

**REQUEST FOR PROPOSALS**

**FEASIBILITY STUDY FOR THE**

**EBC BIODIGESTERS PROJECT**

Submission Deadline: **4:00 PM**  
**LOCAL TIME**  
**OCTOBER 17, 2011**

Submission Place: Mr. Tamer Nassar  
Vice President  
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**SEALED PROPOSALS SHALL BE CLEARLY MARKED AND RECEIVED PRIOR TO THE TIME AND DATE SPECIFIED ABOVE. PROPOSALS RECEIVED AFTER SAID TIME AND DATE WILL NOT BE ACCEPTED OR CONSIDERED.**

**N.B.: Any and all questions pertaining to the RFP should be sent to Nina Patel, USTDA, 1000 Wilson Blvd, Suite 1600, Arlington, VA 22209-3901, Tel: (703) 875-4357, Fax: (703) 875-4009, [npatel@ustda.gov](mailto:npatel@ustda.gov)**

## REQUEST FOR PROPOSALS

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## **Section 1: INTRODUCTION**

The U.S. Trade and Development Agency (USTDA) has provided a grant in the amount of US\$283,000 to Energy Allied Egypt, LLC (the "Grantee") in accordance with a grant agreement dated June 30, 2011 (the "Grant Agreement"). USTDA has provided a grant to the Grantee to perform the EBC Biodigesters Project Feasibility Study. The Grant Agreement is attached at Annex 4 for reference. The Grantee is soliciting technical proposals from qualified U.S. firms to provide expert consulting services to perform the Feasibility Study.

### **1.1 BACKGROUND SUMMARY**

Egypt is estimated to produce 36.5 million metric tons of agricultural waste on an annual basis. Approximately 75% is disposed of in environmentally irresponsible and illegal ways, such as being dumped in the deserts of Egypt or burned. Moreover, Egypt produces vast quantities of both organic waste and manures—much of which is either underutilized or unused. In an attempt to stem the growth of this problem, the Egyptian Environmental Affairs Agency has implemented a program that compensates companies for each metric ton collected and disposed of in an environmentally sustainable manner. In spite of this program, the disposal of waste continues to pose a significant environment and health threat to Egypt.

To address the growing issue of agricultural waste disposal in Egypt, the Grantee is seeking a Feasibility Study ("FS") to assist in the development of the EBC Biodigesters project. The objective of the EBC Biodigesters project is to construct 10 biodigester units in six key locations throughout Egypt that will utilize agricultural, animal and organic solid waste for production of liquid and solid fertilizers and biogas for power generation. Each biodigester unit will be capable of processing 200 tons of waste per day. The FS is needed to secure the financial support for establishing and operating the biodigester units in Egypt and will serve as a cornerstone in the development and publication of a comprehensive business plan.

The FS will evaluate a broad spectrum of parameters affecting biodigesters in Egypt, including: the different compositions of the available feedstocks, the utilization and pricing of the produced products, and the logistical aspects of feedstock and products. In addition, the FS will determine the developmental and environmental impacts of the plan to construct biodigester facilities.

The Grantee seeks to use advanced technology for the EBC Biodigesters project that will result in the production of liquid fertilizer, solid soil enhancement (compost), and biogas that can be used to provide heat to the anaerobic digesters, enhancing productivity. The biogas can also be used to generate electricity sufficient to power an entire biodigester facility with the possibility of surplus electricity.

The Grantee, Energy Allied Egypt, LLC, is a project development firm that identifies and develops large scale, energy and infrastructure projects in North and West Africa and provides consulting and representative services. The Grantee's activities are focused in the energy sector, including power generation and infrastructure development, and cover a range of projects including power plants, petrochemical and chemical facilities, and biofuels. Based upon the results of the FS, the Grantee will establish the Egyptian Biodigesters Company ("EBC") to be the special project entity responsible for implementing the full biodigesters project. In addition,

the American University in Cairo (AUC) has agreed to support the project by providing one of the sites for a biodigester unit. AUC is fully supportive of this project and has signed a Memorandum of Understanding with EAE that confirms its commitment to the project.

A background Desk Study is provided for reference in Annex 2. . Please note that the Desk Study report is for reference only.

## **1.2 OBJECTIVE**

The Terms of Reference (TOR) for this Feasibility Study are attached as Annex 5.

## **1.3 PROPOSALS TO BE SUBMITTED**

Technical proposals are solicited from interested and qualified U.S. firms. The administrative and technical requirements as detailed throughout the Request for Proposals (RFP) will apply. Specific proposal format and content requirements are detailed in Section 3.

The amount for the contract has been established by a USTDA grant of US\$283,000. **The USTDA grant of \$US283,000 is a fixed amount. Accordingly, COST will not be a factor in the evaluation and therefore, cost proposals should not be submitted.** Upon detailed evaluation of technical proposals, the Grantee shall select one firm for contract negotiations.

## **1.4 CONTRACT FUNDED BY USTDA**

In accordance with the terms and conditions of the Grant Agreement, USTDA has provided a grant in the amount of US\$283,000 to the Grantee. The funding provided under the Grant Agreement shall be used to fund the costs of the contract between the Grantee and the U.S. firm selected by the Grantee to perform the TOR. The contract must include certain USTDA Mandatory Contract Clauses relating to nationality, taxes, payment, reporting, and other matters. The USTDA nationality requirements and the USTDA Mandatory Contract Clauses are attached at Annexes 3 and 4, respectively, for reference.

## **Section 2: INSTRUCTIONS TO OFFERORS**

### **2.1 PROJECT TITLE**

The project is called the EBC Biodigesters Project.

### **2.2 DEFINITIONS**

Please note the following definitions of terms as used in this RFP.

The term "Request for Proposals" means this solicitation of a formal technical proposal, including qualifications statement.

The term "Offeror" means the U.S. firm, including any and all subcontractors, which responds to the RFP and submits a formal proposal and which may or may not be successful in being awarded this procurement.

### **2.3 DESK STUDY REPORT**

USTDA sponsored a Desk Study to address technical, financial, sociopolitical, environmental and other aspects of the proposed project. A copy of the report is attached at Annex 2 for background information only. Please note that the TOR referenced in the report are included in this RFP as Annex 5.

### **2.4 EXAMINATION OF DOCUMENTS**

Offerors should carefully examine this RFP. It will be assumed that Offerors have done such inspection and that through examinations, inquiries and investigation they have become familiarized with local conditions and the nature of problems to be solved during the execution of the Feasibility Study.

Offerors shall address all items as specified in this RFP. Failure to adhere to this format may disqualify an Offeror from further consideration.

Submission of a proposal shall constitute evidence that the Offeror has made all the above mentioned examinations and investigations, and is free of any uncertainty with respect to conditions which would affect the execution and completion of the Feasibility Study.

## **2.5 PROJECT FUNDING SOURCE**

The Feasibility Study will be funded under a grant from USTDA. The total amount of the grant is not to exceed US\$283,000.

## **2.6 RESPONSIBILITY FOR COSTS**

Offeror shall be fully responsible for all costs incurred in the development and submission of the proposal. Neither USTDA nor the Grantee assumes any obligation as a result of the issuance of this RFP, the preparation or submission of a proposal by an Offeror, the evaluation of proposals, final selection or negotiation of a contract.

## **2.7 TAXES**

Offerors should submit proposals that note that in accordance with the USTDA Mandatory Contract Clauses, USTDA grant funds shall not be used to pay any taxes, tariffs, duties, fees or other levies imposed under laws in effect in the Host Country.

## **2.8 CONFIDENTIALITY**

The Grantee will preserve the confidentiality of any business proprietary or confidential information submitted by the Offeror, which is clearly designated as such by the Offeror, to the extent permitted by the laws of the Host Country.

## **2.9 ECONOMY OF PROPOSALS**

Proposal documents should be prepared simply and economically, providing a comprehensive yet concise description of the Offeror's capabilities to satisfy the requirements of the RFP. Emphasis should be placed on completeness and clarity of content.

## **2.10 OFFEROR CERTIFICATIONS**

The Offeror shall certify (a) that its proposal is genuine and is not made in the interest of, or on behalf of, any undisclosed person, firm, or corporation, and is not submitted in conformity with, and agreement of, any undisclosed group, association, organization, or corporation; (b) that it has not directly or indirectly induced or solicited any other Offeror to put in a false proposal; (c) that it has not solicited or induced any other person, firm, or corporation to refrain from submitting a proposal; and (d) that it has not sought by collusion to obtain for itself any advantage over any other Offeror or over the Grantee or USTDA or any employee thereof.

## **2.11 CONDITIONS REQUIRED FOR PARTICIPATION**

Only U.S. firms are eligible to participate in this tender. However, U.S. firms may utilize subcontractors from the Host Country for up to 20 percent of the amount of the USTDA grant for

specific services from the TOR identified in the subcontract. USTDA's nationality requirements, including definitions, are detailed in Annex 3.

## **2.12 LANGUAGE OF PROPOSAL**

All proposal documents shall be prepared and submitted in English, and only English.

## **2.13 PROPOSAL SUBMISSION REQUIREMENTS**

The **Cover Letter** in the proposal must be addressed to:

Mr. Tamer Nassar  
Vice President  
Energy Allied Egypt, LLC  
5 Adeeb Ishak Street  
2<sup>nd</sup> Floor  
Raml Station, Alexandria 21111  
Egypt

Phone: +20 3 480 0655  
Fax: +20 3 480 0717

**An Original and eight (8) copies of your proposal must be received at the above address no later than 4:00 PM (Local Time), on October 17, 2011.**

Proposals may be either sent by mail, overnight courier, or hand-delivered. Whether the proposal is sent by mail, courier or hand-delivered, the Offeror shall be responsible for actual delivery of the proposal to the above address before the deadline. Any proposal received after the deadline will be returned unopened. The Grantee will promptly notify any Offeror if its proposal was received late.

Upon timely receipt, all proposals become the property of the Grantee.

## **2.14 PACKAGING**

The original and each copy of the proposal must be sealed to ensure confidentiality of the information. The proposals should be individually wrapped and sealed, and labeled for content including "original" or "copy number x"; the original and eight (8) copies should be collectively wrapped and sealed, and clearly labeled.

Neither USTDA nor the Grantee will be responsible for premature opening of proposals not properly wrapped, sealed and labeled.

## **2.15 AUTHORIZED SIGNATURE**

The proposal must contain the signature of a duly authorized officer or agent of the Offeror empowered with the right to bind the Offeror.

## **2.16 EFFECTIVE PERIOD OF PROPOSAL**

The proposal shall be binding upon the Offeror for NINETY (90) days after the proposal due date, and Offeror may withdraw or modify this proposal at any time prior to the due date upon written request, signed in the same manner and by the same person who signed the original proposal.

## **2.17 EXCEPTIONS**

All Offerors agree by their response to this RFP announcement to abide by the procedures set forth herein. No exceptions shall be permitted.

## **2.18 OFFEROR QUALIFICATIONS**

As provided in Section 3, Offerors shall submit evidence that they have relevant past experience and have previously delivered advisory, feasibility study and/or other services similar to those required in the TOR, as applicable.

## **2.19 RIGHT TO REJECT PROPOSALS**

The Grantee reserves the right to reject any and all proposals.

## **2.20 PRIME CONTRACTOR RESPONSIBILITY**

Offerors have the option of subcontracting parts of the services they propose. The Offeror's proposal must include a description of any anticipated subcontracting arrangements, including the name, address, and qualifications of any subcontractors. USTDA nationality provisions apply to the use of subcontractors and are set forth in detail in Annex 3. The successful Offeror shall cause appropriate provisions of its contract, including all of the applicable USTDA Mandatory Contract Clauses, to be inserted in any subcontract funded or partially funded by USTDA grant funds.

## **2.21 AWARD**

The Grantee shall make an award resulting from this RFP to the best qualified Offeror, on the basis of the evaluation factors set forth herein. The Grantee reserves the right to reject any and all proposals received and, in all cases, the Grantee will be the judge as to whether a proposal has or has not satisfactorily met the requirements of this RFP.

## **2.22 COMPLETE SERVICES**

The successful Offeror shall be required to (a) provide local transportation, office space and secretarial support required to perform the TOR if such support is not provided by the Grantee; (b) provide and perform all necessary labor, supervision and services; and (c) in accordance with best technical and business practice, and in accordance with the requirements, stipulations, provisions and conditions of this RFP and the resultant contract, execute and complete the TOR to the satisfaction of the Grantee and USTDA.

## **2.23 INVOICING AND PAYMENT**

Deliverables under the contract shall be delivered on a schedule to be agreed upon in a contract with the Grantee. The Contractor may submit invoices to the designated Grantee Project Director in accordance with a schedule to be negotiated and included in the contract. After the Grantee's approval of each invoice, the Grantee will forward the invoice to USTDA. If all of the requirements of USTDA's Mandatory Contract Clauses are met, USTDA shall make its respective disbursement of the grant funds directly to the U.S. firm in the United States. All payments by USTDA under the Grant Agreement will be made in U.S. currency. Detailed provisions with respect to invoicing and disbursement of grant funds are set forth in the USTDA Mandatory Contract Clauses attached in Annex 4.

### **Section 3: PROPOSAL FORMAT AND CONTENT**

To expedite proposal review and evaluation, and to assure that each proposal receives the same orderly review, all proposals must follow the format described in this section.

Proposal sections and pages shall be appropriately numbered and the proposal shall include a Table of Contents. Offerors are encouraged to submit concise and clear responses to the RFP. Proposals shall contain all elements of information requested without exception. Instructions regarding the required scope and content are given in this section. The Grantee reserves the right to include any part of the selected proposal in the final contract.

The proposal shall consist of a technical proposal only. A cost proposal is NOT required because the amount for the contract has been established by a USTDA grant of US\$283,000, which is a fixed amount.

Offerors shall submit one (1) original and eight (8) copies of the proposal. Proposals received by fax cannot be accepted.

Each proposal must include the following:

- Transmittal Letter,
- Cover/Title Page,
- Table of Contents,
- Executive Summary,
- Company Information,
- Organizational Structure, Management Plan, and Key Personnel,
- Technical Approach and Work Plan, and
- Experience and Qualifications.

Detailed requirements and directions for the preparation of the proposal are presented below.

#### **3.1 EXECUTIVE SUMMARY**

An Executive Summary should be prepared describing the major elements of the proposal, including any conclusions, assumptions, and general recommendations the Offeror desires to make. Offerors are requested to make every effort to limit the length of the Executive Summary to no more than five (5) pages.

## **3.2 COMPANY INFORMATION**

For convenience, the information required in this Section 3.2 may be submitted in the form attached in Annex 6 hereto.

### **3.2.1 Company Profile**

Provide the information listed below relative to the Offeror's firm. If the Offeror is proposing to subcontract some of the proposed work to another firm(s), the information requested in sections 3.2.5 and 3.2.6 below must be provided for each subcontractor.

