

Terms of References

Study of Socio-Economic Impacts of Solar Pumping Systems in Terms of Local Job and Value Creation in Egypt

Promoting Employment through Renewable Energy and Energy Efficiency (RE/EE) in the Middle East and North Africa (MENA) - RE-ACTIVATE

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Regional Center for Renewable Energy and Energy Efficiency
المركز الإقليمي للطاقة المتجددة وكفاءة الطاقة



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1 Background

The Regional Center for Renewable Energy and Energy Efficiency (RCREEE) is an independent regional organization, which aims to enable and increase the adoption of renewable energy and energy efficiency practices in the Arab region. RCREEE partners with regional governments and global organizations to initiate and lead clean energy policy dialogues, strategies, technologies and capacity development in order to increase Arab states' share of tomorrow's energy.

The Federal Ministry for Economic Cooperation and Development (BMZ) has commissioned GIZ to implement the project "Promoting Employment through Renewable Energy and Energy Efficiency (RE/EE) in the Middle East and North Africa (MENA) (RE-ACTIVATE)".

RE-ACTIVATE helps identifying and exploiting complementarities and synergies across national and/or sectorial borders in promoting sustainable energy technologies and sustainable local development. It serves as a bridge and links supporting activities of like-minded actors, helping to bridge gaps, and providing targeted knowhow regarding the inter-linkages and inter-dependencies between sectors and countries.

In that respect, RCREEE and RE-ACTIVATE have entered into a cooperation agreement to support national (Egypt) and regional cross-border cooperation and knowhow transfer on employment promotion through RE/EE in the MENA region.

Egypt is experiencing a period of rapid population growth and urbanization, which increases both the demand for food and the demand for energy. The currently used diesel powered systems for producing electricity and pumping water are becoming unsustainable, due to rising costs and unreliable supply of fossil fuels. Agriculture - especially in remote areas - is affected by crop losses resulting from fuel shortages. Accordingly, cost effective, reliable and sustainable systems for the long-term are needed to ensure essential irrigation in the agricultural sector of Egypt. The use of solar pumping systems demonstrates a clear superiority to a diesel generator driven system, both in terms of environmental protection and sustainable agriculture practices.

2 Objective

The agricultural sector is one of the top economic driving forces of the Egyptian economy for both its share in the GDP and its impact on employment.

According to the Ministry of Agriculture and Land Reclamation, Egypt plans to increase its agricultural production level by reclaiming 1.5 million acres of desert land by 2017 and another 3 million acres by 2030. The energy intensity of irrigation in the newly reclaimed land and the lack of grid connections to meet this need constitute the biggest challenge for this plan. To secure sustainable water management and lower the energy intensity, farms in the new lands are required to use drip irrigation, as well as sprinkler systems, knowing that the main water source is groundwater.



Building on the fact that Egypt is one of the richest countries in the world with regard to its solar energy potential, solar photovoltaic (PV) is increasingly seen as a cost effective alternative energy source, particularly to meet the growing energy demand in off-grid areas across the agriculture sector. Applications for decentralized solar PV in the agro-food sector have also a strong potential for creating jobs, especially in small and medium enterprises.

The objective of this study is to gain an understanding of the market, including the geographical areas with highest demand for solar pumping solution, the irrigation systems used, the existing suppliers in the market, the existing financing solutions, and the main barriers to the realization of this potential.

This study is intended for stakeholders in governmental bodies, private sector, professional associations, financial institutions and other actors in the agro-food sectors as well as organizations active in the RE/EE field.

3 Description of Tasks

With reference to all the technical analysis and economic information highlighted and published recently under the study "Solar Pumping Systems in Egypt – Practical Guidelines for Self-Assessment", this assignment is no duplication of the mentioned study and therefore all technical and economic repetition must be avoided. The main tasks under this assignment include the following:

- 1) Primary and secondary research including surveys of agricultural areas, irrigation practices and systems (river-based and groundwater) to understand the status quo, the real needs and the main challenges of the market.
- 2) Stocktaking of existing and potential solar pumping solutions providers (isolated and hybrid systems) and technical and financial description of the main solutions offered in the Egyptian and world market.
- 3) Analysis of the main opportunities, drivers, gaps and barriers for a consequential deployment of solar pumping systems in the Egyptian agricultural and irrigation sectors, for river-based and groundwater irrigation respectively.
- 4) Overview of the legal and administrative requirements as well as of the existing support and financing mechanisms in this respect
- 5) Analysis of the composition of the value chain in this market segment, including of those parts of the value chain which local companies could take over (possibly following a more deliberate support policy by public authorities)
- 6) Translation of this analysis into informed scenario-based forecasts about the most likely future job creation effects (direct and indirect) as well as about the corresponding capacity building requirements (for workers and firms)
- 7) Modeling of the data to estimate the potential market size of river-based and groundwater irrigation at the national level and in each geographical area in order to identify "hot spot" where solar PV companies can focus their marketing and sales efforts.
- 8) Proposal of indicative solar pumping targets and market growth paths by 2020, 2025 and 2030, in line with relevant national objectives.



