

# **REQUEST FOR EXPRESSIONS OF INTEREST**

## **(CONSULTING SERVICE SELECTION)**

### **KINGDOM OF CAMBODIA**

#### **Ministry of Agriculture, Forestry and Fisheries**

#### **Project for Agricultural Development and Economic Empowerment**

Loan No. I-870-KH & Grant No. I-DSF-8101-KH

1. The Royal Government of Cambodia has received Loan and Grant Proceeds of SDR 11.30 million each, as in total SDR 22.60 million (equivalent to approximately USD 17.50 million each, as in total USD 35.00 million) from the International Fund for Agricultural Development (IFAD) for the Project for Agricultural Development and Economic Empowerment (PADEE) and intends to apply part of the proceeds of the grant/fund for consulting services.
2. The National Biodigester Programme (NBP) is appointed under this Loan to implement a pro-poor biodigester project in five selected province with financial support from IFAD-PADEE through the Netherlands Development Organization (SNV).
3. The Ministry of Agriculture, Forestry and Fisheries (MAFF), Project Support Unit (PSU), National Biodigester Programme (NBP) and SNV are seeking to recruit a qualified consultant/firm to carry out a baseline and feasibility study on the technical and financial viability of a pro-poor biodigester project within the selected provinces.
4. The survey will target households that have at least 10 kg of cattle, buffalo or pig manure daily available for feeding a small biodigester. The specific objectives of the study are:
  - a. Determine the rural household conditions on fuelwood use, fuel, manure management practices, health and labour conditions;
  - b. Fact finding on social economic conditions of households in project areas;
  - c. Willingness and ability to invest in a small biodigester;
  - d. Assessment of demand and obstacles to pro-poor biodigester adoption.The main data collection tool will be a household survey amongst 100 randomly selected households.
5. The successful expert(s) shall have the following qualifications and experience:
  - Good knowledge of the Cambodian agricultural sector and rural energy provision;
  - Good knowledge of rural conditions and animal husbandry practices;

- Academic background in a related field;
  - At least 2-3 years related work experiences;
  - Extensive knowledge in reporting, analysis and assessments (i.e. developing tools, sampling, data collection and analysis);
  - Fluency in English and Khmer;
  - Flexible attitude;
  - Ability to go to provinces and manage the data collection.
6. The MAFF PSU, NBP and SNV invite expressions of interest from qualified and experienced expert(s) to undertake the above-mentioned services. The expert(s) shall be selected in accordance with the procedures set out in the RGC's Procurement Manual (PM) updated May 2012 and in consistent with IFAD Procurement Guideline.
- Candidates may obtain copies of the detailed Terms of Reference (in English) for the assignment from the address below during office hours (8:00-12:00 and 13:30-17:30), Monday to Friday, or by downloading from <http://asia.ifad.org/web/cambodia/resources>
7. Interested expert(s) in submitting their expressions of interest must provide copy of their updated curriculum vitae (CV), indicating personal and technical skills, academic qualifications, experience in similar assignments, and names of at least three (3) referees with contact information (e-mail address, skype or telephone numbers).
8. Proposals must be sent to the address or email below at or before 5pm, June 6, 2013:

**National Biodigester Programme (NBP)**  
**Department of Animal Production and Health (DAPH)**  
Street 371, Khan Meanchey, Phnom Penh  
Phnom Penh, or by email to: [admin@nbp.org.kh](mailto:admin@nbp.org.kh)  
Website: [www.nbp.org.kh](http://www.nbp.org.kh)



## **National Biodigester Programme Cambodia**

### **Terms of References for Baseline and pro-poor biodigester feasibility study**

The National Biodigester Programme (NBP) has obtained financial support from IFAD-PADEE through the Netherlands Development Organization (SNV) to implement a pro-poor biodigester project in five selected provinces starting from February 2013 till December 2015.

#### **1. Objective**

The survey will target households that have at least 10 kg of cattle, buffalo or pig manure daily available for feeding a small biodigester. The principal objective is to assess the potential of a pro-poor biodigester project amongst the target group taking into account their specific socio-economic conditions and constraints to biodigester adoption.

##### **1.1 Specific objective**

- a) Determine the rural household conditions on fuel wood use, fuel, manure management practices, health and labour conditions;
- b) Fact finding on social economic conditions of households in project areas;
- c) Willingness and ability to invest in a small biodigester;
- d) Assessment of demand and obstacles to pro-poor biodigester adoption.
- e) The main data collection tool will be a household survey amongst 100 selected households.