1. Name of firm and business address (street address only), including telephone and fax numbers.
2. Year established (include predecessor companies and year(s) established, if appropriate).
3. Type of ownership (e.g. public, private or closely held).
4. If private or closely held company, provide list of shareholders and the percentage of their ownership.
5. List of directors and principal officers (President, Chief Executive Officer, Vice-President(s), Secretary and Treasurer; provide full names including first, middle and last). Please place an asterisk (\*) next to the names of those principal officers who will be involved in the Feasibility Study.
6. If Offeror is a subsidiary, indicate if Offeror is a wholly-owned or partially-owned subsidiary. Provide the information requested in items 1 through 5 above for the Offeror's parent(s).
7. Project Manager's name, address, telephone number, e-mail address and fax number.

### **3.2.2 Offeror's Authorized Negotiator**

Provide name, title, address, telephone number, e-mail address and fax number of the Offeror's authorized negotiator. The person cited shall be empowered to make binding commitments for the Offeror and its subcontractors, if any.

### **3.2.3 Negotiation Prerequisites**

1. Discuss any current or anticipated commitments which may impact the ability of the Offeror or its subcontractors to complete the Feasibility Study as proposed and reflect such impact within the project schedule.
2. Identify any specific information which is needed from the Grantee before commencing contract negotiations.

### 3.2.4 Offeror's Representations

If any of the following representations cannot be made, or if there are exceptions, the Offeror must provide an explanation.

1. Offeror is a corporation [*insert applicable type of entity if not a corporation*] duly organized, validly existing and in good standing under the laws of the State of \_\_\_\_\_ . The Offeror has all the requisite corporate power and authority to conduct its business as presently conducted, to submit this proposal, and if selected, to execute and deliver a contract to the Grantee for the performance of the Feasibility Study. The Offeror is not debarred, suspended, or to the best of its knowledge or belief, proposed for debarment, or ineligible for the award of contracts by any federal or state governmental agency or authority.
2. **The Offeror has included, with this proposal, a certified copy of its Articles of Incorporation, and a certificate of good standing issued within one month of the date of its proposal by the State of \_\_\_\_\_ .** The Offeror commits to notify USTDA and the Grantee if they become aware of any change in their status in the state in which they are incorporated. USTDA retains the right to request an updated certificate of good standing.
3. Neither the Offeror nor any of its principal officers have, within the three-year period preceding this RFP, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a federal, state or local government contract or subcontract; violation of federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, violating federal or state criminal tax laws, or receiving stolen property.
4. Neither the Offeror, nor any of its principal officers, is presently indicted for, or otherwise criminally or civilly charged with, commission of any of the offenses enumerated in paragraph 3 above.
5. There are no federal or state tax liens pending against the assets, property or business of the Offeror. The Offeror, has not, within the three-year period preceding this RFP, been notified of any delinquent federal or state taxes in an amount that exceeds \$3,000 for which the liability remains unsatisfied. Taxes are considered delinquent if (a) the tax liability has been fully determined, with no pending administrative or judicial appeals; and (b) a taxpayer has failed to pay the tax liability when full payment is due and required.
6. The Offeror has not commenced a voluntary case or other proceeding seeking liquidation, reorganization or other relief with respect to itself or its debts under any bankruptcy, insolvency or other similar law. The Offeror has not had filed against it an involuntary petition under any bankruptcy, insolvency or similar law.

The selected Offeror shall notify the Grantee and USTDA if any of the representations included in its proposal are no longer true and correct at the time of its entry into a contract with the Grantee.

### **3.2.5 Subcontractor Profile**

1. Name of firm and business address (street address only), including telephone and fax numbers.
2. Year established (include predecessor companies and year(s) established, if appropriate).

### **3.2.6 Subcontractor's Representations**

If any of the following representations cannot be made, or if there are exceptions, the Subcontractor must provide an explanation.

1. Subcontractor is a corporation [*insert applicable type of entity if not a corporation*] duly organized, validly existing and in good standing under the laws of the State of \_\_\_\_\_ . The subcontractor has all the requisite corporate power and authority to conduct its business as presently conducted, to participate in this proposal, and if the Offeror is selected, to execute and deliver a subcontract to the Offeror for the performance of the Feasibility Study and to perform the Feasibility Study. The subcontractor is not debarred, suspended, or to the best of its knowledge or belief, proposed for debarment or ineligible for the award of contracts by any federal or state governmental agency or authority.
2. Neither the subcontractor nor any of its principal officers have, within the three-year period preceding this RFP, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a federal, state or local government contract or subcontract; violation of federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, violating federal or state criminal tax laws, or receiving stolen property.
3. Neither the subcontractor, nor any of its principal officers, is presently indicted for, or otherwise criminally or civilly charged with, commission of any of the offenses enumerated in paragraph 2 above.
4. There are no federal or state tax liens pending against the assets, property or business of the subcontractor. The subcontractor, has not, within the three-year period preceding this RFP, been notified of any delinquent federal or state taxes in an amount that exceeds \$3,000 for which the liability remains unsatisfied. Taxes are considered delinquent if (a) the tax liability has been fully determined, with no pending administrative or judicial appeals; and (b) a taxpayer has failed to pay the tax liability when full payment is due and required.

5. The subcontractor has not commenced a voluntary case or other proceeding seeking liquidation, reorganization or other relief with respect to itself or its debts under any bankruptcy, insolvency or other similar law. The subcontractor has not had filed against it an involuntary petition under any bankruptcy, insolvency or similar law.

The selected subcontractor shall notify the Offeror, Grantee and USTDA if any of the representations included in this proposal are no longer true and correct at the time of the Offeror's entry into a contract with the Grantee.

### **3.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND KEY PERSONNEL**

Describe the Offeror's proposed project organizational structure. Discuss how the project will be managed including the principal and key staff assignments for this Feasibility Study. Identify the Project Manager who will be the individual responsible for this project. The Project Manager shall have the responsibility and authority to act on behalf of the Offeror in all matters related to the Feasibility Study.

Provide a listing of personnel (including subcontractors) to be engaged in the project, including both U.S. and local subcontractors, with the following information for key staff: position in the project; pertinent experience, curriculum vitae; other relevant information. If subcontractors are to be used, the Offeror shall describe the organizational relationship, if any, between the Offeror and the subcontractor.

A manpower schedule and the level of effort for the project period, by activities and tasks, as detailed under the Technical Approach and Work Plan shall be submitted. A statement confirming the availability of the proposed project manager and key staff over the duration of the project must be included in the proposal.

### **3.4 TECHNICAL APPROACH AND WORK PLAN**

Describe in detail the proposed Technical Approach and Work Plan (the "Work Plan"). Discuss the Offeror's methodology for completing the project requirements. Include a brief narrative of the Offeror's methodology for completing the tasks within each activity series. Begin with the information gathering phase and continue through delivery and approval of all required reports.

Prepare a detailed schedule of performance that describes all activities and tasks within the Work Plan, including periodic reporting or review points, incremental delivery dates, and other project milestones.

Based on the Work Plan, and previous project experience, describe any support that the Offeror will require from the Grantee. Detail the amount of staff time required by the Grantee or other participating agencies and any work space or facilities needed to complete the Feasibility Study.

### **3.5 EXPERIENCE AND QUALIFICATIONS**

Provide a discussion of the Offeror's experience and qualifications that are relevant to the objectives and TOR for the Feasibility Study. If a subcontractor(s) is being used, similar information must be provided for the prime and each subcontractor firm proposed for the project. The Offeror shall provide information with respect to relevant experience and qualifications of key staff proposed. The Offeror shall include letters of commitment from the individuals proposed confirming their availability for contract performance.

As many as possible but not more than six (6) relevant and verifiable project references must be provided for each of the Offeror and any subcontractor, including the following information:

- Project name,
- Name and address of client (indicate if joint venture),
- Client contact person (name/ position/ current phone and fax numbers),
- Period of Contract,
- Description of services provided,
- Dollar amount of Contract, and
- Status and comments.

Offerors are strongly encouraged to include in their experience summary primarily those projects that are similar to or larger in scope than the Feasibility Study as described in this RFP.

#### **Section 4: AWARD CRITERIA**

Individual proposals will be initially evaluated by a Procurement Selection Committee of representatives from the Grantee. The Committee will then conduct a final evaluation and completion of ranking of qualified Offerors. The Grantee will notify USTDA of the best qualified Offeror, and upon receipt of USTDA's no-objection letter, the Grantee shall promptly notify all Offerors of the award and negotiate a contract with the best qualified Offeror. If a satisfactory contract cannot be negotiated with the best qualified Offeror, negotiations will be formally terminated. Negotiations may then be undertaken with the second most qualified Offeror and so forth.

The selection of the Contractor will be based on the following criteria:

1. Firms' specific experience related to the assignment: 30 points maximum
  - Firms' overall experience: 20 points
  - Firms' overseas experience: 10 points
2. Adequacy of proposed work plan and methodology in response to the TOR: 30 points maximum
  - Knowledge of proposed work and understanding of service: 10 points

- Appropriateness of proposed methodology and work plan: 20 points

3. Qualifications and competence of the key staff for the assignment: 25 points maximum

- Team Leader's experience in similar projects: 5 points
- Agricultural Waste Specialist's experience in similar projects: 4 points
- Legal/Regulatory Expert's experience in similar projects: 4 points
- Mechanical Engineer's experience in similar projects: 4 points
- Electrical Engineer's experience in similar projects: 4 points
- Economist /Financial Analyst's experience in similar projects: 4 points

4. Past performance: 15 points maximum

- Three relevant and verifiable projects: 15 points
- Two relevant and verifiable projects: 10 points
- One relevant and verifiable project: 5 points

Proposals that do not include all requested information may be considered non-responsive.

Price will not be a factor in contractor selection.

# ANNEX 1

MR. TAMER NASSAR, VICE PRESIDENT, ENERGY ALLIED EGYPT, LLC, 5 ADEEB ISHAK STREET, 2<sup>ND</sup> FLOOR, RAML STATION, ALEXANDRIA, 21111, EGYPT, PHONE: +20 3 480 0655, FAX: +20 3 480 0717

EGYPT: EBC BIODIGESTERS PROJECT FEASIBILITY STUDY

POC: Nina Patel, USTDA, 1000 Wilson Boulevard, Suite 1600, Arlington, VA 22209-3901, Tel: (703) 875-4357, Fax: (703) 875-4009. EBC Biodigesters Project Feasibility Study. The Grantee invites submission of qualifications and proposal data (collectively referred to as the "Proposal") from interested U.S. firms that are qualified on the basis of experience and capability to develop a feasibility study for the Egypt: EBC Biodigesters Project.

Egypt is estimated to produce 36.5 million metric tons of agricultural waste on an annual basis. Approximately 75% is disposed of in environmentally irresponsible and illegal ways, such as being dumped in the deserts of Egypt or burned. Moreover, Egypt produces vast quantities of both organic waste and manures—much of which is either underutilized or unused. In an attempt to stem the growth of this problem, the Egyptian Environmental Affairs Agency has implemented a program that compensates companies for each metric ton collected and disposed of in an environmentally sustainable manner. In spite of this program, the disposal of waste continues to pose a significant environment and health threat to Egypt.

To address the growing issue of agricultural waste disposal in Egypt, the Grantee is seeking a Feasibility Study ("FS") to assist in the development of the EBC Biodigesters project. The objective of the EBC Biodigesters project is to construct 10 biodigester units in six key locations throughout Egypt that will utilize agricultural, animal and organic solid waste for production of liquid and solid fertilizers and biogas for power generation. Each biodigester unit will be capable of processing 200 tons of waste per day. The FS is needed to secure the financial support for establishing and operating the biodigester units in Egypt and will serve as a cornerstone in the development and publication of a comprehensive business plan.

The FS will evaluate a broad spectrum of parameters affecting biodigesters in Egypt, including: the different compositions of the available feedstocks, the utilization and pricing of the produced products, and the logistical aspects of feedstock and products. In addition, the FS will determine the developmental and environmental impacts of the plan to construct biodigester facilities.

The Grantee seeks to use advanced technology for the EBC Biodigesters project that will result in the production of liquid fertilizer, solid soil enhancement (compost), and biogas that can be used to provide heat to the anaerobic digesters, enhancing productivity. The biogas can also be used to generate electricity sufficient to power an entire biodigester facility with the possibility of surplus electricity.

The Grantee, Energy Allied Egypt, LLC, is a project development firm that identifies and develops large scale, energy and infrastructure projects in North and West Africa and provides consulting and representative services. The Grantee's activities are focused in the energy sector, including power generation and infrastructure development, and cover a range of projects including power plants, petrochemical and chemical facilities, and biofuels.

Based upon the results of the FS, the Grantee will establish the Egyptian Biodigesters Company ("EBC") to be the special project entity responsible for implementing the full biodigesters project. In addition, the American University in Cairo (AUC) has agreed to support the project by providing one of the sites for a biodigester unit. AUC is fully supportive of this project and has signed a Memorandum of Understanding with EAE that confirms its commitment to the project.

The U.S. firm selected will be paid in U.S. dollars from a \$283,000 grant to the Grantee from the U.S. Trade and Development Agency (USTDA).

A detailed Request for Proposals (RFP), which includes requirements for the Proposal, the Terms of Reference, and a background definitional mission/desk study report are available from USTDA, at 1000 Wilson Boulevard, Suite 1600, Arlington, VA 22209-3901. To request the RFP in PDF format, please go to:

<https://www.ustda.gov/businessopps/rfpform.asp>. Requests for a mailed hardcopy version of the RFP may also be faxed to the IRC, USTDA at 703-875-4009. In the fax, please include your firm's name, contact person, address, and telephone number. Some firms have found that RFP materials sent by U.S. mail do not reach them in time for preparation of an adequate response. Firms that want USTDA to use an overnight delivery service should include the name of the delivery service and your firm's account number in the request for the RFP. Firms that want to send a courier to USTDA to retrieve the RFP should allow one hour after faxing the request to USTDA before scheduling a pick-up. Please note that no telephone requests for the RFP will be honored. Please check your internal fax verification receipt. Because of the large number of RFP requests, USTDA cannot respond to requests for fax verification. Requests for RFPs received before 4:00 PM will be mailed the same day. Requests received after 4:00 PM will be mailed the following day. Please check with your courier and/or mail room before calling USTDA.

Only U.S. firms and individuals may bid on this USTDA financed activity. Interested firms, their subcontractors and employees of all participants must qualify under USTDA's nationality requirements as of the due date for submission of qualifications and proposals and, if selected to carry out the USTDA-financed activity, must continue to meet such requirements throughout the duration of the USTDA-financed activity. All goods and services to be provided by the selected firm shall have their nationality, source and origin in the U.S. or host country. The U.S. firm may use subcontractors from the host country for up to 20 percent of the USTDA grant amount. Details of USTDA's nationality requirements and mandatory contract clauses are also included in the RFP.

Interested U.S. firms should submit their Proposal in English directly to the Grantee by **4:00 PM (Local Time), October 17, 2011** at the above address. Evaluation criteria for the Proposal are included in the RFP. Price will not be a factor in contractor selection, and therefore, cost proposals should NOT be submitted. The Grantee reserves the right to reject any and/or all Proposals. The Grantee also reserves the right to contract with the selected firm for subsequent work related to the project. The Grantee is not bound to pay for any costs associated with the preparation and submission of Proposals.