- 9) Recommendation of different policies and support measures to achieve the different targets including:
 - Party(ies) responsible for the fulfilment of the targets, policy, incentive and/or support measures
 - Source of funding
 - Fulfilment supervision mechanisms
 - Penalties in case of non-fulfilment (if necessary)
 - Target modification mechanisms
- 10) Final comprehensive report including analysis and findings in English, with a “stand-alone” executive summary in Arabic and English that can be communicated and deliver the key messages independently.

In addition to the technical expertise, the analysis should be based on intensive stakeholder consultations to understand/validate the opportunities, drivers, gaps and barriers in this market as well as the recommended targets, actions and measures. Stakeholders will include the Ministry of Agriculture, Ministry of Irrigation, Agricultural development agency, farm owners, solar pumping installers, international and bilateral aid organizations with ongoing activities in the field, and banks and financial institutions.

The study should be developed between the 15th of May 2016 and 15th of September 2016.

4 Terms of Payment

The following payment installments will be made in accordance with RCREEE regulations and according to the agreed deliverables:

- Advance payment of 10% upon signing the contract.
- Interim payment of 20% against RCREEE acceptance of deliverable 1:
Initial market assessment including surveys of agricultural areas, irrigation practices and systems (river-based and groundwater), stocktaking of existing and potential solar pumping solutions providers (isolated and hybrid systems) and technical description of main solutions offered in the Egyptian market, and their maturity in comparison with the international market.
- Interim payment of 20% against RCREEE acceptance of deliverable 2:
Market potential assessment based on analysis of gaps and barriers, existing support and financing mechanism and modeling of the data to estimate the potential market size in each geographical area identifying “hot spot”.
- Interim payment of 20% against RCREEE acceptance of deliverable 3:
Interim report including proposal of indicative solar pumping targets and market growth paths and recommended policies and support measures to achieve the targets. The report should include also Assessment of the employment effects associated with solar pumping deployment in Egypt (direct and indirect jobs)
Results of Intensive stakeholder consultations to validate the opportunities as well as the gaps and barriers in this market. .
- Final payment of 30% against RCREEE acceptance of deliverable 4:



Final comprehensive report including all analysis, stakeholders' consultation results, and study findings in English, with a "stand-alone" executive summary in Arabic and English that can be communicated and deliver the key messages independently.

5 Provisions

1. All activities need to be in strong accordance with the above mentioned requirements and based on state-of-the-art in knowledge as well as international standards.
2. The bidders could be individuals or consultancy firms. If international, the bidder can contract a qualified national consultant and his CV should be submitted with the offer and accepted by RCREEE.
3. The reports should be submitted in English, except for the executive summary, which should be in both Arabic and English that can be communicated and deliver the key messages independently.

6 Expression of Interest and Selection

6.1 Submission of Proposal

The bidder should send separate signed and stamped technical and financial proposals by email in PDF format, **no later than 16th April 2016**. All proposals must be sent to the contacts below:

Mohamed Hamed, Financial and Administration Manager
Mohamed.hamed@rcreee.org

With a CC to: Info@rcreee.org and inass.aboukhodier@rcreee.org

The technical offer should include CVs, past consultant/firm experience, a comprehensive implementation plan, time schedule and the strategy of the bidder to approach the target of the ToR.

The financial offer should be broken down and inclusive all related fees, taxes and all other expenses (communication, materials, etc.) in accordance with applicable laws and relevant RCREEE regulations.

The bidder will coordinate all stages with RCREEE/RE-Activate, where Ms. Inass AbouKhodier will serve as focal point under the supervision of Dr. Maged Mahmoud (maged.mahmoud@rcreee.org).

6.2 Bidder Selection

RCREEE will only contact short listed bidders based on RCREEE's internal regulations and policies. RCREEE has the right to accept or refuse any offers without any justifications.

6.3 Contract Party and Beneficiary

The selected bidder will enter into a consultancy contract with RCREEE according to its internal regulation and terms of contracting.

Cairo, 27.03.2016