

GOLD STANDARD LOCAL STAKEHOLDER CONSULTATION REPORT

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SECTION A. PROJECT DESCRIPTION

A. 1. Project eligibility under the Gold Standard

[See Toolkit 1.2 and Toolkit Annex C]

Project title: National Biodigester Programme (NBP) Cambodia

Stakeholder report version: V7

Date of completion: 26/09/2010

Scale of the project activity (T 1.2.1)

The national Biodigester Programme is a large scale project activity

Host Country or State (T.1.2.1)

Cambodia ratified the Kyoto protocol 22 august 2002 and the date of enforcement is 16 February 2005. Therefore, Cambodia is an eligible state Voluntary Gold Standard projects¹.

Type of Project Activity (T.1.2.3)

The project party falls under the category '*Renewable energy supply*' as defined in GSv2.1_Requirements, resulting from the displacement of non renewable cooking and lighting fuels by a renewable energy supply (biogas).

Avoidance of methane emission from manure management practices in the baseline is eligible under the Gold Standard if biogas is not flared but used to meet energy services according to the GS.

Biogas from the biodigesters is used by all households for cooking and by 92% also for lighting as surveyed by the annual Biogas User Survey (BUS) of 2008². In addition, the prime objective of households to adopt a biodigester is to displace cooking and lighting fuels by biogas. They have no incentive to flare biogas.

The project activities are therefore eligible for Gold Standard Registration.

¹ <http://maindb.unfccc.int/public/country.pl?country=KH>

² BUS report 2008: [http://www.nbp.org.kh/userfiles/file/publication/9-%20BUS%20report%202008-%20Eng%20\(FINAL\).pdf](http://www.nbp.org.kh/userfiles/file/publication/9-%20BUS%20report%202008-%20Eng%20(FINAL).pdf)

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Greenhouse gases (T.1.2.4)

| GHG | | GHG eligible under the GS | GHG eligible under the UNFCCC | GHG applied for the project activities |
|------|----------------|---------------------------|-------------------------------|--|
| CO2 | Carbon dioxide | Yes | Yes | Yes |
| CH4 | Methane | Yes | Yes | Yes |
| N2O | Nitrous Oxide | yes | Yes | No ³ |
| PFCs | | No | Yes | No |
| HFCs | | No | Yes | No |
| SF6 | | No | Yes | No |

The PDD elaborates on the emission claims of the GHGs in the baseline and project scenario.

Official Development Assistance (ODA, T 1.2.5)

Cambodia is country which is part of the OECD Development Assistance Committee's ODA recipient list. The NBP is donor funded by the Government of the Netherlands through SNV. This fund source is not received under the condition, directly or indirectly, that the credits coming out of NBP are transferred to the Dutch government, the ODA declaration is attached, see Annex 5.

Project timeframe (T.1.2.6)

Applicable project cycle: Retroactive project cycle.

NBP is seeking retroactive registration as of 1st of January 2009. The credits generated between 13 March 2006 and 31st December 2008 are sold up until December 2008 to HIVOS, the remainder of the credits will be sold at a later stage to HIVOS, evidence of this is annexed to the PDD.

Credit period:

The chosen credit period by NBP is 10 years; consequently, the credit period runs from 13th of March 2006 to the 12 of March 2016. Gold Standard certification is sought for the credits from the 1-1-2009 to 12 March 2016.

Retroactive crediting: The project is operational before it will be registered under the Gold Standard. Retroactive crediting is sought for the credits generated from the 1st of Januari 2009. This is well within the limit set by the Gold Standard of two years emission claims prior Gold Standard registration.

Consider Additionality (T.1.3)

Additionality is considered in the PDD belonging to this document. In the PDD NBP demonstrated that carbon finance is a part of its business plan and that without carbon finance a budget deficient

³ However, N₂O emissions are reduced as a result of the project activities, this is not taken into account which is conservative.

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would occur as a result. Saving costs, by removing the subsidy on biodigesters is seen as undesirable as the average income of the households with the technical potential is too low to adopt the technology without subsidies. Please refer to the PDD for a comprehensive additionality assessment.

Consider sustainable development (T. 2.4)

The Gold Standard Passport and the PDD show that the NBP activities have substantial co-benefits which lead to sustainable development. The benefits are not confined to the direct beneficiary as there are significant overspill to other sectors, i.e. the skills obtained by the training of masons for biodigesters can also be used for other construction projects. Please refer to the PDD and the Gold Standard Passport for a complete overview of co-benefits and sustainable development.

DNA notification

The DNA has no objection to the NBP activities, a Lono was sent to NNP 12 September 2005, see Annex 3.

A. 2. Current project status

NBP is installing biodigesters since 13 March 2006. In total 6402 digester have been built up to 31-12-2009 in 8 provinces. The phase I target of the program is the dissemination of 18500 household sized biodigester by 2012. The next table shows the number of built biodigesters per province as of the end of 2009.

Table 1: Biodigester construction 2006 to 31-12-2009

| Province | Production completed | | | | Grand Total |
|---------------------------|----------------------|------|------|------|-------------|
| | 2006 | 2007 | 2008 | 2009 | Total |
| Cumulative | 296 | 1446 | 3786 | 6402 | |
| Annual achievement | 296 | 1150 | 2340 | 2616 | 6402 |

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SECTION B. DESIGN OF STAKEHOLDER CONSULTATION PROCESS

B. 1. Design of physical meeting(s)

i. Agenda

Meetings were held at three levels, national, provincial and at the village level. Hereunder the agenda is pasted of the national consultation workshop in 2005, the provincial meetings, the village meetings and the national workshop of 2008 and a dedicated meeting for the bio-slurry extension program.

The national consultation workshop in 2005

Schedule consultation workshop
for setting up Provincial Biogas Programme Offices
(Phnom Penh, Imperial Garden Villa & Hotel, on 6th December 2005)

| Time | Activity | Methodology | Facilitator |
|---------------|---|--|---|
| 7:30-8:00 | Registration | Fill in the template list of participants | Ms. Song Kurietha |
| 8:00-8:30 | Opening the workshop | welcome address Comments by Re-BPO Opening Speech | Mr. Kao Phal, Jan Lam and H.E Nou Mut |
| 8:30-9:00 | Introduction of the Biogas Programme and key actors | Presentation | Jan Lam and Heng Bunny |
| 9:00-10:00 | Draft Guideline for setting up Provincial Office of Biogas Programme | Presentation | Jan Lam and Heng Bunny |
| 10:00-10:05 | Questions and Answer | Open floor | All participants |
| 10:05-10:25 | Tea Break | | |
| 10:25-11:40 | Group discussion Comments, suggestions for changing and improvement to the draft guideline for setting up the provincial office of Biogas Programme (Example: Roles, Responsibility and working function) | 4 groups divided (1- Dept of AH&P and MAFF group, 2- Provincial Governor Group, 3- Provincial Director of Agriculture group, 4- Provincial Office of Animal Husbandry group) | SNV-Biogas Programme and DAHP representatives |
| 11:40-12:00 | Presentation | Group presentation 5 Minutes for each group | Group Representative |
| 12:00 - 13:30 | Lunch Break | | |
| 13:30-14:30 | Consensus | Large group discussion | Jan Lam, Suon Solthoeun |
| 14:30-15:30 | Draft planning for setting the office | Large group discussion | Jan Lam, Heng Bunny |
| 15:30-15:45 | Tea Break | | |
| 15:45- 16:00 | Questions and answers | Large group | Jan Lam and Heng Bunny |
| 16:00-16:15 | Summary of the results of the workshop | Presentation | SNV-Biogas Programme and DAHP representatives |
| 16:15-16:45 | Closing | | Biogas Programme and MAFF |

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| The provincial workshops | | | |
|---------------------------------|---|---|---|
| • Time | Session Topic | Contents | Method(s) of deliberation |
| • 08:00-09:30 | Registration and Opening ceremony | a. Registration b. Opening ceremony | |
| • 09:00-09:30 | Introduction, Workshop objectives and schedules | a. Introduction of Participants and Facilitators b. Need for the workshop c. Objectives of the workshop d. Expected Outputs e. Overview of the detailed schedule | Theoretical lectures, presentation and discussions |
| • 9:30-10:15 | Introduction to Biogas Technology | a. Biogas Technology in general b. Benefits of the technology at household, community and national levels c. Effective use of biogas and bio-slurry d. Introduction of Farmer's Friend Model of Biodigester | Theoretical lectures, presentation and discussions |
| • 10:15-10:30 | Tea Break | | |
| • 10:30-11:15 | Relevance of Biodigester Technology in Cambodia | a. Energy situation in Cambodia b. Potential of biodigester technology in Cambodia c. Biodigester technology in relation to agriculture, forest, gender, health and sanitation, environment, economy and employment (entrepreneurship development), and poverty alleviation | Group discussions, Theoretical lectures, presentation and discussions |
| • 11:15-12:15 | Installation costs and Financial Viability | a. Costs and benefits b. Benefit – Cost ratio c. Financial and Economic Analysis | Theoretical lectures, presentation and discussions |
| • 12:15-13:15 | Lunch | | |
| • 13:15-14:00 | Introduction of National Program on Biogas | a. Evolution of National Biodigester Programme in Cambodia b. Programme objectives and targets c. Progress/activities undertaken till date d. Implementation modality | Theoretical lectures, presentation and discussions |
| • 14:00- | Extension Support | a. Extension Approaches | Group discussions, |

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| | | | |
|---------------|---|--|--|
| 14:45 | Services and incentives to be provided to potential users | <ul style="list-style-type: none"> b. Extension Methods (Door to door visit – individual persuasion, use of local leaders, exhibition and demonstration, use of mass media, publications, audio-visual aids, seminar and workshops, street-drama, training and HRD) c. Technical back stopping services d. Subsidy e. User’s training f. Guarantee and after-sales-services | Theoretical lectures, presentation and discussions |
| • 14:45-15:00 | Tea Break | | |
| • 15:00-16:00 | Role of different stakeholders | <ul style="list-style-type: none"> a. Role of potential users b. Role of NBP (centre and provinces) c. Role of governmental agencies at the provincial and commune levels d. Role of non-governmental organisations e. Role of financing institutions f. Role of private companies g. Role of local leaders/local governmental bodies h. Role of media | Group discussions and presentation |
| • 16:00-16:30 | Discussion and Conclusions | | Group discussions and presentation |
| • 16:30-17:00 | Closing ceremony | | |

The village workshop

| Time | Session Topic | Contents | Method(s) of deliberation |
|-------------|---|---|--|
| 09:00-10:00 | Registration and Opening | <ul style="list-style-type: none"> c. Registration d. Opening ceremony | |
| 10:00-10:30 | Introduction, Workshop objectives and schedules | <ul style="list-style-type: none"> f. Introduction of Participants and Facilitators g. Need for the workshop h. Objectives of the workshop | Theoretical lectures, presentation and discussions |

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| | | | |
|-------------|---|---|---|
| | | <ul style="list-style-type: none"> i. Expected Outputs j. Overview of the detailed schedule | |
| 10:30-11:30 | Introduction to Biogas Technology | <ul style="list-style-type: none"> e. Biogas Technology in general f. Benefits of the technology at household and community levels g. Effective use of biogas and bio-slurry h. Introduction of Farmer's Friend Model of Biodigester | Theoretical lectures, presentation and discussions |
| 11:30-12:15 | Relevance of Biodigester Technology in the village | <ul style="list-style-type: none"> d. Energy situation in the village e. Potential of biodigester technology in the village f. Biodigester technology in relation to agriculture, forest, gender, health and sanitation, environment, economy and employment (entrepreneurship development), and poverty alleviation | Group discussions, Theoretical lectures, presentation and discussions |
| 12:15-13:15 | Lunch | | |
| 13:15-14:00 | Installation costs and Financial Viability | <ul style="list-style-type: none"> d. Installation and Operation and Maintenance Costs e. Tangible and non-tangible benefits f. Financial Analysis | Theoretical lectures, presentation and discussions |
| 14:00-14:45 | Support Services and incentives to be provided to potential users | <ul style="list-style-type: none"> g. Technical back stopping services h. Subsidy i. User's training j. Guarantee k. After-sales-services | Group discussions, Theoretical lectures, presentation and discussions |
| 14:45-15:00 | Tea Break | | |
| 15:00-15:45 | Process of Installation of biodigester | <ul style="list-style-type: none"> i. Role of PBPO j. Role of governmental agencies at the provincial and commune levels k. Role of potential users l. Ways to approach PBPO for getting support | Group discussions and presentation |

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| | | | |
|-------------|---|----------------------|---------------------------------------|
| 15:45-16:15 | Discussion – Question and Answers | | Group discussions and presentation |
| 16:15-16:45 | Registration of potential farmers | a. Filling of Form-1 | |
| 16:45-17:00 | Closing | | |

The National workshop of 2008

| Time | Activities | Facilitator/Speaker |
|------------------------|--|---|
| 7:30-7:45 | Registration | Ms. Kunthea, Kanitha |
| 7:45-8:00 | Arrival of honorable guests | |
| <i>Opening Session</i> | | |
| 8:00-8:10 | Introduction of the workshop | |
| 8:10-8:25 | Welcome Speech | Representative of SNV |
| 8:25-8:40 | Brief Report | H.E. Nou Muth Chairman of NBP Steering Committee |
| 8:40-9:00 | Opening remarks | H.E. Dr. Chan Sarun Minister of Agriculture Forestry and Fisheries |
| <i>9:00-9:20</i> | <i>Tea Break</i> | <i>Video of Biodigester Promotion</i> |
| 9:20-9:25 | Objective, expected and process of workshop | H.E. Kao Phal |
| 9:25-9:35 | Sustainable Biodigester Sector Financing | Jan Lam SNV Senior Advisor to NB |
| 9:35-10:00 | - Achievement of NBP - Benefits of Biodigester: Social- Gender, Environment, Health and economic analysis | Ms. Lam Saoleng Programme Coordinator of NBP |
| 10:00-10:25 | 1. Best practice of Animal Husbandry Link to biogas 2. Promotion and marketing by network (SVR) | Mr. Thach Ratana Director of SVR DOA and PBPO |
| 10:25-10:45 | Slurry Extension and integrating farming system (KCM) | Mr. Heng Bin Yik Director of KCM DOA and PBPO |
| 10:45-11:10 | Method of promotion and marketing by NGO CEDAC | Mr. Lang Seng Horng CEDAC |
| 11:10-11:35 | Practical bio-slurry management and integrated farming system - | Key farmer from KCM province |

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| | | |
|------------------------|--|--|
| 11:35-12:00 | Practical bio-slurry management and integrated farming system | Key Farmer From Takeo |
| <i>12:00-13:00</i> | <i>Lunch break (Provided at the hotel)</i> | |
| 13:00-15:00 | Open Forum | <ul style="list-style-type: none"> - Mr. Kao Phal, - Dr. Sar Chetra, - Jan Lam, - All Speakers |
| 15:00-15:20 | Coffee break | |
| 15:20-16:00 | The way forward: Biodigester development towards integrated farming system | Mr. Kao Phal |
| <i>Closing session</i> | | |
| 16:00-16:15 | Summary report | H.E. Kao Phal/Sar Chetra |
| 16:15-16:30 | Closing remarks | H.E. SC Chairman/Kao Phal |
| | | |