# ANNEX 2



## 1. Executive Summary

Egypt is estimated to produce 36.5 Million metric tons of agricultural waste on an annual basis. Today, approximately 8.5 million metric tons is being used in some form as animal feed. The surplus waste of approximately 28 Million metric tons is often disposed of in numerous ways, such as being disposed in the vast deserts of Egypt or burned.

This project, which involves the construction of biodigester units in Egypt, has been proposed by Energy Allied Egypt (EAE), the Grantee, an Egyptian company that develops various agricultural, energy and chemical facilities.

Preliminary evaluation, by EAE, identified six sites as potential locations for the plants. The proposed USTDA funded feasibility study ("Study") will evaluate these locations and recommend most promising ones based on waste availability, regional impacts, and project profitability.

The proposed study will determine the technical and financial feasibility of a plan to construct 200 tons/day biodigester facilities that will utilize agricultural, animal, and organic solid waste for production of liquid and solid fertilizers and biogas for power generation. If waste processing plant proves feasible, the results of the Study could lead to an appropriate technical and financial solution to utilize agricultural waste in Egypt for highly desirable products manufacturing.

This project is expected to offset greenhouse gas emissions from existing landfills and unauthorized burns. The facility will utilize modern and efficient technology for producing fertilizer and biogas. No such projects (with the exception of very small household units) have been deployed in Egypt.

The overall project cost is about \$10 million for each 200 tons/day unit. U.S. exports could be at the \$3.5-7 million (35%-70%) level. Assuming a successful outcome of the Study, EAE is planning to install 10 units throughout Egypt.

A number of U.S. firms have suitable credentials for equipment supply and engineering and are likely to be interested in the proposed project. The total budget for this project is estimated to be \$ \$282,878.24





## 2. Project Background and Description

### 2.1 Waste

Agricultural waste is generated from three distinct sources. The primary source of agricultural waste is composed of stems, leaves, roots, and other parts of plants not consumed by humans or animals, such as rice straw or cotton stacks. Residues from the primary processing of agricultural produce, such as sugar beet pulp, sugar cane pressings, tomato pomace, and other agro-industrial by-products (i.e. collectively organic waste), are a second source of agricultural waste. The third type of agricultural waste is composed of animal waste, often in the form of barnyard manure or stable bedding in which animal manure is mixed with straw and other types of plant waste. Exhibit 1 below provides the seasonality of various agricultural waste streams in Egypt.

**Exhibit 1 - Agricultural Products Seasonality**

Annual Agricultural Waste Production											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
			Barley Straw				Maize Residues	Sorghum Stalks			Barley Straw
								Cotton Stalks			
									Sugar Cane Residues		
Organic Waste											
Animal Manures											

Source: Field Crops Research Institute, Agricultural Research Center, Ministry of Agriculture, Egypt.

Egypt is estimated to produce some 36.5 Million metric tons of agricultural waste on an annual basis. Of this amount, approximately 8.5 million metric tons is being used in some form as animal feed. The surplus waste of approximately 28 Million metric tons is generally disposed of in numerous ways that are not beneficial to the environment, such as being dumped in the vast deserts of Egypt or burned.

In an attempt to stem the growth of this problem, the Egyptian Environmental Affairs Agency has implemented a program whereby companies are compensated for each metric ton collected and disposed of in an environmentally sustainable and sound manner. However, to date, few companies have taken advantage of this program due to lack of technical expertise, operational knowledge and organizational structure.

Moreover, Egypt produces vast quantities of both organic waste and manures—much of which is either under-utilized or unutilized. Thus, the disposal of most of



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the Egypt's agricultural wastes continues to pose a significant environment and health threat to the country.

## **2.2 Process**

When considering sustainable development, there are two basic methods of processing agricultural wastes into useful products: aerobic digestion and anaerobic digestion.

Aerobic digestion, or decomposition, is the process by which tissues of a dead organism break down into simpler forms of matter when exposed to the elements such as water and air. Aerobic decomposition produces compost, which is a partially decomposed substance that can be used as a fertilizer and soil enhancement, while releasing carbon dioxide gas (CO<sub>2</sub>), and heat.

Anaerobic digestion is a series of processes in which microorganisms break down biodegradable material in the absence of oxygen. The anaerobic process produces solid and liquid digestates and biogas (primarily methane mixed with CO<sub>2</sub> and hydrogen). While both processes rely on natural bacteria to decompose (digest) the organic waste materials, the major difference is that aerobic digestion takes place in an open environment with oxygen freely available and anaerobic digestion takes place in a closed environment in the absence of oxygen.

Conventional aerobic composting technology is well-developed and readily available from a number of suppliers. It is important to highlight that there are several composting businesses in operation in Egypt, yet the country is still a net importer of compost, as current supply does not meet demand. All commercial operations in Egypt utilize a mixture of dry agricultural wastes (primarily straws and other residues) and animal manure. Many of these operations report problems in the quality of manure they can obtain, particularly the problem of contamination with non-organic material that cannot be composted.

The environmental benefits of composting are considerable, despite the fact that the technology is not new. The process uses agricultural waste and turns it into a low- to medium-grade soil enhancer that increases the soil's organic matter and available nutrients needed for plant growth.

Anaerobic digestion (AD) is widely recognized as a more energy efficient process than aerobic digestion. Moreover, the technology of the AD process allows the capture and better utilization of many of the products of decomposition that are, in fact, lost into the environment during aerobic digestion. As part of an integrated





waste management system, AD reduces the emission of landfill gas into the atmosphere, and AD is a renewable energy source because it produces a methane and carbon dioxide-rich biogas, suitable for energy production without using fossil fuels. The nutrient-rich liquid and solids left after digestion can be used as fertilizers and soil amendments.

The AD process begins with the waste material being loaded into a digester, a closed container in which bacteria break down insoluble organic polymers (such as carbohydrates) in a process called hydrolysis. The polymers are then in turn broken down by other bacteria. Acidogenic bacteria convert sugars and amino acids into carbon dioxide, hydrogen, ammonia, and organic acids. Acetogenic bacteria then convert these organic acids into acetic acid, along with additional ammonia, hydrogen, and carbon dioxide. Bacteria called Methanogens finally are able to convert these products into methane and carbon dioxide.

*The products of the AD process are the biogas, nutrient rich liquid solution, and residual organic solids.* Previously, the technical expertise required to maintain AD systems, coupled with high capital costs and low process efficiencies, limited the scope of industrial application as a waste treatment technology. However, in the past decade improved environmental awareness, advances in technology, and emerging market opportunities have combined to stimulate a rapid expansion in the organic waste processing sector.

## **2.3 Project Details**

### **2.3.1 Sites and Waste Sourcing**

The Contractor identified a number of sites that may host the proposed AD plants. The FS will evaluate the waste sourcing and sites availability for 6 locations identified in pre-feasibility study and the ones that are the best match for fuel sourcing under this Feasibility Study detailed review.

Egypt produces a vast of array of waste streams within the country. Preliminary evaluations indicate that the majority of these waste streams are likely to be suitable for the EAE biodigesters. Exhibit 4 reflects the seasonality of the different waste streams and the type of waste produced. The data is based on the study conducted by Agricultural Research Center at the Egypt Ministry of Agriculture. In total, the amount of various wastes available is estimated at over 650,000 tons/day. The most significant contribution to the agricultural waste stream comes from maize residue,



cotton stalks, and rice straw. While the waste is available during April-December period, the availability peaks during August-October period.

#### Exhibit 4 - Egypt Agricultural Waste Availability by Type and Location

Governorate	Apr	Aug	Sep			Oct					Nov		Dec
	Barley Straw	Maize Residues	Rice Straw	Sorghum Stalks	Cotton Stalks	Wheat Straw	Rice straw	Sorghum Stalks	Cotton Stalks	Sugar Cane Residues	Wheat Straw	Sugar Cane Residues	Barley Straw
Alexandria	100	2,300	183	0	82	2,767	0	46	1,383	23	23	692	11
Aswan	83	833	0	250	0	867	125	0	433	0	0	217	0
Asyut	17	11,900	0	8,017	0	8,650	4,008	0	4,325	0	0	2,163	0
Behira	150	20,767	11,600	0	5,800	12,283	0	2,900	6,142	1,450	1,450	3,071	725
Beni Suef	17	13,167	17	200	8	6,800	100	4	3,300	2	2	1,650	1
Cairo	0	100	0	0	0	13	0	0	7	0	0	3	0
Dakahlia	0	6,800	24,867	0	12,333	14,217	0	6,167	7,108	3,083	3,083	3,554	1,542
Damietta	0	533	3,250	0	1,625	1,017	0	813	508	406	406	254	203
Fayoum	550	4,233	1,267	3,950	633	9,200	1,975	317	4,600	158	158	2,300	79
Gharbia	0	11,400	9,350	0	4,675	7,100	0	2,338	3,550	1,169	1,169	1,775	584
Giza	17	10,300	17	0	8	2,050	0	4	1,025	2	2	513	1
Ismailia	150	4,200	183	0	92	1,467	0	46	733	23	23	367	11
Kafr El-Sheikh	150	8,267	15,183	0	7,592	10,100	0	3,796	5,050	1,898	1,898	2,525	949
Luxor	0	1,133	0	0	0	700	0	0	350	0	0	175	0
Matruh	0	367	0	0	0	267	0	0	133	0	0	67	0
Menoufia	0	28,867	0	0	0	5,200	0	0	2,600	0	0	1,300	0
Minya	17	33,033	0	450	0	10,700	225	0	5,350	0	0	2,675	0
New Valley	667	33	433	0	217	1,700	0	108	850	54	54	425	27
North Sinai	733	0	0	0	0	317	0	0	158	0	0	79	0
Noubaria	100	6,767	0	0	0	7,633	0	0	3,817	0	0	1,908	0
Port Said	150	300	883	0	442	167	0	221	83	110	110	42	55
Qalyoubia	0	9,500	1,033	0	517	2,250	0	258	1,125	129	129	563	65
Qena	67	4,167	0	1,433	0	4,683	717	0	2,342	0	0	1,171	0
Sharkia	517	27,833	14,750	0	7,375	17,700	0	3,688	8,850	1,844	1,844	4,425	922
Sohag	17	14,833	0	6,850	0	9,150	3,425	0	4,675	0	0	2,288	0
Suez	50	300	0	0	0	67	0	0	33	0	0	17	0
<b>Total (Tons)</b>	<b>3,552</b>	<b>221,933</b>	<b>82,816</b>	<b>21,150</b>	<b>41,409</b>	<b>136,865</b>	<b>10,575</b>	<b>20,706</b>	<b>68,430</b>	<b>10,351</b>	<b>10,351</b>	<b>34,219</b>	<b>6,175</b>

Source: EAE Pre-Feasibility Study, 2010

Exhibit 5 provides the organic waste availability details. Organic waste will be a valuable supplement to the agricultural waste stream. The volume of waste produces is estimated at over 15,000 cubic meters per day.



**Exhibit 5 – Organic (Large Animal) Waste Availability by Type and Location**

Item No.	Governorate	No. of Large Animals	Animal Manure (m3/year)	Animal Manure (m3/day)
1.	Alexandria	40,000	110,460	303
2.	Behira	240,000	986,718	2,703
3.	Beni Suef	200,000	598,329	1,639
4.	Cairo	10,000	23,814	65
5.	Dakahlia	150,000	426,879	1,170
6.	Fayoum	50,000	154,311	423
7.	Gharbia	190,000	568,845	1,558
8.	Giza	90,000	275,700	755
9.	Ismailia	25,000	69,384	190
10.	Kafr El Sheikh	110,000	323,577	887
11.	Menia	280,000	838,722	2,298
12.	Menoufia	200,000	603,759	1,654
13.	Port Said	20,000	60,195	165
14.	Sharkia	260,000	770,211	2,110
15.	Suez	10,000	17,178	47
16.	Total	1,875,000	5,828,082	15,967

Source: EAE Pre-Feasibility Study, 2010

Exhibit 6 provides the details of the solid waste available in Egypt. It should be noted that naturally, the largest amount of waste is available close to large cities with dense population. Overall, solid waste is estimated at over 9 million tons/year with organic content close to 50%. Organic waste can contribute to over 13,000 tons/day to the agricultural waste stream.



**Exhibit 6 – Solid Waste Availability by Type and Location**

Item No.	Governorate	Solid Waste (tons/year)	Organic Waste (tons/year)	Organic Waste (tons/day)
1.	Alexandria	1,097,000	549,000	1,503
2.	Asyut	198,000	99,000	271
3.	Aswan	102,000	51,000	140
4.	Behira	270,000	135,000	370
5.	Beni Suef	113,000	57,000	155
6.	Cairo	3,203,000	1,602,000	4,388
7.	Dakahlia	600,000	300,000	822
8.	Damietta	91,000	46,000	125
9.	Fayoum	46,000	23,000	63
10.	Gharbia	464,000	232,000	636
11.	Giza	1,345,000	673,000	1,842
12.	Ismailia	108,000	54,000	148
13.	Kafr El Sheikh	194,000	97,000	266
14.	Luxor	42,000	21,000	58
15.	Matruh	32,000	16,000	44
16.	Minya	166,000	83,000	227
17.	Menoufia	235,000	118,000	322
18.	New Valley	18,000	9,000	25
19.	North Sinai	39,000	20,000	53
20.	Port Said	155,000	78,000	212
21.	Qalyoubia	596,000	298,000	816
22.	Qena	133,000	67,000	182
23.	Red Sea	48,000	24,000	66
24.	Sharkia	331,000	166,000	453
25.	Sohag	175,000	88,000	240
26.	Suez	157,000	79,000	215
27.	<b>Total</b>	<b>9,967,000</b>	<b>4,984,000</b>	<b>13,653</b>

Source: EAE Pre-Feasibility Study, 2010

In general, the amount of waste theoretically available for the biodigester process exceeds 700,000 tons per day. Each proposed unit is expected to utilize about 200 tons per day.

EAE has identified six locations based on the pre-feasibility investigations. The proposed locations of the EAE biodigester units are based upon covering major waste production areas throughout Egypt. Dakahlia, Kafr El Sheikh and Sharkia are the main producers of agricultural wastes and animal manures, situated in the Nile Delta. Whereas Minya and Asyut represent the main producers of agricultural waste in Upper Egypt. The AUC campus, situated very close to Cairo where most of the organic waste is produced, represents a key location for organic waste treatment.



