. In 2005 HEPCO Company, is responsible for providing the electric energy to the Hebron city and the surrounding area.</li> <li>4. In 2011 HEPCO upgrade the MV distribution level from 6.6 to 11 KV in order of reducing</li> </ol>			

<sup>31</sup> This is a person or entity that initiates, owns and promotes the project and has decision-making power on borrowings or the allocation of equity.

<sup>32</sup> The project should require financing, including mezzanine and equity investments in energy efficiency and/or renewable energy projects or companies developing, manufacturing, distributing or installing energy efficiency and/or renewable energy equipment or services which have or are expected to have a quantifiable impact on the reduction of greenhouse gas emissions, are environmentally beneficial and/or generate energy savings, carbon credits and/or tradable renewable energy certificates.

<sup>33</sup> The answer should provide the track record or prior experience the sponsor has with the technology, including the numbers of years experience and in which capacity.

<sup>34</sup> The answer should provide the track record or prior experience of the operator in the sector and with the technology, including the numbers of years experience and in which capacity

losses and increasing system capacity.	
5. Now HEPCO have 7 Transforming substations 33/11 KV with total capacity of 156 MVA	
6. In 2013 the peak load was 89 MVA.	
7. Most of MV OHL is replaced by underground cables inside the city	
8. MV network length is more than 200 Km, and LV network more than 800 Km mainly of ABC.	
9. MV system is controlled and monitored through SCADA system.	
10. More than 6000 street lighting luminaries lighting Hebron streets and ways of different rating and types.	
11. In 2012 HEPCO obtained ISO 9001:2008 for distribution and management of electric power utility services.	
12. HEPCO serve more than 40000 customers.	
Name of owner: Hebron Municipality	Location: Hebron – Palestine
What will the owners investment in the project be? <sup>35</sup>	
What is the project's source of cash flow?	
Is this under a fixed contract and if so, for how many years ?	

**PROJECT IDENTIFICATION FORM**

**GENERAL COMMENTS AND ADDITIONAL INFORMATION**

(Please add additional pages as necessary)

***This page is to be completed for all projects***

<p><b>Brief project description</b></p> <p>This project is to replace all the street lighting fixture crossing the main road from north to south made of HPS &amp; MH lamp with LED type to reduce losses, energy bills, CO<sub>2</sub> emissions and improving overall system efficiency and in addition to energy saving.</p> <p>The total number of these fixtures is about 1000 units to be replaced at the first stage, which will be designed and constructed by HEPCO teams.</p> <p><b>The nature of the market for the enterprise's products or services</b></p> <p>(Briefly discuss the nature of the market, its location and size, type of consumers, financial position of buyers, advantages of your product or service over the competition)</p> <p><b>Benefits details</b></p> <p>(Describe the benefits to the national and local economy expected from the project, covering the specific impact on: energy and environmental improvements, export promotion, import substitution,</p>
---

<sup>35</sup> Owner's investments in projects can vary by type and amount to be invested, so details should be stated. A project with no owner's equity will have a low chance of success in obtaining investment by others.

job creation, productivity improvements, technology transfer)

1. Reducing CO<sub>2</sub> emissions
2. Reducing energy losses
3. Reducing energy consumption bills
4. Improve overall efficiency of the system
5. Using new LED technology and knowhow transfer

**Greenhouse gas emission reduction**

(Describe how the project will contribute to this providing an indication of volume.)

**PROJECT IDENTIFICATION FORM**

**PROPOSED INVESTMENT AND FINANCING NEEDS**

(Please add additional pages as necessary)

***This page is to be completed for all projects***

<b>Investment &amp; Financing needs</b>	<b>Detail</b>	<b><u>Estimated investment cost</u> in USD</b>	<b><u>Estimated revenues</u> in USD/year</b>
<u>Design and Engineering</u>	Preparing designs and tendering documents	50,000	
<u>Land, infrastructure</u>			
Equipment	LED Luminaries and accessories	1,000,000	
Construction	By HEPCO Teams engineers & technicians	150,000	
Operation cost	By HEPCO Teams engineers & technicians	50,000	
Others			
<b>9.1.1.1.1 Total investments and revenues</b>		<b>1,250,000</b>	

<u>Lifetime of the project</u>		<u>Proposed start of implementation</u>		<u>Expected implementation time</u>	
20 Years		1/1/2015 (day/month/year)		2015 Years	12 Months

**OUTLINE FINANCING PLAN**

	<u>Type (in kind/equity/cash)</u>	<u>USD</u>	<u>% of Total</u>	<u>Interest rate (cost of capital)%</u>
Owner's Equity	equity	250,000	20%	
<u>Other Equity</u>				
<u>Bank Loans</u>				
<u>Other Loans</u>				
<u>Grants</u>	Equity / in kind	1,000,000	80%	
<u>What kind of guarantees are available (bank/utility/government)?</u>				

**PROJECT IDENTIFICATION FORM**

**SPECIFIC PROJECT INFORMATION**

(Please add additional pages as necessary)

***This page should only be completed if relevant to proposed project***

**F. STREET LIGHTING**

<p><u>Type of street lighting:</u> HPS,MH</p> <p>Year of construction: From 1960 until now</p> <p>Total installed capacity (kW): 600 KW</p> <p><u>Number of light fittings:</u> 6000 units</p> <p>Prevailing types and capacities (W): 75 W, 100 W, 150 W, 250 W, 400 W.</p> <p>Type of control (manual, timer, day light control):</p> <p>Day light control</p>
--

