

Activity Brief

**Energy Efficiency
Lighting System
Monastir Municipality- Central Market and Stores**

Activity Name	Lighting
Lead Partner	NERC/RSS
Supporting Partner(s) if applicable	-
Geographical Scope of Activity	Monastir Municipality - Central Market and
Budget Line Item	4.1 Implement pilot projects
Budget Amount	JD 7,000
Start Date	Q4, 2018
End Date	Q3, 2019

SECTION A: ACTIVITY DESCRIPTION

1.1 Activity Summary

The Central Market and Stores are considered as important utilities in providing facilitative services to the local community at Monastir. They have different areas that are around 18000 m² and 4000 m² for the market and stores, respectively. These utilities are directly managed by the municipality itself.

The central market and stores mainly depend on the electric energy to meet their energy needs, where the electricity is completely fed by the public power network.. The annual electric energy consumptions are 28,204 kWh and 47,233 kWh, which cost around 5,052.88 T.D and 13,837.65 T.D for the market and stores, respectively. It is worth mentioning that lighting system consumes around 72% of the total electricity consumption. Tables below show the number & type as well as the power for the connected lighting units.

Table 1: Lighting units' types and loads used in the stores

Unit/ Type	Number of units	Total loads (kW)
INCANDESCENT	6	0.36
MERCURY-HID 400W	22	9.68
FLUORESCENT T8-120CM 18W	40	2
FLUORESCENT T8-60CM 36W	64	1.6
LED FLOODLIGHT	4	1.04
HPS-STREET LIGHTING 400W	9	3.96
CFL 16W	14	0.224
LED SPOTLIGHT 6W	9	0.054
TOTAL	168	18.918

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Table 2: Lighting units' types and loads used in the market

Unit/ Type	Number of units	Total loads (kw)
INCANDESCENT 60W	120	7.20
FLUORESCENT T8-120CM 36W	40	2.00
CFL 27W	17	0.46
TOTAL	177	9.66

Table 3 below shows the energy and cost savings, Simple Payback Period (SPB) for replacement of the lighting units with LED Lamps in the stores and the market.

Table 3: Energy saving opportunities in the market & the stores at Monastir's Municipality

ECMS	CURRENT ENERGY CONSUMPTION (KWH)	ENERGY SAVING (KWH)	COST SAVING (TD)	INVESTMENT (TD)	PBP (YR.)
The Store					
REPLACING INCANDESCENT 60 W WITH LED BULB 10 W	954.0	795	159.00	140.0	0.88
REPLACING MERC 400 W WITH LED FLOOD 180 W	25,652.0	15,158	3,031.60	6600.0	2.18
REPLACING FLUORESCENT 36 W WITH LED TUBE 18 W	5,300.0	3,392	678.40	1200.0	1.77
REPLACING FLUORESCENT 18 W WITH LED TUBE 9 W	4,240.0	2,714	542.72	1493.3	2.75
REPLACING HPS-STREET LIGHTING 400W WITH LED-STREET 180 W	10,494.0	6,201	1,240.20	2700.0	2.18
REPLACING CFL 16 W WITH LED BULB 6 W	593.6	371	74.20	233.3	3.14
TOTAL	47,233.6	28,631	5,726.12	12,366.6	4.32
The Market					
REPLACING INCANDESCENT 60 W WITH LED BULB 10 W	21,024	17,520	3,154	2,800	0.9
REPLACING FLUORESCENT 36 W WITH LED TUBE 18 W	5,840	3,738	673	1,200	1.8
REPLACING CFL 27 W WITH LED BULB 6 W	1,340	1,042	188	283	1.5
TOTAL	28,204	22,300	4,014	4,283	1.1

The expected annual energy saving through introducing EE measures by replacing old inefficient lighting will be around 50,931 KWh with an estimated investment of about TD 16650 (USD 7085 or JD 5030).

1.2 Approach to Ensure Community Participation

Reducing energy usage in Municipality buildings 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 buildings: training of facility managers to ensure energy is not wasted, and retrofitting of Municipal buildings 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 (e.g.,

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reduced operating expenses, more comfortable buildings). 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.

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. We think that women have the right to own efficient and clean cooking tools, refrigerator, washing machine, efficient lighting and proper ventilation systems as they normally spend more time using these equipment at their homes. Therefore, they need special support and assistance to build their skills on how to purchase, own and use energy these 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 actions such as replacing inefficient lamps with efficient ones at their homes.

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1.4 Activity Objectives & Expected Results

Activities	Objective	Input	Outputs/Measureable Results	Outcomes	Purpose/Impact
Replacing old inefficient lighting lamps	Deployment of resource efficiency practices at the Municipality level and reducing energy consumption in lighting system by at least 60 % of the total lighting consumption and reducing accompanying CO2 emission. .	<ul style="list-style-type: none"> - Efficient lamps (LED) - Financial resources - Municipality technical staff participation - Qualified contractors (installers of units) - MINARET project management and supervision of activity implementation 	Around 345 lamps of different types are replaced and operational	Up to 50,931 KWh energy saving is realized	<ul style="list-style-type: none"> - Municipalities act as “lead by example” actors - Promotion of efficient and clean technology - Enhancing community awareness on best practices for resource efficiency - Contribute to climate change mitigation actions - Achieving market transformation towards efficient and clean technologies - Promoting sustainable development concept at municipality & communities levels

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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 lamps units	- Updated summary paper/report														
2. Preparation of technical specification and tender documents	- 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	- 896 lamps 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	- 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	500
3. Tender announcement, evaluation and awarding	1000
4. Implementation of the action	5000
5. Supervision and monitoring & evaluation	500
Total	7000