

Ref: BUS 2009/NDBMP/IDCOL

Date: 27 January, 2010

Dear Sir/Madam,

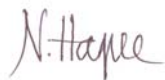
Infrastructure Development Company Limited (IDCOL) is implementing National Domestic Biogas and Manure Programme (NDBMP) with support Netherlands Development Organization (SNV) and KfW-German Development Bank. Under this programme a total of 37,269 biogas plants will be constructed during. The overall objective of the NDBMP is to develop and disseminate domestic biogas plants in rural areas with the ultimate goal to establish a sustainable and commercial biogas sector in Bangladesh. Till January 2010, about 10,100 biogas plants have been constructed by the partner organization.

IDCOL wants to conduct a biogas users' survey through an Independent Consulting firm to assess various impacts of biogas IDCOL have been informed that your organization works on such types of studies.

We have Terms of Reference (TOR) for conducting Biogas Users' Survey 2009 under National Domestic Biogas and Manure Programme (NDBMP) is attached herewith. You are kindly requested to submit proposal by **February 25, 2010** during office hour. For any information you are requested to contact with the undersigned.

We are looking forward to hearing from you soon.

Best regards,



Nazmul Haque Faisal
Senior Programme Manager, NDBMP
Contact: 9143157 (Ex-33), 01912-056989

Terms of Reference

For

Biogas Users' Survey 2009

1. Background

Bangladesh remains an agrarian country and because of increasing population growth, the amount of per capita cultivable land is shrinking very fast. Bangladesh has been facing a severe power crisis for about a decade and the power generation is almost entirely dependent on natural gas about 84.5% of total electricity generation installed capacity. The Renewable Energy policy of Bangladesh published in 2008, stated that renewable energy could play a vital role for the provision of the rural energy supplies.

There are indications that consumption of biomass energy has already exceeded the regenerative limit and there prevails energy crisis in the rural areas of Bangladesh. Because of energy shortage, more and more agricultural residues and animal dung are being used as fuel depriving the soil of organic matter and essential micronutrients. As a result, soil fertility is declining and the farmers are becoming more and more dependent on chemical fertilizer. Moreover, use of biomass, as fuel in traditional stoves, is responsible for in-door air pollution causing health hazards to the users. It is apprehended that, with the population growth, the energy crisis, environmental degradation, indoor air pollution-related diseases, deforestation, declining of soil fertility, use of chemical fertilizer and declining of agricultural yield will sharpen further if things move as usual and no alternative measures are undertaken. Biogas offers a sustainable solution, at least in part, to all these problems. The technology is simple, proven and acceptable to the common people. Raw materials are available easily and cheaply in the rural areas. It is economic and affordable.

Considering the above scenario Infrastructure Development Company Limited (IDCOL) with the support of Netherlands Development Organisation (SNV) had started National Domestic Biogas and Manure Programme (NDBMP) in Bangladesh from 2006 and later KfW also joined the programme from mid 2009. Some 10,000 domestic biogas plants have been installed by the end of 2009 under the NDBMP. The programme aims to construct 37,269 high quality domestic biogas plants by the end of 2012 across the country through the partner organisations.

The success of a programme cannot be judged merely by quantitative figures of biogas plants, but the functioning of the installed plants is very crucial as well as important. On the other hand, various direct and indirect but important benefits enjoyed by the users of biogas technology may be taken into consideration. It is imperative to know how far the users of biogas, who are the ultimate beneficiary of the programme, have derived benefit from their plants and the programme as a whole and to what extent they are satisfied with the technology. It is equally important to assess socio-economic impact brought about by this technology. Thus, in order to obtain necessary feedbacks about the technology, it is essential to monitor both the technology and its impact on user satisfaction by conducting appropriate and detailed surveys at regular intervals.

From the initiation of the programme NDBMP has been conducting annual Biogas Users Survey to assess various impacts of biogas as well as to find out the effect of biogas on users. The Biogas Users Survey is one of the ways to keep in connection with the reality on household level and will generate the finding and suggestions that can be used for the improvement of the programme deliveries. This will be the third survey under NDBMP to assess various impacts of biogas as well as to find out the effect of biogas on health, agriculture, climate change and workload of women and children. The findings as well as recommendations of the survey report will be instrumental for further improvements in the programme deliveries. For this purpose, NDBMP aims to select suitable consultant for the conduction of the Biogas Users' Survey for the year 2009.

