

**INTEGRATED DEVELOPMENT SOCIETY
(IDS – NEPAL)**

**Post Project Assessment on
Public Awareness and
Participation in Community
Bio-Briquette Production**

Project Location: Bishankhu Narayan, Nepal



IDS-Nepal

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Project Title: Community Briquette Project (15/2/2004 – 14/2/2005)

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Acknowledgement

I would like to express my deep gratitude to the Bio-briquette making community members of Bishankhu Narayan in Lalitpur district of Nepal for their hospitality and cooperation who so generously offered their time and energy to participate in the survey process.

It will be unfair to proceed further without appreciating IDS Nepal team; especially Program Director Mr. Prakash Koirala for his wholehearted support to the study, Prabin Neupane for his support during field visit and interview facilitation, and Kamal Bista for his support in gathering community members for the survey component.

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Introduction

Bio-briquette is a form of bio energy obtained from *Banmara* (“*Eupatorium adenophorum*” a type of invasive plant species more commonly referred to as forest killer weed) which displaces the use of fossil fuel consequently helping reduce carbon dioxide emissions.

Nepal is a country of great geographical diversity with three main regions- the Mountainous, the Hilly and the Terai. *Banmara* thrives in the valleys outlining the midsections of the Hilly and the Terai region where farming is one of the major occupations subsequently posing great threat to regular crop yield. While the capital city of Kathmandu lies within the valley, its rural outskirts still face developmental challenges in terms of information and technology. These rural areas are also the most susceptible to *Banmara* effects.

Project Area

Community Forest Users Groups (CFUGs) within Nepal that have been affected by *Banmara*. The targeted location for this report is Bishankhu Narayan, Lalitpur district, Nepal.

Objective

To conduct a study on community awareness and participation in adopting bio-briquette technology, and marketing options of the product.

Methodology

Secondary information: Available project reports and documents were studied at the IDS office at Tudaldevi, Baluwatar in Kathmandu.

Primary data collection: Semi-structured survey questionnaire was prepared and tested with the community members in a focus group discussion. Respondents were randomly sampled among the members of the Bio-briquette making group in Bishankhu Narayan. A total of 12 representative respondents out of a total 49 households of Bio-briquette making group were interviewed with the support of two survey facilitators. While many people did not have telephone/internet service and the postal service was not efficient, face-to-face interview turned out to be the best option in terms of engaging and communicating with people first hand and in addition learning about their concerns and comments.

Aside from semi-structured interview, participatory exercises on Daily Routine Work, Social and Resource Mapping, and Time Line were conducted. A man and a woman from two different households volunteered to participate in the Daily Routine Work; and an elderly as well as key informant member of the group volunteered to participate in the Social and Resource Mapping as well as Time Line Exercises.

Discussion and Observation

Awareness on the Bio-briquette

From Table 1 below, the most important goal for the majority was income generation through selling briquettes followed by improved living standards. At the focus group discussion, people showed inclined interest in any income generating activities and added that employment would be the most important among all options. Improved agriculture yield was another important goal added by some participants during the survey since it was the major source of income in most households.

Table 1: Importance of goals of the Bio-briquette community (1=most important and 5=least important):

| | 1 | 2 | 3 | 4 | 5 |
|--|---|---|---|---|---|
| Improve living standards | 2 | 1 | 1 | 0 | 1 |
| Learning how to make resources last longer | 0 | 0 | 2 | 0 | 0 |
| Control over resource management | 1 | 2 | 0 | 0 | 0 |
| Cooperation to manage resources | 0 | 0 | 0 | 0 | 2 |
| Income generation through selling briquettes | 7 | 0 | 0 | 3 | 1 |
| *Agriculture (* indicates participant's addition to the questionnaire) | 1 | 1 | 0 | 0 | 0 |

From Table 2 below, the most profound changes that were brought by the Community Bio-briquette Project was Social/Behavioral and Environmental. During the survey, people shared their views and gave brief explanations as to what they considered were the most evident changes. Here are some of the experiences.