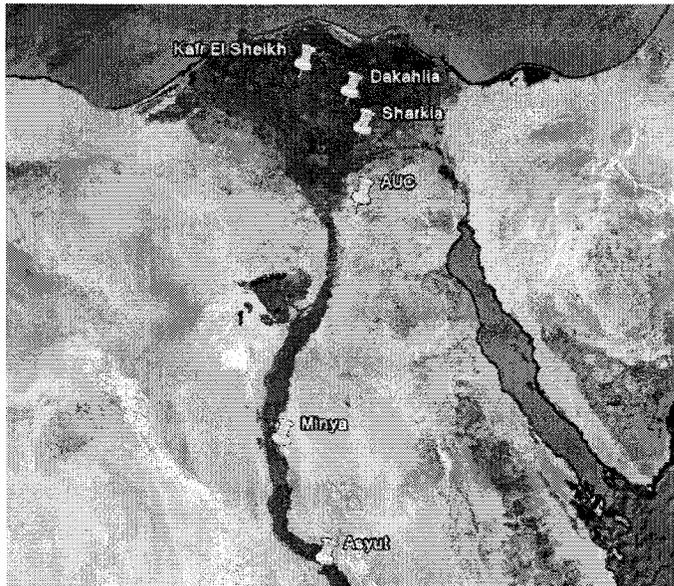
Thus, EAE will be processing a broad cross-section of the agricultural wastes produced within the country.

Based on this analysis, EAE proposes to establish biodigester units in the following locations:

1. Dakahlia
2. Kafr El Sheikh
3. Sharkia
4. Minya
5. Asyut
6. AUC Campus or the Desert Development Center.

Exhibit 7 shows a map of the proposed locations referenced above. EAE's rationale for the selection of these locations was to secure continuity of supply by being located in Egypt's major waste producing areas.

#### Exhibit 7 - Site Locations



Source: EAE Pre-Feasibility Study

Exhibit 8 outlines the capacity and production of the units planned for each of the aforementioned locations.

#### Exhibit 8 - Capacity and Production of Proposed Units



Item No	Location	Feedstock	No of Units	Unit Capacity (tons/day)	Total Capacity (tons/day)
1.	Dakahlia	Agricultural Waste, Manure	2	200	400
2.	Kafr El Sheikh	Agricultural Waste, Manure	2	200	400
3.	Sharkia	Agricultural Waste, Manure	2	200	400
4.	Minya	Agricultural Waste, Organic	2	200	400
5.	Asyut	Agricultural Waste, Organic	1	200	200
6.	AUC Campus, New Cairo (Helwan)	Organic	1	200	200
<b>Total</b>	<b>6</b>	<b>N/A</b>	<b>10</b>	<b>N/A</b>	<b>2000</b>

Source: EAE Pre-Feasibility Study

### 2.3.3 Waste Characteristics

Some examples of Egypt's agricultural waste are pictured in Exhibit 9 below.

#### Exhibit 9 - Examples of Agricultural Waste (Rice Straw and Cotton Stacks)



The sample average waste characteristics for rice straw and cotton stacks are listed in Exhibit 10.



**Exhibit 10 - Waste Characteristics**

Parameter	Rice Straw	Cotton Stacks
Moisture, %	6	6
Ash, %	16	3
Volatile Matter, %	66	73
Carbon, %	36	43
Hydrogen, %	5	5
Nitrogen, %	1	0.6
Sulphur, %	0.15	0.15
Chlorine, %	0.4	0.4
Net Calorific Value, Kcal/kg	3,440	3,675

**3. Project Sponsor’s Capabilities and Commitment**

Energy Allied Egypt (EAE) is the primary project sponsor. Energy Allied Egypt is an independent incorporated Egyptian company that has some mutual shareholders as a U.S.-based developer Energy Allied International (EAI).

The proposed development and engineering team seems to have all necessary qualifications to successfully complete the proposed project. The information available on the project Grantee, Energy Allied Egypt, shows the required past experience to develop and maintain the complex waste-to-energy projects as well as significant reputation to resolve traditional and ad-hoc project development issues. The company has a track record of successful past projects.

Project Grantee, Energy Allied Egypt is qualified to manage the project and all the activities under this feasibility study. EAE management has the necessary experience to manage this complex project. EAE is an entity with significant development experience. On the development of this project, EAE was advised by several technology and engineering partners.

EAE seems to have extensive and diverse experience in developing various power and chemical infrastructure projects in North Africa and Middle East.

**3.1 Energy Allied Egypt – Project Grantee**





EAE is a projects development firm that identifies and develops large scale, energy and infrastructure projects in North and West Africa. In addition to the foregoing, EAE also provides both consulting and representative (i.e. outsourced business development and marketing) services. EAE's activities are primarily focused in the energy sector, including refining and petrochemicals, power generation and infrastructure development, and cover a wide range of projects including power plants, oil refineries, petrochemical and chemical facilities and biofuels.

EAE develops projects from inception to execution and completion, in coordination with local governments, regulatory authorities, technology licensors, EPC contractors, equity investors, as well as financing and lending institutions.

Capitalizing on its existing relationships with U.S. organizations, EAE seeks to apply proven U.S. technologies in Egypt to create wealth and positive socio-economic impacts from resources which are otherwise unutilized or underutilized.

Some of the most relevant past reference projects developed by EAE include:

**1. Chemicals: Egypt - Linear Alkyl Benzene Project**, fully operational, \$520 M of total investment.

- Production Start: July 2008
- *Client*: ELAB - (Joint Venture of the Ministry of Petroleum, Ministry of Finance, Echem and the National Investment Bank of Egypt)
- *EAE Contribution*: EAE was the project developer in cooperation with the Ministry of Petroleum and Echem. In addition: 1. Project Developer (in cooperation with Ministry of Petroleum and Echem); 2. Analysis: EPC Contractor identification, assessment and selection; 3. Management: Assistance to LG International and GS Engineering and Construction (EPC Contractor) during project execution; 4. Coordination: of Consortium partners, Engineering for Petroleum and Process Industries (ENPPI), and the Petroleum Project & Technical Consultations Co (Petrojet).

**2. Power: Côte d'Ivoire - Peace Refinery**, in development

- Design Capacity: 60,000 BPD, which was expanded to 100,000 BPD
- *Client*: Petroci Holding & Government of Cote d'Ivoire
- *EAE Contribution*: 1. Technical & Commercial Advisor: Defined, directed and managed the development & publication of comprehensive technical and market studies; 2. Project Manager: Developed and managed the overall project action and implementation program and critical components; 3. Financial & Equity Advisor: Managed in-depth economic study and coordinated activities of internationally recognized financial firm; 4. Supply & Off-take Advisor:





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Managed the development of commercial agreements for the feedstock supply and product off-take agreements; 5. Strategic Partner / Financial Investor analysis and selection.

**3. Power: Côte d'Ivoire - Azito Power Project, Complete and fully operational**

- Production: 288 MW, Production Start: March 1999, Developed as an Independent Power Plant (IPP), on a build, own & transfer (BOT) basis.
- *Client:* Originally Electcité de France (EDF) with AKFED's venture capital arm; Ownership has changed recently to include Globeleq
- *EAE Contribution:* Project Developer: EAE worked with host-country government to invent, clarify and define the concept of IPP utilizing an undeveloped natural gas resource; Project Development and scoping; Technical Advisor; Strategic Partner / Financial Investor analysis and selection.

**4. Energy: Qatar - QAFAC - Qatar Fuel Additives Company, Completed and fully operational**

- Production - Methanol: 832,500 Tons/Year - ICI technology, MTBE: 610,000 Tons/Year - UOP technology
- *Client:* QAFAC (Joint Venture between Industries Qatar, OPIC Middle East Corporation, International Octane Limited and LCY Investments Corp)
- *EAE Contribution:* 1. Project Developer: Project concept, investor group organization; 2. Project Developer: Project scoping & development; 3. Technical Advisor: Program Management; 4. Financial Advisor: Feasibility Studies/financial investor analysis; 5. Technology Advisor: License research, selection and negotiations.

**5. Energy: Dubai - Dubai Natural Gas Company (DUGAS - wholly-owned by the Government of Dubai), Complete and Fully operational**

- 500,000 tons/year, unique, one-of-kind MTBE facility in UAE
- *Client:* DUGAS - wholly-owned by the Government of Dubai
- *EAE Contribution:* Energy Allied worked with Dubai and DUGAS as the initial investors to develop the project. In addition: 1. Project Developer: Project concept, investor group organization; 2. Project Developer: Project scoping & development; 3. Technical Advisor: Program Management; 4. Financial Advisor: Feasibility Studies/financial investor analysis; 5. Technology Advisor: License research, selection and negotiations.

**6. Chemicals: Equate Petrochemical Complex, Complete & Fully operational**

- *Client:* Union Cargill and Petrochemical Industries (PIC)
- *EAE Contribution:* 1. Financial Advisor: Project Financing; 2. Technical Advisor: EPC contract execution.





## 7. Energy: Middle East - Advisor - ARCO

- *Project:* Regional Representative & Project Developer
  1. Gas Pipeline - Qatar to GCC (Gulf Cooperation Countries)
  2. Upstream Development Offshore Gas, Qatar
  3. Upstream Development Onshore Oil, Abu Dhabi
  4. Various Petrochemicals Projects in Egypt and Oman
  5. Gas to Liquids (GTL) Project in Egypt.
- *Client:* ARCO (Atlantic Richfield Company), now a part of BP (British Petroleum)
- *EAE Contribution:* EAE was a consultant to Arco and provided consulting services for their Upstream, Downstream and Petrochemicals businesses throughout the Middle East region.

EAE management includes Mike Nassar, Chairman and CEO; Rod Ragan, President; Tamer Nassar, Regional Vice President; and Tamer Ramzy, General Manager, Projects

## 4. Implementation Financing

EAE has a successful track record of past projects. In 2008, EAE successfully completed a \$520 million Linear Alkyl Benzene Project for ELAB, a Joint Venture of the Ministry of Petroleum, Ministry of Finance, Echem and the National Investment Bank of Egypt. EAE was the project developer in cooperation with the Ministry of Petroleum and Echem. Also, EAE has performed advisory services including EPC contractor identification, assessment and selection and Owners support during project execution.

In 1999, EAE has completed 288 MW Azito Power Project in Côte d'Ivoire. EAE was a project developer for this IPP project under the build, own and transfer basis.

Some of the other major projects developed by EAE include projects for Qatar Fuel Additives Company, Dubai Natural Gas Company, Union Cargill Equate Petrochemical Complex, and Atlantic Richfield Company. Most of these projects are located in Northern Africa and Middle East. Additional details are provided in Section 3.1 and the Appendix.

Following are the current projects under development by EAE:

- Côte d'Ivoire - Peace Refinery, EAE is a technical and commercial advisor and project manager.





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- Egypt - Styrene/Polystyrene Facility, EAE is equity participant and technical, marketing and financial advisor.

The capital cost estimate for each of the proposed 200 tons/day biodigester facilities is about \$10 million (ten facilities cost is \$100 million). EAE has begun discussions with both equity investors and project finance institutions and would anticipate the beginning of the formal marketing process by the end of 2011. It is anticipated that the equity and debt investors will require a full feasibility study to be completed as part of the conditions precedent to the financial close for the first project.

EAE has discussed with and received positive feedback on the project from:

- Al Ahly Capital Holding (private equity firm in Egypt);
- International Finance Corporation; and
- American University in Cairo.

CG was successful in independently discussing attractiveness of this type of project with IFC, African Development Bank (AfDB), and American University in Cairo. Positive feedback was received on the project concept, structuring, and technology. All financial organizations confirmed interest in either contributing to debt commitments and/or arranging/syndicating the funding. Several parties indicated interest in acquiring an equity stake. At the same time almost all participants mentioned a need for a detailed feasibility study and advanced progress in fuel supply agreements.

IFC has confirmed its strong support for this type of project in Egypt. Local bankers have discussed the ability to take on both debt and equity positions. IFC in Egypt for such a project can take up to 20% in equity and up to 25% in debt.

AfDB can offer 25-30 % of debt financing and also can arrange a syndication of additional funds. AfDB can match any competitive pricing rates for renewable projects.

AUC confirmed that depending on the outcome of the feasibility report, it is possible that the University's endowment fund managers, upon approval by the Board, may want to participate by taking an equity stake in the project. AUC endowment's balance approaches a half billion dollars at present.





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## 5. Export Potential

Waste-to-energy equipment exports field is fairly new to Egypt. There are only few selected pilot projects that were implemented for this sector. The recent changes in regulation as well as sectoral problems will be opening this field for new export opportunities.

On broader basis, the United States seems to have stable amount of power-related equipment exports into the country, including steel, pumps, turbines, boilers, controls, and auxiliary equipment. Exhibit 12 below provides the 2005-10 export details for selected power-related HS-classification items.



**Exhibit 12 - U.S. Historical Power Equipment Exports to Egypt (in \$M)**

Item	2005	2006	2007	2008	2009	2010
Iron and Steel	57	100	147	405	107	235
Liquid Pumps	25	28	42	63	61	67
Filters	23	23	25	25	37	55
Data Processing and Controls	33	31	27	35	34	48
Vacuum Pumps	36	38	23	87	74	38
Generating Sets	15	13	29	61	32	33
Communications	17	17	30	19	33	32
Valves	11	15	18	30	33	25
Gas Turbines	75	9	55	56	59	22
Wire	2	12	9	5	14	13
Motors	18	1	5	13	10	10
Convertors	7	5	12	8	7	9
Switches	7	5	9	10	11	9
Motor Parts	6	6	9	21	11	7
Boilers	7	2	4	12	4	3
Electric Storage	1	1	2	2	4	2
<b>TOTAL</b>	<b>339</b>	<b>307</b>	<b>444</b>	<b>851</b>	<b>531</b>	<b>607</b>

Source: Department of Commerce, 2011

Exhibit 13 provides a high-level estimate of U.S. exports for one 200 tons/day unit for the proposed project. The unit cost excluding land, financing and contingency costs is estimated at about \$10 million for one 200 ton/day unit, with U.S. exports estimated at 35-70% of the total cost. The overall project cost is directly proportional to number of units installed. EAE plans to install 10 units. Therefore, the overall project cost is expected to be over \$100 million.

**Exhibit 13 - Project Budget Estimate and Share of U.S. Exports (\$ M)**

Major Equipment/Services	Approximate Total Cost	U.S. Exports (U.S. Competitiveness)		
		Low Probability	High Probability	Indicator
<b>One Unit (200 ton/day)</b>				
Steel	\$ 0.5	-	-	low-low
Welding and fabrication	\$ 0.5	-	-	low-low
Tanks	\$ 0.4	-	-	low-low
Boiler, Heat Exchangers, Clean-Up System	\$ 1.0	0.48	\$ 1.0	good-excellent
Coveyer and Loading	\$ 0.2	-	0.12	low-good
Collection System	\$ 0.6	-	0.29	low-good
Pumps and motors	\$ 1.1	0.54	\$ 1.1	good-excellent
Meters	\$ 0.3	0.15	\$ 0.3	good-excellent
Valves	\$ 1.1	0.53	\$ 1.1	good-excellent
Insulation	\$ 0.3	-	-	low-low
Software	\$ 0.7	0.35	\$ 0.7	good-excellent
Instrumentation and Controls	\$ 0.4	0.22	\$ 0.4	good-excellent
Electrical	\$ 1.0	0.48	\$ 1.0	good-excellent
Civil and construction	\$ 0.6	-	-	low-low
Other (incl. categories above)	\$ 0.7	0.33	0.33	good-good
Engineering	\$ 0.7	0.34	\$ 0.7	good-excellent
<b>Total Value for 1 Unit</b>	<b>\$ 10.0</b>	<b>3.4</b>	<b>6.9</b>	

Source: CG Estimate based on Anaerobic Phased Solids Digester Pilot Demonstration Project, California Energy Commission 2008



EAE provided a very high-level unit estimate totaling to about \$9.5 million per unit. CG has estimated additional costs of about \$0.5 million for various other items, including patent fees.