2. Objectives

2.1 General Objective

The main objective of the Biogas Users' Survey is to make a comprehensive assessment of the impacts of the biogas plants installed so far on energy, health & sanitation, and agricultural systems as well as technical, socio-economic, environmental and gender concerns. In addition to local impacts, the survey also should provide information to evaluate the global environmental impacts of biogas plants.

2.2 Specific Objectives

The specific objectives will be to assess and analyse following aspects of biogas:

a. Impact on Health and Sanitation

Biogas reduces exposure to smoke and significantly improves air quality inside kitchen and also owing to the fact that biogas plant owners may chose to construct sanitary toilets, the survey should focus on the following health related issues:

- Status of toilets, toilets used and toilet attached biogas plant
- Exposure to indoor air pollution and reduction of smoke in the kitchen due to biogas
- Respiratory and eye infection
- Mosquito induced diseases and nuisance
- Fire/burning accidents, general physical condition (stress, free time, time for feeding etc) among women, men and children

b. Impact on Socio-economic Conditions

As biogas reduces fuel expenses for cooking and lighting and also saves significant time spent in collecting fuel wood and dung cakes, this has economic and social implications. Following issues having socio-economic implications should be focused in the survey:

- Time and money saved through different household and biogas related activities

- Use of the saved time in different income generating activities
- Changes in income and access to the natural resources
- Employment generation
- Determination of economic level of biogas owners as compared to the non-users
- Financing source for biogas plants
- Educational status of the user

c. Information on Biogas Plants

Following biogas plant related information should be assessed:

- Instruction on operation as provided by the Construction Partner Organizations (POs)
- Operation and maintenance of the biogas plant including trainings
- After- construction-services provided by the POs
- Plant operation rate, problem and maintenance cost
- Major problems faced by the users
- Dung availability per day and burning hours of biogas stove
- Functioning biogas plant
- Plants financed by financial institutions or cash
- Dealing with financial institutions; how difficult/easy?
- Other organizations supporting biogas

d. Users' Satisfaction and Perception

Perceptions of the biogas users with regards to the following relevant issues should be assessed:

- Their awareness, requirements and suggestions for possible improvement
- Operation and maintenance training received by them
- Means of communication on biogas
- Satisfaction/ dissatisfaction
- Sources of biogas information
- Repair and maintenance
- Family member responsible for contacting the PO
- Time and types of services provided by the PO

e. Impacts on Gender

Since biogas provides direct benefit to rural women especially, as a result of the reduction of workload, following gender related issues should be assessed:

- Women's participation in decision making process
- Construction, operation, maintenance and management of biogas plant
- Ability of women to contact the PO for services/repairs
- Technical know-how of either men or women
- Benefits derived by the women and children from the installation of biogas plant

- Health and workload change before and after biogas installation
- Enrollment of girls in schools
- Income generation and productive work
- Women's involvement in social works
- Time involvement of women vis-à-vis men in household chores like cooking, feeding, fuel wood collection, operation of biogas plant, etc.

f. Agriculture Impacts

The prime source of raw material for biogas is the dung of livestock and poultry litters and the digested slurry is considered a high quality manure. Impacts of biogas on major components of the Bangladeshi farming systems, viz. crop production and fish culture, should be assessed by considering following issues;