The Bioslurry workshops:

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| Time | Activities | Facilitator |
|-------------|--|--|
| 07:30-08:00 | The arrival of participant and register | PBPO Admin |
| 08:00-08:15 | 1. Opening - The overview of provincial workshop (participants, honorarium guests, respect the national anthem) | PBPO |
| 08:15-08:25 | 2. The welcome speech and brief progress report | Mr. Heng Binyik |
| 08:25-08:35 | 3. Speech of NBP representative | Mr. Kong Kea |
| 08:35-09:00 | 4. Impression speech and opening remark (steering committee) | H.E Kao Phal |
| 09:00-09:15 | Break | |
| 09:15-10:00 | 5. Presentation - Presentation on bio-slurry unit and slurry promotion activities | Mr. Kong Kea |
| 10:00-12:00 | - Presentation on the finding from participatory action research - The experience in bio-slurry utilization on vegetable, rice, fish and vermin-culture. | Mr. Chhong Sophal (CEDAC) - Ms. Prak Chhin - Mr. Ton Sophal - Mr. Chhun San - Mr. Moeun Morn |
| 12:00-13:30 | Lunch | |
| 13:30-14:45 | Small group discussion - How the institutes/stakeholders involved in bio-slurry promotion activities? - How to integrate bio-slurry promotion activities in other programmes? | PBPO |
| 13:45-14:45 | Group presentation and question | Group representative |
| 14:45-15:00 | Break | |
| 15:00-15:30 | Free forum | PBPO and NBP |
| 15:30-16:00 | Sum up the result from one day workshop and closing | NBP |

Please ensure that at least the following points are covered but feel free to add more points as needed:

- Opening of the meeting
→ *included, see agenda*
- Explanation of the project
→ *included, see agenda*
- Questions for clarification about the project
→ *included, see agenda*

- Blind SD exercise

→ *The National workshop agenda of 2008: the session of 9:35- 10:00, the provincial agenda: the session of 10:30 – 11:15 and the village workshop : 11:30-12:15, addresses sustainable development. It specifically informs and discusses interactively with the participants the biodigester program and its connection with sustainable development: (Biodigester technology in relation to agriculture, forest, gender, health and sanitation, environment, economy and employment (entrepreneurship development), and poverty alleviation). The session of 11:15-12:15 of the provincial workshop, 13:15-14:00 of the village workshop informs and discusses with the participants how poverty alleviation is achieved and how the investment can be recovered by the beneficiaries.*

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- Discussion on monitoring SD

→ *Participants will be informed of the monitoring tools developed by NBP, In specific the role of the PBPO for the quality control of the digester and the operation and the biogas user survey which is an in depth annual survey with a representative sample size.*

- Closure of the meeting

→ *included, see agenda*

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ii. Non-technical summary

Please be aware that carbon market specific terms may not be appropriate for the readers/ audience of this summary.

[See Toolkit 2.6 and Toolkit Annex J]

Carbon finance was on the agenda of the National Workshop of 2008 in Phnom Penh, see hereunder the translated introduction of the information folder send to the participants:

National Biodigester Programme (NBP) is a joint programme between the Cambodia Ministry of Agriculture Forestry and Fisheries (MAFF) and the Netherlands Development Organisation (SNV). The programme aims at the dissemination of domestic biodigesters as an indigenous, sustainable energy source through the development of a commercial, market oriented, biodigester sector in selected provinces of Cambodia. MAFF has nominated the Department of Animal Health and Production (DAHP) as the advisory and coordinating agency for the programme, the Netherlands Development Organization (SNV) provides technical assistance to the programme while the Directorate General International Cooperation (DGIS) of the Dutch Ministry of Foreign Affairs provides financial assistance in the framework of the Asia Biogas Programme.

Domestic biodigesters have not only contributed to green house gases emission reduction with an average about 6 tons CO₂ eq./year/plant, but also provide a large number of benefits including deforestation reduction (9 kg/day/family of firewood), saving from buying firewood and lighting (12\$/family/month) saving time for women in cooking, cleaning and collecting wood (2 hours/day). Also, cooking with biogas instead of firewood does not cause any indoor airpollution. Moreover, the digested dung from a biodigester is a fertilizer and helps to make the investment of a farmer economically viable.

Some 75% of the population depends on subsistence farming as their main source of income. Farming is mostly based in an integrated system combining crop production and animal husbandry. Livestock consist mostly of cattle and pigs. Biogas produced from cattle and pig manure may be one of the most appropriate alternate energy sources with an estimated technical potential of 224,000 household biodigesters in 6 southern provinces.

The programme is presently working in eight provinces, Kandal, Svay Rieng, Kampong Cham, Takeo, Kampong Speu, Kampong Chhnang, Kampot and Prey Veng. To present, the progamme has achieved over 3,800 plants, of which 2300 are built in 2008. About 50% plants are financed with the help of a special credit scheme which was introduced by PRASAC-MFI in November 2007.

The national workshop included a 1 day study tour to the Takeo Province.

The provincial workshop

The participants of the provincial workshop received, similar to the participant of the national workshop, a package of information folders and reports. The information folder, which contains the information about NBP contains all the information and is designed for participants with little or no

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background on biogas and anaerobic digestion. The table of contents of that folder is:

| | | |
|-----|---|----|
| 1. | <i>introduction of biodigester technology</i> | 3 |
| 1.1 | <i>general</i> | 3 |
| 1.2 | <i>introduction of farmer's friend model of biodigester</i> | 3 |
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The information folder contains all the information required for the participants for a complete overview of the biodigester, its socio-economic and the socio-technical setting. The complete document is pasted in annex 5.

During the village workshops and the bio-slurry extension workshops, the participants were provided leaflets and booklets with information on the technical functioning of the biodigesters, daily operation needs, energy and organic fertiliser production and the construction process with the financing options.

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iii. Invitation tracking table⁴

Of the national workshop 2008:

| No. | Name of participants | Organisations | # of confirmed | Resp. | Remark |
|-----|------------------------------|----------------------|----------------|-----------------|---------|
| 1 | H.E. Chan Sarun | MAFF | 1 | Invited by DAHP | Special |
| 2 | H.E. Nou Muth | MAFF | 1 | Invited by MAFF | Special |
| 3 | H.E. San Vanty | MAFF | 1 | Invited by MAFF | Special |
| 4 | H.E. Meas Kim Sivaro | MAFF | | Invited by MAFF | Special |
| 5 | H.E. Om Kimsear | MAFF | | Invited by MAFF | Special |
| 6 | Mr. Prak Thaveamida | MAFF | 1 | Invited by MAFF | Special |
| 7 | Mr. Kao Phal | DAHP | 1 | Invited by MAFF | Special |
| 8 | Mr. Sar Chetra | DAHP | 1 | Invited by MAFF | Special |
| 9 | Mr. Nao Thuk | FiA | 1 | Invited by MAFF | Special |
| 10 | Mr. Pen Vuth | DOA | 1 | Invited by MAFF | Special |
| 11 | Mr. So Rithikun | DOE | 1 | Invited by MAFF | Special |
| 12 | Mr. Khy Vibolotra | | 1 | Invited by MAFF | Special |
| 13 | Mr. Loy Rasmey | | 1 | Invited by MAFF | Special |
| 14 | Mr. Heng Bin Yik | KCM PBPO | 1 | Invited by MAFF | Special |
| 15 | Mr. Thach Ratana | SVR PBPO | 1 | Invited by MAFF | Special |
| 16 | Mr. Seng Soeung | KSP PBPO | 1 | Invited by MAFF | Special |
| 17 | Mr. Meng Sothy | TKO PBPO | 1 | Invited by MAFF | Special |
| 18 | Mr. Ngan Nany | KCN PBPO | 1 | Invited by MAFF | Special |
| 19 | DOA of KDL, KPT, PV, KSP,TKO | | 5 | Invited by MAFF | Special |
| 20 | | FA | 1 | Invited by MAFF | Special |
| 21 | Dr. Nov Vonika | MAFF Programme | 5 | Invited by MAFF | |
| 22 | PBPO Coordinators | | 8 | Invited by MAFF | |
| 23 | Slurry Extension | | 8 | Invited by MAFF | |
| 24 | Provincial Governors | | 8 | Invited by MAFF | Special |
| 25 | Model farmers | | 3 | Invited by MAFF | |
| 26 | | MOH | 1 | Invited by MAFF | |
| 27 | | MIME | 1 | Invited by MAFF | |
| 28 | | MOWA | 1 | Invited by MAFF | |
| 29 | | MOE | 1 | Invited by MAFF | |
| 30 | | MORD | 1 | Invited by MAFF | |
| 31 | | MOEYS | 1 | Invited by MAFF | |
| 32 | | Agriculture Universi | 5 | Invited by MAFF | |
| 33 | | CARDI | 1 | Invited by MAFF | |
| 34 | | CEDAC | 3 | Invited by NBP | |
| 35 | | FAO | 1 | Invited by NBP | |
| 36 | | GERES | 1 | Invited by NBP | |
| 37 | | GTZ | 1 | Invited by NBP | |
| 38 | | ADB | 1 | Invited by NBP | |
| 39 | | WB | 1 | Invited by NBP | |
| 40 | | UNDP | 1 | Invited by NBP | |
| 41 | | EU | 1 | Invited by NBP | |
| 42 | | WHO | 1 | Invited by NBP | |
| 43 | | WFP | 1 | Invited by NBP | |
| 44 | | DAI | 1 | Invited by NBP | |
| 45 | | CRDT | 1 | Invited by NBP | |
| 46 | | PRASAC | 1 | Invited by NBP | |
| 47 | | LWF | 1 | Invited by NBP | |
| 48 | | WWF | 1 | Invited by NBP | |
| 49 | | PDI | 2 | Invited by NBP | |
| 50 | | Srer Khmer | 1 | Invited by NBP | |
| 51 | | CelAgrid | 1 | Invited by NBP | |
| 52 | | HF-Cambodia | 1 | Invited by NBP | |
| 53 | | Media | 3 | Invited by NBP | |
| 54 | | NBP | 6 | | |
| 55 | | Total | 97 | | |

⁴ The workshop of 2005: not available, but a attendance list is available and pasted in Annex 1

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The next table shows a summary of the type of participants which attended the provincial workshop. The information is condensed resulting from the sheer number of participants, 688, annex I shows the scans of the participants lists.

1: Number of attendees of the provincial workshops

| Participated Organization | Provinces/ Date of Workshop | | | | | | | | Total |
|-------------------------------------|-----------------------------|-------------|-------------|-------------|--------------|-----------------|-------------|-----------|------------|
| | Kampong Chhm | Svay Rieng | Kandal | Takeo | Kampong Speu | Kampong Chhnang | Kam Pot | Prey Veng | |
| | 14-Feb-2006 | 16-Feb-2006 | 23-Feb-2006 | 14-Sep-2006 | 8-Dec-2006 | 12-Dec-2007 | 14-Dec-2007 | ##### | |
| NGOs | 14 | 4 | 3 | 8 | 3 | 8 | 7 | 6 | 53 |
| Banks | 2 | 0 | 1 | 1 | 1 | 3 | 11 | 4 | 23 |
| Other Departments | 5 | 0 | 5 | 4 | 5 | 2 | 0 | 1 | 22 |
| Local Authorities (Governors, CC, V | 1 | 6 | 12 | 50 | 35 | 37 | 18 | 20 | 179 |
| Department of Agriculture | 53 | 27 | 29 | 35 | 48 | 27 | 28 | 23 | 270 |
| MAFF/DAHP | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 18 |
| NBP/SNV | 1 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 21 |
| Masons | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 6 | 16 |
| Farmers | 0 | 21 | 10 | 0 | 0 | 12 | 5 | 6 | 54 |
| CEDAC Staffs | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 19 | 32 |
| Total | 80 | 68 | 70 | 103 | 97 | 93 | 87 | 90 | 688 |
| Female | 4 | 10 | 2 | 7 | 5 | 4 | 9 | 5 | 46 |
| % Female | 5% | 15% | 3% | 7% | 5% | 4% | 10% | 6% | 7% |

Hereunder a summary of the number of attendees of the villages workshops. Considering the enormous outreach of this workshop, 4831 villagers so far, it is impractical to list all the participants. The attendees are counted by the PPBO support staff who organized the workshops.

2: Number of attendees of the village workshops

Village workshop 2006-2009

| Province | Participants in Village Workshop | | | | Grand Total |
|--------------|----------------------------------|-------------|-------------|------------|-------------|
| | 2006 | 2007 | 2008 | 2009 | |
| Kg. Cham | 320 | 106 | 0 | 376 | 802 |
| Kandal | 210 | 82 | 434 | 31 | 757 |
| Svay Rieng | 250 | 142 | 284 | 0 | 676 |
| Takeo | 0 | 596 | 0 | 0 | 596 |
| Kg. Speu | 0 | 535 | 270 | 0 | 805 |
| Kg. Chhnang | 0 | 0 | 245 | 0 | 245 |
| Kam Pot | 0 | 0 | 657 | 0 | 657 |
| Prey Veng | 0 | 0 | 119 | 174 | 293 |
| Total | 780 | 1461 | 2009 | 581 | 4831 |

Village workshop in 2009

| Province | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|--------------|----------|------------|------------|------------|------------|----------|----------|----------|----------|----------|----------|----------|------------|
| Kg. Cham | 0 | 134 | 0 | 121 | 121 | | | | | | | | 376 |
| Kandal | 0 | 18 | 13 | 0 | 0 | | | | | | | | 31 |
| Svay Rieng | 0 | 0 | 0 | 0 | 0 | | | | | | | | 0 |
| Takeo | 0 | 0 | 0 | 0 | 0 | | | | | | | | 0 |
| Kg. Speu | 0 | 0 | 0 | 0 | 0 | | | | | | | | 0 |
| Kg. Chhnang | 0 | 0 | 0 | 0 | 0 | | | | | | | | 0 |
| Kam Pot | 0 | 0 | 0 | 0 | 0 | | | | | | | | 0 |
| Prey Veng | 0 | 78 | 96 | 0 | 0 | | | | | | | | 174 |
| Total | 0 | 230 | 109 | 121 | 121 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 581 |

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3. Invitations tracking table of the bio-slurry workshop

Not available. In annex I the participant list of a selected province is pasted.

Please explain how you decided that the above organisations/ individuals are relevant stakeholders to your project. Also, please discuss how your invitation methods seek to include a broad range of stakeholders (e.g. gender, age, ethnicity).

