1 Background

The Somali Energy Transformation (SET) is a project implemented by ADRA Somalia in Somaliland, Puntland and South Central Somalia, and is financed by the European Union through the ACP-EU Energy Facility II, with co-financing from ADRA Germany, ADRA UK and ADRA Austria. The overall objective of this project is to contribute to poverty alleviation, fragility reduction and climate change mitigation for rural and peri-urban people in Somalia/Somaliland. Deployment of renewable energy will transform the country’s energy sector, principally the electricity and biomass sub-sectors.

The project will implement the following activities:

(i) Development of off-grid pico-solar PV markets in rural areas;
(ii) Development of community electrification schemes in rural areas;
(iii) Supply and installation of solar powered systems for irrigation, health and educational facilities;
(iv) Scaling up production, distribution and marketing of modern energy efficient cook stoves;
(v) Development/ or support to youth led renewable energy enterprises; and
(vi) Initiate energy policy dialogue in Puntland and South Central Somalia.

Among the activities to be undertaken under the “Development of community electrification schemes in rural areas” and “Supply and installation of solar powered systems for irrigation, health and educational facilities”, is a technical feasibility study of selected sites where solar PV systems are proposed to be installed.

The activity targets isolated villages, in Somaliland, Puntland and South Central Somalia. The implementation of this activity involves identification of anchor sites; development of business and investment plans; development of sites including user training and business development support. Envisaged outputs of this activity are:

- 6 energy centres established in rural areas powering multiple community services.
- 15 rural water supply systems using renewable energy systems for water provision, irrigation, agro-processing and value addition - Targeted rural and community farms will be supported with installation of solar powered pumping systems for shallow wells and boreholes, to replace expensive diesel pumps and ensure increased availability of the systems.
• 15 rural schools/education centres powered with Solar PV systems for lighting and powering Information, Communication and Technology systems – The schools to receive support will be schools with significant enrolment of learners (at least 500 students) and with a strong and active CEC which will partner together with the project in purchasing of the ICT equipment to be powered by the solar systems.

• 15 rural health centers powered with Solar PV systems to power lighting, refrigeration and ICT facilities – Similar to the systems for schools, health centres or MCH centres will also be equipped with affordable and clean solar energy for powering refrigerators, TV and Video machines for airing of health related programmes and lighting to allow for operations in the night time. The health centres will be located in rural areas of Somaliland, Puntland and South Central Somalia.

The feasibility study should establish whether the proposed sites identified in the pre-feasibility assessment are well founded and likely to fulfill the needs of the economic, social and environmental issues. The feasibility study should detail the technical, economic and financial, institutional and management, environmental and socio-cultural, and operational aspects of the projects in the selected sites.

Therefore, ADRA Somalia is seeking the services of an experienced consultancy firm to undertake the feasibility study for the off grid solar PV systems for the project. The feasibility study is necessary for the effective implementation of the off grid solar pv systems.

**2. Objective of the feasibility study**

The main purpose of the feasibility study is to provide ADRA with analyses and recommendations that will support the organization decision-making with regard to the implementation of solar photovoltaics installation for rural schools, health centers, and irrigation farms in Somaliland, Puntland and South Central states. On review of the final report and the actual feasibility of the projects, ADRA will implement the SET project effectively.

This feasibility study will entail:

- **Assessment of identified sites:** Will review the proposed project sites earlier selected by ADRA and the respective ministries. Assess the community capability and investment contribution to the proposed project activity

- **System Capacity:** Will assess the energy demand of each of the project sites

- **Applicable Technology:** Will review the available technology in the market and recommend the best technology for the project and fix the efficiency level of the equipment.

- **Cost Estimation:** Will review all aspects of the project component and prepare a detailed breakdown of cost estimate of each component of each of the project sites.
• **Review of Environmental Issues:** Will Review the existing environmental laws and regulations and recommend environmental issues that may arise as a result of the implementation of the project.

• **Legal and Institutional Issues:** Will review legal and institutional aspects for the proper implementation of the project regarding resettlement of the population of the selected area if required.

• Propose public private partnership model for community electrification.

### 3. Research methodology

The study should utilize the following data collection methods:

i) Review of technical data.

ii) Direct interviews with key stakeholders

iii) Carrying out physical measurement

The consultant may use any other methodology that they deem necessary.