- Cattle population, grazing method (openly grazed /stall fed), shed management, animal health, fodder management etc
- Changes in the above practices after the installation of biogas
- Quantity of dung produced each day and its utilization in the biogas (loading rate), dung patties for burning purposes and manure for composting purpose
- Changes in the composting practices such as piling up the manure, turning the decomposing materials for aeration, pit size, pit management and duration of bio slurry storage in the pit
- Bio slurry use pattern and their effectiveness on crop growth and yield, soil fertility and ultimately the farm income
- Pond condition (Size, seasonal or annual) and its utilization
- Status of fish feeding and use of bio-slurry as fish feed
- Effectiveness of bio-slurry on fish growth, yield and farm income

g. Energy, Emission Reduction and Environmental Impacts

Biogas reduces the pressure on forests and alleviates deforestation as an average family size of biogas plant is considered to save more than 1.5 tons of fuel wood per annum. The digested slurry is an excellent source of organic manure that can significantly improve soil fertility and crop productivity. Besides, biogas can significantly reduce the level of Green House Gases emission in the environment. While assessing the energy and environmental benefit, major focus should be given on the following issues:

- Household daily utilization of fire wood (quantity and quality of saving firewood), agriculture residues, animal dung, kerosene, LPG for cooking and type of stoves
- Changes in the above practices after the installation of biogas
- Daily gas production and consumption
- Local (household) environmental condition before and after the installation of biogas and its impact on local environment

3. Approaches and Methodology

The Consultant should mention the detailed approaches and methodology for carrying out this study. But methodology shall include the team composition, desk study, review of all the relevant literature related to user's survey and the statistical process to select the samples. Based upon the review of the literatures, the consultant shall formulate the tools of data collection such as structured questionnaire, checklists for focus group discussions, observation sheets etc, including quantitative and qualitative outputs planned through these surveys, and areas of operation which shall be finalized in agreement with NDBMP/IDCOL.

It is aimed to have a minimum sample size of total 500 biogas households which shall be distributed year wise from 2007 onwards and, if possible, in different socio-cultural settings so that proper representation will be possible.

Random sampling shall be done based on NDBMP database representing various sizes both cow dung and poultry litters plants. Based upon the database available from NDBMP, the consultant shall prepare a detailed list of randomly selected 500 households.

The consultant shall organize an intensive training for the members of field survey team prior to the pre-testing of questionnaire and field mobilization. The consultant shall prepare a detailed programme regarding the mobilization of survey team for field studies and will submit a copy to NDBMP/IDCOL to enable it to monitor the activity in the field.

4. Expected Output

- Inception Report within 3 weeks of signing the contract
- Draft Report within 3 weeks of completing the field survey
- Final Report time line

5. Work Schedule

The project will be implemented tentatively from 15 March 2010 to 30 June, 2010. The consultant shall elaborate detail work schedule to be carried out for implementation of the proposed programme. But the actual time will be determined after the agreement between IDCOL and the Consultant.

6. Team Composition

The team should be composed of ;

- Socio-Economist having more than 10 years experience in the relevant field preferably in renewable energy sector who works as a Team Leader
- Gender Expert having at least 5 years professional experience
- Agriculturist having at least 5 years of professional experiences
- Energy and Environment Expert having extensive knowledge and more than 5 years experience in the renewable energy sector preferably in biogas sector,

- Statistician having more than 5 years experience in similar studies

The Consultant shall submit the name(s) of the required human resources to be assigned for execution of the proposed project. The detailed CVs of the experts to be involved for conducting this study must be submitted with their original signature and their commitment to provide the full time for this study.

7. Submission of Proposal

The proposal shall comprise of two parts: technical and financial. Both parts should be submitted to IDCOL in separate sealed envelopes. The technical proposal should contain a clear description of the objectives, working methodology, activities, expected major output and a report layout, the CVs of the persons clearly indicating the job title and responsibilities of each individual to be assigned in the study. In addition to these, company profile including past experience of working in biogas, surveys, financial and technical capability of the consultant, organizational structure etc. should also be clearly reflected by the consultant.

In financial proposal, detail break down of the financial estimate such as cost of the experts, field, stationery, photo copies etc. need to be submitted by the consultant.

The best two/three technical proposals will be selected and the corresponding financial proposal will be opened. Based on the evaluation, IDCOL will select the one of best proposals of the consultant and award the work.

8. Terms of Payment

Payment will be made according to the following schedule:

- 20% after signing of the contract agreement
- 40% after submission of inception report & acceptance by IDCOL
- 20% after submission of the draft report & acceptance by IDCOL
- 20% after submission and acceptance of the final report by IDCOL

9. Duties and Taxes

The consultant will be responsible to pay all tariffs, duties, other taxes or charges levied by the GoB at any stage during the execution of the work which will be deducted at source by IDCOL.

