

**Activity Brief**

**Energy Efficiency  
Street Lighting  
Monastir Municipality /Tunis**

<b>Activity Name</b>	<b>Energy Efficiency- Street Lighting</b>
<b>Lead Partner</b>	<b>NERC/RSS</b>
<b>Supporting Partner(s) if applicable</b>	<b>-</b>
<b>Geographical Scope of Activity</b>	<b>Monastir Municipality</b>
<b>Budget Line Item</b>	<b>4.1 Implement pilot projects</b>
<b>Budget Amount</b>	<b>JD 61,000</b>
<b>Start Date</b>	<b>Q1, 2019</b>
<b>End Date</b>	<b>Q4, 2019</b>

**SECTION A: ACTIVITY DESCRIPTION**

**1.1 Activity Summary**

Street lighting system receives its power from public grid. Street lighting system is considered as one of the main energy consumer at the municipality. The average annual electrical energy consumption from the electrical grid in 2016 was 5,377,670 KWh.

The following Table 11 shows the details of the public lighting grid in 2005 and 2016.

<b>TYPE</b>	<b>RATING (W)</b>	<b>NO. OF LAMPS (2005)</b>	<b>LOAD (KW)</b>	<b>(%)</b>	<b>NO. OF LAMPS (2016)</b>	<b>LOAD (KW)</b>	<b>(%)</b>
MERCURY VAPOR	250	2,300	667	34.12	1,900	551	27.62
MERCURY VAPOR	125	3,440	478	51.03	3,100	431	44.75
HIGH PRESSURE SODIUM	250	1,000	290	14.83	2,840	824	22.09
HIGH PRESSURE SODIUM	150	0	0	0.00	750	128	4.14
HIGH PRESSURE SODIUM	70	0	0	0.00	100	8	1.38
<b>TOTAL LOAD (KW)</b>			<b>1,435</b>			<b>1,942</b>	
<b>CONSUMED ENERGY (KWH/YEAR)</b>			<b>6,430,000</b>			<b>5,377,670</b>	
<b>COST OF CONSUMED ENERGY (T.D./YEAR)</b>			<b>630,524</b>			<b>1,227,366</b>	

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ECMS	NO. OF LAMPS TO BE REPLACED	TOTAL CONNECTED LOAD (KW)	ANNUAL ELECTRIC ENERGY SAVING (KWH)	ANNUAL COST SAVING (TD)	INVESTMENT (TD)	EXPECTED LIFETIME (YR.)	SIMPLE PAYBACK PERIOD (YR.)
REPLACE MV 125W WITH LED 75W	3100	232.5	549674	126425	1395000	25	11.0
REPLACE MV 250W WITH LED 100 W	1900	190	999660	229922	950000	25	4.1
REPLACE HPS 70W WITH LED 40W	100	4	11077	2548	25000	25	9.8
REPLACE HPS 150W WITH LED 75W	750	56.25	198686	45698	337500	25	7.4
REPLACE HPS 250W WITH LED 100W	2840	284	1495336	343927	1420000	25	4.1
<b>TOTAL</b>	<b>8690</b>	<b>766.75</b>	<b>3,254,432</b>	<b>748,519</b>	<b>4,127,500</b>		<b>5.5</b>

Above table shows that around 8690 public lighting lamps could be replaced with efficient LED lighting lamps. This would lead to an annual energy saving of about 3,254,432 KWh with an investment of about 4,127,500 TD (USD 1,756,383).

Due to the budget limitation, it would be possible to replace around 360 lamps with a total investment of TD 190,054 (USD 80,874, or JD 57,421). This would lead to an annual energy saving of about 138893 KWh.

### 1.2 Approach to Ensure Community Participation

Reducing energy usage in Municipality's facilities such as public lighting offers a great opportunity to significantly reduce municipalities' energy expenses at a time when many are facing budget difficulties. In this regard, two main strategies that can be considered with municipal facilities: training of facility managers to ensure energy is not wasted, and retrofitting of main energy consumers to reduce ongoing energy demand. Energy efficiency needs to be easy to undertake for both unsophisticated cities that do not have enough staff knowledgeable in energy management, as well as larger cities that may have energy expertise. Programs also need to produce results in a short run so that communities can see the benefits of their actions. Results should be visible to the Municipality's citizens in order to garner continued community support. These results can be communicated to the citizens through awareness workshops, leaflets, brochures...etc. In addition, citizens are normally eager to see that their local authority is doing its best to preserve natural resources and leads by example showing the great benefit of improving energy efficiency for its facilities. Where necessary, citizens or communities can be involved in municipality's actions related to energy efficiency from the planning phase through participating in meetings, discussions and in taking the right decision. Furthermore, citizens should feel and touch the impact of improving Energy efficiency at their municipality, as this should be positively reflected on the provided services by the municipality towards its community.