#### **2. Methodology**

After awarding the contract, the consultant/firm will start with a desk study including relevant programme documents, information on biogas and animal husbandry in Cambodia and similar NBP feasibility study done in 2004 and the WWF/CRDT biodigester feasibility study executed by GERES in 2010.

Based on the desk study, the consultant will develop data-collection tools, such as structured questionnaires for households, check-lists, observation sheets etc.

The consultant will test the (draft) data-collection tools during a field-testing exercise with the principal resource persons of NBP. Prior to the survey, the consultant will conduct an intensive training for all members of the Field Survey Team in cooperation with NBP and SNV. The basic methodology is as follows:

1. Farmer survey in 5 provinces, consisting 33 districts and 246 communes of Kandal, Svay Rieng, Takeo, Kampot and Prey Veng amongst 4 PADEE Improved group Revolving Fund (IGRF) groups in each province. In each IGRF 4 randomly selected households and the group leader shall be interviewed. The total sample is 80 households and 20 IGRF group leaders.

2. The sampling method is cluster sampling, where clusters are randomly selected IGRF groups (4 in each province) and the primary sampling units are households participating in the IGRF group with at least 10 kg manure at daily basis and the group leader of the respective group.
3. In each province, a representative cross-section of at least 8 of the selected farmers (2 per IGRF group) will be requested to gather the amount of manure excreted at the stable/house during one day under normal conditions (i.e. as per common practice); the manure test. It will be ensured that at least 4 measurement samples of each animal category are obtained (hybrid cow, indigenous cow, pig sow, pig fattening and buffalo)
4. Baseline fuel consumption of all households. A kitchen performance test (KPT) will be executed at the households that were selected for the manure test, entailing a 24 hours fuel measurement campaign.
5. Pictures of farms, houses, animals, and stables

### **3. Survey Topics**

#### ***IGRF group composition (group leader interview)***

- Number of households in PADEE poverty group 1,2 and 3;
- Number of households and number of animals per hh (hybrid cows, indigenous cows, pigs or buffaloes) by poverty category in the IGRF group;
- Estimated number of households with at least 10 kg of manure (ex-ante as per group leader impression and ex-post calculated based on the manure test results);
- Biogas awareness amongst group members as per team leader impression;
- Biodigester investment potential as per team leader impression;
- Does the team leader think that biogas is a good use of the IGRF loan?

#### ***Socio-economic conditions***

- Family composition, income, expense, jobs, agricultural activities, type of house and land ownership.
- Credit facilities available in the village, use of credit or/and other banking services, farmer incurring debt.
- Intended use of PADEE loan and household business plan
- Poor ID card provided/withdraw and PADEE poverty category.

#### ***Livestock composition***

- Species (cow, indigenous cow, type of pig (sow, fattening, piglet, boar, other), buffalo, number, age category (youngster, adult) and sex.
- Animal husbandry system, reasons for keeping animals
- Description of pig farming system, annual cycles, type of pigs owned, selling weight
- Livestock housing conditions; cattle (hybrid and indigenous), pig and buffalo stabling hours, seasonality, condition of stable and pigsty.
- Average number of animals on a yearly basis, future, now, 1 year ago, 5 years ago. Reasons for increase/decrease in animal numbers (i.e. tractor, no labour etc)
- Average animal weight, daily feed nature, including fuel used for preparation.

#### ***Organic Manure management***

- Manure management assessed as per IPCC 2006 guidelines chapter 4 volume 10 including seasonality by type of animal;

- Amount of manure collectable by type of animal and calculated amount produced (where it can be assumed that the ratio of time spent in the field is the ratio of manure excreted in the field) (as per manure test) including seasonal variations;
- Share of manure used as fertilizer and/or other uses..
- Hours per day spent on manure management, by whom.

### ***Energy use for cooking***

- Daily, seasonal and yearly use of cooking fuels for human food cooking and water boiling (household averages, person equivalent averages, averages by provinces).
- Stove type, efficiency and quality.
- Availability and origin of firewood and charcoal, who collects and/or buys, time consumption for gathering, use and cleaning of kitchen utilities.
- NRB indicators (changes in fuel costs, difficulty of collecting wood, increase in distance/frequency, now, 1 year ago and 5 years ago and adaptation strategies (i.e. switch to lower quality fuels/wood, switch to buying fuels, biogas)
- Estimation of fuel wood displacement potential by biogas by taking into account amount of manure collectable, baselines and biogas stove efficiency presented in a histogram