**Legal status of owner/sponsor (mark appropriate box):**

Public Company		Municipality	<input checked="" type="checkbox"/>	To be privatized		Private Company		Other (specify):	
----------------	--	--------------	-------------------------------------	------------------	--	-----------------	--	------------------	--

**Energy Consumption**

9.1.2	<u>Energy meters installed?</u> (Yes/no?)	<u>Annual consumption</u>		<u>Today's price</u>  in USD
		Year Before 2012	Last Year 2013	
<u>Electricity, total (energy)</u>	Yes	5,732,638	5,385,157 kWh	0.18 /kWh
<u>Electricity, total (power)</u>			kW	/kW
<u>Electricity, day</u>			kWh	/kWh
<u>Electricity, night</u>			kWh	/kWh

Who pays the energy bills, and from what source(s)?:

Hebron Municipality from its own sources

Date: _____	Name: _____	Signature: _____
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## 10 SUDAN

### 10.1 Laboratory testing for energy

#### **PROJECT IDENTIFICATION FORM**

#### **SHORT FORM**

***This page is to be completed for all projects***

Project name Laboratory testing for energy efficiency of household appliances		Project sponsor <sup>36</sup> :ministry of water resource and electricity	
Contact person: Abed El Hafiz Babikir			
Address: Electricity Regulatory Authority		Telephone:00249123499116	
City: Khartoum		Mobile number: 00249123499116	
Country: Sudan		E-mail: hfz_babiker@yahoo.com	
Country: Sudan		Location: : Khartoum	
Sector: <sup>37</sup> Electricity Regulatory Authority			
Type of technology:		Equipment supplied by:	
Sponsors experience with the technology <sup>38</sup> : no experience			
Name of operator: not yet			
Operator's previous experience <sup>39</sup> no yet			
Name of owner: Electricity Regulatory Authority		Location: Khartoum	
What will the owners investment in the project be? <sup>40</sup>			
What is the project's source of cash flow? Rent for public			
Is this under a fixed contract and if so, for how many years ? no yet			

<sup>36</sup> This is a person or entity that initiates, owns and promotes the project and has decision-making power on borrowings or the allocation of equity.

<sup>37</sup> The project should require financing, including mezzanine and equity investments in energy efficiency and/or renewable energy projects or companies developing, manufacturing, distributing or installing energy efficiency and/or renewable energy equipment or services which have or are expected to have a quantifiable impact on the reduction of greenhouse gas emissions, are environmentally beneficial and/or generate energy savings, carbon credits and/or tradable renewable energy certificates.

<sup>38</sup> The answer should provide the track record or prior experience the sponsor has with the technology, including the numbers of years experience and in which capacity.

<sup>39</sup> The answer should provide the track record or prior experience of the operator in the sector and with the technology, including the numbers of years experience and in which capacity

<sup>40</sup> Owner's investments in projects can vary by type and amount to be invested, so details should be stated. A project with no owner's equity will have a low chance of success in obtaining investment by others.



**PROJECT IDENTIFICATION FORM**

**GENERAL COMMENTS AND ADDITIONAL INFORMATION**

(Please add additional pages as necessary)

***This page is to be completed for all projects***

<p><b>Brief project description</b></p> <p>Laboratory testing and examination of the efficiency of household appliances for refregar</p> <p><b>The nature of the market for the enterprise's products or services</b></p> <p>(Briefly discuss the nature of the market, its location and size, type of consumers, financial position of buyers, advantages of your product or service over the competition)</p> <p>The first one in Sudan</p> <p><b>Benefits details</b></p> <p>(Describe the benefits to the national and local economy expected from the project, covering the specific impact on: energy and environmental improvements, export promotion, import substitution, job creation, productivity improvements, technology transfer)</p> <p><b>Energy efficiency</b></p> <p><b>Greenhouse gas emission reduction</b></p> <p><u>(Describe how the project will contribute to this providing an indication of volume.)</u></p> <p>Reduce thermal generation</p>
--

**PROJECT IDENTIFICATION FORM****PROPOSED INVESTMENT AND FINANCING NEEDS**

(Please add additional pages as necessary)

***This page is to be completed for all projects***

Investment & Financing needs	Detail	<u>Estimated investment cost</u> in USD	<u>Estimated revenues</u> in USD/year
<u>Design and Engineering</u>			
<u>Land, infrastructure</u>		150000	
Equipment		500000	
Construction		100000	
Operation cost			
Others		100000	
Total investments and revenues		<b>850000</b>	

<u>Lifetime of the project</u>	<u>Proposed start of implementation</u>	<u>Expected implementation time</u>	
Years	(day/month/year)	Years	Months

**OUTLINE FINANCING PLAN**

	<u>Type</u> <u>(in kind/equity/cash)</u>	<u>USD</u>	<u>% of Total</u>	<u>Interest rate</u> <u>(cost of capital)%</u>
Owner's Equity		250000	30	
<u>Other Equity</u>				
<u>Bank Loans</u>				
<u>Other Loans</u>		60000	70	
<u>Grants</u>				
What kind of guarantees are available (bank/utility/government)?				