The Stakeholder meetings were organized with the following objectives:

- The strategy chosen aimed at reaching the maximum number of people with an (latent) interest in the programme, by organizing a stakeholder consultation in each of the 8 provinces targeted under phase I of NBP and a focused target group information meeting at village level. By doing this, travel distance was limited and since meetings were held in the project area, maximum identification of the participants with the projects was ensured.
- Participants:
 - At National Level:** The participants invited present a cross-section of the main organizations which have a common ground with the NBP activities. For instance, CEDAC a large NGO working with farmers, GERES, an international NGO working in the field of the environment, WWF, a Gold Standard supporter NGO, and so on.
 - At provincial level,** the participant invited consisted of a representation of organizations which are directly or indirectly affected by the project. The participants of the workshop will be those who are directly involved in the promotion and extension of biodigester technology at the provincial level in one or another way. This will include government office bearers in agriculture/livestock office, rural development office, women and veterans affairs offices, local government offices, bank/cooperatives and micro-financing institutions, farmer Interest Organisations, INGOs working in the provinces, Local NGOs, private sector companies, local masons/artesian, key community leaders, farmers and local media persons.
 - At village level,** farmers were invited with the potential for a biogas plant, for a focussed direct interaction with the potential beneficiaries. If requested, the meeting would continue face to face for a direct interaction with the farmer and the representative of the PBPO (Provincial Biodigester Programme Office).
 - The bio-slurry workshops:** These workshops were organised with the specific aim to promote the use of bio-slurry for sustainable farming to save costs and to reduce the reliance on chemical fertilizers. The participants were, lead farmers, farmers interest groups, agricultural NGOs with a extension component, Government agricultural extension agencies, village leaders. For a list of organisation please refer to page 31.
- **Representation:** The combination of the sheer number of participants of the national, provincial and village workshops, the mix of organizations with a common ground with the NBP activities ensured representativeness.
- **Cooperation:** Relevant local operating Stakeholder/organizations were invited, as they know the field, the farmers and the local conditions, in addition, farmers were present during the provincial workshops and a farmer was a speaker during the national workshop of 2008.
- **Representation of the organizational structure in the provinces:** Ensured was that a representation of the district counsels were invited and in some case also the commune counsels.

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- Range: Female participation was around 7% of the provincial workshops and 9% in the bio-slurry workshops. Race and ethnicity are not relevant as the Cambodia population is quite homogeneous, especially in the targeted provinces by NBP.

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iv. Text of individual invitations

[See Toolkit 2.6 and Toolkit Annex J]

Of the national workshop of 2005:

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SNV- Cambodia / Biodigester Programme

To: **Mr. Sanvanty**, Deputy Director General, MAFF
#200 Preah Norodom Blvd,
Tonlebasac, Khan Chamkarmon,
Phnom Penh, Cambodia

From: **Heng Bunny**, National Biogas Programme Coordinator
SNV- CAMBODIA / Biogas Programme
74, Monivong Blvd. Phnom Penh

Date: 24 November 2005

Ref: BPO/HB/008/05

Subject: **Invitation Provincial Participant to Participate Consultation Workshop
on 6th December 2005**

Dear Mr. San Vanty

Please refer to our letter dated 18th November 2005. We would like to inform to you that, in conjunction with our partner MAFF, we intend to conduct a one day consultative workshop on 6th December 2005 on the setting up and functioning of Provincial Biodigester Offices.

Please find attached the provisional agenda for the day.

We were proposed to invite four participants from each of the six provinces earmarked for the first phase of the programme: the Provincial Governor, two representatives of the Provincial Department of Agriculture and one representative of the Provincial Office of Animal Husbandry and Production. Furthermore we propose four participants from Department of Animal Husbandry and Production, two participants from MAFF and three participants SNV.

We would like to request you to issue the invitation the workshop participants.

Travel and daily allowances will be covered by SNV according to common rates.

We are looking forward to hear from you soon.

Kind regards,



Heng Bunny,
Biogas Programme Officer

CC:
1- Director Dept of AH&P
2- Dr. Siun Sothireta, Deputy Director Dept AH&P
3- SNV Cambodia Biogas Programme Advisor

Department of Animal Health and Production, 474 Monivong Blvd, P.O. Box 2190, Phnom Penh Cambodia
Tel: 023 992 606, Fax: 855-23 992 604 and E-mail: adminbiogas@camintel.com

Of the national workshop in 2008:

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Date: 12/12/2008

Ref.: NBP/LS/049/08

**To: Sir/Madame
Cambodian Rural Development Team**

Subj.: Invitation to participate in the National Workshop on Domestic Biodigester Sector Development in Cambodia and a Field visit

Dear Sir/Madame,

With the strong cooperation support from MAFF, NBP will organise a national workshop on the "**Domestic Biodigester Sector Development in Cambodia**". The overall objective of the programme is to enhance biodigester technology awareness and its benefits among politicians, leaders of relevant ministries, rural development agencies and local authorities.

The workshop consists of 2 parts, a 1 day tour to Takeo province where a cluster of biodigester farmers will be visited on 23 December followed by a 1 day information and discussion meeting in Phnom Penh on 24 December 2008 at the Sunway Hotel.

As coordinator of the NBP, I would like to invite you or your representative to attend the above mentioned field visit and the workshop. It is also possible to attend only one of the 2 workshop parts. Please find more detail programme attached.

For confirmation, please contact Mr. Chheng Rottanak at 017 88 27 37 or Ms. Song Kunthea at 012 85 91 41 before 19 December 2008. Please note that bus will leave from the Department of Animal Health and Production on 23 December at 7:00 am

Thank you for your cooperation and we are looking forward to hearing from you.


Sincerely yours,

Lam Saoleng
NBP Coordinator

Enclosed workshop programme

The invitation of the provincial workshop is in Khmer and the translation is depicted hereunder. The invitations and the structure is the same for the other 7 provincial workshops.

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មជ្ឈមណ្ឌលសិក្សានិងអភិវឌ្ឍន៍កសិកម្មកម្ពុជា (អង្គការ សេដាស)

ផ្ទះលេខ ១១៩ ផ្លូវ ២៩៧ សង្កាត់ទឹកល្អក់ ១ ខណ្ឌទួលគោក រាជធានីភ្នំពេញ

ប្រអប់សំបុត្រលេខ ១១១៨ ទូរស័ព្ទ: ៨៥៥.២៣ ៨៨០ ៤១៦ ទូរសារ: ៨៥៥.២៣ ៨៨៥ ១៤៦

លិខិតអញ្ជើញ

អ្នកសំរេចសំរេចសម្រេចផ្សេងៗទៀត របស់អង្គការ សេដាស ប្រចាំខេត្តតំបែង

គោរពជូន

លោក/ស្រីប្រធានមជ្ឈមណ្ឌលកសិកម្មភូមិភាគ ខេត្តកំពត

កម្មវត្ថុ: សំណើសុំអញ្ជើញចូលរួម សិក្ខាសាលាផ្នែកខេត្តស្តីពី "ការផ្សព្វផ្សាយ បច្ចេកវិទ្យាភ្នំជីវមន្ទីរ" ។

សេចក្តីជូនមោទន៍ទៅក្នុងកម្មវត្ថុនេះ ខ្ញុំសូមជំរាបជូន លោក/ស្រីអោយបានជ្រាបថា: មជ្ឈមណ្ឌលសិក្សា និងអភិវឌ្ឍន៍កសិកម្មកម្ពុជា (អង្គការសេដាស) សហការជាមួយកម្មវិធីភ្នំជីវមន្ទីរកំពត និងរៀបចំកម្មវិធី សិក្ខាសាលាផ្នែកខេត្តស្តីពី "ការផ្សព្វផ្សាយ បច្ចេកវិទ្យាភ្នំជីវមន្ទីរ" ។ ដែលនឹងប្រព្រឹត្តទៅ នៅថ្ងៃទី ១៤ ខែធ្នូ ឆ្នាំ ២០០៧ វេលាម៉ោង ៧:៣០ ម៉ោងព្រឹក ។

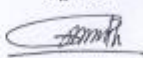
ទីកន្លែង: នៅមជ្ឈមណ្ឌល អាណាត់(CASAC)ខេត្តកំពត

សូមជូនក្របខ័ណ្ឌជាមួយនូវកម្មវិធីសិក្ខាសាលាចំនួន ០១ ច្បាប់ ។

សូមលោក/ស្រីទទួលបន្ទុកការគោរពជំរាបជ្រាបដំណឹងខ្ញុំជាមួយ ។

ធ្វើនៅភ្នំពេញ, ថ្ងៃទី ០៤ ខែធ្នូ ឆ្នាំ ២០០៧

ហត្ថលេខា



លោក យ៉ែន ចារឹម

អ្នករៀបចំកម្មវិធី

Centre d'Etude et de Développement Agricole Cambodgien (CEDAC)

No 119, St. 297, Sangkat Tink Laak 1, Khan Teul Kork, Phnom Penh, Cambodia

PO-Box: 1118, Tel: 855-23 880 916; Fax: 855-23 885 146; E-mail: cedac@online.com.kh

Translation:

Gold Standard Passport version 2.1 July 2009 23

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Date: 04/12/2007

**To: Director of Department of Women Affair
Kampot Province**

**Subj.: Invitation to participate in the Introduction Provincial Workshop on
Dissemination of Biodigester Programme in Kampot**

Dear Madam,

I would like to inform you that the Centre d'Etude et de Développement Agricole Cambodgien (CEDAC) who implement the Kampot Provincial Biodigester Programme under the support from MAFF and NBP will organise a provincial workshop on the "**Dissemination of Biodigester Programme in Kampot**".

We have the pleasure to invite you to participate the workshop which will be held at the centre of ASAC Kampot Province on 14th December 2007 from 7:30 am onward. Please find more detail programme attached.

Thank you for your cooperation and we are looking forward to seeing you at the workshop.

Sincerely yours,

Khin Daravuth
PBPO Director

Enclosed workshop programme

**Of the village workshops: Not available
Of the bio-slurry workshop: Not available**

v. Text of public invitations

[See Toolkit 2.6 and Toolkit Annex J]

Participants were not publically invited.

B. 2. Description of other consultation methods used

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If individuals and/ or entities (e.g. NGOs) are unable to attend the physical meeting, please discuss other methods that were used to solicit their feedback/ comments (e.g. questionnaires, phone calls, interviews).

The reach out of the meeting organized by NBP are of such a scale that the representativeness is ensured.

In addition, an inventory was made per province of all the organizations working with farmers and farmer households (agricultural, women interest groups, etc) these organizations have been contacted with information of the programme. They were invited for dialogue on the NBP activities.

With those organizations that were interested, discussions were held on how to incorporate the NBP activities in their activities. These activities are mainly in the field of awareness raising, user training, extension and farmer interest safeguarding.

The next table shows the organizations which have responded to the invitation for a dialogue with NBP.

Meeting with Other NGOs

| No. | NGO name | Name of Persons met | Position | Other |
|-----|--|--------------------------|---------------------------------|-------|
| 1 | Cambodia Education and Waste Management Organisation (COMPED) | Chau Kim Heng | Director | |
| 2 | Cambodia Rural Development Team (CRDT) | Claire Bennett | Organisational Capacity Builder | |
| 3 | Catholic Relief Service (CRS) | | Svay Rieng Programme Manager | |
| 4 | Centre d'Etude et de Development Agricole Cambodgien (CEDAC) | Yang Saing Koma | President | |
| 5 | Development Alternatives, Inc. (DAI) | Curtis Hundley | Deputy Chief of Party | |
| 6 | Farmer Livelihood Development (FLD) | Sok Somith | Director | |
| 7 | GERES | Iwan | Director | |
| 8 | Heifer International Cambodia | Sen Sovann | Director | |
| 9 | Human Resource and Rural Economic Development Organisation (HURREDO) | Ngin Bunrith | Director | |
| 10 | National Committee for Sub-National Democratic Development (NCDD) | Barry Hall, Nhem Sovanna | | |
| 11 | Peace and Development Institute (PDI) | Nou Navuth | Director | |
| 12 | People in Need-Cambodia | Ivana Poliacikova | Programme Officer | |
| 13 | United Nations Development Programme (UNDP) | Christopher Miller | Energy and Environment Analyst | |
| 14 | Swiss Red Cross | Hilde Schalenbourg | FIN/ADM Delegate | |

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SECTION C. CONSULTATION PROCESS

C. 1. Participants' in physical meeting(s)

i. List of participants: Workshop of 2005

Annex I shows the registration list of the attendees.

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Participant list of the national workshop of 2008

| No. | Name of participants | Organisations | # of part. | Remark |
|-----|------------------------------|-----------------------------|------------|------------------------------|
| 1 | H.E. Chan Sarun | MAFF | 1 | Join field trip & Opening WS |
| 2 | H.E. Meas Kimsivaro | MAFF | 1 | Join field trip & workshop |
| 3 | Mr. San Vanty | MAFF | 1 | Join field trip & workshop |
| 4 | Mr. Prak Thaveamida | MAFF | 1 | Join field trip & workshop |
| 5 | Mr. Kao Phal | DAHP | 1 | Join field trip & workshop |
| 6 | Mr. Sar Chetra | DAHP | 1 | Join field trip & workshop |
| 7 | Mr. Nao Thuk | FiA | 1 | Join field trip & workshop |
| 8 | Mr. Pen Vuth | DOA | 1 | Join field trip & workshop |
| 9 | Mr. So Rithikun | DOE | 1 | Join field trip & workshop |
| 10 | Mr. Khy Vibolbotra | | 1 | Join field trip & workshop |
| 11 | Mr. Loy Rasmey | | 1 | Join field trip & workshop |
| 12 | Mr. Heng Bin Yik | KCM PBPO | 1 | Join field trip & workshop |
| 13 | Mr. Thach Ratana | SVR PBPO | 1 | Join field trip & workshop |
| 14 | Mr. Seng Soeung | KSP PBPO | 1 | Join field trip & workshop |
| 15 | Mr. Meng Sothy | TKO PBPO | 1 | Join field trip & workshop |
| 16 | Mr. Ngan Nany | KCN PBPO | 1 | Join field trip & workshop |
| 17 | DOA of KDL, KPT, PV, KSP,TKO | | 5 | Join field trip & workshop |
| 18 | | FA | 1 | Attend workshop |
| 19 | Dr. Nov Vonika Mr. | MAFF Programme | 5 | Attend workshop |
| 20 | PBPO Coordinators | | 8 | Join field trip & workshop |
| 21 | Slurry Extension | | 8 | Join field trip & workshop |
| 22 | Model farmers | | 8 | Attend workshop |
| 23 | Provincial Governors | | 3 | Attend workshop |
| 24 | | MOH | 1 | Attend workshop |
| 25 | | MIME | 1 | Attend workshop |
| 26 | | MOWA | 1 | Attend workshop |
| 27 | | MOE | 1 | Attend workshop |
| 28 | | MORD | 1 | Attend workshop |
| 29 | | MOEYS | 1 | Attend workshop |
| 30 | | Agriculture Universities | 5 | Attend workshop |
| 31 | | CARDI | 1 | Attend workshop |
| 32 | Mr. Land Seng Horng | CEDAC | 1 | Attend workshop |
| 33 | | FAO | 1 | Attend workshop |
| 34 | | GERES | 1 | Attend workshop |
| 35 | | GTZ | 1 | Attend workshop |
| 36 | | ADB | 1 | Attend workshop |
| 37 | | WB | 1 | Attend workshop |
| 38 | Lay Khim | UNDP | 1 | Attend workshop |
| 39 | | EU | 1 | Attend workshop |
| 40 | | WHO | 1 | Attend workshop |
| 41 | | WFP | 1 | Attend workshop |

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| | | | | |
|----|------------------|--------------|-----------|-----------------|
| 42 | | DAI | 1 | Attend workshop |
| 43 | | CRDT | 1 | Attend workshop |
| 44 | Say Sony | PRASAC | 1 | Attend workshop |
| 45 | Dr. Sam In | LWF | 1 | Attend workshop |
| 46 | Mr. Seng Teak | WWF | 1 | Attend workshop |
| 47 | Mr. Nou Navuth | PDI | 1 | Attend workshop |
| 48 | Mr. Pou Sovan | Srer Khmer | 1 | Attend workshop |
| 49 | Dr. Khiev Borith | CelAgrid | 1 | Attend workshop |
| 50 | Mr. Sen Sovan | HF-Cambodia | 1 | Attend workshop |
| 51 | | Media | 3 | |
| 52 | | NBP | 4 | |
| 53 | | Total | 92 | |

The field visit, which was part of the workshop was attended by a greater number of people, from the report of the national workshop:

The total participants have attended this field visit was 295 people in those 80 participants were the delegation from MAFF, Ministry of Environment, Ministry of Rural Development, Ministry of , ministry of Education and Sport, Ministry of Health, and Provincial Governors or deputy provincial governor from all targeted provinces of NBP and 215 people are local authority and farmers.