### ***Other energy use***

- Energy for lighting (kerosene, other), daily and yearly use, origin, cost,
- Fuel used for animal feed preparation (daily, seasonal, by animal type and yearly amounts),
- Fuel used to ward off insects at night from the animal stable

### ***Health of the family members***

- Use of latrine, type, how many persons
- Cooking conditions, ventilation of kitchen (level of indoor air-pollution)
- Common illnesses, eye and respiratory diseases, parasites related to fuel use and sanitation
- Water source and quality

### ***Sustainable development indicators***

- Quality and sufficiency of lighting in the evening and at night
- Gender balance in the daily chores (fuel wood collecting, animal husbandry, cooking, cleaning of utensils)
- Expenditure on fuels and chemical fertilizers, absolute and relative to income
- Schooling and constraints to schooling related to daily chores

### ***Market potential***

- Biogas awareness and interest
- Potential for biogas: number of households that have 10 kg of manure, 15 kg, 20 kg, 25 kg, 30 kg, 35 and 40 kg or more amongst the PADEE beneficiaries in the 5 targeted provinces
- Market potential based on number of households that can and are willing and able to invest \$300, \$250, \$200, \$150, \$100 and/or are willing to take up loans for a biodigester without latrine and compost hut
- Willingness and ability to spend \$50 extra for a biodigester connected latrine and compost hut

- Willingness to use IGRF loan for biodigester investment and otherwise against current MFI biodigester credit conditions
- Rankling of perceived benefits of biogas
- Perceived obstacles to investing in a biodigester

### **Other**

- Amount and type of chemical fertilizers (including N content and total N application (kg total and kg/are)
- Which extension services are in contact with the family (health, nutrition, animal husbandry, agriculture), frequency of visits and quality
- Identification of other and related livelihood improvement measures that could be included in a biodigester package (improved cook stove, solar lantern, latrine, compost hut)

The questionnaires used in the survey will be submitted to NBP for approval before the start of the field work.

## **4. Work schedule**

Tentatively, the survey will be implemented from 15 June to 1 August, for a period of 6 weeks, including ~ 2 weeks for the preparatory works, ~2 weeks for the Field Survey and ~ 2 weeks for data processing and formulation of the draft report. The final report will be submitted within two weeks after approval of the draft report by the NBP.

## **5. Deliverables**

### **5.1 Inception report**

Prior to the mobilisation of the Field Survey Team, the consultant will submit for approval to the NBP an inception report. This report will incorporate:

- the main findings and observations following from the desk study;
- the final-draft data collection tools proposed and developed by the consultant;
- a detailed list of randomly selected IGRF groups, including evidences of random selection;
- a detailed work schedule for the survey;
- the proposed table of content for the draft report.

The NBP shall provide comments and suggestions on the inception report within 3 working days

### **5.2 Draft PADEE's beneficiaries technical and financial potential survey report**

The data collected from the field survey shall be checked and verified by the consultant expert team prior to processing.

The report shall include:

- approach and methodology of the study;
- review of the relevant desk-study findings;
- discussion on major findings;
- analysis of technical and financial conditions and constraints underlying biodigester adoption;
- suggestions and recommendations;

- all processed original data properly coded in excel, including proper and sound description of each column and clear and unambiguous coding of missing values.

Results of the draft report shall be discussed during a workshop in which the consultant will present the findings. The NBP shall provide comments and suggestions on the draft report within 10 working days.

### **5.3 Final survey report**

The consultant will finalise the draft report, incorporating the comments and suggestions received from the NBP, the workshop and –if necessary- other relevant and knowledgeable institutions and persons. The final report will be submitted as follows:

- Report in MS words and PDF
- Excel data sheet and if available the original SPSS data entry files
- Questionnaires in English and khmer
- Pictures, coded by household

## **6. How to Apply**

Interested consultants/firms will develop a proposal for the survey. Consultants are encouraged to suggest improvements to the ToR. The proposal shall be submitted in two sections:

Section 1, technical proposal, including:

- a tentative work schedule for the survey;
- an outline of the proposed data-collection tools;
- any suggestions for improvement of the ToR and/or the survey
- the names, CVs and responsibilities of the proposed members of the Survey Team.

Section 2, financial proposal, including:

- cost break down;
- proposed budget.

The applicants shall submit the proposal to NBP office by 6 June 2013, to

**National Biodigester Programme (NBP)**  
**Department of Animal Production and Health (DAPH)**  
Street 371, Khan Meanchey, Phnom Penh  
Phnom Penh, or by email to: [admin@nbp.org.kh](mailto:admin@nbp.org.kh)  
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