## 11 TUNISIA

### 11.1 Technical assistance of SNCFT for the establishment of an energy efficiency project

#### **PROJECT IDENTIFICATION FORM**

#### **SHORT FORM**

***This page is to be completed for all projects***

Project name: Technical assistance of SNCFT for the establishment of an energy efficiency project		Project sponsor <sup>41</sup> :	
Contact person:			
Address: 67 av. Farhat Hached -1001- BP 693		Telephone: 71 34 55 11 et 71 25 44 40	
City: Tunis		Mobile number:	
Country: Tunisia		E-mail: <a href="mailto:brc@sncft.com.tn">brc@sncft.com.tn</a>	
Country: Tunisia		Location: Tunisia	
Sector: <sup>42</sup> Transport			
Type of technology:		Equipment supplied by:	
Sponsors experience with the technology <sup>43</sup> :			
Name of operator:			
Operator's previous experience <sup>44</sup>			
Name of owner:		Location:	
What will the owners investment in the project be? <sup>45</sup>			
What is the project's source of cash flow?			
Is this under a fixed contract and if so, for how many years ?			

<sup>41</sup> This is a person or entity that initiates, owns and promotes the project and has decision-making power on borrowings or the allocation of equity.

<sup>42</sup> The project should require financing, including mezzanine and equity investments in energy efficiency and/or renewable energy projects or companies developing, manufacturing, distributing or installing energy efficiency and/or renewable energy equipment or services which have or are expected to have a quantifiable impact on the reduction of greenhouse gas emissions, are environmentally beneficial and/or generate energy savings, carbon credits and/or tradable renewable energy certificates.

<sup>43</sup> The answer should provide the track record or prior experience the sponsor has with the technology, including the numbers of years experience and in which capacity.

<sup>44</sup> The answer should provide the track record or prior experience of the operator in the sector and with the technology, including the numbers of years experience and in which capacity

<sup>45</sup> Owner's investments in projects can vary by type and amount to be invested, so details should be stated. A project with no owner's equity will have a low chance of success in obtaining investment by others.

**PROJECT IDENTIFICATION FORM**

**GENERAL COMMENTS AND ADDITIONAL INFORMATION**

(Please add additional pages as necessary)

***This page is to be completed for all projects***

**Brief project description**

The project consists in strengthening monitoring and energy management within the company through:

- The introduction of fuel management terminals.
- The equipment all tank of gauging system.
- The establishment of a monitoring software;
- Upgrade of fuel dispensing facilities (tanks, piping layout of the reception area, ...)

**The nature of the market for the enterprise's products or services**

(Briefly discuss the nature of the market, its location and size, type of consumers, financial position of buyers, advantages of your product or service over the competition)

SNCFT is a public transport company in Tunisia

**Benefits details**

(Describe the benefits to the national and local economy expected from the project, covering the specific impact on: energy and environmental improvements, export promotion, import substitution, job creation, productivity improvements, technology transfer)

The expected objectives by implementation of the project are:

- Improving the current system for monitoring the consumption of rolling stock.
- Minimizing fuel leaks;
- Real-time availability technical managers of key parameters and ratios related to the consumption of rolling stock in order to quickly identify any deficiencies and take corrective action.

A gain of 5% on fuel consumption can be generated by the development of this project

**Greenhouse gas emission reduction**

(Describe how the project will contribute to this providing an indication of volume.)

This project reduces emissions of the company proportionally to the gains on consumption.

**PROJECT IDENTIFICATION FORM****PROPOSED INVESTMENT AND FINANCING NEEDS**

(Please add additional pages as necessary)

***This page is to be completed for all projects***

<b>Investment &amp; Financing needs</b>	<b>Detail</b>	<b><u>Estimated investment cost</u></b> <u>in USD</u>	<b><u>Estimated revenues</u></b> <u>in USD/year</u>
<u>Design and Engineering</u>			
<u>Land, infrastructure</u>			
Equipment			
Construction			
Operation cost			
Others			
Total investments and revenues		<b>300 000</b>	<b>1338463</b>

<u>Lifetime of the project</u>	<u>Proposed start of implementation</u>	<u>Expected implementation time</u>	
<u>5 Year</u>	<u>(01/01/2015)</u>	<u>01 year</u>	<u>Months</u>

**PROJECT IDENTIFICATION FORM**

**SPECIFIC PROJECT INFORMATION**

(Please add additional pages as necessary)