The next table summarizes all the attendees of the provincial consultation workshops

| Participated Organization | Provinces/ Date of Workshop | | | | | | | | Total |
|-------------------------------------|-----------------------------|-------------|-------------|-------------|--------------|-----------------|-------------|-----------|------------|
| | Kampong Charm | Svay Rieng | Kandal | Takeo | Kampong Speu | Kampong Chhnang | Kampot | Prey Veng | |
| | 14-Feb-2006 | 16-Feb-2006 | 23-Feb-2006 | 14-Sep-2006 | 8-Dec-2006 | 12-Dec-2007 | 14-Dec-2007 | ##### | |
| NGOs | 14 | 4 | 3 | 8 | 3 | 8 | 7 | 6 | 53 |
| Banks | 2 | 0 | 1 | 1 | 1 | 3 | 11 | 4 | 23 |
| Other Departments | 5 | 0 | 5 | 4 | 5 | 2 | 0 | 1 | 22 |
| Local Authorities (Governors, CC, V | 1 | 6 | 12 | 50 | 35 | 37 | 18 | 20 | 179 |
| Department of Agriculture | 53 | 27 | 29 | 35 | 48 | 27 | 28 | 23 | 270 |
| MAFF/DAHP | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 18 |
| NBP/SNV | 1 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 21 |
| Masons | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 6 | 16 |
| Farmers | 0 | 21 | 10 | 0 | 0 | 12 | 5 | 6 | 54 |
| CEDAC Staffs | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 19 | 32 |
| Total | 80 | 68 | 70 | 103 | 97 | 93 | 87 | 90 | 688 |
| Female | 4 | 10 | 2 | 7 | 5 | 4 | 9 | 5 | 46 |
| % Female | 5% | 15% | 3% | 7% | 5% | 4% | 10% | 6% | 7% |

The table shows that in total 688 people participated from a wide range of organizations. NBP considers the provincial workshop as a vital tool for effective promotion and dissemination of biodigester technology, to allow the sector to growth by coordinating efforts of *all* stakeholders. Due to practical reasons the list of participants of the provincial workshop and the village workshop is condensed, resulting from the enormous number of participants.

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Annex I shows the complete list of participants of the provincial workshops. Summary of the village workshops:

Village workshop 2006-2009

| Province | Participants in Village Workshop | | | | Grand Total |
|--------------|----------------------------------|-------------|-------------|------------|-------------|
| | 2006 | 2007 | 2008 | 2009 | |
| Kg. Cham | 320 | 106 | 0 | 376 | 802 |
| Kandal | 210 | 82 | 434 | 31 | 757 |
| Svay Rieng | 250 | 142 | 284 | 0 | 676 |
| Takeo | 0 | 596 | 0 | 0 | 596 |
| Kg. Speu | 0 | 535 | 270 | 0 | 805 |
| Kg. Chhnang | 0 | 0 | 245 | 0 | 245 |
| Kam Pot | 0 | 0 | 657 | 0 | 657 |
| Prey Veng | 0 | 0 | 119 | 174 | 293 |
| Total | 780 | 1461 | 2009 | 581 | 4831 |

Village workshop in 2009

| Province | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|--------------|----------|------------|------------|------------|------------|----------|-----|----------|----------|----------|----------|----------|------------|
| Kg. Cham | 0 | 134 | 0 | 121 | 121 | | | | | | | | 376 |
| Kandal | 0 | 18 | 13 | 0 | 0 | | | | | | | | 31 |
| Svay Rieng | 0 | 0 | 0 | 0 | 0 | | | | | | | | 0 |
| Takeo | 0 | 0 | 0 | 0 | 0 | | | | | | | | 0 |
| Kg. Speu | 0 | 0 | 0 | 0 | 0 | | | | | | | | 0 |
| Kg. Chhnang | 0 | 0 | 0 | 0 | 0 | | | | | | | | 0 |
| Kam Pot | 0 | 0 | 0 | 0 | 0 | | | | | | | | 0 |
| Prey Veng | 0 | 78 | 96 | 0 | 0 | | | | | | | | 174 |
| Total | 0 | 230 | 109 | 121 | 121 | 0 | | 0 | 0 | 0 | 0 | 0 | 581 |

The number of participants of the village workshops is 4831 (June 2009), which is considerable considering that only 5356 plants have been built so far (June 2009). For the same reasons as listed under the table of the provincial workshops, the names of the persons and organisations have not been translated.

Summary of the participants of the bio-slurry workshops

In 2008, four provincial workshops on Bio-slurry use were organized in Kampong Speu on 03 Dec 2008, Kampong Cham on 09 Dec 2008, Svay Rieng On 15 Dec 2008 and Takeo province on 18 Dec 2008. The participants attended these workshop come from:

- Provincial Department of Environment,
- Department of Health, Department of Education Youth and Sport,
- Department of Women Affaire,
- Department of Information,
- Department of Agriculture,
- chief of district agricultural office,
- commune council,
- supervisor,
- masons,
- model farmers
- NGOs.

Totally 301 participants (26 Female) attended these provincial workshops; Kompong Speu (69 and F=4), Kompong Cham (74, F=8), Svay Rieng (78, F=9), Takeo (80, F=5). A registration list is pasted in Annex I of one selected province: Kampong Speu.

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[See Toolkit 2.6.1 and Toolkit Annex J]

Please attach original participants' list (in original language) as Annex 1.

Comments accompanying Annex 1

→ The attendance list of the village workshops is available, however due to the sheer number of participants not included in this report.

ii. Evaluation forms

Not available

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C. 2. Pictures from physical meeting(s)

Kampong Cham – 14 Februari 2006



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Kampong Chang 12 December 2007



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Kampong Speu 8 December 2006



Kampot 14 December 2007



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Prey Veng -10 october 2008



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Svay Rieng – 16 Februari 2006



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Takeo 14 September 2006



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National workshop in Phnom Penh of 2008



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Pictures of the National workshop in 2005: Not Available

Bio-slurry extension workshop: Kampong Speu



ការចូលរួមរបស់ ឧកេឌត្តម ប៊ែន សំបូរ ក្នុងវិធីបើកវគ្គ



វិធីភាពចូលរួមក្នុងពេលដំណើរការសិក្ខាសាលា



ការធ្វើបទបង្ហាញរបស់កសិករតំរូវ



ការធ្វើបទបង្ហាញរបស់មន្ត្រីអង្គការ សេដាភ



សកម្មភាពពិភាក្សាក្រុមតូច



សកម្មភាពបកស្រាវលទ្ធផលតាមក្រុម និងការពិភាក្សា

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C. 3. Outcome of consultation process

i. Minutes of physical meeting(s)

Please ensure that you include a summary of the meeting as well as all comments received.

[See Toolkit 2.6, 2.6.1, 2.6.2 and Toolkit Annex J]

Of the provincial workshops Kampot is selected for the translation of the minutes into khmer, which is on its own a comprehensive task. Some irrelevant parts have been deleted; the original is available upon request.

Minutes Provincial Workshop on Dissemination of Biodigester Programme in Kampot

In the morning of 14 December 2007, there was a provincial workshop celebrated in the meeting hall of ASAC in Kampot Provincial Town on workshop on "Dissemination of Biodigester Programme in Kampot Province". It was held for a full day by CEDAC and supported by The National Biodigester Programme (NBP).

This workshop was honored by:

- H.E. **Nou Muth**, Under Secretary of State of MAFF and Chairman of NBP Steering Committee.
- H.E. **Thach Khoun** Provincial Governor of Kampot
- Mr. **Kao Phal** Director of DAPH
- Mr. **Kim Phan** Deputy Director of Agriculture Department of Kampot
- Mr. **Jan Lam** SNV Representative
- Mrs. **Lam Saoleng** NBP Programme Coordinator
- Mr. **Lang Seng Horng** CEDAC Representative

There were 95 people participated in the workshop. They were from local authorities, related departments, NGOs, MFI, promoters and potential farmers, coming from others districts, communes and villages in Kampot:

- Department of Agriculture of Kampot
 - Provincial Office of Animal Production and Health of Kampot
 - Provincial Extension office
 - Provincial Agriculture office
 - All 8 Districts Offices of Animal Production and Health
 - All 8 Districts Offices of Agriculture
 - Director of Provincial Department of Rural Development
 - Director of Provincial Department of Environment
 - Director of Provincial Department of Health
 - Director of Provincial Department of Woman Affairs
 - Governors of all 8 Districts
 - Commune chiefs in 7 districts
 - Promoters from 7 districts
 - Potential farmers from 7 districts

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PURPOSE OF WORKSHOP

A one-day workshop aim to:

- Disseminate the biodigester technology in Kampot
- Launch and start the biodigester programme in Kampot

AGENDA

→same as all the other provincial workshops

WELCOME SPEECH OF MR. LANG SENG HORNG REPRESENTATIVE OF CEDAC

First of all, he has expressed his respect to Excellencies, ladies and gentle men who have participated in the workshop and thanks to all guests who were present at that time.

Today CEDAC is proudful to arrange “The Provincial Workshop on the Dissemination of Biodigester Programme in Kampot” by cooperation and supported by the National Biodigester Programme. On behalf of CEDAC and himself, he thanked governor, all levels of authorities, related departments, others stakeholders who have cooperated in the arrangement of the workshop. And he thanked all the guests who were present.

Mr. Lang Seng Horng added:

CEDAC is a local organization that focus on agricultural development, has based in 1930 villages in 15 provinces in Cambodia. Its philosophy is to have better livelihood for the people in the countryside, to have good mutual cooperation, to have enough rights to decide on their own life as well as to supply the rich food to the whole Cambodia.

CEDAC started the community development in 2004 in the cooperation with GTZ/RDP and CBRDP/IFAD. In 2007, CEDAC had more expansions under donation of Japanese organization ACT until 2010.

In April 2007, CEDAC cooperated with the National Bio-digester Program which operates in Kampong Cham, Svay Rieng, Kandal, Takeo and Kampong Speu. Based on the experiences and the results, CEDAC sees that the Bio-gas technology is very important for farmer and society such as:

- To reduce the wood consumption that is the important part in reducing of the lost of forest, which cause the climate change.
- To help farmers to save money from buying wood and coals.
- To help farmers to save time in cooking.
- To make better hygiene in kitchen and efficiency cooking.
- To make better health of the housewife in cooking, to reduce in smoke born disease.
- Bright light to help in quality education and household works.
- To help farmers to save double fertilizer amount and reducing of using chemical fertilizer.
- To make better rich soil so that the farmers will get more agricultural production by using the compost and other natural fertilizer.

Mr. Lang Seng Horng added more:

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CEDAC is really happy to operate the National Bio-digester in Kampot and other provinces in Cambodia. Our vision is to see each farmers own their bio-digester plants. To succeed this plan, CEDAC has important strategies such as:

- To assign 1 or 2 promoters in a commune and at least 87 communes in Kampot.
- To cooperate with all communes and farmers association with others stakeholders to widen this program. CEDAC will divide his shares which received from NBP to the commune and community as a reward.
- To create a mason association in the key area to become an independent institution to provide construction services with efficiency and high responsibility.
- To broadcast by radio in Kampot within the first and second month started.
- To cooperate well with PRASAC microfinance institution to provide credit loan to farmers quickly.

Based on the strategies and potential that CEDAC had, Mr. Lang Seang Horng expected that at least 500 plants will be built in 2008. He added: "anyway this success depended on the support and well cooperation with all level of authorities and all related people in Kampot.

On behalf of CEDAC, Mr. Lang Seang Horng expressed his gratitude to Excellencies, ladies and gentle men who were presented in this workshop.

SPEECH OF MR. JAN LAM, SNV SENIOR BIOGAS ADVISOR

SNV organisation supports this bio-digester program for 20 years already with financial assistance from the Netherlands government. Seeing the usefulness of bio gas and the potential for this technology in Cambodia so we started to work here a year ago. The program is set up in cooperation between SNV organisation and Ministry of Agriculture Forestry and Fishery of Cambodia. This year we launch this program in Kampot by taking partner with CEDAC who operates and promotes the program. I am enthusiastic to have partner with CEDAC and PRASAC too.

Finally, I thanks Excellencies ladies and gentle men and wish all participants to be healthy and good luck.

THE SPEECH OF MR. KIM PHEAN, DEPUTY DIRECTOR OF AGRICULTURE DEPARTMENT OF KAMPOT

He has described his report of production in the province:

- | | | |
|----|-------------------------|------------|
| 1. | Total Agricultural area | 129.000 ha |
| | -Rainy Season Crop | 126.000 ha |
| | -Dry Season Crop | 3.000 ha |
| 2. | Total Applied area | 125.175ha |
| | -Rainy Season | 122.850ha |
| | -Dry Season | 2.326ha |
| 3. | Total Harvest area | 125.175ha |
| | -Rainy Season | 122.850ha |
| | -Dry Season | 2.326ha |

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| | |
|-------------------|------------|
| 4. Average output | 2.525 T/ha |
| -Rainy Season | 2.521T/ha |
| -Dry Season | 2.902T/ha |
| 5. Total amount | 316.463T |

| | |
|---|-------------|
| -Rainy Season | 309.716T/ha |
| -Dry Season | 6.747T/ha |
| By deduction crops seed, animals foods and lost we get the balance: | |
| - Rice | 135.009T |
| - De-husked rice | 86.406T |

These results are received after the anti-insect activities since the beginning of the last rainy season. So we got the report of the rainy season in 2007, the insect destroy about 23.479ha of crops are located in the 8 districts of Kampot.