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**1.3 Gender Mainstreaming Approach & Plan**

A gender mainstreaming approach requires that gender equality issues be raised at each step in any project cycle. In most cases, women capacities related to energy efficiency issues are invisible and limited. Enhancing women role especially for household sector is crucial as they normally using and dealing with home appliances & equipment that consume energy including lighting devices. Women need special support and assistance to build their skills on how to purchase, own and use energy efficient equipment. Gender engagement especially women can be enhanced through the following:

- Ensure equal participation of women in project's meetings and discussions
- Ensure active participation in relevant awareness workshops
- Where possible, to participate in planning and implementation of at least simple energy efficiency such as replacing inefficient lamps with efficient ones.

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**1.4 Activity Objectives & Expected Results**

Activities	Objective	Input	Outputs/Measureable Results	Outcomes	Purpose/Impact
Replacing some of High Pressure Sodium lamps (HPS) and Mercury Vapor Lamps with equivalent LED Lamps.	Deployment of resource efficiency practices at the Municipality level and reducing energy consumption by around 3% and reducing accompanying CO2 emission.	<ul style="list-style-type: none"> <li>- 360 LED lamps of different wattage with their needed equipment</li> <li>- Municipality technical staff participation</li> <li>- Qualified contractors (installers of units)</li> <li>- MINARET project management and supervision of activity implementation</li> </ul>	360 LED units are installed and operational	Up to 138,893 KWh energy saving has been realized	<ul style="list-style-type: none"> <li>- Municipalities act as “lead by example” actors</li> <li>- Promotion of efficient and clean technology</li> <li>- Enhancing community awareness on best practices for resource efficiency</li> <li>- Contribute to climate change mitigation actions</li> <li>- Achieving market transformation towards efficient and clean technologies</li> <li>- Promoting sustainable development concept at municipality &amp; communities levels</li> </ul>

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**1.5 Implementation Plan & Time-frame including gender mainstreaming & community participation**

Task	Responsibility		Indicator	Tools & Means of Verification	2018						2019				2020			
	Organization	Person			7	8	9	10	11	12	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1. Updating data, if necessary	- RSS/NERC - Municipality Staff	- Eng. Nidal Abdulla	- Updated # of units (lamps)	- Updated summary paper/report														
2. Preparation of technical specification and tender documents, if needed	- RSS/NERC - Municipality Staff	- Eng. Nidal Abdulla - Municipality Focal point	- Technical specifications and tender conditions are prepared.	- Tender documents files														
3. Tender announcement, evaluation and awarding	- RSS/NERC - Municipality Staff	- Eng. Nidal Abdulla - Municipality Focal point	- Announcement in newspaper or other means - One contractor has been awarded	- Evaluation report - Awarding letter														
4. Implementation of the action	- Awarded contractors/installers	- Awarded contractor/installer	- 650 lamps are installed and operational - 24 AC units are installed and operational	- Progress reports														
5. Supervision and monitoring & evaluation	- RSS/NERC - Municipality technical Staff	- Eng. Nidal Abdulla - Municipality Focal point	- # of corrective actions and notes - # of visits	- Progress reports														

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**1.6 Communication Plan**

- Coordination and communication with Municipality staff and country's focal point to ensure better management of the action implementation
- Organize meetings; face-to-face, skype, phone calls...
- Share progress reports and MoMs

**SECTION B: ACTIVITY BUDGET**

The total budget of the action is broken down as follows:

Task	Budget /cost (JD)
1. Updating data, if necessary	0
2. Preparation of technical specification and tender documents, if needed	1000
3. Tender announcement, evaluation and awarding	1500
4. Implementation of the action	57,500
5. Supervision and monitoring & evaluation	1000
<b>Total</b>	<b>61,000</b>