**This page should only be completed if relevant to proposed project**

**A. ENERGY EFFICIENCY IN TRANSPORT**

<p><b>MAIN ACTIVITIES OF THE SNCFT</b></p> <ul style="list-style-type: none"> <li>- Passenger Outline.</li> <li>- Passenger Suburbs</li> <li>- Freight</li> </ul> <p><b>RAIL NETWORK</b></p> <ul style="list-style-type: none"> <li>- 471 km of standard gauge lines (1437 mm);</li> <li>- 1688 km of meter gauge lines (1000 mm) 65 km of which are electrified</li> <li>- 8 km of lines mixed gauge (standard and metric)</li> </ul> <p><b>TRANSPORT EQUIPMENT</b></p> <ul style="list-style-type: none"> <li>- 130 Locomotives online, 41 Shunting locomotive, 6 Electric trains 3 units, 262 Towed passenger equipment, 5 express autorails, 3648 Wagons and 1266 Containers.</li> </ul> <p>SNCFT have 12 diesel stations:</p> <ul style="list-style-type: none"> <li>- Central Station</li> <li>- Station South to GDFH</li> <li>- Station North to GDFH</li> <li>- Station Railcar express train to GDFH</li> <li>- Station DABC (Borj Cedria)</li> <li>- Gaafour Station (Depot)</li> <li>- Gaafour Station (Train)</li> <li>- Station Sousse</li> <li>- Station Kasserine</li> <li>- Station Sfax</li> <li>- Station Gafsa</li> <li>- Station Metlaoui</li> </ul> <p><b>Legal status of owner/sponsor (mark appropriate box):</b></p>									
Public Institution	<input checked="" type="checkbox"/>	Municipality		To be privatized		Private Institution		Other (specify):	

**Energy Consumption**

	<u>Energy meters installed?</u>	<u>Annual consumption</u>		<u>Today's price</u>
	(Yes/no?)	Year Before	Last Year	in USD
Consumption in passenger traffic			<u>16782 m3</u>	<u>731/m3</u>
<u>Consumption of air conditioning</u>			<u>2544 m3</u>	<u>731/m3</u>
<u>Consumption of electric trains</u>			<u>5949 MWh</u>	<u>107/MWh</u>
<u>Consumption of freight</u>			<u>16407 m3</u>	<u>731/m3</u>

Energy bill based on (measurement \_\_\_\_, m<sup>3</sup> \_\_\_\_, m<sup>2</sup> \_\_\_\_):

Date: _____	Name: _____	Signature: _____
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## 11.2 Implementation of CTM (centralized technical management) in 17 units in conjunction with the seat

### PROJECT IDENTIFICATION FORM

#### SHORT FORM

***This page is to be completed for all projects***

Project name: implementation of CTM (centralized technical management) in 17 units in conjunction with the seat		Project sponsor <sup>46</sup> :	
Contact person: Mr Mehdi TARRES			
Address: Directorate- General El Mouradi Hotel		Telephone: +216 73 246 355	
City: Sousse		Mobile number:	
Country: Tunisia		E-mail: Mehdi.Tarres@elmouradi.com	
Country: TUNISIA		Location: SOUSSE	
Sector: <sup>47</sup> TOURISM			
Type of technology:		Equipment supplied by:	
Sponsors experience with the technology <sup>48</sup> :			
Name of operator:			
Operator's previous experience <sup>49</sup>			
Name of owner:		Location:	
What will the owners investment in the project be? <sup>50</sup>			
What is the project's source of cash flow?			
Is this under a fixed contract and if so, for how many years ?			

<sup>46</sup> This is a person or entity that initiates, owns and promotes the project and has decision-making power on borrowings or the allocation of equity.

<sup>47</sup> The project should require financing, including mezzanine and equity investments in energy efficiency and/or renewable energy projects or companies developing, manufacturing, distributing or installing energy efficiency and/or renewable energy equipment or services which have or are expected to have a quantifiable impact on the reduction of greenhouse gas emissions, are environmentally beneficial and/or generate energy savings, carbon credits and/or tradable renewable energy certificates.

<sup>48</sup> The answer should provide the track record or prior experience the sponsor has with the technology, including the numbers of years experience and in which capacity.

<sup>49</sup> The answer should provide the track record or prior experience of the operator in the sector and with the technology, including the numbers of years experience and in which capacity

<sup>50</sup> Owner's investments in projects can vary by type and amount to be invested, so details should be stated. A project with no owner's equity will have a low chance of success in obtaining investment by others.



**PROJECT IDENTIFICATION FORM**

**GENERAL COMMENTS AND ADDITIONAL INFORMATION**

(Please add additional pages as necessary)

***This page is to be completed for all projects***

**Brief project description**

Implementation of CTM (centralized technical management) in 17 units in conjunction with the seat.

**The nature of the market for the enterprise's products or services**

(Briefly discuss the nature of the market, its location and size, type of consumers, financial position of buyers, advantages of your product or service over the competition)

**Benefits details**

- CTM Monitoring equipment and installations.
- Reduced energy expenditure through optimum management of the site.
- Ongoing monitoring and the possibility of centralization.
- A quick response remote.
- Securing facilities and users.
- Secure incomes.
- Improved comfort and well-being within the building.
- Response Procedures.
- Traceability of actions and events.
- Statistics.
- Dynamic Support for maintenance.

This project allows us to win 20% of the energy (Gas and Electricity)

**Greenhouse gas emission reduction**

450-500 t CO<sub>2</sub> per year

**PROJECT IDENTIFICATION FORM****SPECIFIC PROJECT INFORMATION**

(Please add additional pages as necessary)

***This page should only be completed if relevant to proposed project*****A. ENERGY EFFICIENCY IN BUILDINGS**

Building category (Hotel): _____ _____	Year of construction: Since 1985
	Heated floor area: m <sup>2</sup>
	Cooled floor area: m <sup>2</sup>
Type of heating system: Central Heating	
<u>Type of cooling system:</u> Centralized Cooling	
<u>Type of ventilation system:</u> Fan Coil	
<u>Type of domestic hot water system:</u>	
Type of automatic control system:	
Other energy consuming installations?	
<b>Legal status of owner/sponsor (mark appropriate box):</b>	
Public Institution	Municipality
To be privatized	Private Institution
Other (specify):	