He added more:

As representative of Agricultural Department of Kampot, I am proud of CEDAC who has arranged this provincial workshop "Bio-digester Promoting workshop" that is very important and parallel to the government policy which step forward to health assuring and poverty reduction.

He clarified that:

Now we focus to the main point of the workshop are to promote bio gas and to build bio-digester plants in the village in the purpose to make villager understanding and using their productivities all of its uses. It will help the bio gas users to modernize their life, saving money and to reduce the pollution in the house.

Finally, he thanked Excellencies ladies and gentle men and wish all participants to be healthy and successful in jobs.

THE SPEECH OF H.E. THACH KHON, GOVERNOR OF KAMPOT:

He said welcome to all participants:

I honor to chairman and warmest welcome to participant. Thanks CEDAC who arrange this glorious workshop.

He added more:

Depend on previous presentations; biodigester programme is very important for us and farmers. We should effectively promote this programme to go ahead by cooperation with authorities and stakeholders closely.

Finally, he thanked Excellencies Nou Muth ladies and gentle men and thanked CEDAC who arrange this glorious workshop.

THE SPEECH OF H.E. NOU MUTH, UNDER SECRETARY OF STATE OF MAFF

By the agreement between government and SNV organization of Netherlands which create the National Bio-digester Program in Cambodia. We find the important of Bio gas to farmers is suitable to Cambodia's environment. The planning of the National Bio-digester Program is to achieve 17800 plants between 2006 and 2009.

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Excellency has presented about the interests of bio-digester plant, it is important for ladies and children. It saves time to cook and provide enough time for the girls to go school. The bio-digester program has started already in 20 countries.

He added more:

According to its interests so please related authorities and other stakeholders join in this action by widely promoting in the area, which will encourage the farmer to have their own bio-digester plant. So in order to reach our goal we should show the bio-digester plant or leaflets to farmers. We cooperate with PRASAC that can improve our promoting and amount of construction plants.

He reported about Bird Flu:

- Bird Flu appeared in 27 places.
- In Kampot appeared in 2 places with 4 cases has infected to people.
- 4 patients died and 4 patients cannot be cured.

Finally, again he thanked Excellencies Thach Khon, ladies and gentle men and wish Excellencies and all participants to be healthy and successful in jobs. He declare to open the workshop from now on.

THE PRESENTATION OF MRS. LAM SAOLENG, NBP PROGRAMME COORDINATOR

She presented the "The Extension and Promotion of Bio-digester Technology"

- Content:
 - Main purpose of workshop
 - The expected results
 - The topic of workshop
- Main purpose: Provide information and promotion of bio-digester technology in the region
- Other purpose:
 - Present the National Bio-digester Programme activities, and organization structure of national, provincial and their activities.
 - Present the interests of Biodigester technology for the household and communities.
 - Present the costs and resources to build biodigester plant
 - Provide information of services and donate potential farmers.
 - Establish a forum for provincial stakeholders to discuss and find the strategies related to extension and promotion of bio-digester technology in the communities.
- Expected result that participants will:
 - See and understand about the National Bio-digester Program and Provincial Bio-digester Program Officer.

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- Understand the bio-digester technology, its importance for Cambodia; understand the environment and techniques to extension and promotion of bio-digester in the communities.
 - Understand the services; donate to farmers and the costs of construction.
 - Identify the chance and obstacle in the promotion of the communities and reducing the difficulties and taking the chance to promote the program.
 - Know the roles of each other and promotion strategies and push the bio-digester technology in the communities.
- Topic of workshop:
1. Introduction of the NBP, PBPO and accomplishment.
 2. Quick introduction about bio-digester technology.
 3. Using bio slurry and slurry extension.
 4. Incentive and promotion of bio-digester technology.
 5. Spending and benefits of bio-digester.
 6. Support the services and role of participants and encourage the bio-digester users.

She presented the 1st point, the rest points are presented by Mr. Vong Phirun.

The first point which presented by her are:

- Friend Farmer Bio-digester plant
- Introduction: The arrangement of the bio-digester program.
- Main purpose of the Bio-digester program.
- Program target province
- Bio-digester construction planning in the phase 1: 2006-2009

| | 2006 | 2007 | 2008 | 2009 | Total |
|-------------------|-----------------|------------------|-------------|-------------|--------------|
| Province | Planning | | | | |
| 1.Kampong Cham | 113 | 211(500) | 400 | 20000 | 4700 |
| 2.Kandal | 85 | 66(300) | 200 | 2000 | 4450 |
| 3.Svay Rieng | 61 | 103(200) | 200 | 2000 | 4450 |
| 4.Takeo | 31 | 339(300) | 504 | 500 | 1300 |
| 5.Kampong Speu | 4 | 196(250) | 350 | 1000 | 1800 |
| 6.Kampong Chhnang | 0 | 20 | 150 | 1000 | 1800 |
| 7.Kampot | 0 | 20 | 500 | | |
| Total | 294(650) | 915(1700) | 2304 | 8000 | 17500 |

- Organizational structure of the National Bio-digester Program
- The National Bio-digester Program
- Organization structure of the Provincial Bio-digester Program Officer
- Activities of NBP and PBPO.
- Training in the middle level.
- Training in the provincial level.

THE PRESENTATION OF MR. VONG PHIRUN, NBP TECHNICAL MANAGER.

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After the presentation of Mrs.Lam Soaleng, Mr.Vong Phirun presented the rest points as following:

- Quick introduction about bio-digester technology.
- Use of bio slurry.
- Incentive and promotion of bio-digester technology.
- Spending and benefits of bio-digester plants.
- Support the services and role of related people and encourage the bio-digester users.

THE PRESENTATION OF A LADY WHO COMES FROM TAKEO.

First of all, she honors to the chairmen and all participants who were present.

She added that:

She has collaborated with CEDAC, she has seen CEDAC projects were good and now there is a new project "Bio-digester program". She has decided to build for the first plant although she paid till 300\$ thus she has decided to take her money from feeding worm and fish; it is the demo plant in the community as a sample for the other villagers.

She continued that:

She has explained to other villagers about the importance of the bio-digester plant like saving money from buying fuel wood, coal to cook and saving time of cooking and getting the compost fertilizer to use in the rice fields and crops. And one more importance was that violence in the family was reduced after she had a bio-digester plant.

Finally, she thanked to CEDAC and all participants and wished all participants to get healthy, happiness all times. Thanks!

QUESTION AND ANSWER

In this stage, Mr.Vong Phirum, Technical Manager, will answer to all questions of the participants.

Question 1 : If we do not use our plant for many months, does it have problem?

Answer : No, it doesn't but there is no gas. If you put daily dung it will work as usual.

Question 2 : Is the plant for farmers use only? What about state officers?

Answer : Not only farmers and everybody can have their own plants.

Question 3 : Can we construct the plant in the flooded area?

Answer : If there is too much water we can not build but if there is not much we can.

Question 4 : The program provides 100\$, does the program donate anything else?

Answer : Besides the 100\$, the programme provides user training on plant operation and maintenance, extension services on bio-fertiliser user and quality control on construction and after-sales service. Farmers have also the possibility to get cheap credit from PRASAC MFI who collaborates with the programme.

Question 5 : Can we put the dry cattle dung in the plant?

Answer : No, we can't. The dry dung evaporates its all of its gas.

Question 6 : If we have 2 cattle, can we mix its dung with pig dung?

Answer : If the cattle dung is not enough we can mix with pig dung.

SUMMARY THE RESULT OF MR. LANG SENG HORNG, REPRESENTATIVE OF CEDAC

He respected to all participants again before summarizing the results. He invited 3 participants to

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state their impressions.

1st participant:

For a full day, he understand the importance of the bio-digester plant as to reduce the poverty when we use the light by burning bio gas at night and to reduce the money to buy fuel wood. Now the bio-digester plant has high quality for 20-30 years. He determined to promote the bio-digester program to other villagers in his community to understand clearly about the bio gas plant interests. Thanks!

2nd participant:

He respected to all participants. He stated: from the starting till now he knew a lot of interests of bio-digester plant, we can use all possibilities of our resources from cattle and we will get more fertilizers with high qualities. One more he say that: "Now dung is money". Thanks!

3rd participant:

He respected to all participants. For a full day attendance, he gets more knowledge of using the existing resources and the importance of the bio-digester plants. He expects that bio-digester plant will help in reducing payment and healthy of his family member. He continues: "Today we care our health" and trying to get more interests from our resources. He determines that when he goes back to the village he will promote the bio-digester program to other villagers. Thanks!

Mr. Lang Seng Horng summarized the reports:

The Bio-digester Program of CEDAC was collaborated with the National Bio-digester Program since 2006 till 2007. At the end of 2007, NBP has included 2 targets area are Kampong Chhnang and Kampot. CEDAC cooperated with NBP in the promotion and implementation of the program.

Today there are many participants, Excellency, ladies and gentle men, all level of authorities, related department and farmers who come from other districts in Kampot.

The bio-digester plants have many sizes 4m³, 6m³, 8m³, 10m³ and 15m³. Based on the study we find that farmers who have 2 cows can build 4m³ plants. The price of construction is from 300\$ to 600\$ depend on the size. After the construction completed, the program will provide 100\$ to the plant owner. Beside this we cooperated with PRASAC to offer loan to farmers with the lowest interests' rate 1.2%. After the plants has constructed the program will provide after-sale-service for 2 years. During the construction we will provide the supervision and instruction until the plant completed. We will provide users training and after-sale-service by mason of the plants at least 2 times or by our supervisors.

He continued that:

In this year 2008, we determine to build 500 plants as our planning in Kampot. So we expect that authorities, other departments and stakeholders will fully help to support and promote our program as stated by the provincial governor.

This year 2008, we have 20 demo plants. We will select many promoters in 7 districts and select 1-2 promoters in each commune. And we will broadcast our program in radio in whole Kampot. Finally, Mr. Lang Seng Horng expressed his gratitude to Excellencies, ladies and gentle men who were presented in this workshop and wish all participants to be healthy and successful in jobs. Thanks!

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CLOSING REMARK BY MRS. LAM SAOLENG, NBP PROGRAM COORDINATOR

First of all, she expressed her gratitude to:

Governor of Kampot and related authorities who were present. She was proud of CEDAC who arranged this tremendous workshop.

She continued that:

She expected that CEDAC will achieve 500 plants in the year 2008. She asked for help from all participants in these activities to promote the program to go ahead. And she expected that authorities would help and cooperated well with CEDAC to achieve the planning.

She added that:

Now a day, everything is more expensive so when we own the plant, it can save money, reduce poverty, make better environment and stabilize the atmospheres.

We wish CEDAC to achieve the planning to complete 500 plants in 2008. If CEDAC achieve this planning we will rank the 1st class to Kampot where built the largest amount of plants.

She expressed her gratitude to Excellencies, ladies and gentle men who were presented in this workshop for a full day and wish all participants to be healthy and successful in jobs.

Finally, she stated to close the workshop at 4:30 in that day with gloriousness and magnificence. Thank you!

IMPRESSION OF THE WRITER:

I am very glad to see numerous participants who are present in this workshop. Also I am happy to see this workshop going well even though there is some problem with sound system. In the name of the officer in this program, we try our best to arrange this workshop to be well and the result is different from our expectation. The number of participant is more than our expectation which attended by Excellency Nou Muth, chairman, related authorities, stakeholders and farmers. In this full day I am very please with our arrangement which is appreciated by NBP Program coordinator and CEDAC.

Phnom Penh, 20 December, 2007

Luy Khemrath Darith

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ii. Minutes of other consultations

The national workshop of 2008

Date: 05 January 2009

National Biodigester Programme (NBP)

To

Minister of Agriculture Forestry and Fisheries (MAFF)

Subject: The Summary report of the National Workshop on the "Domestic biodigester Sector Development in Cambodia"

The workshop consists of 2 parts, a 1 day tour to Takeo province where a cluster of biodigester farmers will be visited followed by a 1 day information and discussion meeting Sunway Hotel, Phnom Penh. The overall objective of the workshop is to enhance biodigester technology awareness and its benefits among politicians, leaders of relevant ministries, rural development agencies and local authorities. The summary activities and result from these two events is presented as below:

1. Field visit in Takeo province

This field visit was organized on 23 December 2008 at Trapaing Chork village, Tramkak commune and Tramkak district where the cluster of biodigester was constructed and farmers have intensively used bio-slurry for integrated farming. This field visit is aiming at making participants aware of biodigester and its advantage prior to the intensive discussion for the next day workshop. The field visit was led by H.E Om Kimsea, the Secretary of State of MAFF, the representative of H.E Chan Sarun, the minister of the Ministry of Agriculture Forestry and Fisheries. The total participants have attended this field visit was 295 people in those 80 participants were the delegation from MAFF, Ministry of Environment, Ministry of Rural Development, Ministry of , ministry of Education and Sport, Ministry of Health, and Provincial Governors or deputy provincial governor from all targeted provinces of NBP and 215 people are local authority and farmers.

In this occasion, H.E Om Kimsea has impressed that biodigester is really give significantly advantage to farmers and very much contributes to the improvement of environment, health fare, and poverty reduction of farmers etc. All distinguish guests and farmers have visited farmers' houses and see and some vegetable production such as salad, cabbage, egg plant, and forage grasses with bio-slurry application and other aspect of slurry utilization on vermi culture, and fish production. Moreover, the delegation have discussed with biodigester owners about the daily use of biogas for cooking and lighting, feeding digester, maintenances. The delegate has also visited a plant under-construction and has discussed with the mason and owner.

2. Workshop at Sunway Hotel

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One day workshop was organized on 24 Dec 2008 at Sunway Hotel with the total 80 participants from the relevant ministries, stakeholders and programme implementers, NGOs and model farmers and PBPO directors from all targeted provinces such as Kompong Cham, Kandal, Svay Rieng, Takeo, Kompong Speu, Kompong Chhnang, Kompot and Prey Veng. H.E. Chan Sarun, the Minister of the Ministry of Agriculture Forestry and Fisheries has honored the workshop and provided opening speech for the workshop.

Opening Session

The opening ceremony was chaired by H.E Chan Sarun, the Minister of the Ministry of Agriculture Forestry and Fisheries and accompanied by many high ranking officials from MAFF, and representative of SNV. After the welcome speech of SNV representative and the progress report addressed by H.E Nou Muth, the chairman of steering committee, H.E Chan Sarun gave very clear impression on the advantage of Biodigester on household economic, social, environment, and human health fare. He also indicated that the integration of biodigester with animal husbandry, and integrated farming was considered as one of the other important aspects of agricultural sector development. To make biodigester programme achieved its target, some recommendations were given as following:

- The rectangular strategy of Royal Government of Cambodia highlighted the intensified and diversified cropping, promoting aquacultures, and animal husbandry. Animal can provides meats for human and its dung can be used as organic fertilizer and feeding biodigester for producing biogas for cooking and lighting. So, the involved institutes and local authorities have to strongly support animal husbandry and promote biodigester construction to other provinces.
- The in time dissemination of information related to technology of plant construction and operation via technical training and the quality of technicians should be ensured. MAFF suggested NBP to conduct more training for technical staff and train also the technicians from outsider targeted provinces.
- The Skilled organisation, Provincial Department of Agriculture (PDA) as well as local authority has to continue their efforts to mobilize fund from various donors in order to expand integrated farming and development of biodigester in local community through exchange experience and training.
- Expanding Farmer Field School on integrated farming in order to insure food security and build inter relation of all the components in their farms. For example, animal give meat for human and dung for producing biogas, and the bio-slurry will be used for better growing crops and fish production.