It should be noted that EAE has identified a good U.S. export potential for tanks. CG is of opinion that steel, smaller tanks, welding and assembly, as well as the tank-related equipment will most likely be sourced from China, India, Russia, or Pakistan. EAE has not identified valves, pumps, and motors as U.S. source. CG is of opinion that these items have a good probability being U.S. manufactured. However, they will, most likely, be offered by local retailers of U.S. manufacturers.

Most of the system components identified above are fairly standard products manufactured by a number of providers. Some of the manufacturers include:

- Eaton Electrical (Cutler-Hammer);
- Siemens-Westinghouse;
- Square D Co. (Schneider Electric);
- Encorp Inc.;
- Cooper Power Systems;
- Automated Control Systems;
- GE Energy, GE Industrial, and GE Power Systems;
- Honeywell;
- Motorola;
- Hammond Power Solutions; and
- Kohler Power Systems.

Valves, meters, pumps, motors, controls, and other similar parts are typically purchased via authorized country or regional representatives. Most of the companies listed above have representatives in Egypt, Jordan, U.A.E., Saudi Arabia, and other countries in the region.

In addition to equipment suppliers, U.S. engineering companies may be interested in EPC or task design contracts. Services suppliers potentially include:

- Black and Veatch;
- Jacobs Engineering;
- Shaw Group (former Stone and Webster);
- Sargent and Lundy;
- R.W. Beck;
- HDR, Inc., and



- PB Power.

A number of U.S. firms have other types of technologies for agricultural waste utilization. These technologies may include gasification, incineration, and plasma. Some of the U.S. Based manufacturers of these technologies include Chinook Energy, Energy Products of Idaho, Phoenix Solutions Co., Diversified Energy Corporation, George K. Moss Co., Inc., AE&E Von Roll USA, Indeck Boilers, Foster Wheeler; and others. Based on prior WTE projects in Egypt, Constant Group believes that some of the manufacturers listed above have strong interest in equipment supply to Egypt.

## 6. Foreign Competition and Market Entry Issues

In general, U.S. manufacturers and suppliers would be considered quite competitive in the design, manufacturing, and implementation of the proposed project. However, geographical location and host-country historical ties with other nations may result in serious competition by foreign firms to U.S. companies supplying equipment and services to Egypt.

Exhibit 14 lists major foreign competitors in the North Africa and Middle East.

**Exhibit 14 – Major Equipment Foreign Manufacturers**

<b>EQUIPMENT</b>	<b>COMPANIES</b>
Complete Biodigester Systems	CCI, Canada; Valorga, France; Dranco, Belgium; Compogas, Switzerland; Linde, Germany.
Gasifiers, Incinerators, Boilers	Austrian Energy/Von Roll, Austria; Aker Solutions, Norway; CNIM, France; CMI, Belgium; Kawasaki, Japan; NEM, Netherlands; Standard Fasel-Lentjes, Netherlands; Doosan Babcock, S. Korea.
Gas Turbines	Alstom Power, UK; Centrax GT, UK; Hitachi, Japan; Kawasaki, Japan, JGT, Japan, Mitsubishi, Japan; MTU-Friedrichshafen, Germany; Rolls Royce, UK; Sulzer, Switzerland; Turbomeca, France; Volvo, Sweden; Wartsila, Finland
Steam Turbines	Alstom, Switzerland; Dresser-Rand, Norway; Kawasaki, Japan; Mannesmann Demag, Germany; Voest-Alpine, Austria; Siemens, Germany.
Control Systems	Axsia Howmar, UK; Amot Controls, UK; ABB, Germany; Fortum Engineering, Finland; Siemens, Germany; Yokogawa, Japan





EQUIPMENT	COMPANIES
Engineering Services	TEPSCO, Japan; Fichtner, Germany; Lahmeyer International, Germany; Mott Connell, UK; PB, Singapore; SNC, Canada.

## 7. Developmental Impact

This project is supportive of diverse but complementary objectives of national and local governments. Waste to energy plants will help to meet nationwide renewable generation goals and extend the life of landfills that are challenged by growth in waste generation.

Also, according to USTDA criteria, project's potential development impacts include:

- a) Infrastructure: The project, if implemented, would be a positive contributor to the country's development objectives. The project is expected to add fertilizer production and biogas/eclectic power generation capacity.
- b) Market-Oriented Reform: The proposed project will be used to produce fertilizer and generate energy from biogas. The project will introduce and provide a demonstration of a modern waste utilization process, a much needed tool to advance the national goals of minimizing environmental impacts of waste to landfill process and preventing waste burning.
- c) Human Capacity Building: The project has the potential of creating 200 direct and numerous indirect employment opportunities for the Zabaleen that have been made redundant by the decimation of Egypt's pork industry. EBE biodigester units can be either highly automated or labor intensive, depending on the costs of the operation and the community needs. Labor can be employed at both the feedstock end of the process (i.e. collection, transportation, loading and unloading, sorting, etc.) and at the product end (packaging, storage, distribution, transportation, marketing, sales, etc.). EBE will thus create new, sustainable employment opportunities for Egypt's Zabaleen and farming communities.
- d) Technology Transfer and Productivity Enhancement: The technology for this plant is new and innovative as compared to other existing means of waste utilization in Egypt. The technology adopted is expected to be easily scalable to other projects.





- 
- e) Other: The proposed project will reduce GHG emissions by reducing methane, which has over 20 times the global warming potential of CO<sub>2</sub>.

## 8. Impact in Environment

The proposed plant will primarily use agricultural waste, which would otherwise be burned or dumped. It will be supplemented with organic household waste and animal waste where available. The significant potential problems that arise due to the dumping and burning are:

- 1) Contamination of ground water which in turn can create health hazards;
- 2) Generation of methane gas which, if uncollected, is a potent greenhouse gas with over 20 times the global warming potential of CO<sub>2</sub>;
- 3) The use of relatively large areas of land which could otherwise be used for habitation, cultivation or growing trees, and;
- 4) Noise, odors, the unsavory aesthetics of the decomposing garbage, and the general health hazards from dust dispersal that it can create.

The installation of biodigester plants would help mitigate the aforementioned environmental impacts.

However, the biodigester plant, while categorized as a renewable and environmentally friendly source of energy, does require environmental controls. NO<sub>x</sub>, sulphur dioxide, carbon dioxide, trace amounts of heavy metals, and possibly some toxic derivatives from organic compounds are produced in the process. Likewise, the water discharges as in the case of conventional plants can readily be controlled with available technologies. These costs will be reflected in the analyses conducted as part of the Feasibility Study.

The project should also qualify as a Clean Development Mechanism (CDM) project under the Kyoto Protocol. The proposed project will reduce emissions from the baseline by displacing methane and other greenhouse gases release.

The proposed Terms of Reference for the project feasibility study includes the requirement for a preliminary Environmental Impact Assessment (EIA).

## 9. Impact on U.S. Labor





There is no reason for concern regarding the possibility of negative impacts on U.S. employment due to this project. The project would produce fertilizer and biogas and not products that could be imported into the U.S. On the other hand, positive impacts will result in the event U.S. exporters succeed in obtaining contracts for equipment and services when the project goes forward and even serve as a catalyst for further projects in the region.

No adverse impact is expected from the execution of the proposed project. Its significant export potential would assure the bulk of the production of major goods in the U.S. and their export to the host country. No significant permanent new job creation impacting U.S. jobs is expected outside the U.S.

## 10. Justification

EAE is seeking a USTDA technical assistance grant for the development of up to ten biodigester units in Egypt utilizing advanced, commercially proven technology from the US. These facilities will represent the first time that such U.S. technology has been transferred and implemented in Egypt. The implementation of this technology will represent a significant improvement over the current agricultural waste management practices in the Egypt and throughout Northern Africa. The proposed biodigester units will have a significant solid and liquid fertilizer output and lower emissions profile than unauthorized dumps or open fire burning, which are currently the most common agricultural waste management practices in Egypt.

In addition, the renewable energy law and solid waste management regulations create an attractive environment for developing biodigester facilities in Egypt. Finally, the estimated potential for U.S. export is approximately in the \$35-70 million range for ten units proposed.

Local developers, like EAE, are willing to assume the regulatory and commercial risks and are capable of managing the permitting process for developing renewable energy projects. For new technologies (such as proposed biodigester process), developers like EAE lack the resources to evaluate the technology risk and hence are very reluctant to commit the early stage capital required. While commercially proven in several installations in the U.S. using waste and biomass as a fuel, local knowledge and experience in Egypt is limited. The purpose of the grant is to provide the technical assistance necessary to demonstrate the viability of U.S. biodigester technology.





The Grantee has performed a preliminary economic and financial evaluation of the proposed project. Exhibit 15 provides the details of this evaluation and sensitivities. In general, the economic evaluation of this project shows fairly attractive results for investor. Summary of these results are:

- Capital cost assumptions, O&M, and unit characteristics seem normal.
- Base case assumes that the majority of revenues come from liquid fertilizer sales. Additional revenue comes from solid fertilizer and biogas.
- Financial analysis is somewhat limited due to unlevered calculations. However it provides a good sense of direction. A much more detailed financial analysis shall be performed under the proposed Feasibility Study.
- Project has positive Net Income starting in the first year of operation.
- Project has positive Net Operating Cash flow starting in the first year of operation.
- The financial analysis of the project (on unlevered basis) indicates that an investment of US \$100M will yield an IRR of 47%, an ROI of 198% and a NPV of ~\$340M with an NPV discount rate of 10%.
- CG performed several of its own sensitivities and discovered that the proposed project is most sensitive to price of liquid fertilizer and funding structure.

Overall project seems to have fairly acceptable economics.



**Exhibit 15- Financial Analysis**

Assumptions		Phase 1	Phase 2		
Total Capital Expenditures		\$8,000,000	\$60,000,000		
Item	Unit	Quantity	Price/Unit	1 unit	Total
				Quantity	Price/Unit
				10 units	Total
<b>Gross Receipts</b>					
Liquid fertilizer	Tons	43,650	\$150.00		\$6,547,500
Solid fertilizer	Tons	18,730	\$35.00		\$659,550
Biogas	M BTU	124,800	\$2.50		\$3,120,000
Feedstock collection from EEA	Tons	62,400	\$14.82		\$924,857
<b>Total gross receipts</b>					<b>\$10,651,907</b>
<b>Operating Expense</b>					
Feedstock collection to farmers	Ton	62,400	\$26.32		\$1,642,106
Labor					
Labor: Management/Technical	Annual	2	\$15,600.00		\$31,200
Labor: Skilled	Annual	4	\$9,285.00		\$37,140
Labor: Unskilled	Annual	14	\$3,510.00		\$49,140
Utilities	per annum	1	\$90,000.00		\$90,000
Maintenance	per annum	1	\$90,000.00		\$90,000
Truck Rental	Day Rentals	4,212	\$71.50		\$301,168
Maintenance	Annual	0	\$0.00		\$0
Fuel	Liters	0	\$0.00		\$0
Interest on operating capital	USD	2,240,783	8.50%		\$190,467
<b>Total Operating Expense</b>					<b>\$2,431,250</b>
<b>Biogas</b>					
Net Returns above TVC	USD				\$8,220,657

Source: Pre-Feasibility Study, EAE, 2010



**Exhibit 15 – Financial Analysis (Continued)**

Description	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Capital Expenditures															
Infrastructure															
Equipment															
Bi digesters Units (10), and technology license fee	\$96,000,000														
Land Lease/Preparation/ Facilities Warehouse/ Process/ Office Space	\$5,000,000														
Operating Expenses															
Feedstock	\$8,450,242	\$13,095,821	\$17,043,728	\$18,482,039	\$19,030,601	\$19,607,590	\$20,185,823	\$20,801,099	\$21,425,749	\$22,066,222	\$22,730,677	\$23,412,496	\$24,114,868	\$24,838,315	
Labor	\$935,225	\$935,077	\$1,284,173	\$1,322,698	\$1,362,370	\$1,402,348	\$1,442,348	\$1,482,708	\$1,523,269	\$1,578,371	\$1,620,762	\$1,670,554	\$1,725,821	\$1,777,206	
Utilities	\$463,500	\$716,108	\$293,464	\$1,012,868	\$1,043,347	\$1,074,847	\$1,107,447	\$1,140,093	\$1,172,296	\$1,203,525	\$1,245,810	\$1,283,195	\$1,321,680	\$1,361,331	
Maintenance	\$463,500	\$716,108	\$293,464	\$1,012,868	\$1,043,347	\$1,074,847	\$1,107,447	\$1,140,093	\$1,172,296	\$1,203,525	\$1,245,810	\$1,283,195	\$1,321,680	\$1,361,331	
Transportation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Interest Expense	\$980,000	\$1,515,495	\$2,081,280	\$2,143,718	\$2,208,030	\$2,274,271	\$2,342,490	\$2,412,774	\$2,485,157	\$2,559,712	\$2,636,502	\$2,715,526	\$2,797,066	\$2,880,978	
Total Cash Out	\$10,900,872	\$16,948,006	\$23,278,059	\$23,974,371	\$24,583,802	\$25,454,411	\$26,197,443	\$26,993,360	\$27,762,687	\$28,620,830	\$29,465,453	\$30,370,016	\$31,281,117	\$32,219,550	
Revenues															
Production Capacity	0%	50%	75%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Liquid Fertilizer	\$3,742,950	\$2,182,628	\$71,695,473	\$73,743,337	\$75,955,837	\$78,234,306	\$79,581,336	\$82,098,778	\$84,498,739	\$86,498,739	\$88,695,003	\$90,695,003	\$93,415,853	\$96,218,329	\$99,104,274
Solid Fertilizer	\$3,374,280	\$5,215,283	\$7,159,547	\$7,374,394	\$7,595,564	\$7,823,431	\$8,055,134	\$8,290,878	\$8,543,874	\$8,825,340	\$9,069,200	\$9,341,555	\$9,621,183	\$9,910,488	\$10,219,280
Biogas	\$1,600,000	\$2,482,593	\$3,408,306	\$3,511,567	\$3,616,566	\$3,725,443	\$3,837,206	\$3,952,333	\$4,070,592	\$4,193,019	\$4,318,810	\$4,448,374	\$4,581,525	\$4,719,280	
Total Cash In	\$0	\$59,528,395	\$82,184,329	\$84,629,258	\$87,485,136	\$89,783,180	\$92,476,678	\$95,290,978	\$98,108,608	\$101,051,760	\$104,055,313	\$107,205,513	\$110,421,987	\$113,734,847	
Net Cash Flow	\$27,753,907	\$42,879,786	\$58,888,240	\$60,654,887	\$62,474,534	\$64,348,770	\$66,279,233	\$68,267,610	\$70,315,638	\$72,425,107	\$74,587,860	\$76,835,796	\$79,140,870	\$81,515,096	
IRR	47%														
NPV	\$340,076,238														
RoI	198%														
NPV Discount Rate	10%														

Source: Pre-Feasibility Study, EAE, 2010



Constant Group LLC



### 13. Schedule

The proposed project implementation schedule is presented in Exhibit 16 below. The duration of the total effort is estimated at 5 months with most of upfront tasks being accomplished sequentially. Some of the later tasks that are not on the critical path are conducted in parallel. Final Report issuance is expected in 5 months since notice to proceed.