In economic terms, from farming, the income was usually received as a month's pay depending on the yield. Extra time that would have otherwise been spent haphazardly could be put into good use by making briquettes. Bio-briquette Project had helped employ and earn extra cash. This extra income had given women more independence and less reliance on their husbands for every little household purchases. They also expressed happiness in being able to provide lunch money for children. In social/behavioral terms, community savings could be made for the future. Women could form meetings, learn new things, discuss issues and include opinions. It gave a solid platform for women and helped in improving self-confidence. All of the

women were able to write their names after this project was initiated. Some admitted that it was important for book-keeping and learnt from their school-going children. Introduction of skills development and training had also been a major accomplishment. People were happy to get to know new organizations. From environmental aspect, the most evident was forestry development. Inside the household, there was less smoke, cleaner clothes, no need to constantly stay near the fire and pollution free environment for the children to read. In terms of technology, no spectacular changes were seen. People expressed need of a new grinder machine as the old one provided during the project initiation was less efficient than manpower.

Table 2: Various aspects of changes:

| Variables | Cumulative Total of Ratings by Participants |
|--|--|
| Economic | 6 |
| Social/Behavioral | 7 |
| Environmental | 7 |
| Technological | 2 |
| *Good use of extra time (* indicates participant's addition to the questionnaire) | 1 |

Women drudgery (Table 3) had significantly minimized after the production of Bio-briquette.

Table 3: Women drudgery:

| Yes | No |
|------------|-----------|
| 11 | 1 |

Everyone agreed that the issue of deforestation had been dealt since the implementation of Bio-briquette project (Table 4).

Table 4: Forest restoration:

| Yes | No |
|------------|-----------|
| 12 | 0 |

From Table 5 below, decreased indoor pollution is the most accepted benefit of Bio-briquette use.

During the survey, the respondents added that the use of Bio-briquette was very beneficial for households with elderly persons and infants who were susceptible to respiratory problems. Bio-briquette produced less black smoke than traditional firewood oven. Food cooked

using Bio-briquette was tastier and children were happy to achieve pollution free learning environment at home. Since the inception of Bio-briquette Project, a community driven savings bank was initiated where Rs.25 is deposited on the first Friday of every month. This savings bank loaned money to borrowers with interest, providing assistance to the person in need as well helped increase community savings.

Table 5: Benefit of Bio-briquette use (1=most important and 6=least important):

| | 1 | 2 | 3 | 4 | 5 | 6 |
|--|---|---|---|---|---|---|
| Less CO₂ emission | | | 1 | | 1 | 2 |
| Additional income generation | | 2 | 1 | | 1 | |
| Mitigation of deforestation | | 1 | 1 | 1 | 1 | |
| Energy efficiency | | 1 | 1 | 2 | | |
| Less women drudgery | | | | 1 | 1 | 2 |
| Decreased indoor pollution | 7 | | | | | |
| *Tasty food (*indicates participant's addition to the questionnaire) | 1 | | | | | |

The majority agreed (Table 6) that the NGO headquarters was accessible and available to address questions and concerns. NGO representatives visited regularly once every 1-2 months. However, the respondents added that there had not been a real solid talk between them and the NGO on the further course of actions. Some respondents felt that there were some unfulfilling assurances. Others addressed that initially there was a lot of enthusiasm but after the resources (*Banmara*) depleted due to uprooting, there seemed to be less interest in Bio-briquette making. Respondents said that the guidance offered was incredible but they have been feeling that they are left in middle-grounds.

Table 6: Accessibility and availability of NGO headquarters:

| Yes | No |
|-----|----|
| 10 | 1 |

From Table 7 below, need of grinder machine was the most talked about issue. Respondents expressed that the most difficult task was to grind and a proper grinding machine would simplify their work process and help in rapid production of Bio-briquettes. Another popular debate remained annual work as opposed to seasonal work that would facilitate regular inflow of cash and employment in household. This would ensure better standard of living. Other viewpoints shared were that of access of electricity in the community shelter to operate the

grinder, additional skill development and training classes, concrete upgrade of the shelter and establishment of shop on the second floor of the shelter.