Presentation

Before starting the presentation and free forum discussion, H.E Kao Phal, the Director of Department of Animal Health and Production (DAHP) gave the overview, including the objective, and expected result of this National workshop.

2.2.1 Presentation on the Sustainability of Biodigester Sector Financing

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Overall, there are five main stakeholders who contribute in financing the programme such as (1) Farmer: spent about 70% of the total cost of biodigester construction; (2) Government of Netherlands: provided fund for all expenditure of NBP and subsidy; (3) Ministry of Agriculture Forestry and Fisheries: provided office including electricity, water, and basic salary for provincial staff; (4) FMO: provided loan to farmers through PRASAC, and (5) Revenue from selling carbon (VER). Moreover, the benefit from the investment of building biodigester also presented.

2.2.2 The achievement of NBP and Benefit of Biodigester

From 2006- 2008, NBP has built 3742 biodigesters of the original target 17500 plants. The programme requested to extend the first phase up to 2011 to achieve the planned target. NBP has trained 60 provincial supervisors, over 300 masons, and provide village workshop to 4000 farmers. NBP has spent over 46% of the programme budget for subsidy and the remaining was expended for training, promotion, research and development, and support for provincial staff, the Biodigester provide many advantages including benefits on economic, environment, health, and society. Based on Biodigester User Survey (BUS) reported that farmer has saved 12\$US/family/month from buying fuel wood, coal, petroleum, charging battery. A biodigester can stop using fuel woods from 6 to 9 kg per family and can reduce greenhouse gases emission of 5.9 tones CO₂/plant/year.

There are some constraints that NBP faced in running programme such as (1) the knowledge of farmers regarding to biodigester technology is still limited; (2) the promotion activities are not yet widely spread; (3) lack of biodigester construction companies; (4) weather condition and high underground water level; and (5) the price of construction materials is fluctuated and some materials are not available in provinces.

Main important task for NBP including (1) revision of new target for 2009 to build 3300 plants; (2) request the donor to extend the programme another two year, 2010-2011 to achieve the original target 17500 plant; (3) mobilize further funding and other partner for buying carbon (for the exceeding out of 5000 plants); and (4) Develop biogas construction companies.

2.2.3 Good Model of linkage of biodigester with animal husbandry and promotion system in Svay Rieng province

The improvement of animal husbandry is really increasing the potential for building biodigester. Promotion biodigester and promotion of bio-slurry management and application been actively implemented in Svay Rieng. Up to now, 524 biodigesters had been constructed. The mechanism for promoting biodigester technology is presented as following: (1) Integrated biodigester in annual planning of Provincial Department of Agriculture and District Agricultural Office; (2) Mainstreaming biodigester into the planning of commune council development; (3) Find other partners to cooperate in promotion biodigester; (4) Organize village workshop; (5) Train promoters to do promotion; (6) Quality control; and (7) Provide good after sale services.

Regarding to bio-slurry promotion, PBPO in Svay Rieng has done some activities as following: (1) Select model farmers to conduct demonstration experiments; (2) Organize farmers exchange visit at the model farmers; (3) train the digester owners in small group meeting; (4) integrate bio-slurry management and application in user training; and (5) promote integrated farming at digester owners.

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2.2.4 Bio-slurry promotion and integrated farming system in Kompong Cham

In Kompong Cham, 753 plants were constructed. Provincial Biodigester Programme has promoted using bio-slurry in integrated farming system. Bio-slurry was used for rice, vegetables, fish production, and Fermi culture for fish and chicken. The main activities for promoting bio-slurry are as following: 1. Trained 5 Extension Workers, 2. Selected 22 model farmers to conduct participatory action research to see the effectiveness of bio-slurry, 3. Organized 10 farmers exchange visits with 371 visitors. Based on evaluation observation on bio-slurry management and its utilization showed as below:

- Only 15% of biodigester owners have good slurry management.
- 65% of biodigester owners have medium slurry management.
- 20% of biodigester owners did not manage their bio-slurry yet.
- 90% of biodigester owners have used bio-slurry on rice crops.
- 50% of biodigester owners have used bio-slurry on vegetable home garden
- 5-6 % of biodigester owners have used bio-slurry for fish, and vermi culture.

2.2.5 Biodigester promotion and marketing by CEDAC

The lesson learnt from biodigester promotion and marketing done by CEDAC is that quality of digesters and sustainable of the programme is depending on masons, and on the other hand, if the promoters have built digester first be for promoting other farmers is an effective measure. Promotion extensively and solving problem on time is the effective factors for the success of provincial programme. To promote bio-slurry management and utilization, mason, supervisors have to strongly promote farmers at the beginning of plant construction or under construction.

2.2.6 Integrated farming and bio-slurry application of model farmers

Mr. Phal Phat, a model farmer in Kompong Cham and Mr. Oung Oeun, a model farmer in Takeo have done presentation on their integrated farming. The benefit of biodigester were presented like saving time in cooking, better household environment, increased more income from applying bio-slurry on fish production, rice and vegetable such as shallot, egg plant, yard long bean, rice and forage grass.

Discussion

The results from discussion were grouped into three dimensions; (1) Sustainability of programme; (2) Bio-slurry and integrated farming system; and (3) Technical aspects. The below is the answer to the question raised by participants:

1. Discussion on Sustainability of programme

Cambodia has a good potential for plant construction and high demand so the programme needs to develop the biodigester in a sustainable and permanent sector. NBP needs to strengthen its own performance especially quantity, quality, before and after sale services must be ensured. Besides, NBP needs also good cooperation of all relevant stakeholders to do promotion and integrated biodigester in their development activities.

The short and medium planning, NBP needs financial support from donors but for the long term vision, NBP expects to get fund from selling carbon to run the programme.

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2. Discussion on Bio-slurry and Integrated farming

- All participants are very interested in bio-slurry that is a good organic fertilizer with macro and micro elements for crops such as rice, vegetable, and fruit trees. Moreover, bio-slurry was used also in fish production, Ferri-culture, and improvement of botanical pesticide.

- NBP does not promote bio-slurry use for pig food like Vietnam. Noted that in Vietnam, bio-slurry was used bio-slurry for pig food but not for piglets as their stomach are too weak.

- The manure from ill cows and pigs or just vaccinated animal will not be used for feeding the plants because it effects to digesting process and quality of bio-slurry.

- The bio-slurry comes out from digester after completed digesting process in anaerobic condition of 35-40 degree for 1-4 weeks can kill pathogens and parasite of 90-95% and all weeds were killed. In comparison to the fresh cow dung and pig dung bio-slurry is safer for fish pond "growing planktons and as food for fish".

- The participants in this workshop kept wondered about farmer's experience that impressed the effectiveness of bio-slurry that can prevent fish from death in winter season (Dec-Jan) that normally fish which did not apply slurry in their pond always die during that time. The suggestion was that NBP should research on this.

- Adding degradable organic materials with bio-slurry make the quality of composting better.

- Before starting activities, programme has hired independent advisors to do in-depth study in various aspects such as:

1. Feasibility Study (See how the programme be implemented)
2. Life expectancy of plastic bag biodigester
3. Plant design Study (for selecting appropriate design for Cambodia context)
4. CDM Baseline study (for selling carbon)
5. Credit need assessment study (for biodigester construction)
6. Biodigester User Survey in 2007 (was conducted on 300 families to find understanding)
7. Private Sector Development study
8. Biodigester User Survey in 2008 (was done on 88 users)
9. Study on stove and Lamp efficiency (the programme sent stoves and lamps to test in China, Indian, and Neitherlands)
10. Analyze bio-slurry in laboratory of Agronomy and Agricultural Land Improvement
11. Student thesis on bio slurry
12. VER monitoring survey.
13. Plant Quality Survey.
14. Gender impact research on biodigester family (on going).
15. Research and Development on Stove Improvement.

3. Discussion on technical aspects

- Chicken manure/drop produces highest biogas production 60 liters/kg while human excrement and pig dung is 50 liters/kg, cow manure is 40 liters/kg, and buffalo manure is 35

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liters/kg. However, it is not easy to collect the chicken drop. To collect chicken manure easily, it is needed to put plastic sheet or lay cement on the ground.

- For 4 cubic meters, it is required to feed at least 20kg of fresh manure per day, it means that at least farmer has 2 adult cows or 8 adult pigs.
- The biodigesters can not be exploded because there is no oxygen inside the plants, on the other hand, biogas will escape through the outlet. There are more than 10 million plants had been constructed and used in China, Nepal, India, and Vietnam but no such a case.
- To avoid transmission of pathogens, farmers should use a mixing tool and not allowed to mix and feed plant by hand directly. Only fresh dung is allowed to feed digester, but dry dung.
- NBP does not encourage farmers to connect digester with generator for producing electricity for TV, lighting, pumping, and refrigerator etc. because the average size of plant is only 5.8 m³; the programme satisfies the majority of farmers. There are only 10 and 15 m³ plants (for those rich farmers who can afford to buy engine to connect and transfer biogas into electricity) which are minority to connect with generator to produce electricity, so the programme does not want to spend more money to do such research (technology to transfer biogas into electricity, technique and resource to purify biogas and other chemical substance to remove hydrogen sulfur) which waste budget of majority farmers.

4. Suggestion

- The workshop has suggested NBP to conduct a laboratory research on nutrient pathogens or parasites in the fresh cow/ pig dung and in the bio-slurry in Cambodia rather than rely on the research result from other countries such as Nepal and Vietnam.
- The workshop and programme welcome to all suggestion and want to have annual workshop and forum like this more and wish to have workshop like this in provincial level as well.
- NBP suggest to keep the same amount of subsidy (150\$/palnt) because farmers will get long term benefits and farmers are able to get payback period from their investment in 20 months. If programme increases subsidy (presently, 46% of programme expenditure is for subsidy only; this excluded the cost on pre-construction information providing and farmer training), it would be insufficient budget for operating programme including technical training, promotion activity, and affecting incentive for provincial staff.

Biodigester Promotion and involvement of relevant stakeholders

H.E Kao Phal, the Director of Department of Animal Health and Production indicated that promotion of bio-digester is related to some elements such as (1) Development of animal husbandry would produce sufficient dung for feeding digester; (2) Connecting toilet to biodigester would also increase biogas production and household hygiene. These result in 1. Energy for cooking and lighting; and (2) bio-slurry which is rich of nutrients for all kind of crops, rice, and can be used as fish food and vermi-culture.

H.E Koa Phal call for all stakeholders to promote biodigester as a permanent and sustainable sector including (1) Ministry of Agriculture Forestry and Fisheries, (2) Ministry of women affair, (3) Ministry of Environment, (4) Ministry of Health, (5) Ministry of Rural and Development, (6) Ministry of Water Resource and Meteorology, (7) Ministry of Education and Youth and Sport, (8) local

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authority in all level, (9) farmers, and (10) MFI, and (11) National and international NGO and donors support biodigester programme.

Before closing the workshop, H.E Nou Muth, the Chairman of NBP's Steering Committee and SNV representative have appreciated the cooperation and effort of the DAPH and Department of Agriculture and provide the Appreciation certificates to H.E Kao Phal, Director of Department of Animal Health and Production, and all PBPO directors from Takeo, Kompong Cham, Svay Rieng, Kompong Speu, Kompong Chhnang, and Kompot.

4. Impression

Through this National Workshop, National Biodigester Programme which is that hosted by the Department of Animal Health, and Production, receiving strong support from the Ministry of Agriculture Forestry and Fisheries. All participants from relevant ministries, Provincial Department of Agriculture, representative of provincial governors, and NGOs have interested in biodigester and have dynamic discussion, leading this workshop going smoothly and successfully with fruitful result. There is some suggestion to organize such workshop at provincial level in order to get known and support from local authority, relevant provincial departments to do promotion widely in each province. The participant also requested technical documents for further promotion or integrated it into curriculum of primary or secondary school. All these suggestion have indicated the understanding about biodigester technology and its advantage in integrated farming system and the participation and contribution of relevant stakeholders and local authorities.

The above summary report is submitted to yours Excellency as the brief report and expected to receive your recommendation/feedback.

Highly greeting and sincerely.

Seen and approved
Chairman of NBP steering committee

H.E Nou Muth

Reporter
NBP Programme Coordinator

Ms. Lam Saoleng

Summary Report of Provincial Workshop on Bio-slurry in 2008

Overview

In 2008, four provincial workshops on Bio-slurry use were organized in **Kompong Speu on 03 Dec 2008, Kompong Cham on 09 Dec 2008, Svay Rieng on 15 Dec 2008 and Takeo province on 18 Dec 2008**. The objective of these workshop is disseminate information (awareness raising) on the advantage of bio-slurry on the agriculture sector and looking for possible support form different stakeholder to the programme as well as Bio-slurry promotion activities. The participants attended these workshop come from Provincial Department of Environment, Department of

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Health, Department of Education Youth and Sport, Department of Women Affaire, Department of Information, Department of Agriculture, chief of district agricultural office, commune council, supervisor, masons, model farmers and NGOs. Totally **301** participants (26 Female) attended these provincial workshops; Kompong Speu (69 and F=4), Kompong Cham (74, F=8), Svay Rieng (78, F=9), Takeo (80, F=5).

The main activities in these provincial workshops are presentation of Bio-slurry and Extension officer (NBP), presentation from CEDAC, presentation of model farmers and small group discussion focus on the possibility or suggestion to improve slurry promotion activities. Four small group discussions were grouped by different category, one group for relevant departments and NGO, one group for district agricultural officer, one group for local authority, and one group for masons, and supervisors. Through this workshop, participants get more understanding on bio-slurry and its advantage in the improvement of agricultural sector. The result from group discussion is briefed as below:

Group 1: District governor, and commune council

- Integrated biodigester in annual development plan in order to find more financial support from other sources.
- Disseminate biodigester programme as well as slurry management in any meeting at commune and village level.
- Commune council will help to do promotion biodigester (introducing the advantage of biodigester) to farmers during participatory planning meeting and any meeting with farmers.
- Promote biogas farmers to manage and apply bio-slurry by talking about its value and advantage; especially talking about the price of chemical fertilizer and its future impact.
- The commune council who has enough resources has to build biodigester first to show other farmers.
- Commune council order to the village chief to promote farmers to build digester and composting hut and then follow up result regularly.
- Request NBP to give promotion material to commune council office for distribution and as document.

