Terms of Reference
for a Consultant to Conduct a Training Course on Energy Efficiency in Buildings

Background and Motivation

One of the main targets of the Improving Energy Efficiency of Lighting and Building Appliances UNDP/Gef Project is to create an environment that will enable the market transformation towards the use of energy efficiency lighting systems in the different types of buildings aiming to ensure the reduction of energy consumption.

In this context, the project within its activities has provided technical assistance through capacity building of energy managers to improve energy management of public buildings as well as improving the public procurement processes.

Two training workshops have been previously conducted in the field of lighting auditing and energy efficiency in buildings in cooperation with the EU-funded MED-ENEC project, the first one 27-31 January 2013, targeting managers of public buildings from different ministries, local authorities, municipalities and consulting firms.

The second one 16-20 February 2014, focusing on maintenance engineers from the banking and tourism sectors. As a result of these training courses, a number of ministries, hotels and banks have contacted the project requesting technical assistance for transformation of the lighting systems in their facilities to efficient systems - including international hotel chains and banks that are preparing plans to convert hundreds of their branches.

Due to the success outputs of these training courses, the project is intending to organize the third training course targeting electrical consultants registered in the Egyptian Syndicate of Engineers.

The course is expected to be organized by the end of May at the premises of the Egyptian Syndicate of Engineers and for 20 to 25 trainees.

Objective

The main objective of this training course is to qualify consultants working in the design and installation of lighting systems in buildings to adopt the concept of
energy efficiency and will provide a sound overview for EE opportunities and their identification in buildings.

The training course is to develop a comprehensive content that combines theoretical concepts and practical implementation to ensure that by the end of the training, participants will be able to follow simple and systematic processes in the design and implementation of energy efficient lighting projects.

**Scope of Work:**

The workshop is to cover the following distinct subject areas:

1. Introduction to lighting energy in buildings
2. Facts and figures on lighting energy usage
3. Lighting quality guide including visual and non-visual aspects
4. Efficient Lighting and energy standards and codes (Technical specification for EN and label) (EN compared with IEC and Egyptian Standard)
5. Light Power Density (LPD)
6. Understanding efficient lighting technologies available in the (internat.) market place and the evolvement of lighting technology
7. Overview of lighting control systems and its applications
8. Life cycle analysis and life cycle costs of different lighting systems and how to calculate them.
9. Lighting design methodologies and surveys
10. Commissioning of lighting systems
11. Case studies to include the most common inefficient lighting systems and their recommended retrofits. This should include costs, paybacks and financial performances for such energy efficiency measures. Through the case studies, energy managers would be able to replicate such retrofits and achieve sustainability for the process.
12. Recycling of CFLs – Best practices in other countries
14. Writing a structured and concise energy audit report.
15. The consultant will also coordinate with the manufacturers and suppliers of efficient lighting equipment to display their products during the course.
Deliverables:

- The 5 day training agenda to be approved by the project.
- All Presentations and support training material to be copied on a CD, memory stick or hardcopies for distribution to participants on the first day of the workshop.
- A preliminary energy audit (PEA) questionnaire.
- Based on the completed questionnaire the consultant will carry out analysis with recommendations on which building/facility is most appropriate to carry out the practical part of the workshop.
- A list of the needed measuring instruments to conduct the audit.
- A detailed energy audit report for the building/facility that was audited during the workshop to be distributed to the participants as a sample/template of a detailed energy audit report.
- A one hour (open notes) exam to be administered at the end of the workshop.
- A simple and concise step by step guidebook for the design and implementation of the energy efficient lighting projects starting with the walk through audit and ending with the assessment of the project results.

Qualifications:

- University degree in engineering
- Demonstrated experience and success in delivering same courses
- Good administration and interpersonal skills
- Good computer skills.
- Fluent in English, Arabic language is an asset.

Technical and Financial proposals meeting ToR requirements are to be submitted not late than **10 May 2016** to:

**Eng. Viola Zaklama**  
**Deputy Project Director**  
**Improving Energy Efficiency of Lighting and Building Appliances**  
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