Exhibit 16 - Project Schedule

No.	Task Name	Duration (days)	Months				
			1	2	3	4	5
1	Data Review and Kick-Off Meeting	20	█				
2	Feedstock Supply Assessment and Project Sites	25	█	█			
3	Preparation of Preliminary Design	30		█	█		
4	Economic Analysis	15			█	█	
5	Identification of Financing Options	5				█	
6	Environmental Analysis	10				█	█
7	Regulatory Review	10					█
8	Development Impacts Analysis	5					█
9	Identification of U.S. Sources of Supply	5					█
10	Implementation Plan	5					█
11	Draft Final and Final Reports Preparation and Presentation	15					█

### 14. Recommendations

Constant Group has reviewed the data and analytics that were provided for this project. It also communicated with equipment suppliers and financiers to confirm their knowledge and interest in the project. **Constant Group recommends USTDA to further support this project by providing funding for the full-scale feasibility study.** Following items represent the benefits of the project:



# ANNEX 3



**U.S. TRADE AND DEVELOPMENT AGENCY**  
**Arlington, VA 22209-2131**

**NATIONALITY, SOURCE, AND ORIGIN REQUIREMENTS**

The purpose of USTDA's nationality, source, and origin requirements is to assure the maximum practicable participation of American contractors, technology, equipment and materials in the prefeasibility, feasibility, and implementation stages of a project.

**USTDA STANDARD RULE (GRANT AGREEMENT STANDARD LANGUAGE):**

Except as USTDA may otherwise agree, each of the following provisions shall apply to the delivery of goods and services funded by USTDA under this Grant Agreement: (a) for professional services, the Contractor must be either a U.S. firm or U.S. individual; (b) the Contractor may use U.S. subcontractors without limitation, but the use of subcontractors from host country may not exceed twenty percent (20%) of the USTDA Grant amount and may only be used for specific services from the Terms of Reference identified in the subcontract; (c) employees of U.S. Contractor or U.S. subcontractor firms responsible for professional services shall be U.S. citizens or non-U.S. citizens lawfully admitted for permanent residence in the U.S.; (d) goods purchased for implementation of the Study and associated delivery services (e.g., international transportation and insurance) must have their nationality, source and origin in the United States; and (e) goods and services incidental to Study support (e.g., local lodging, food, and transportation) in host country are not subject to the above restrictions. USTDA will make available further details concerning these standards of eligibility upon request.

**NATIONALITY:**

1) Rule

Except as USTDA may otherwise agree, the Contractor for USTDA funded activities must be either a U.S. firm or a U.S. individual. Prime contractors may utilize U.S.

subcontractors without limitation, but the use of host country subcontractors is limited to 20% of the USTDA grant amount.

## 2) Application

Accordingly, only a U.S. firm or U.S. individual may submit proposals on USTDA funded activities. Although those proposals may include subcontracting arrangements with host country firms or individuals for up to 20% of the USTDA grant amount, they may not include subcontracts with third country entities. U.S. firms submitting proposals must ensure that the professional services funded by the USTDA grant, to the extent not subcontracted to host country entities, are supplied by employees of the firm or employees of U.S. subcontractor firms who are U.S. individuals.

Interested U.S. firms and consultants who submit proposals must meet USTDA nationality requirements as of the due date for the submission of proposals and, if selected, must continue to meet such requirements throughout the duration of the USTDA-financed activity. These nationality provisions apply to whatever portion of the Terms of Reference is funded with the USTDA grant.

## 3) Definitions

A "U.S. individual" is (a) a U.S. citizen, or (b) a non-U.S. citizen lawfully admitted for permanent residence in the U.S. (a green card holder).

A "U.S. firm" is a privately owned firm which is incorporated in the U.S., with its principal place of business in the U.S., and which is either (a) more than 50% owned by U.S. individuals, or (b) has been incorporated in the U.S. for more than three (3) years prior to the issuance date of the request for proposals; has performed similar services in the U.S. for that three (3) year period; employs U.S. citizens in more than half of its permanent full-time positions in the U.S.; and has the existing capability in the U.S. to perform the work in question.

A partnership, organized in the U.S. with its principal place of business in the U.S., may also qualify as a "U.S. firm" as would a joint venture organized or incorporated in the United States consisting entirely of U.S. firms and/or U.S. individuals.

A nonprofit organization, such as an educational institution, foundation, or association may also qualify as a "U.S. firm" if it is incorporated in the United States and managed by a governing body, a majority of whose members are U.S. individuals.

## SOURCE AND ORIGIN:

### 1) Rule

In addition to the nationality requirement stated above, any goods (e.g., equipment and materials) and services related to their shipment (e.g., international transportation and insurance) funded under the USTDA Grant Agreement must have their source and origin in the United States, unless USTDA otherwise agrees. However, necessary purchases of goods and project support services which are unavailable from a U.S. source (e.g., local food, housing and transportation) are eligible without specific USTDA approval.

### 2) Application

Accordingly, the prime contractor must be able to demonstrate that all goods and services purchased in the host country to carry out the Terms of Reference for a USTDA Grant Agreement that were not of U.S. source and origin were unavailable in the United States.

### 3) Definitions

“Source” means the country from which shipment is made.

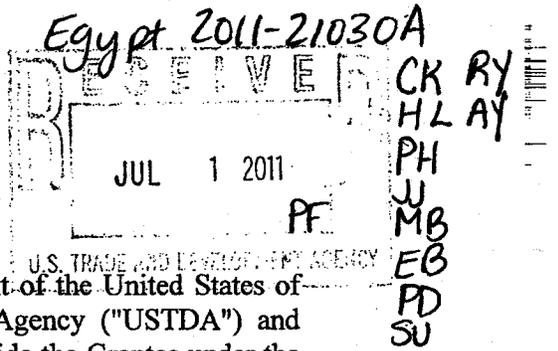
“Origin” means the place of production, through manufacturing, assembly or otherwise.

*Questions regarding these nationality, source and origin requirements may be addressed to the USTDA Office of General Counsel.*

# ANNEX 4

**GRANT AGREEMENT**

LZ  
JW



This Grant Agreement is entered into between the Government of the United States of America, acting through the U.S. Trade and Development Agency ("USTDA") and Energy Allied Egypt LLC ("Grantee"). USTDA agrees to provide the Grantee under the terms of this Agreement US\$283,000 ("USTDA Grant") to fund the cost of goods and services required for a feasibility study ("Study") on the proposed EBC Biodigesters project ("Project") in Egypt ("Host Country").

**1. USTDA Funding**

The funding to be provided under this Grant Agreement shall be used to fund the costs of a contract between the Grantee and the U.S. firm selected by the Grantee ("Contractor") under which the Contractor will perform the Study ("Contract"). Payment to the Contractor will be made directly by USTDA on behalf of the Grantee with the USTDA Grant funds provided under this Grant Agreement.

**2. Terms of Reference**

The Terms of Reference for the Study ("Terms of Reference") are attached as Annex I and are hereby made a part of this Grant Agreement. The Study will examine the technical, financial, environmental, and other critical aspects of the proposed Project. The Terms of Reference for the Study shall also be included in the Contract.

**3. Standards of Conduct**

USTDA and the Grantee recognize the existence of standards of conduct for public officials, and commercial entities, in their respective countries. The parties to this Grant Agreement and the Contractor shall observe these standards, which include not accepting payment of money or anything of value, directly or indirectly, from any person for the purpose of illegally or improperly inducing anyone to take any action favorable to any party in connection with the Study.

**4. Grantee Responsibilities**

The Grantee shall undertake its best efforts to provide reasonable support for the Contractor, such as local transportation, office space, and secretarial support.

## **5. USTDA as Financier**

### **(A) USTDA Approval of Competitive Selection Procedures**

Selection of the U.S. Contractor shall be carried out by the Grantee according to its established procedures for the competitive selection of contractors with advance notice of the procurement published online through *Federal Business Opportunities* ([www.fedbizopps.gov](http://www.fedbizopps.gov)). Upon request, the Grantee will submit these contracting procedures and related documents to USTDA for information and/or approval.

### **(B) USTDA Approval of Contractor Selection**

The Grantee shall notify USTDA at the address of record set forth in Article 17 below upon selection of the Contractor to perform the Study. Upon approval of this selection by USTDA, the Grantee and the Contractor shall then enter into a contract for performance of the Study. The Grantee shall notify in writing the U.S. firms that submitted unsuccessful proposals to perform the Study that they were not selected.

### **(C) USTDA Approval of Contract Between Grantee and Contractor**

The Grantee and the Contractor shall enter into a contract for performance of the Study. This contract, and any amendments thereto, including assignments and changes in the Terms of Reference, must be approved by USTDA in writing. To expedite this approval, the Grantee (or the Contractor on the Grantee's behalf) shall transmit to USTDA, at the address set forth in Article 17 below, a photocopy of an English language version of the signed contract or a final negotiated draft version of the contract.

### **(D) USTDA Not a Party to the Contract**

It is understood by the parties that USTDA has reserved certain rights such as, but not limited to, the right to approve the terms of the contract and any amendments thereto, including assignments, the selection of all contractors, the Terms of Reference, the Final Report, and any and all documents related to any contract funded under the Grant Agreement. The parties hereto further understand and agree that USTDA, in reserving any or all of the foregoing approval rights, has acted solely as a financing entity to assure the proper use of United States Government funds, and that any decision by USTDA to exercise or refrain from exercising these approval rights shall be made as a financier in the course of funding the Study and shall not be construed as making USTDA a party to the contract. The parties hereto understand and agree that USTDA may, from time to time, exercise the foregoing approval rights, or discuss matters related to these rights and the Project with the parties to the contract or any subcontract, jointly or separately, without thereby incurring any responsibility or liability to such parties. Any approval or failure to approve by USTDA shall not bar the Grantee or USTDA from asserting any right they might have against the

To: Tamer Nassar  
Energy Allied Egypt LLC  
5 Adeeb Ishak Street  
2<sup>nd</sup> Floor,  
Raml Station, Alexandria 21111  
Egypt

Phone: +20 3 480 0655  
Fax: +20 3 480 0717

To: U.S. Trade and Development Agency  
1000 Wilson Boulevard, Suite 1600  
Arlington, Virginia 22209-3901  
USA

Phone: (703) 875-4357  
Fax: (703) 875-4009

All such communications shall be in English, unless the parties otherwise agree in writing. In addition, the Grantee shall provide the Commercial Section of the U.S. Embassy in Host Country with a copy of each communication sent to USTDA.

Any communication relating to this Grant Agreement shall include the following fiscal data:

Appropriation No.: 11 11/12 1001  
Activity No.: 2011-21030A  
Reservation No.: 2011252  
Grant No.: GH201121252

#### **18. Termination Clause**

Either party may terminate the Grant Agreement by giving the other party thirty (30) days advance written notice. The termination of the Grant Agreement will end any obligations of the parties to provide financial or other resources for the Study, except for payments which they are committed to make pursuant to noncancellable commitments entered into with third parties prior to the written notice of termination.

**19. Non-waiver of Rights and Remedies**

No delay in exercising any right or remedy accruing to either party in connection with the Grant Agreement shall be construed as a waiver of such right or remedy.

**20. U.S. Technology and Equipment**

By funding this Study, USTDA seeks to promote the project objectives of the Host Country through the use of U.S. technology, goods, and services. In recognition of this purpose, the Grantee agrees that it will allow U.S. suppliers to compete in the procurement of technology, goods and services needed for Project implementation.

**[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]**

IN WITNESS WHEREOF, the Government of the United States of America and Energy Allied Egypt LLC, each acting through its duly authorized representative, have caused this Agreement to be signed in the English language in their names and delivered as of the day and year written below. In the event that this Grant Agreement is signed in more than one language, the English language version shall govern.

**For the Government of the  
United States of America**

By: Chris H. Wyatt

Date: 06/30/11

Witnessed:

By: Heather Lanig

**For Energy Allied Egypt LLC**

By: [Signature]

Date: June 30, 2011

Witnessed:

By: [Signature]

**Annex I -- Terms of Reference**

**Annex II -- USTDA Mandatory Clauses**

## Annex II

### USTDA Mandatory Contract Clauses

#### A. USTDA Mandatory Clauses Controlling

The parties to this contract acknowledge that this contract is funded in whole or in part by the U.S. Trade and Development Agency ("USTDA") under the Grant Agreement between the Government of the United States of America acting through USTDA and Energy Allied Egypt LLC ("Client"), dated \_\_\_\_\_ ("Grant Agreement"). The Client has selected \_\_\_\_\_ ("Contractor") to perform the feasibility study ("Study") for the EBC Biodigesters project ("Project") in Egypt ("Host Country"). Notwithstanding any other provisions of this contract, the following USTDA mandatory contract clauses shall govern. All subcontracts entered into by Contractor funded or partially funded with USTDA Grant funds shall include these USTDA mandatory contract clauses, except for clauses B(1), G, H, I, and J. In addition, in the event of any inconsistency between the Grant Agreement and any contract or subcontract thereunder, the Grant Agreement shall be controlling.

#### B. USTDA as Financier

##### (1) USTDA Approval of Contract

All contracts funded under the Grant Agreement, and any amendments thereto, including assignments and changes in the Terms of Reference, must be approved by USTDA in writing in order to be effective with respect to the expenditure of USTDA Grant funds. USTDA will not authorize the disbursement of USTDA Grant funds until the contract has been formally approved by USTDA or until the contract conforms to modifications required by USTDA during the contract review process.

##### (2) USTDA Not a Party to the Contract

It is understood by the parties that USTDA has reserved certain rights such as, but not limited to, the right to approve the terms of this contract and amendments thereto, including assignments, the selection of all contractors, the Terms of Reference, the Final Report, and any and all documents related to any contract funded under the Grant Agreement. The parties hereto further understand and agree that USTDA, in reserving any or all of the foregoing approval rights, has acted solely as a financing entity to assure the proper use of United States Government funds, and that any decision by USTDA to exercise or refrain from exercising these approval rights shall be made as a financier in the course of financing the Study and shall not be construed as making USTDA a party to the contract. The parties hereto understand and agree that USTDA may, from time to time, exercise the foregoing approval rights, or discuss matters related to these rights and the Project with the parties to the contract or any subcontract, jointly or separately, without thereby incurring any responsibility or liability to such parties. Any approval or failure to approve by USTDA shall not

bar the Client or USTDA from asserting any right they might have against the Contractor, or relieve the Contractor of any liability which the Contractor might otherwise have to the Client or USTDA.