**Energy Consumption**

	<b><u>Energy meters installed?</u></b> (Yes/no?)	<b><u>Annual consumption</u></b>		<b><u>Today's price</u></b>
		Year Before	Last Year	in USD
Electricity, total energy	Yes		<u>43 050 120kWh</u>	<u>0.10/kWh</u>
<u>Electricity, max power</u>			<u>kW</u>	<u>/kW</u>
<u>District heating</u>			<u>MJ</u>	<u>/MJ</u>
<u>Oil</u>			<u>tons</u>	<u>/tons</u>
<u>Gas</u>	Yes		<u>5 755 617 m<sup>3</sup></u>	<u>0.21/m<sup>3</sup></u>
Water	Yes			

Energy bill based on (measurement \_\_\_\_, m<sup>3</sup> \_\_\_\_, m<sup>2</sup> \_\_):

## PROJECT IDENTIFICATION FORM

## SPECIFIC PROJECT INFORMATION

***This page should only be completed if relevant to proposed project***

**E. CHILLED WATER PRODUCTION AND DISTRIBUTION**

Plant capacity:	MW	If existing, year of construction:
Type of chillers installed (cooling only, tri-generation, etc.): osmosis plant.		
Distribution net extension:	m	
Age of net:		
Number of distribution substations:		
Main end-users/customers (number, private/commercial, etc.):		
Any renovation implemented the last 3 years?		
<b>Legal status of owner/sponsor (mark appropriate box):</b>		
Public Company	Municipality	To be privatized
		Private Company
		Other (specify):

**Energy Consumption**

	<b><u>Energy meters installed?</u></b> (Yes/no?)	<b><u>Annual consumption</u></b>		<b><u>Today's price</u></b>
		Year Before	Last Year	in USD
<u>Oil</u>			tons	/tons
<u>Gas</u>			m <sup>3</sup>	/m <sup>3</sup>
<u>Electricity</u>	Yes		679 776 kWh	0.10/kWh
<u>Others</u>				

Date: _____	Name: _____	Signature: _____
-------------	-------------	------------------

## 11.3 Replacement of 1.3 million light points T8 to T5

### PROJECT IDENTIFICATION FORM

#### SHORT FORM

***This page is to be completed for all projects***

Project name replacement of 1.3 million light points T8 to T5	Project sponsor <sup>51</sup> :Ministry of education + ANME
Contact person: Lotfi Sinene	
Address:	Telephone:
City: TUNIS	Mobile number:98827366
Country: TUNISIA	E-mail: sinene@mail2chef.com
Country: TUNISIA	Location: TUNIS
Sector: <sup>52</sup> EDUCATION	
Type of technology: fluorescent tubes T8	Equipment supplied by: fluorescent tubes T5
Sponsors experience with the technology <sup>53</sup> :	
Name of operator:	
Operator's previous experience <sup>54</sup>	
Name of owner:	Location:
What will the owners investment in the project be? <sup>55</sup>	
What is the project's source of cash flow?	
Is this under a fixed contract and if so, for how many years ?	

<sup>51</sup> This is a person or entity that initiates, owns and promotes the project and has decision-making power on borrowings or the allocation of equity.

<sup>52</sup> The project should require financing, including mezzanine and equity investments in energy efficiency and/or renewable energy projects or companies developing, manufacturing, distributing or installing energy efficiency and/or renewable energy equipment or services which have or are expected to have a quantifiable impact on the reduction of greenhouse gas emissions, are environmentally beneficial and/or generate energy savings, carbon credits and/or tradable renewable energy certificates.

<sup>53</sup> The answer should provide the track record or prior experience the sponsor has with the technology, including the numbers of years experience and in which capacity.

<sup>54</sup> The answer should provide the track record or prior experience of the operator in the sector and with the technology, including the numbers of years experience and in which capacity

<sup>55</sup> Owner's investments in projects can vary by type and amount to be invested, so details should be stated. A project with no owner's equity will have a low chance of success in obtaining investment by others.

**PROJECT IDENTIFICATION FORM**

**GENERAL COMMENTS AND ADDITIONAL INFORMATION**

(Please add additional pages as necessary)

***This page is to be completed for all projects***

<p><b>Brief project description</b> The project involves the replacement of 1.3 million points of light T8 (1x36W) in fluorescent tubes T5 (1x18W)</p> <p><b>Benefits details</b> This project will essentially make energy savings that will have an impact later on electrical peak summer when we have to run the air conditioning.</p> <p>The impact on the environment, thanks to such action will prevent greenhouse gas emissions.</p> <p>This action will have an impact on the creation of new jobs and creating new market too.</p> <p><b>Greenhouse gas emission reduction</b></p> <p><u>(Describe how the project will contribute to this providing an indication of volume.)</u></p>
---

**PROJECT IDENTIFICATION FORM****PROPOSED INVESTMENT AND FINANCING NEEDS**

(Please add additional pages as necessary)