Group 2: NGOs and relevant departments

- Help to do promotion biodigester programme in their targeted area
- Request NBP to train their NGO staff in order to do promotion
- Organize farmers exchange visit to where slurry had been managed and applied properly.
- Integrate biodigester programme in any meeting with their staff and farmers.
- Need promotion materials, poster, DVD, leaflet and booklet.
- Relevant department strongly support and will discuss about biodigester program their colleagues and find possible integrate this programme into their activities in grassroots level.
- Rachana (Takeo) organization allocated budget for building composting hut in its targeted area.
- Kohkampuchea (K.cham) association promoted building digester and promote composting hut.

Group 3: District agricultural office

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- Commit to do promotion biodigester programme and especially bio-slurry management and application.
- The district agricultural office will assign one staff to be responsible for promotion slurry management and application and follow up the result regularly.
- Develop model farmers in commune level for field visit of other farmers.
- Organize field visit for biogas farmers.
- Working with commune extension worker to develop planning and follow up regularly.
- Follow up the result of plant construction and number of composting hut every monthly meeting with extension workers.
- Report regularly to the district governor and ask for intervention if necessary.
- Request promotion materials and money for supporting extension workers and snack for each field visit
- Meet and report to the provincial department of agriculture regularly

Group 4: PBPO and mason

- Do effort to explain farmers about the advantage of slurry pit and composting hut.
- Give information on slurry management and application during plant construction.
- Train other mason on how to manage bio-slurry and ask them to inform farmers during plant construction.
- Try to explain farmers about the advantage of bio-slurry after sell service.
- Monitor the old plants and note which one did not have slurry pit and composting hut for easy to do promotion.

Commit to promote farmers to build slurry pit and storage with proper boundary before giving form number 9.

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Assessment of all comments

| Stakeholder comment | Was comment taken into account (Yes/ No)? | Explanation (Why? How?) |
|---|---|--|
| Is the plant for farmers use only? What about state officers? | yes | The only criteria that NBP uses are that households must have at least 20 kg of manure on daily basis. Hence anybody is eligible for a biodigester as long as they have at least 20 kg of manure per day irrespective of social or professional background of the potential beneficiary. |
| Can we construct the plant in the flooded area? | yes | No, areas that possibly flood it is impossible to construct a biodigester |
| The program provides 100\$, does the program donate anything else? | yes | It is now \$150 |
| Cambodia has a good potential for plant construction and high demand so the programme needs to develop the biodigester in a sustainable and permanent sector. NBP needs to strengthen its own performance especially quantity, quality, before and after sale services must be ensured. Besides, NBP needs also good cooperation of all relevant stakeholders to do promotion and integrated biodigester in their development activities. | yes | The short and medium planning, NBP needs financial support from donors but for the long term vision, NBP expects to get fund from selling <u>carbon to run the programme.</u> |
| The workshop has suggested NBP to conduct a laboratory research on nutrient pathogens or parasites in the fresh cow/ pig dung and in the bio-slurry in Cambodia rather than rely on the research result from other countries such as Nepal and | no | Research on the presence of pathogens in digested slurry is not relevant for fresh cow and/or pig manure. These tests were done in some other countries only at plants with a toilet connection and without further composting after the slurry left |

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| Vietnam. | | the outlet. We have not done such tests as the % of households with a toilet connection to the plant and without composting of the digested slurry is very low. |
| The workshop and programme welcome to all suggestion and want to have annual workshop and forum like this more and wish to have workshop like this in provincial level as well. | No | However, NBP will organize provincial workshops on various topics (financing, bio-slurry use, multi-stakeholder involvement, etc.) when the need arises and on special occasions like achieving certain milestones |
| From the discussion on bio-slurry, it was suggested to promote bio-slurry for pig food by participants. | No | NBP does not promote bio-slurry use for pig food like Vietnam. Noted that in Vietnam, bio-slurry was used bio-slurry for pig food but not for piglets as their stomach are too weak. |
| The participants in this workshop kept wondered about farmer's experience that impressed the effectiveness of bio-slurry that can prevent fish from death in winter season (Dec-Jan) that normally fish which did not apply slurry in their pond always die during that time. The suggestion was that NBP should research on this. | Yes | The fraction of organic matter in bio-slurry much lower than of manure. Hence the biological oxygen demand of bio-slurry is much lower, resulting in a much lower depletion of oxygen from the water for the decay of the material. The use of manure on the other hand, results in a depletion of oxygen which can result in fish death. |
| A participant expressed the concern that a biodigester might explode | no | The biodigesters can not be exploded because there is no oxygen inside the plants, on the other hand, biogas will escape through the outlet. There are more than 10 million plants had been constructed and used in China, Nepal, India, and Vietnam but no such a case. |

Selected comments listed are from the workshop in Kampot and the national workshop in 2008. All the other comments were general questions. The minutes of the other workshops have not been translated.

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[See Toolkit 2.6]

iii. Revisit sustainability assessment

| Are you going to revisit the sustainable development assessment? | Yes | No |
|--|--------------------------|-------------------------------------|
| Please note that this is necessary when there are indicators scored 'negative' or if there are stakeholder comments that can't be mitigated [See Toolkit 2.7] | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Give reasoning behind the decision

The scoring of the sustainability assessment did not result in negative indicators. The overall outcome of the programme is very positive. The end user technology benefit will be illustrated by continued use and as is known from other biogas programs, such as in Nepal (BSP Nepal), Vietnam and other countries these type of project result in high benefits for the end user, the local, national and global of both the economy and environment. Gold Standard Stakeholder consultations are specifically designed for populations affected by projects, e.g. wind farms.

iv. Summary of alterations based on comments

If stakeholder comments have been taken into account and any aspect of the project modified, then please discuss that here.

[See Toolkit 2.6.2, 2.8]

There is a regular interaction with programme implementers like bank staff, provincial managers, masons and Biodigester Construction Companies. Also a annual Biogas User Survey is conducted to measure how the biodigesters and the programme are perceived by the plant users. Based on these contacts regular modifications are made to make the plants, appliances and the delivery methods more user friendly. Examples are the way the MFIs are operating and how the subsidy is canalised. The way user trainings are organised, adaptations to the stove and tap and an increase in the spare-part retail outlets.

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SECTION D. SUSTAINABLE DEVELOPMENT ASSESSMENT

D. 1. Own sustainable development assessment

- 'Do no harm' assessment

[See Toolkit 2.4.1 and Toolkit Annex H]

| Safeguarding principles | Description of relevance to my project | Assesment of my projec t risks breac hing it (low/ mediu m/hig h) | Mitigation measure |
|---|--|---|--------------------|
| 1.The project respects internationally proclaimed human rights including dignity, cultural property and uniqueness of indigenous people. The project is not complicit in Human Rights abuses. | Not relevant | Low | Not required |
| 2. The project does not involve and is not complicit in involuntary resettlement. | Does not occur, not relevant | Low | Not required |
| 3. The project does not involve and is not complicit in the alteration, damage or removal of any critical cultural heritage | Not relevant as it does not occur | low | Not required |
| 4. The project respects the employees' freedom of association and their right to collective bargaining and is not complicit in restrictions of these freedoms and rights | The project respect the freedom of the workers and their rights according to Cambodian law | Low | Not required |

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| 5. The project does not involve and is not complicit in any form of forced or compulsory labour | Forced and compulsory labour does not occur | Low | Not required |
| 6. The project does not employ and is not complicit in any form of child labour | The project does not employ children | Low | Not required |
| 7. The project does not involve and is not complicit in any form of discrimination based on gender, race, religion, sexual orientation or any other basis. | The project treats everybody the same | Low | Not required |
| 8. The project provides workers with a safe and healthy work environment and is not complicit in exposing workers to unsafe or unhealthy work environments. | Travel to the biodigesters is identified as the most dangerous part of the biodigester installation | low | <p>An accident insurance is provided for the extension workers of the provincial offices. The employees of the NBP licensed private enterprise companies are, by contract, obliged to be responsible for safety at work and bear all the expenses in case an accident happens.</p> <p>There are 2 different relations with construction technicians:</p> <ul style="list-style-type: none"> - Technicians directly supervised by the PBPOs (old situation), and; - Technicians supervised and managed by Biodigester Construction Companies. <p>A very important party in the implementation of the programme in provincial level are also the PBPOs with the supervisory and extension staff. In total some 150 people are employed at the PBPOs.</p> <p>The masons are working in a shallow (1.5 meter) pit, not on a scaffolding or with a structure above their heads. Therefore there is no risk that they will fall from some height or that there is falling material that can injure them.</p> |

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| | | | <p>Nevertheless the companies are obliged to insure their staff against accidents, the insurance cost is part of the overhead cost which is part of the plant construction cost. The companies are officially registered and have to comply with the Cambodia Labour Law.</p> <p>At far greater risk are the staff who have to make frequent field visits and are exposed to the Cambodian traffic. They have small motorbikes who are delivered to them in new condition and they get an allowance to have them optimally maintained. Also they are annually provided with protective gear (helmet) and with an accident insurance.</p> |
| 9. The project takes a precautionary approach in regard to environmental challenges and is not complicit in practices contrary to the precautionary principle. | The anaerobic treatment in the biodigester does not for 100% disinfect the feeding material (human and animal waste), but reduces the risk significantly compared to the baseline. | low | The effluent (slurry) is left to decompose aerobically and mixed with agricultural residues; the initiated compost process will remove all remaining pathogens. On average twice a year the compost is spread out of the land |
| 10. The project does not involve and is not complicit in significant conversion or degradation of critical natural habitats, including those that are (a) legally protected, (b) officially proposed for protection, (c) identified by authoritative sources for their high conservation value, or (d) recognized as protected by traditional local communities. | In contrast, the project has a positive impact on the natural habitat | Low | Not required |

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| <p>11. The project does not involve and is not complicit in corruption.</p> | <p>Concern was expressed that corruption might occur at sales outlets. This however does not occur; additional clarification is provided in the mitigation measure.</p> | <p>low</p> | <p>NBP has a policy of setting price ceilings for construction, appliances and spareparts. With the pre-construction information potential farmers receive is a Bill of Quantities clearly indicating the quantity of construction materials (cement, bricks, sand, gravel) needed for a certain size. The cost of these materials depends on the location where they are bought, the BoQ gives an average price. The same goes for the appliances, including the piping, only here the price for NBP supplied materials (stoves, lamps, taps, main gaspipe, water drain) is fixed regardless of the location. Also cost of skilled and unskilled mandays is fixed as is the guarantee fee. On the back side of the BoQ the construction process is outlined. If a client is in need of additional appliances or spareparts, he/she can obtain these at a fixed rate. A BoQ is attached as annex to the GS passport.</p> |
| <p>Additional relevant critical issues for my project type</p> | <p>Description of relevance to my project</p> | <p>Assessment of relevance to my project (low/medium/high)</p> | <p>Mitigation measure</p> |
| <p>Environmental protection</p> | <p>Odor</p> | <p>Low</p> | <p>Odor will be reduced resulting from the anaerobic treatment in the biogas digester of the waste compared with the current situation. This is the result of the conversion of the organic matter, the main agent of the foul odor into biogas.</p> |

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ii. Sustainable development matrix⁵

The next table is not the blind sustainability assessment as required under the Gold Standard, but sustainable development was discussed in each of the workshops. The next table is the sustainability assessment conducted by NBP in collaboration with an independent consultant.

| Indicator | Mitigation measure | Relevance to achieving MDG | Chosen parameter and explanation | Preliminary score |
|---|---|---|---|-------------------|
| Gold Standard indicators of sustainable development. | If relevant copy mitigation measure from "do no harm" –table, or include mitigation measure used to neutralise a score of ‘-‘ | Check www.undp.org/mdg and www.mdgmonitor.org Describe how your indicator is related to local MDG goals | Defined by project developer | ’ |
| Air quality | | Applies to MDG target 4 (4.1, 4.2), & 5. Clean indoor air will reduce under-five mortality rate (4.1) and infant mortality rate and the disease burden due to indoor air pollution. It applies to target 5 by improving living conditions and thereby reducing maternal mortality | Parameter: Reduction in wood and charcoal consumption for cooking and kerosene consumption for lighting in the project compared to the baseline. Explanation: Women and children are primarily exposed to smoke from cooking. Combustion of these fuels causes hazardous emissions which over time have a | + |

⁵ Copy paste from the GS passport

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| | | rate. | negative impact on human health. | |
| Water quality and quantity | | Applies to MDG target 7 (7.8, 7.9). Proportion of population using an improved water source and improved sanitation facility. Water quality will improve if animal and human waste does not, directly or indirectly end up in the water. In addition, the provision of biogas will enable household to sterilize their water. | Parameter: Number of toilets built. Explanation: Treating human waste in a biodigester avoids contamination of water with pathogens and excessive nutrients. | + |
| Soil condition | | Applies to MDG target 7. Nutrient loops are closed by the use of digester effluent which avoids eutrophication of the soil and water bodies. | Parameter: Reduction of using chemical fertilizers as fertilizer in the project compared to the baseline Explanation: The application of bio-slurry instead of chemical fertilizers will balance nutrient inflow and outflows, which closes the nutrient loops. | + |
| Other pollutants | | | | 0 |
| Biodiversity | | Applies to MDG 7; reduced pressure on the forest | Parameter: Reduction in wood and charcoal consumption for | 0 |

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| | | <p>resulting from the substitution of wood and charcoal for cooking by biogas</p> | <p>cooking in the project compared to the baseline. Explanation: A significant proportion of the wood fuels are from non-renewable origin, hence the reduction of fuel wood consumption will decrease the pressure on the remaining forest and habitat for flora and fauna. However, since the amount of wood consumed relative to other driving forces of deforestation is relatively small, the overall impact is hard to quantify and measure.</p> | |
| Quality of employment | | <p>Applies for MDG, target 1 (1.b). Achieve full and productive employment and decent work for all, including women and young people.</p> | <p>Parameter: Number of trained masons and supervisors and number of companies working of marketing, construction and after sale services Explanation: Workers that are trained acquire skills required for qualified work.</p> | + |
| Livelihood of the poor | | <p>Target 7c: Reduce by half the proportion of people without sustainable access to safe drinking water and basic</p> | <p>Parameter: Increase in access to basic sanitation by the installation of a toilet to the biodigester; Use of biogas a lighting fuel; number of biogas</p> | + |

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| | | sanitation. General improvement of living conditions | lamps in use; Explanation: The treatment of waste in the biodigester removes pathogens, improves sanitation (esp. when a toilet is connected) and the use of biogas lamps result in a tremendous improvement in the quality of life of the poor. | |
| Access to affordable and clean energy services | | | Parameter: Reduction in cooking and lighting fuel expenditure compared to the baseline Explanation: Substitution of cooking and lighting fuel by biogas is revenue saving since biogas originates from a free energy source (animal and human waste) | + |
| Human and institutional capacity | | Applies for MDG, target 1 (1.b). Achieve full and productive employment and decent work for all, including women and young people. It also applied to MDG 3, since it reduces the serious time burden on women and children for fuel | Parameter: Creation of jobs and skills Explanation: Human capacity is established by training, by licensing and certifying biogas construction enterprises. The parameter is measured in qualitative and quantitative employment. | 0 |