### **C. Nationality, Source and Origin**

Except as USTDA may otherwise agree, the following provisions shall govern the delivery of goods and services funded by USTDA under the Grant Agreement: (a) for professional services, the Contractor must be either a U.S. firm or U.S. individual; (b) the Contractor may use U.S. subcontractors without limitation, but the use of subcontractors from Host Country may not exceed twenty percent (20%) of the USTDA Grant amount and may only be used for specific services from the Terms of Reference identified in the subcontract; (c) employees of U.S. Contractor or U.S. subcontractor firms responsible for professional services shall be U.S. citizens or non-U.S. citizens lawfully admitted for permanent residence in the U.S.; (d) goods purchased for performance of the Study and associated delivery services (e.g., international transportation and insurance) must have their nationality, source and origin in the United States; and (e) goods and services incidental to Study support (e.g., local lodging, food, and transportation) in Host Country are not subject to the above restrictions. USTDA will make available further details concerning these provisions upon request.

### **D. Recordkeeping and Audit**

The Contractor and subcontractors funded under the Grant Agreement shall maintain, in accordance with generally accepted accounting procedures, books, records, and other documents, sufficient to reflect properly all transactions under or in connection with the contract. These books, records, and other documents shall clearly identify and track the use and expenditure of USTDA funds, separately from other funding sources. Such books, records, and documents shall be maintained during the contract term and for a period of three (3) years after final disbursement by USTDA. The Contractor and subcontractors shall afford USTDA, or its authorized representatives, the opportunity at reasonable times for inspection and audit of such books, records, and other documentation.

### **E. U.S. Carriers**

#### **(1) Air**

Transportation by air of persons or property funded under the Grant Agreement shall be on U.S. flag carriers in accordance with the Fly America Act, 49 U.S.C. 40118, to the extent service by such carriers is available, as provided under applicable U.S. Government regulations.

#### **(2) Marine**

Transportation by sea of property funded under the Grant Agreement shall be on U.S. carriers in accordance with U.S. cargo preference law.

#### **F. Workman's Compensation Insurance**

The Contractor shall provide adequate Workman's Compensation Insurance coverage for work performed under this Contract.

#### **G. Reporting Requirements**

The Contractor shall advise USTDA by letter as to the status of the Project on March 1st annually for a period of two (2) years after completion of the Study. In addition, if at any time the Contractor receives follow-on work from the Client, the Contractor shall so notify USTDA and designate the Contractor's contact point including name, telephone, and fax number. Since this information may be made publicly available by USTDA, any information which is confidential shall be designated as such by the Contractor and provided separately to USTDA. USTDA will maintain the confidentiality of such information in accordance with applicable law.

#### **H. Disbursement Procedures**

##### **(1) USTDA Approval of Contract**

Disbursement of Grant funds will be made only after USTDA approval of this contract. To make this review in a timely fashion, USTDA must receive from either the Client or the Contractor a photocopy of an English language version of a signed contract or a final negotiated draft version to the attention of the General Counsel's office at USTDA's address listed in Clause M below.

##### **(2) Payment Schedule Requirements**

A payment schedule for disbursement of Grant funds to the Contractor shall be included in this Contract. Such payment schedule must conform to the following USTDA requirements: (1) up to twenty percent (20%) of the total USTDA Grant amount may be used as a mobilization payment; (2) all other payments, with the exception of the final payment, shall be based upon contract performance milestones; and (3) the final payment may be no less than fifteen percent (15%) of the total USTDA Grant amount, payable upon receipt by USTDA of an approved Final Report in accordance with the specifications and quantities set forth in Clause I below. Invoicing procedures for all payments are described below.

##### **(3) Contractor Invoice Requirements**

USTDA will make all disbursements of USTDA Grant funds directly to the Contractor. The Contractor must provide USTDA with an ACH Vendor Enrollment Form (available from USTDA) with the first invoice. The Client shall request disbursement of funds by

USTDA to the Contractor for performance of the contract by submitting the following to USTDA:

**(a) Contractor's Invoice**

The Contractor's invoice shall include reference to an item listed in the Contract payment schedule, the requested payment amount, and an appropriate certification by the Contractor, as follows:

(i) For a mobilization payment (if any):

"As a condition for this mobilization payment, the Contractor certifies that it will perform all work in accordance with the terms of its Contract with the Client. To the extent that the Contractor does not comply with the terms and conditions of the Contract, including the USTDA mandatory provisions contained therein, it will, upon USTDA's request, make an appropriate refund to USTDA. "

(ii) For contract performance milestone payments:

"The Contractor has performed the work described in this invoice in accordance with the terms of its contract with the Client and is entitled to payment thereunder. To the extent the Contractor has not complied with the terms and conditions of the Contract, including the USTDA mandatory provisions contained therein, it will, upon USTDA's request, make an appropriate refund to USTDA."

(iii) For final payment:

"The Contractor has performed the work described in this invoice in accordance with the terms of its contract with the Client and is entitled to payment thereunder. Specifically, the Contractor has submitted the Final Report to the Client, as required by the Contract, and received the Client's approval of the Final Report. To the extent the Contractor has not complied with the terms and conditions of the Contract, including the USTDA mandatory provisions contained therein, it will, upon USTDA's request, make an appropriate refund to USTDA."

**(b) Client's Approval of the Contractor's Invoice**

(i) The invoice for a mobilization payment must be approved in writing by the Client.

(ii) For contract performance milestone payments, the following certification by the Client must be provided on the invoice or separately:

"The services for which disbursement is requested by the Contractor have been performed satisfactorily, in accordance with applicable Contract provisions and the terms and conditions of the USTDA Grant Agreement."

(iii) For final payment, the following certification by the Client must be provided on the invoice or separately:

"The services for which disbursement is requested by the Contractor have been performed satisfactorily, in accordance with applicable Contract provisions and terms and conditions of the USTDA Grant Agreement. The Final Report submitted by the Contractor has been reviewed and approved by the Client. "

**(c) USTDA Address for Disbursement Requests**

Requests for disbursement shall be submitted by courier or mail to the attention of the Finance Department at USTDA's address listed in Clause M below.

**(4) Termination**

In the event that the Contract is terminated prior to completion, the Contractor will be eligible, subject to USTDA approval, for reasonable and documented costs which have been incurred in performing the Terms of Reference prior to termination, as well as reasonable wind down expenses. Reimbursement for such costs shall not exceed the total amount of undisbursed Grant funds. Likewise, in the event of such termination, USTDA is entitled to receive from the Contractor all USTDA Grant funds previously disbursed to the Contractor (including but not limited to mobilization payments) which exceed the reasonable and documented costs incurred in performing the Terms of Reference prior to termination.

**I. USTDA Final Report**

**(1) Definition**

"Final Report" shall mean the Final Report described in the attached Annex I Terms of Reference or, if no such "Final Report" is described therein, "Final Report" shall mean a substantive and comprehensive report of work performed in accordance with the attached Annex I Terms of Reference, including any documents delivered to the Client.

**(2) Final Report Submission Requirements**

The Contractor shall provide the following to USTDA:

- (a) One (1) complete version of the Final Report for USTDA's records. This version shall have been approved by the Client in writing and must be in the English language. It is the responsibility of the Contractor to ensure that confidential information, if any, contained in this version be clearly marked. USTDA will maintain the confidentiality of such information in accordance with applicable law.

and

**(b)** One (1) copy of the Final Report suitable for public distribution ("Public Version"). The Public Version shall have been approved by the Client in writing and must be in the English language. As this version will be available for public distribution, it must not contain any confidential information. If the report in (a) above contains no confidential information, it may be used as the Public Version. In any event, the Public Version must be informative and contain sufficient Project detail to be useful to prospective equipment and service providers.

and

**(c)** Two (2) CD-ROMs, each containing a complete copy of the Public Version of the Final Report. The electronic files on the CD-ROMs shall be submitted in a commonly accessible read-only format. As these CD-ROMs will be available for public distribution, they must not contain any confidential information. It is the responsibility of the Contractor to ensure that no confidential information is contained on the CD-ROMs.

The Contractor shall also provide one (1) copy of the Public Version of the Final Report to the Foreign Commercial Service Officer or the Economic Section of the U.S. Embassy in Host Country for informational purposes.

### **(3) Final Report Presentation**

All Final Reports submitted to USTDA must be paginated and include the following:

**(a)** The front cover of every Final Report shall contain the name of the Client, the name of the Contractor who prepared the report, a report title, USTDA's logo, USTDA's mailing and delivery addresses. If the complete version of the Final Report contains confidential information, the Contractor shall be responsible for labeling the front cover of that version of the Final Report with the term "Confidential Version." The Contractor shall be responsible for labeling the front cover of the Public Version of the Final Report with the term "Public Version." The front cover of every Final Report shall also contain the following disclaimer:

"This report was funded by the U.S. Trade and Development Agency (USTDA), an agency of the U. S. Government. The opinions, findings, conclusions or recommendations expressed in this document are those of the author(s) and do not necessarily represent the official position or policies of USTDA. USTDA makes no representation about, nor does it accept responsibility for, the accuracy or completeness of the information contained in this report."

**(b)** The inside front cover of every Final Report shall contain USTDA's logo, USTDA's mailing and delivery addresses, and USTDA's mission statement.

Camera-ready copy of USTDA Final Report specifications will be available from USTDA upon request.

(c) The Contractor shall affix to the front of the CD-ROM a label identifying the Host Country, USTDA Activity Number, the name of the Client, the name of the Contractor who prepared the report, a report title, and the following language:

“The Contractor certifies that this CD-ROM contains the Public Version of the Final Report and that all contents are suitable for public distribution.”

(d) The Contractor and any subcontractors that perform work pursuant to the Grant Agreement must be clearly identified in the Final Report. Business name, point of contact, address, telephone and fax numbers shall be included for Contractor and each subcontractor.

(e) The Final Report, while aiming at optimum specifications and characteristics for the Project, shall identify the availability of prospective U.S. sources of supply. Business name, point of contact, address, telephone and fax numbers shall be included for each commercial source.

(f) The Final Report shall be accompanied by a letter or other notation by the Client which states that the Client approves the Final Report. A certification by the Client to this effect provided on or with the invoice for final payment will meet this requirement.

## **J. Modifications**

All changes, modifications, assignments or amendments to this contract, including the appendices, shall be made only by written agreement by the parties hereto, subject to written USTDA approval.

## **K. Study Schedule**

### **(1) Study Completion Date**

The completion date for the Study, which is March 1, 2012, is the date by which the parties estimate that the Study will have been completed.

## **(2) Time Limitation on Disbursement of USTDA Grant Funds**

Except as USTDA may otherwise agree, (a) no USTDA funds may be disbursed under this contract for goods and services which are provided prior to the Effective Date of the Grant Agreement; and (b) all funds made available under the Grant Agreement must be disbursed within four (4) years from the Effective Date of the Grant Agreement.

## **L. Business Practices**

The Contractor agrees not to pay, promise to pay, or authorize the payment of any money or anything of value, directly or indirectly, to any person (whether a governmental official or private individual) for the purpose of illegally or improperly inducing anyone to take any action favorable to any party in connection with the Study. The Client agrees not to receive any such payment. The Contractor and the Client agree that each will require that any agent or representative hired to represent them in connection with the Study will comply with this paragraph and all laws which apply to activities and obligations of each party under this Contract, including but not limited to those laws and obligations dealing with improper payments as described above.

## **M. USTDA Address and Fiscal Data**

Any communication with USTDA regarding this Contract shall be sent to the following address and include the fiscal data listed below:

U.S. Trade and Development Agency  
1000 Wilson Boulevard, Suite 1600  
Arlington, Virginia 22209-3901  
USA

Phone: (703) 875-4357  
Fax: (703) 875-4009

### Fiscal Data:

Appropriation No.: 11 11/12 1001  
Activity No.: 2011-21030A  
Reservation No.: 2011252  
Grant No.: GH201121252

## **N. Definitions**

All capitalized terms not otherwise defined herein shall have the meaning set forth in the Grant Agreement.

## **O. Taxes**

USTDA funds provided under the Grant Agreement shall not be used to pay any taxes, tariffs, duties, fees or other levies imposed under laws in effect in Host Country. Neither the Client nor the Contractor will seek reimbursement from USTDA for such taxes, tariffs, duties, fees or other levies.

# ANNEX 5

## Annex I

### **Terms of Reference**

#### **Objective:**

A feasibility study ("Study") is required to evaluate the applicability of advanced biodigester technology in Egypt. The Study will evaluate the necessary scientific, technical, financial, operational, environmental and social components needed to implement, support, and sustain a biodigestion operation of up to ten (10) units in Egypt, at up to six (6) different sites.

The Study will provide Energy Allied Egypt LLC (EAE) (Grantee) with the necessary documentation to secure the financial support for implementing and operating multiple biodigester units in Egypt. The Study will serve as a cornerstone in the development of a comprehensive business plan, which will facilitate the creation of the Egyptian Biodigesters Company (EBC), the special project vehicle that will be responsible for the implementation of the biodigester units.

#### **Task 1 - Kick-Off Meeting and Data Review**

Within one month of contract approval, the Contractor shall conduct an in-country kick-off meeting with the Grantee to present the selected team, discuss the proposed Study methodology and gather relevant data and information. During the kick-off meeting, the Contractor shall discuss and verify all expected deliverables and schedule for the Study.

The Grantee shall provide all available and relevant data and documents to the Contractor during this kick-off meeting, including but not limited to:

- All relevant pre-feasibility assessments conducted by the Grantee;
- "Develop a Business Plan for Establishing a National Bio-Energy Center," Dr. Eid M. A. Megeed, Director of Technology Management and Commercialization Office, Agricultural Research Center, Ministry of Agriculture, Egypt;
- Agricultural Waste Data, Field Crops Research Institute, Agricultural Research Center, Ministry of Agriculture, Egypt;
- Animal Waste Data, Animal Production Research Institute, Agricultural Research Center, Ministry of Agriculture, Egypt;
- Fertilizer cost and quality data;
- Transmission system data for at least nine distribution companies;  
(<http://www.egelec.com/mysite1/annual%20report/annual%20report.htm>);
- Current and projected electric tariffs;  
([http://www.egyptera.com/en/Bill\\_Tariffs.htm](http://www.egyptera.com/en/Bill_Tariffs.htm));
- Relevant generation and transmission data from the Egyptian Electricity Holding Company (<http://www.egelec.com/mysite1/default3.htm>);
- Laws and decrees related to the power sector, including legislature-proposed drafts ([http://www.egyptera.com/en/acts\\_laws.htm](http://www.egyptera.com/en/acts_laws.htm));

- Egyptian Designated National Authority's (DNA) rules for carbon credits; and
- Any other available studies and information as needed.

The Contractor shall review these documents and any other available and relevant information related to feedstock supply, site evaluation, local regulations and system configuration.

**Deliverable:** Within four weeks of the in-country kick-off meeting, the Contractor shall prepare and deliver to the Grantee an Inception Report. In the Inception Report, the Contractor shall include the Study plan that will be utilized to develop, specify, and measure the data collection, project parameters, and desired results. The Inception Report shall be drafted in close coordination with the Grantee. The Contractor shall outline in the Inception Report specific Egyptian agricultural and energy resource issues that may be reduced or eliminated by the introduction of the Project. The Contractor shall include in the Report an index of data, in a matrix format, collected before and during the visit that is required for the remainder of the Study.