***This page is to be completed for all projects***

	Detail	<b><u>Estimated investment cost</u></b> in USD	<b><u>Estimated revenues</u></b> in USD/year
<u>Design and Engineering</u>	-	0	0
<u>Land, infrastructure</u>	-	0	0
Equipment	1.3 millions fluorescent tubes T5 (1x18W)	20 millions	4 millions
Construction	-	0	0
Operation cost	-	0	0
Others	-	0	0
<b>11.3.1.1.1 Total investments and revenues</b>		20 millions	4 millions

<u>Lifetime of the project</u>	<u>Proposed start of implementation</u>	<u>Expected implementation time</u>	
10 Years	01/08/2014 (day/month/year)	1 Year	0 Months

**OUTLINE FINANCING PLAN**

	Type <u>(in kind/equity/cash)</u>	<u>USD</u>	<u>% of Total</u>	<u>Interest rate</u> <u>(cost of capital)%</u>
Owner's Equity	cash	10 millions	50%	0%
<u>Other Equity</u>	cash	10 millions	50%	0%
<u>Bank Loans</u>	-	0	0	0
<u>Other Loans</u>	-	0	0	0
<u>Grants</u>	-	0	0	0
<u>What kind of guarantees are available (bank/utility/government)? (international donor + government)</u>				

**PROJECT IDENTIFICATION FORM****SPECIFIC PROJECT INFORMATION**

(Please add additional pages as necessary)

***This page should only be completed if relevant to proposed project*****A. ENERGY EFFICIENCY IN BUILDINGS**

Building category (Hospital, apartments, office, school): <u>Offices + schools</u>	Year of construction: .....
	Heated floor area: m <sup>2</sup>
	Cooled floor area: m <sup>2</sup>
Type of heating system: central heating	
<u>Type of cooling system:</u> central cooling	
<u>Type of ventilation system:</u> central ventilation	
<u>Type of domestic hot water system:</u>	
Type of automatic control system:	
Other energy consuming installations?	
<b>Legal status of owner/sponsor (mark appropriate box):</b>	
Public Institution	<input checked="" type="checkbox"/> Municipality
	<input type="checkbox"/> To be privatized
	<input type="checkbox"/> Private Institution
	<input type="checkbox"/> Other (specify):

**Energy Consumption**

11.3.2	<u>Energy meters installed?</u>	<u>Annual consumption</u>		<u>Today's price</u>
	(Yes/no?)	Year Before	Last Year	in USD
Electricity, total energy	Yes		<u>kWh</u>	<u>/kWh</u>
<u>Electricity, max power</u>	Yes		<u>kW</u>	<u>/kW</u>
<u>District heating</u>	Yes		<u>MJ</u>	<u>/MJ</u>
<u>Oil</u>	No		<u>tons</u>	<u>/tons</u>
<u>Gas</u>	Yes		<u>m<sup>3</sup></u>	<u>/m<sup>3</sup></u>
Other				

Energy bill based on (measurement \_\_\_\_, m<sup>3</sup> \_\_\_\_, m<sup>2</sup> \_\_):



## 11.4 District Cooling Network

### PROJECT IDENTIFICATION FORM

#### SHORT FORM

***This page is to be completed for all projects***

Project name District Cooling Network		Project sponsor <sup>56</sup> : Municipality + ANME	
Contact person: M. FETHI HANCHI			
Address: ANME		Telephone: +216 71906900	
City: TUNIS		Mobile number:	
Country: TUNISIA		E-mail:	
Country: TUNISIA		Location: Te shores of lake Tunis	
Sector: <sup>57</sup> Chilling			
Type of technology: central cooling		Equipment supplied by: District Cooling Network	
Sponsors experience with the technology <sup>58</sup> :			
Name of operator:			
Operator's previous experience <sup>59</sup>			
Name of owner:		Location:	
What will the owners investment in the project be? <sup>60</sup>			
What is the project's source of cash flow?			
Is this under a fixed contract and if so, for how many years ?			

<sup>56</sup> This is a person or entity that initiates, owns and promotes the project and has decision-making power on borrowings or the allocation of equity.

<sup>57</sup> The project should require financing, including mezzanine and equity investments in energy efficiency and/or renewable energy projects or companies developing, manufacturing, distributing or installing energy efficiency and/or renewable energy equipment or services which have or are expected to have a quantifiable impact on the reduction of greenhouse gas emissions, are environmentally beneficial and/or generate energy savings, carbon credits and/or tradable renewable energy certificates.

<sup>58</sup> The answer should provide the track record or prior experience the sponsor has with the technology, including the numbers of years experience and in which capacity.

<sup>59</sup> The answer should provide the track record or prior experience of the operator in the sector and with the technology, including the numbers of years experience and in which capacity

<sup>60</sup> Owner's investments in projects can vary by type and amount to be invested, so details should be stated. A project with no owner's equity will have a low chance of success in obtaining investment by others.