10 . Reporting

The consultant should submit reports in three stages of the study:

10.1 Inception Report

Before proceeding to the fieldwork, the Consultant shall submit *two copies* of inception report containing information collected from desk study and the detailed work plan. The Consultant shall discuss with IDCOL prior to preparing the report, which contains details for the proposed work including the methodology.

10.2. Draft Report

Incorporating all the details of the study carefully reviewed, calculated with necessary analysis to provide insight in the issues of the specific objectives, , *three copies* of the draft report shall be prepared and submitted to IDCOL as per the given time schedule.

The data from the fieldwork will be carefully reviewed, calculated with necessary analysis to provide insight in the issues of the specific objectives of the survey.

10.3. Final Report

After submission of the draft report, the Consultant shall organize a consultative workshop to present the findings of the study among the stakeholders and to get comments and suggestions, in consultation with IDCOL. In the final report, the Consultant should clearly mention the methodology, output of the study and recommendations based on the study by incorporating the comments and suggestions received from the stakeholders. *Five copies* of final report and an electronic copy (in CD word and excel files) must be submitted to IDCOL including an executive summary in Bangla. The reports must be prepared and performed in a professional way by adhering to strict quality standards.

11. Delays

In the event of failure to comply with the completion period, the consultant will have to request IDCOL for extension giving reasonable cause for such delays. If IDCOL does not find the causes reasonable, the consultant will have to pay penalty at rate of 2% of the total contract value of the order for each week's delay up to first three weeks. If the delay is more than three weeks, IDCOL shall have right to terminate the contract.

12. Force Majeure

In case of force majeure, the consultant is entitled to an extension of the completion time. Force majeure is understood to be natural disasters, fires strikes, Lockout sabotage, breakdowns and accidents of all kinds, war to like conditions, riot, and civil commotion or due to circumstances beyond the control of consultant. Apart from an extension of the time of completion, force majeure does not entitle the consultant to any compensation for damage or loss suffered.

13. Termination of Contract

In the event that work progress or quality is not satisfactory, IDCOL shall have the right of withdrawing the contract partly or wholly. Justification for such action will be provided in writing. The portion of the contract value that has not been paid when such action is taken will be retained in IDCOL as liquidated damages.

14. Acceptance of Proposal

All rights are reserved with IDCOL either to approve or disapprove the proposal without giving any reasons whatsoever. If needed, the Consultant will be asked for modifications in the proposal before approval.

15. Comments on ToR

The Consultant can comments on the ToR, provide the suggestions and improve the proposal accordingly without making any material change.

Basis for Evaluation of the proposals

The following will be the marking of the technical and financial proposals.

- A. Technical Proposal 80%
- B. Financial Proposal 20%

A. Technical Proposal

One hundred marks are considered as total mark for Technical Proposal. The basis for the evaluation of the technical proposals will be as mentioned below.

- 1. Experience of firm10**
 - 1.1 Relevant areas of works of the firm.....3
 - 1.2 General Experience of firm2
 - 1.3 Experience of firms particularly on purposed task.....5

- 2. Methodology to carry out the proposed tasks and effectiveness.....40**
 - 2.1 Methodology to carry out the tasks.....30
 - 2.2 Innovative approaches and sincerity for tasks.....5
 - 2.3 Manning and work schedule.....5

- 3. Composition of team proposed studies.....40**
 - 3.1 Qualification of the personnel15
 - 3.2 General Experiences of the personnel5
 - 3.3 Experiences of the personnel in similar tasks.....20

Only those firms whose marks of the technical proposal are above 60% would be called for making a presentation.

- 4. Presentation..... 10**
 - 4.1 Clarity about the TOR.....5
 - 4.2 Commitment from the team members5

Total 100

B. Financial Proposal

Only the financial proposal of those consultants who have been qualified for presentation will be evaluated. The financial proposal of non qualified consultants will be returned.