#### **Task 2 – Project Sites and Feedstock Supply Assessments**

The Contractor shall conduct Project site assessments for the six (6) proposed locations for the placement of the biodigester units in Egypt. The Contractor shall clearly identify the means to capitalize on site geographic advantages and propose measures to overcome site deficiencies in the site assessments. The pre-identified sites are:

1. Dakahlia
2. Kafr El Sheikh
3. Sharkia
4. Minya
5. Asyut
6. American University in Cairo (AUC) Campus or the Desert Development Center

The Contractor shall evaluate at least one (1) waste stream each from commercial, residential and agricultural sources for each site location. The Contractor shall select and execute the testing methodology. The Contractor shall perform a waste characterization assessment for each site that shall include, but not be limited to, the following evaluations:

- Current assessment of the volumes/tonnages of waste delivered to the sites as well as a 10-year forecast of future projections;
- Composition of the waste streams supplied (including physical and chemical composition). Analysis of six (6) different physical and chemical composition tests on each waste stream;
- Consideration and estimation of seasonal changes that could impact waste quality and composition;
- Quality of the waste and fertilizer output and energy value that can be generated by the available waste; and

- Pre-treatment capabilities, including requirements (such as sorting, recycling, drying, and shredding).

Deliverable: The Contractor shall prepare and deliver to the Grantee a Waste Characteristic Assessment Report that contains the information collected, work performed, and analysis provided under Task 2.

### **Task 3 – Preparation of Preliminary Design**

The Contractor shall prepare a preliminary biodigester unit design for each of the six (6) proposed locations. The Contractor shall base each design on the sustainable waste volume evaluated under Task 2 for each site. Each site design shall include the following elements:

- Process diagrams showing waste intake for minimum, average, and maximum cases with optimal output ratios for fertilizers and electricity (three (3) cases total). For each case, the Contractor shall also estimate the maximum production of each of the following components: liquid fertilizer, solid fertilizer and electricity;
- Technical specification for all major equipment;
- Piping and instrumentation diagrams (P&IDs) for all major systems and interfaces; and
- Electrical interconnection requirements and waste delivery and product shipment facilities.

The Contractor shall discuss the preliminary design with at least three (3) major U.S. manufacturers to make sure they are capable of providing this type of equipment to the Egyptian market.

Deliverable: The Contractor shall prepare and deliver to the Grantee a Preliminary Design Report that contains all information collected, work performed, and analysis provided under Task 3.

### **Task 4 - Economic Analysis**

The Contractor shall prepare an economic analysis of each Project site taking into consideration the waste and site data prepared in Tasks 1 and 2 and the technical characteristics developed in Task 3. The Contractor shall use these inputs in addition to, but not limited to, revenue projections generated by fertilizer sales, waste tipping fees, electrical revenues and costs of residual disposal, to develop an economic model. The Contractor shall use the economic model results to provide details of the operating results, including net operating revenues and debt service coverage.

The Contractor shall provide a list of capital costs for the Project including, but not limited to:

- Engineering, procurement and construction contracts;

- Recommended contractual arrangement (fixed price, target price, guaranteed maximum price, or other);
- Major equipment;
- Interconnections with utilities; and
- Owners' costs for development (including land costs, permitting costs, professional fees, licensing fees, and financing costs).

In addition to listing proposed non-feedstock operational costs, the Contractor shall list staffing, maintenance and repair (including long-term repair and replacement of key components), consumables (such as water, sorbants, chemicals, and catalysts), waste disposal costs, and start-up energy costs.

The Contractor shall evaluate the Project under Egyptian Designated National Authority rules, which shall be provided in the initial kick-off meeting, to determine the likelihood that the Project could generate carbon credits under the Clean Development Mechanism (CDM) program. If the probability of the Project qualifying is likely, the Contractor shall include this revenue stream in the Project economic analysis.

For all six (6) Project sites, the Contractor shall conduct a base case and sensitivity analysis related to projected changes in all external factors, including but not limited to fertilizer cost, waste cost, electricity cost, interest rates, and investment costs, which could impact the Project profitability. The Contractor shall calculate net present value and internal rate of return for all alternatives.

Deliverable: The Contractor shall prepare and deliver to the Grantee an Economic Analysis Report that contains all information collected, work performed, and analysis provided under Task 4.

#### **Task 5 – Identification of Financing Options**

The Contractor shall draft documentation with the Grantee's input, that will be used to request written expressions of interest from at least three (3) potential donors/lenders and credit agencies that will be selected by the Grantee and the Contractor for the Project. In addition, the Contractor shall verify current terms and conditions for each of the potential sources of funding that shall be identified.

Deliverable: The Contractor shall prepare and deliver to the Grantee a Financial Options Report that contains all information collected, work performed, and analysis provided under Task 5.

#### **Task 6 – Preliminary Environmental Impact Assessment**

The Contractor shall ensure all Study recommendations comply with applicable local environmental regulations and World Bank requirements as well as conditions set forth by the U.S. Export-Import Bank and the Overseas Private Investment Corporation. The Contractor shall perform a preliminary environmental impact assessment of the Project.

The preliminary environmental impact assessment shall identify anticipated impacts, both positive and negative, associated with the Project (negative impacts may include increases to pollution in the air, water, or noise); provide recommendations for maximizing positive and minimizing negative environmental impacts; and identify the steps the Grantee will need to take subsequent to the Study's completion and prior to completion of the Project to comply with local environmental requirements and those of the multilateral and bilateral lending agencies listed above.

Deliverable: The Contractor shall prepare and deliver to the Grantee a Preliminary Environmental Impact Assessment Report that contains all information collected, work performed, and analysis provided under Task 6.

### **Task 7 – Regulatory Review**

The Contractor shall identify all local permit requirements for Project implementation including environmental, land use, transportation, water, waste, and electrical interconnection. The Contractor shall meet with agencies that have jurisdiction over the Project, including, the Egyptian Environmental Affairs Agency (EEAA), the Ministry of Environment, the Ministry of Agriculture and Land Reclamation, and local electric distribution companies.

The Contractor shall evaluate the proposed Project against the requirements of Egypt's Environmental Law No. 4 of 1994, as amended in 2009.

The Contractor shall review the existing renewable and energy sector laws of Egypt, permitting requirements, local building requirements, right-of-way, and zoning ordinances that would impact Project implementation. The Contractor shall identify any potential barriers to international, including U.S. company, participation in the Project implementation. If barriers are identified, the Contractor shall provide remediation recommendations to the Grantee.

Deliverable: The Contractor shall prepare and deliver to the Grantee a Regulatory Review Report that contains all information collected, work performed, and analysis provided under Task 7.

### **Task 8 – Developmental Impact Assessment**

The Contractor shall prepare a report on the potential developmental impact of the Project in Egypt. In the report, the Contractor shall focus on what the economic and social development outcomes would be if the Project is implemented according to the Study recommendations. While specific focus should be paid to the immediate impact of the Project, the Contractor shall include additional developmental benefits deriving from the Project, including spin-off and demonstration effects. The analysis of potential benefits of the Project should be as concrete and detailed as possible. The development impact factors are intended to provide the Project's decision-makers, stakeholders, and financial institutions with a broader view of the Project's potential effects on Egypt. The

Contractor shall provide estimates of the Project's potential benefits in the following areas:

- **Infrastructure:** The Contractor shall identify the anticipated infrastructure impacts of the Project, giving a brief synopsis and concrete examples of the potential infrastructure impacts. The Contractor shall provide an analysis of the impact of implementing up to ten (10) biodigester units in up to six (6) different sites.
- **Market-Oriented Reform:** The Contractor shall provide a description of any regulations, laws, standards or institutional changes that would be recommended pursuant to these Terms of References and the effect they would have if implemented.
- **Human Capacity Building:** The Contractor shall provide a description of the number and type of positions that would be needed to construct and operate the plant(s) and number of people that would be needed to procure construction materials, erect and operate the facilities. The Contractor would also provide an estimate of the number of people who would receive related training and a brief description of the types of training programs that might be applicable.
- **Technology Transfer and Productivity Enhancement:** The Contractor shall identify the anticipated advanced technology that would be utilized for the Project. The Contractor shall also identify anticipated efficiencies that would be gained as a result of the Project.
- **Other:** The Contractor shall identify any other anticipated development impacts or benefits to the Project, including spin-off or demonstration effects.

**Deliverable:** The Contractor shall prepare and deliver to the Grantee a Development Impact Analysis Report that contains all information collected, work performed, and analysis provided under Task 8.

#### **Task 9 – Identification of U.S. Sources of Supply**

The Contractor shall provide a list of available U.S. sources of supply for Project implementation. The Contractor shall include business name, point of contact, address, telephone, e-mail, and fax numbers for each potential source of supply for each Project component (including equipment and services).

**Deliverable:** The Contractor shall prepare and deliver to the Grantee a U.S. Sources of Supply Report that contains all information collected, work performed, and analysis provided under Task 9.

#### **Task 10 – Implementation Plan**

The Contractor shall provide a comprehensive plan, schedule and timeline required for Project implementation at each site. The Contractor shall include in the schedule a Critical Path Analysis (CPA) and detailed implementation milestone descriptions.

Deliverable: The Contractor shall prepare and deliver to the Grantee an Implementation Plan Report that contains all information collected, work performed, and analysis provided under Task 10.

### **Task 11 – Final Report**

The Contractor shall prepare and deliver to the Grantee and USTDA a substantive and comprehensive Final Report of all work performed under these Terms of Reference (“Final Report”). The Contractor shall organize the Final Report according to the above tasks, and shall include all deliverables and documents that have been provided to the Grantee. The Contractor shall prepare the Final Report in accordance with Clause I of Annex II of the Grant Agreement.

#### **Notes:**

- (1) The Contractor is responsible for compliance with U.S. export licensing requirements, if applicable, in the performance of the Terms of Reference.**
- (2) The Contractor and the Grantee shall be careful to ensure that the public version of the Final Report contains no security or confidential information.**
- (3) The Grantee and USTDA shall have an irrevocable, worldwide, royalty-free, non-exclusive right to use and distribute the Final Report and all work product that is developed under these Terms of Reference.**

# ANNEX 6

## COMPANY INFORMATION

### A. Company Profile

Provide the information listed below relative to the Offeror's firm. If the Offeror is proposing to subcontract some of the proposed work to another firm(s), the information requested in sections E and F below must be provided for each subcontractor.

1. Name of firm and business address (street address only), including telephone and fax numbers:
2. Year established (include predecessor companies and year(s) established, if appropriate).
3. Type of ownership (e.g. public, private or closely held).
4. If private or closely held company, provide list of shareholders and the percentage of their ownership.
5. List of directors and principal officers (President, Chief Executive Officer, Vice-President(s), Secretary and Treasurer; provide full names including first, middle and last). Please place an asterisk (\*) next to the names of those principal officers who will be involved in the Feasibility Study.
6. If Offeror is a subsidiary, indicate if Offeror is a wholly-owned or partially-owned subsidiary. Provide the information requested in items 1 through 5 above for the Offeror's parent(s).

7. Project Manager's name, address, telephone number, e-mail address and fax number .

**B. Offeror's Authorized Negotiator**

Provide name, title, address, telephone number, e-mail address and fax number of the Offeror's authorized negotiator. The person cited shall be empowered to make binding commitments for the Offeror and its subcontractors, if any.

**C. Negotiation Prerequisites**

1. Discuss any current or anticipated commitments which may impact the ability of the Offeror or its subcontractors to complete the Feasibility Study as proposed and reflect such impact within the project schedule.
2. Identify any specific information which is needed from the Grantee before commencing contract negotiations.

**D. Offeror's Representations**

Please provide exceptions and/or explanations in the event that any of the following representations cannot be made:

1. Offeror is a corporation [*insert applicable type of entity if not a corporation*] duly organized, validly existing and in good standing under the laws of the State of \_\_\_\_\_ . The Offeror has all the requisite corporate power and authority to conduct its business as presently conducted, to submit this proposal, and if selected, to execute and deliver a contract to the Grantee for the performance of the Feasibility Study. The Offeror is not debarred, suspended, or to the best of its knowledge or belief, proposed for debarment, or ineligible for the award of contracts by any federal or state governmental agency or authority.

2. **The Offeror has included, with this proposal, a certified copy of its Articles of Incorporation, and a certificate of good standing issued within one month of the date of its proposal by the State of \_\_\_\_\_.** The Offeror commits to notify USTDA and the Grantee if they become aware of any change in their status in the state in which they are incorporated. USTDA retains the right to request an updated certificate of good standing.
3. Neither the Offeror nor any of its principal officers have, within the three-year period preceding this RFP, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a federal, state or local government contract or subcontract; violation of federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, violating federal or state criminal tax laws, or receiving stolen property.
4. Neither the Offeror, nor any of its principal officers, is presently indicted for, or otherwise criminally or civilly charged with, commission of any of the offenses enumerated in paragraph 3 above.
5. There are no federal or state tax liens pending against the assets, property or business of the Offeror. The Offeror, has not, within the three-year period preceding this RFP, been notified of any delinquent federal or state taxes in an amount that exceeds \$3,000 for which the liability remains unsatisfied. Taxes are considered delinquent if (a) the tax liability has been fully determined, with no pending administrative or judicial appeals; and (b) a taxpayer has failed to pay the tax liability when full payment is due and required.
6. The Offeror has not commenced a voluntary case or other proceeding seeking liquidation, reorganization or other relief with respect to itself or its debts under any bankruptcy, insolvency or other similar law. The Offeror has not had filed against it an involuntary petition under any bankruptcy, insolvency or similar law.

The selected Offeror shall notify the Grantee and USTDA if any of the representations included in its proposal are no longer true and correct at the time of its entry into a contract with the Grantee.

Signed: \_\_\_\_\_  
(Authorized Representative)

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



3. Neither the subcontractor, nor any of its principal officers, is presently indicted for, or otherwise criminally or civilly charged with, commission of any of the offenses enumerated in paragraph 2 above.
4. There are no federal or state tax liens pending against the assets, property or business of the subcontractor. The subcontractor, has not, within the three-year period preceding this RFP, been notified of any delinquent federal or state taxes in an amount that exceeds \$3,000 for which the liability remains unsatisfied. Taxes are considered delinquent if (a) the tax liability has been fully determined, with no pending administrative or judicial appeals; and (b) a taxpayer has failed to pay the tax liability when full payment is due and required.
5. The subcontractor has not commenced a voluntary case or other proceeding seeking liquidation, reorganization or other relief with respect to itself or its debts under any bankruptcy, insolvency or other similar law. The subcontractor has not had filed against it an involuntary petition under any bankruptcy, insolvency or similar law.

The selected subcontractor shall notify the Offeror, Grantee and USTDA if any of the representations included in this proposal are no longer true and correct at the time of the Offeror's entry into a contract with the Grantee.

Signed: \_\_\_\_\_  
(Authorized Representative)

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_