**PROJECT IDENTIFICATION FORM**

**GENERAL COMMENTS AND ADDITIONAL INFORMATION**

(Please add additional pages as necessary)

***This page is to be completed for all projects***

<p><b>Brief project description</b></p> <p>A cooling network is an assembly consisting of a primary pipe network via the public or private domain, transporting cold as ice water and for air conditioning of buildings.</p> <p>The project objective is to reduce the consumption of electricity and water by centralizing the production of cold for air conditioning of buildings</p> <p><b>Benefits details</b></p> <p>The problem of electricity peak load in summer in Tunisia is one of the major concerns which STEG faces. Indeed, the risk of blackout becomes more imminent.</p> <p>The use of air conditioning is one of the main causes of the increase in electricity peak load in recent years. But such use of technology will have a significant impact on power demand and will make significant savings on energy consumption, water consumption and chemicals.</p> <p><b>Greenhouse gas emission reduction</b></p>
--

**PROJECT IDENTIFICATION FORM****PROPOSED INVESTMENT AND FINANCING NEEDS**

(Please add additional pages as necessary)

***This page is to be completed for all projects***

	<b>Detail</b>	<b><u>Estimated investment cost</u></b> <u>in USD</u>	<b><u>Estimated revenues</u></b> <u>in USD/year</u>
<u>Design and Engineering</u>	a feasibility study and a study of the distribution network must be established	250.000	
<u>Land, infrastructure</u>		1.000.000	
Equipment	District Cooling Network	70.000.000	
Construction	impact study and study design		
Operation cost	impact study and study design		
Others	-	0	0
<b>Total investments and revenues</b>		<b>71.250.000</b>	

<u>Lifetime of the project</u>	<u>Proposed start of implementation</u>	<u>Expected implementation time</u>	
40 Years	01/01/2016 (day/month/year)	3 Years	0 Months

**SPECIFIC PROJECT INFORMATION**

(Please add additional pages as necessary)

***This page should only be completed if relevant to proposed project*****E. CHILLED WATER PRODUCTION AND DISTRIBUTION**

Plant capacity: 50 MW		If existing, year of construction:	
Type of chillers installed (cooling only, tri-generation, etc.): central cooling, cooling only, split system...			
Distribution net extension: 7200 m Age of net: 20 years Number of distribution substations: 2			
Main end-users/customers (number, private/commercial, etc.): 30 000 persons			
Any renovation implemented the last 3 years? No			
<b>Legal status of owner/sponsor (mark appropriate box):</b>			
Public Company	Municipality	<input checked="" type="checkbox"/> To be privatized	Private Company <input checked="" type="checkbox"/> Other (specify):

**Energy Consumption**

	<b><u>Energy meters installed?</u></b> (Yes/no?)	<b><u>Annual consumption</u></b>		<b><u>Today's price</u></b>
		Year Before	Last Year	in USD
<u>Oil</u>	Yes		<u>tons</u>	<u>/tons</u>
<u>Gas</u>	Yes		<u>m<sup>3</sup></u>	<u>/m<sup>3</sup></u>
<u>Electricity</u>	Yes		<u>kWh</u>	<u>/kWh</u>
<u>Others</u>				

## 11.5 Substitution of SHP street light lamps with LED lamps

### PROJECT IDENTIFICATION FORM

#### SHORT FORM

***This page is to be completed for all projects***

Project name Substitution of SHP street light lamps with LED lamps		Project sponsor <sup>61</sup> : Municipality+ANME	
Contact person: M. FETHI HANCHI			
Address: ANME		Telephone: +216 71906900	
City: TUNIS		Mobile number:	
Country: TUNISIA		E-mail:	
Country: TUNISIA		Location: TUNIS	
Sector: <sup>62</sup> STREET LIGHTING			
Type of technology: SHP LAMPS		Equipment supplied by: LED LAMPS	
Sponsors experience with the technology <sup>63</sup> :			
Name of operator:			
Operator's previous experience <sup>64</sup>			
Name of owner:		Location:	
What will the owners investment in the project be? <sup>65</sup>			
What is the project's source of cash flow?			
Is this under a fixed contract and if so, for how many years ?			

<sup>61</sup> This is a person or entity that initiates, owns and promotes the project and has decision-making power on borrowings or the allocation of equity.

<sup>62</sup> The project should require financing, including mezzanine and equity investments in energy efficiency and/or renewable energy projects or companies developing, manufacturing, distributing or installing energy efficiency and/or renewable energy equipment or services which have or are expected to have a quantifiable impact on the reduction of greenhouse gas emissions, are environmentally beneficial and/or generate energy savings, carbon credits and/or tradable renewable energy certificates.

<sup>63</sup> The answer should provide the track record or prior experience the sponsor has with the technology, including the numbers of years experience and in which capacity.

<sup>64</sup> The answer should provide the track record or prior experience of the operator in the sector and with the technology, including the numbers of years experience and in which capacity

<sup>65</sup> Owner's investments in projects can vary by type and amount to be invested, so details should be stated. A project with no owner's equity will have a low chance of success in obtaining investment by others.