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| | | wood collection. | | |
| Quantitative employment and income generation | | Applies for MDG, target 1 (1.b). Achieve full and productive employment and decent work for all, including women and young people | Parameter Number of masons and supervisors employed and number of companies working with marketing, construction and after sales services Explanation: Jobs by type resulting from the NBP activities | + |
| Balance of payments and investment | | Applies to MDG 8: Target 8b: Address the special needs of the least developed countries | Parameter: Total net capital inflow (Amount of foreign direct, investment, VER income and payments for materials not produced in Cambodia). Explanation: Simple summation of the monetary inflows and outflows resulting from the NBP activities | + |
| Technology transfer and technological self-reliance | | Applied to MDG 8: Target 8f: In cooperation with the private sector, make available the benefits of new technologies, especially information and communications | Parameter: Number of biodigesters built Explanation: The implementation of the project is a clear example of technology transfer and technological self-reliance | + |
| Justification choices, data source and provision of references | | | | |
| Air quality | The indoor air quality will improve significantly, since biogas is a | | | |

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|----------------------------|--|
| | clean fuel which does not emit hazardous pollutants (respirable suspended particulate matter, eye irritating smoke) when combusted (Rehfuess, Mehta et al. 2006) ⁶ |
| Water quality and quantity | Unsafe water and lack of sanitation ranks number 6 of the top 10 disease factors according to the WHO ⁷ . A biodigester treats waste, removes pathogens and coliforms and since application of slurry as fertilizer is actively promoted by NBP, the bio-slurry extension program, water pollution is drastically reduced. |
| Soil condition | Farmers switch to bio-slurry once they experience the benefits; this is promoted by the bio-slurry extension program. The literature shows that bio-slurry has similar characteristics as chemical fertilizer (Srinivasan 2008) ⁸ , and is therefore a good substitute. NBP promotes anaerobic composting of slurry by mixing it with other organic material (agricultural residues), since this improves the organic content of the material, preserves the nutrients and it will also result in soil amendment. |
| Other pollutants | |
| Biodiversity | A reduced consumption of wood will (in)directly alleviate the pressure on the forest and will therefore contribute to the habitat preservation for flora and fauna. This is well established by a great number of studies i.e.: (Srinivasan 2008) ⁸ , Dutta (1997) ⁹ , Guatam, Baral 2009) ¹⁰ |
| Quality of employment | NBP sets up a biogas sector, private enterprises, once licensed, will construct the biodigesters. Since the technology is being indigenized, jobs created are for a long period especially since the potential for biogas plants is much larger than NBP targets during phase I. Long |

⁶ Rehfuess, E., S. Mehta, et al. (2006). "Assessing Household Solid Fuel Use: Multiple Implications for the Millennium Development Goals." *Environmental Health Perspectives* **114**(3): 373-378.

⁷ WHO (2002). *World Health Report: Reducing Risks, Promoting Healthy Life*. Geneva.

⁸ Srinivasan, S. (2008). "Positive externalities of domestic biogas initiatives: Implications for financing." *Renewable and Sustainable Energy Reviews* 12(5): 1476-1484.

⁹ Dutta, S., I. H. Rehman, et al. (1997). *Biogas - The Indian NGO experience*. New Dehli, Tata Energy Research Institute

¹⁰ Gautam, R., S. Baral, et al. (2009). "Biogas as a sustainable energy source in Nepal: Present status and future challenges." *Renewable and Sustainable Energy Reviews* 13(1): 248-252.

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| | |
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| | term employment is therefore likely. |
| Livelihood of the poor | Biogas is a clean fuel which enables household to make a giant leap on the energy ladder (Buysman 2009) ¹¹ , it is much cleaner, more convenient, reduces drudgery of fuel wood collection for especially women and children, which allows and empowers women and children to fulfil their potential. The provision of light enables activities in the evening, be it study, reading, opening of shops or for entertainment. These cumulative benefits significantly improves the lives and livelihood of the poor. |
| Access to affordable and clean energy services | The only costs of biogas are the opportunity costs involved in the daily operation and maintenance of the biogas plant. However, since the time involved in collection fuel wood, tendering the wood fire, cleaning the sooth from the pans is much higher than the total time expenditure of operating the biodigester (ESMAP 2004 ¹² ; Dutta, Rehman et al, 1997) ¹³ ; GTZ, 1999 ¹⁴ ; the total time expenditure is and revenues are saved by not buying cooking and lighting fuels. |
| Human and institutional capacity | Training of masons, biogas extension workers, supervisors and the licensing of private enterprise all contribute to human and institutional capacity. Women empowerment is indirectly obtained since the provision of biogas relieves the women of drudgeries (fuel wood collection, tendering the fire, cleaning of sooth from utensils), as a result they can devote time to other activities and fulfill their potential (Srinivasan 2008) and WHO 2009 ¹⁵ |
| Quantitative employment and income generation | (1) Number of masons and (2) supervisors trained, (3) number of companies working on marketing, construction and after-sales services |
| Balance of payments and | NBP receives ODA from the Dutch government and income from the selling of VERs. This result in a substantial inflow of revenues into the |

¹¹ Buysman, E. (2009) *Anaerobic Digestion for Developing Countries with Cold Climates - Utilizing solar heat to address technical challenges and facilitating dissemination through the use of carbon finance*. Faculty of Environmental

Sciences, sub department Environmental Technology. Wageningen. University of Wageningen. Master.

¹² ESMAP (2004) "The impact of energy on women's lives in rural India."

¹³ Dutta, S., I. H. Rehman, et al. (1997). *Biogas - The Indian NGO experience*. New Dehli, Tata Energy Research Institute.

¹⁴ GTZ (1999). *Biogas Digest Volume II Biogas - Application and Product Development*.

¹⁵ <http://www.who.int/indoorair/mdg/en/>

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| investment | country. A minor proportion of this inflow is used to purchase equipment from China which cannot be constructed in Cambodia at the moment |
| Technology transfer and technological self-reliance | The introduction of the biodigester technology, in Cambodia, is an example of technology transfer. Significant capacity building is necessary to establish the new technology in the country and to indigenize the technology to local conditions. |

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| D. 2. Stakeholders Blind sustainable development matrix |
|---|

[See Toolkit 2.6.1]

Not available. This was not part of the original stakeholder consultation workshop meeting.

| |
|---|
| Comments resulting from the stakeholders blind sustainable development matrix |
|---|

Not applicable

| |
|---|
| Give analysis of difference between own sustainable development matrix and the one resulting from the blind exercise with stakeholders. Explain how both were consolidated. |
|---|

Not applicable

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| D. 3. Consolidated sustainable development matrix |
|---|

[See Toolkit 2.4.2]

Not available, not part of the consultation process.

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SECTION E. DISCUSSION ON SUSTAINABILITY MONITORING PLAN

[See Toolkit 2.4.3 and 2.6.1]

Discuss stakeholders' ideas on monitoring sustainable development indicators. Do people have ideas on how this could be done in a cost effective way? Are there ways in which stakeholders can participate in monitoring?

Not applicable

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SECTION F. DESCRIPTION OF THE DESIGN OF THE STAKEHOLDER FEEDBACK ROUND

[See Toolkit 2.11]

NBP uses a multitude of mean to monitor progress and the impact of the program, however this is not a unidirectional process, at any time NBP is open for feedback and suggestions and as this report shows on a great number of occasions NPB has actively sought feedback of stakeholders involved. The website of NBP (www.nbp.org.kh) is an important mean to distribute information about the programme to anyone interested and on that webpage everybody can find the contact details of NBP (<http://www.nbp.org.kh/page.php?id=13>), which can be used to provide feedback to the program. As the screenshot to the right shows, contact details of all the NBP staff, advisors and the focal point is published.

In order to improve opportunities to provide feedback, NBP has developed a feedback/evaluation form that is specifically designed to 'ease' the process of giving feedback, commenting and other requests. The next screenshot shows the form (<http://www.nbp.org.kh/comments.php>):



The screenshot shows the NBP website interface. At the top left is the NBP logo with the text 'National Biogas Programme'. Below the logo is a navigation menu with items like Home, Introduction, Achievements, Special Credit for Biogas, News & Event, Partner Organizations, Technical aspect, Publications, Use of Biogas, Download, Sitemap, Contact us, Job Opportunity, Coverage Map, and Gallery. There is an 'e-mail Login' section with fields for Username and Password, and a 'Login' button. A visitor counter shows '0000279' and 'Last update by 2009-09-03'. The main content area is titled 'Contact us' and provides the following information:

Please Contact Us at:
 National Biogas Programme (NBP)
 Department of Animal Production and Health
 Street 371 (Solar), Khan Meanchey, Pinnom Penh, Cambodia
 Tel: 855 023 992 609
 Fax: 855 023 992 604
 Email: admin@nbp.org.kh
 Website: <http://www.nbp.org.kh>

Staff of National Biogas Programme

| | | | |
|---------------------------|-----------|----------------------|--|
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| Admin and Finance Manager | | Mr. Chheng Rottanak | rottanak@nbp.org.kh |
| Technical Manager | | Mr. Meng Chanvool | vool@nbp.org.kh |
| Technical Supervisor | | Mr. Chum Vuth | engineer@nbp.org.kh |
| Technical Supervisor | | Mr. Khlok Hyman | engineer@nbp.org.kh |
| Technical Supervisor | | Mr. Ngeth Sokhan | engineer@nbp.org.kh |
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| Data Typist | | Ms. Ing Tinlichheke | vichheke@nbp.org.kh |
| Programme Assistant | | Ms. Neou Reaksmei | reaksmei@nbp.org.kh |
| Driver/Messenger | | Mr. Prek Sere | |

Advisors of National Biogas Programme

| | | |
|-----------------------|----------------|--|
| ENV Advisor for NBP | Mr. Jan Lam | jam@shworld.org |
| MAFF, Advisor for NBP | Dr. Sar Chetra | chetras@yahoo.com |

Focal Point

| | | |
|--------------------------------|------------------------|--|
| MAFF, Deputy Secretary General | Mr. Prek Theavek Amida | prek.amida.dsp@maff.gov.kh |
|--------------------------------|------------------------|--|

At the bottom of the page, there is a footer with navigation links (Home, News & event, Download, Gallery, Sitemap, Contact us) and contact information for the National Biogas Programme (NBP), Department of Animal Production and Health, Street 371 (Solar), Khan Meanchey, Pinnom Penh, Cambodia, Tel: 855 023 992 609, Fax: 855 023 992 604, Email: admin@nbp.org.kh, Website: <http://www.nbp.org.kh>.

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Procedure and feedback handling

- As the screenshot shows, a link has been created on the FrontPage of the NBP website accessible to every website visitor;
- On the webpage the user has the opportunity to provide feedback by filling in three forms, name, email and comments;
- Once the user enters 'submit', an email with the entered name, email and comments are send to admin@nbp.org.kh;
- On a weekly basis will the NBP management review the emails and aims to answer the emails within a week;
- All feedback, negative or positive, will be stored in a separate file. As NBP aims to answer emails within a week, problems and issues will be resolved in a timely manner.
- At request all emails will be made available to the verifier;

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ANNEX 1. ORIGINAL PARTICIPANTS LIST

Presented in a separate document, otherwise the size of this file would have been too large.


ANNEX 2. ORIGINAL EVALUATION FORMS

Not conducted

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Annex 3: LONO of DNA Cambodia

KINGDOM OF CAMBODIA
NATION-RELIGION-KING



COUNCIL OF MINISTERS
Ministry of Environment

Phnom Penh... 12 September 2005

No.: 2487/MoE

To: Mr. Jan Lam
Senior Advisor Biogas
SNV-Netherlands Development Organisation
#26, Street 334, Phnom Penh, Cambodia

CC: Department of Animal Health and Production
Ministry of Agriculture, Forestry and Fisheries

Subject: Host Country No Objection to the 'National Biogas Programme, Cambodia'

Dear Mr. Jan Lam:

The Cambodian Designated National Authority (DNA) wishes to inform SNV-Netherlands Development Organisation that the proposed CDM project activity entitled 'National Biogas Programme, Cambodia', as submitted on 5th September 2005, was considered in its meeting on 8th September 2005. The Cambodian DNA would like to confirm that:

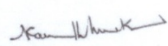
- The Cambodian DNA does not present any objection to the submitted Project Idea Note (PIN) of the proposed CDM project activity; and
- This No Objection Letter does not commit the Cambodian DNA to approving the proposed CDM project activity.

While preparing your project, please refer to the Cambodian Sustainable Development Criteria for Proposed CDM Projects available at www.camclimate.org.kh. Please contact the Cambodian Climate Change Office at the Ministry of Environment should you have any queries.

We would like to thank you for considering developing a CDM project in Cambodia.

Yours Sincerely,

Senior Minister, Minister of Environment



No. 46, Samdech Preah Sihanouk, Tonle Bassac, Chamkarmon, Phnom Penh, CAMBODIA, Phone / Fax : 885-23 21 25 40

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Annex 4: Provincial Level Workshop on Promotion and Extension of Biodigester Technology in Cambodia

Presented in a separate document to reduce the file size of this document.

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Annex 5: ODA declaration



National Biodigester Programme
Ministry of Agriculture, Forestry and Fisheries

Date: August 27, 2010
Project reference: The National Biodigester Programme Cambodia

To: Gold Standard Foundation

Declaration of Non-Use of Official Development Assistance by Project Owner

As Project Owner of the above-referenced project, acting on behalf of all project participants, I now make the following representations:

I hereby declare that I am duly and fully authorised by the project owner of the above-referenced project, acting on behalf of all project participants, to make the following representations on Project Proponent's behalf:

I. Gold Standard Documentation

I am familiar with the provisions of Gold Standard Documentation relevant to Official Development Assistance (ODA). I understand that the above-referenced project is not eligible for Gold Standard registration if the project receives or benefits from Official Development Assistance under the condition that some or all credits coming out of the project are transferred to the ODA donor country. I now expressly declare that no financing provided in connection with the above-referenced project has come from or will come from ODA that has been or will be provided under the condition, whether express or implied, that any or all of the credits [CERs, ERUs or VERs] issued as a result of the project's operation will be transferred directly or indirectly to the country of origin of the ODA.

II. Duty to Notify Upon Discovery.

If I learn or if I am given any reason to believe at any stage of project design or implementation that ODA has been used to support the development or implementation of the project, or that an entity providing ODA to the host country may at some point in the future benefit directly or indirectly from the credits generated from the project as a condition of investment, I will make this known to the Gold Standard immediately.

III. Sanctions. I am fully aware that under Section 10 of the Gold Standard Terms and Conditions sanctions and damages may be incurred for the provision of false information related to Projects and/or Gold Standard credits.

Signed: 

Name: Nou Muth


National Biodigester Programme

Title: NBP Director.

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