### 4. Scope of work

The consultant will be expected to undertake the following general tasks:

**Pre-Visit:**

- Participate in briefing and consultative meetings on the assignment at Nairobi and in the field with ADRA and government officials.
- Familiarize with the local energy context, the energy policies and plans, and the SET project documents.
- Determine, in consultation with the Project Manager, the most appropriate methods for conducting the feasibility study and preparatory work needed.
- Prepare plan for approval by ADRA incorporating: data collection methods, data collection instruments, resources required and plans to ensure ethical data collection.
- Design and deliver a training for the project staff (and partners) on key aspects of the feasibility study including how data will be collected (process, methods, and tools), analyzed, interpreted, and reported.
- Constitute the study team (in agreement with Ministry and ADRA staff).

**Visit:**

- Conduct project site visits and agreed methodology with the Project Manager, Project Engineer, beneficiaries and stakeholders;
- Data collection at the field level from target beneficiaries (health centres, educational centres and farms)
- Provide feedback to ADRA throughout visit and share summary of the study, observations, and recommendations with the project manager and key program staff;

**Post-Visit:**

- System design and recommendations based on the data collected
- Debrief project management and the respective Ministries on the process and preliminary findings of the technical assessment
• Prepare a draft report of the feasibility study report and share it with the Project Manager, Project Engineer or designate. The draft report will be subject to discussion by relevant program staff.
• Prepare and submit comprehensive, well-structured report of the feasibility study.

5. Expected Outputs

The consultant is expected to come up with a report with chapters/sections on each of the proposed project sites in Somalia, as well as recommendations on their feasibility. The envisaged output of the consultancy will include a hard copy and electronic copy of the following:

a. **Draft Report** for the feasibility study for cluster solar PV systems in Somalia

A Draft Report for the study to include, among other chapters:

(i) Methodology of the feasibility assessment
(ii) Project Technical assessment
(iii) Project Social and Environmental assessment
(iv) Project Economic and Financial assessment
(v) Project Bill of Quantities and specifications
(vi) Project Risk and mitigation strategy
(vii) Project Exit Strategy & Sustainability plan
(viii) Final recommendations

The draft report will be reviewed by ADRA project team prior to compilation of the final report. The final report is expected five (5) days after receipt of ADRA review comments.

b. **A Final Report** for the study to include the above listed information, and all comments from the review sessions. The final reports will be presented in softcopy (CD Format) and three (3) bound hardcopies. The final report is expected two (2) days after ADRA’s approval and acceptance of the draft report.

5.0 Implementation Schedule

It is expected that the technical feasibility study will be completed within 25 days from the day of signing the agreement. On the basis of the proposed time schedule outline in this Terms of Reference, the consultant shall prepare a brief work plan. The work plan should set out the Consultant approach for conducting assessment activities.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Person days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary work (signing of the contract, discussion of survey tools)</td>
<td>2</td>
</tr>
<tr>
<td>Field Survey-s</td>
<td>12</td>
</tr>
</tbody>
</table>
6.0 Qualifications

(i) Possess a BSc or MSC degree in the fields of Electrical Engineering, Renewable Energy, Appropriate Technology, Economics, Environmental Studies or any other field relevant to the TOR.

(ii) At least 5 years working experience in feasibility and economic analysis of development projects; cost benefit analysis, cost utility analysis, cost effectiveness analysis and social return of investment analysis and/or actual implementation of renewable energy projects.

(iii) Demonstrated experience in undertaking similar feasibility studies. Experience in working in countries in Post Conflict Transitions/Reconstruction will be an added advantage.

(iv) Experience working with off grid electrification and solar PV in particular is an advantage.

Proposals should include:

- Up-to-date CV
- Short overview of how the candidate meets the qualifications, experience and skills requirements
- Description of proposed approach and methodology
- Projected budget – including projected travel and in-country accommodation and subsistence costs. Holding tax must also be included where relevant. Payment milestones should also be included.

7.0 Submission of Proposals

In order to achieve the objectives of the assignment, the consultant will be expected to take complete responsibility for all the activities identified in the TOR. The Technical Proposal should contain a complete description and explanation of the proposed methodology for the Assignment (work plan), time-line, staffing, names and qualifications of allocated personnel and any other resources that the consultant will make available to execute the assignment and achieve the objective.

The Financial Proposal should stipulate the professional fees, travel, taxes, etc for the assignment.
8.0 How to Apply

Applications for this consultancy should be emailed to the Human Resource Manager using the email hr@adrasom.org by 15th November 2015, with “Technical Feasibility Study for Solar PV Systems” in the subject line.