**PROJECT IDENTIFICATION FORM**

**GENERAL COMMENTS AND ADDITIONAL INFORMATION**

(Please add additional pages as necessary)

***This page is to be completed for all projects***

<p><b>Brief project description</b></p> <p>The project consists in the substitution of 400 SHP lamps with the technology LED luminaires.</p> <p>The street lighting consumption of Med V avenue is about 172 800 Kw/year (Power of each lamp is about 150W). Each lamp supplied will have a power about 60W</p> <p><b>Benefits details</b></p> <p>Such a project can not only realize significant reduction on electricity consumption of public lighting but it also has an impact on the environment by avoiding CO2 gas emission.</p> <p>On the other hand such initiative allows transition to an efficient lighting using advanced technology which in turn will lead adherence to this market transition toward more efficient solutions.</p> <p><b>Greenhouse gas emission reduction</b></p>
---

**PROJECT IDENTIFICATION FORM****PROPOSED INVESTMENT AND FINANCING NEEDS*****This page is to be completed for all projects***

	<b>Detail</b>	<b><u>Estimated investment cost</u></b> <u>in USD</u>	<b><u>Estimated revenues</u></b> <u>in USD/year</u>
<u>Design and Engineering</u>	-	0	0
<u>Land, infrastructure</u>	-	0	0
Equipment	400 LED luminaires	160 000	
Construction	-	0	0
Operation cost	-	0	0
Others	-	0	0
<b>Total investments and revenues</b>		<b>160 000</b>	

<u>Lifetime of the project</u>	<u>Proposed start of implementation</u>	<u>Expected implementation time</u>
10 Years	01/01/2015 (day/month/year)	0 Years 2 Months

**OUTLINE FINANCING PLAN**

	Type <u>(in kind/equity/cash)</u>	<u>USD</u>	<u>% of Total</u>	<u>Interest rate</u> <u>(cost of capital)%</u>
Owner's Equity	Cash	160 000	100	0
<u>Other Equity</u>	-	0	0	0
<u>Bank Loans</u>	-	0	0	0
<u>Other Loans</u>	-	0	0	0
<u>Grants</u>	-	0	0	0
<u>What kind of guarantees are available (bank/utility/government)?</u> Government				

## PROJECT IDENTIFICATION FORM

## SPECIFIC PROJECT INFORMATION

*This page should only be completed if relevant to proposed project*

## F. STREET LIGHTING

Type of street lighting: SHP lamps						
Year of construction: 1999						
Total installed capacity (kW): 40						
Number of light fittings: 400						
Prevailing types and capacities (W): 100						
Type of control (manual, timer, day light control): manual						
<b>Legal status of owner/sponsor (mark appropriate box):</b>						
Public Company		Municipality	<input checked="" type="checkbox"/>	To be privatized		Private Company
						Other (specify):

## Energy Consumption

11.5.1	<u>Energy meters installed?</u> (Yes/no?)	<u>Annual consumption</u>		<u>Today's price</u> in USD
		Year Before	Last Year	
<u>Electricity, total (energy)</u>	Yes	172 800 kWh		0.173/kWh
<u>Electricity, total (power)</u>	Yes	40 kW		/kW
<u>Electricity, day</u>	Yes	- kWh		/kWh
<u>Electricity, night</u>	Yes	- kWh		/kWh

Who pays the energy bills, and from what source(s)?: Municipality (government budget)

Date: _____	Name: _____	Signature: _____
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## **III. Annex: Template for business plan document**

**« Name of the project »**

**“Country”**

**“Project developer name”**

Date:

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## 12 SUMMARY OF THE BUSINESS PLAN

(1 to 2 pages)

- *What are the main features of the project*
- *How the project meets the developer needs*
- *What is the potential opportunity?*
- *The cost of the project and its financial scheme*
- *The profitability of the project and the likely benefits that will provide*

## 13 DESCRIPTION OF THE DEVELOPER PROFILE

(2 to 3 pages)

- *Who is the project owner or developer (person of company)?*
- *Where he is located*
- *What is his business?*
- *What are his skills in relation with the project?*
- *Some figures on his historical activity?*
- *What are the strengths regarding the project?*
- *Financial solidity of the developer*

## 14 ENERGY EFFICIENCY MARKET ANALYSIS IN THE COUNTRY

(1 to 2 pages)

- *Local energy prices and the perspectives of their evolution*
- *Legal framework in relation of energy efficiency*
- *Incentive policy to EE, if any, etc.*

## 15 PROJECT DESCRIPTION

(4 to 5 pages)

- *Project objective*
- *Description of the technical solution adopted by the project*
- *Description of the used technology*
- *The implementation planning of the project*
- *Who and how the implementation will be made*
- *The strategy for the project operation and the means to be provided*
- *Project lifetime*
- *Evaluation of the final energy saving by type of energy (electricity, gas, fuel, etc.)*

## 16 FINANCING PLAN

(1 to 2 pages)

- *The investment cost details by component and distinguishing the local and the imported part of the procurements*

- *The proposed financial scheme of the project (equity, debts, etc).*
- *The terms of the debts, mainly the interest rate, reimbursement period and grace period.*

## 17 FINANCIAL AND ECONOMIC ANALYSIS

**(8 to 10 pages)**

- *Forecast of the operation costs of the project*
- *Forecast of the energy bill saving, with clear presentation of the assumption of calculation*
- *Forecast of the project cash-flow over the project period*
- *The financial profitability by presenting the main profitability ratios of the EE project, such as Net Present Value, Payback, Interest Rate of Return, Profitability Index.*
- *Sensitivity analysis of the profitability regarding the critical assumptions*

## 18 RISKS' MITIGATION

**(1 to 2 pages)**

- *What are the main risks of the project?*
- *What is your strategy to mitigate the identified risks?*

## 19 ENVIRONMENTAL AND OTHER BENEFITS EVALUATION

**(2 to 3 pages)**

- *Primary energy saving*
- *National energy bill reduction*
- *Energy subsidy saving*
- *Job creation*
- *CO2 emission mitigation*