Table 7: Changes or improvements within the Community Bio-briquette project:

| Type of improvements needed | Responses by priority |
|---|------------------------------|
| Need Grinder machine (easy, less dust, less manpower) | 5 |
| Community shelter upgrade | 1 |
| Establishment of shop on the second floor | 1 |
| Do not know | 1 |
| Other work (long term not just seasonal) | 4 |
| Electricity in the community shelter | 1 |
| Good and healthy environment | 1 |
| Better standard of living | 1 |
| Additional skill development and training classes | 1 |

From Table 8 below, the use of Bio-briquette was preferred the most for cooking followed by heating room in the winter. The respondents advised that food cooked using Bio-briquette was tastier and that they mainly preferred boiling milk and cooking pulses using it. Next, since the briquettes burn continuously for a long time, its usage for heating room during the winter season was outstanding. Other usages included massaging pregnant women/babies/elderly and for poultry farming.

The usage of Bio-briquette for the purposes of cooking was popular during the winter because it also generated continuous heat helping keep the room warm. It was learnt that gas or firewood burnt a lot faster and helped save time especially during rush hours in the morning where food needed to be prepared by 7 a.m. For this reason, some respondents still resorted to traditional methods of cooking even after the introduction of Bio-briquettes (although they used Bio-briquettes as well).

Another interesting fact that was noted during the survey was that the ash produced after burning the Bio-briquette was an excellent source of manure for flower pots and kitchen gardening. It could also be used as a dishwashing agent for copper and brass utensils.

Table 8: Use of Bio-briquette (1=most important and 5=least important):

| | 1 | 2 | 3 | 4 | 5 |
|---------------------------------------|----------|----------|----------|----------|----------|
| Cooking | 7 | 4 | | | |
| Heating | 3 | 4 | 3 | | 2 |
| Fodder preparation for animals | 1 | | | 1 | |
| Poultry farming | | | 6 | 1 | |
| Others (specify) | 1 | 3 | 1 | 1 | 1 |

Participation in Bio-briquette activities

All the respondents who participated in the focus group discussion and the survey were active members in community Bio-briquette production (Table 9). 1 indicates respondent him or herself and (+ number) indicates other active members in community Bio-briquette production within a household.

Table 9: Active members within household in community Bio-briquette production:

| | | | | | | | | | | | |
|------------|-----|---|---|---|---|-----|-----|---|---|---|-----|
| Yes | 1+2 | 1 | 1 | 1 | 1 | 1+1 | 1+3 | 1 | 1 | 1 | 1+2 |
| No | | | | | | | | | | | |

According to Table 10, 8 out of 12 respondents were involved in the marketing of Bio-briquettes. 1 indicates respondent him or herself and (+ number) indicates other active members in community Bio-briquette marketing within a household.

Table 10: Active members within household in community Bio-briquette marketing

| | | | | | | | | | | | | |
|------------|---|---|---|---|---|---|---|---|---|---|---|-----|
| Yes | 1 | 1 | | | 1 | 1 | 1 | 1 | | | 1 | 1+1 |
| No | | | 1 | 1 | | | | | 1 | 1 | | |

According to Table 11, most respondents replied that the division of labour was equally shared and teamwork was applied in the production of Bio-briquette. The community was formed into groups for the purposes of collection, burning and moulding of briquettes which was then further split up into sub groups of 4-6 people to share the workload. Some respondents were assisted by their children and/or husband during the production process.

Table 11: Division of labour carried out during the process of Bio-briquette production

| | |
|---|----|
| Children lend hand | 1 |
| Community sub-group | 10 |
| Husband assists by carrying load, book-keeping, packaging | 1 |

Marketing Bio-briquettes

The community Bio-briquette project as a means of generating income for household was liked by many. According to Table 12, maximum voted Very Good. While conducting the survey, the respondents who put satisfactory also added that initially it was very good but at present with depletion of *Banmara*, generation of income had become satisfactory.

Table 12: Rating of Bio-briquette project as a means of generating income for household:

| | |
|--------------|---|
| Very Good | 5 |
| Good | 3 |
| Neutral | - |
| Satisfactory | 4 |
| Dissatisfied | - |

The numbers of Bio-briquette produced by a household within one year depended on the major source of income within household i.e. people with regular earnings produced less. Also the workload assigned within sub-groups affected production. Minimum Bio-briquettes produced by a household within one year is 51 and maximum is 1500 depending on the *Banmara* resources available (Table 13).

Table 13: Average number of Bio-briquette produced by a household in a year:

| | |
|-----------|---|
| 51-100 | 1 |
| 101-150 | 2 |
| 750 | 2 |
| 1000 | 3 |
| 1000-1500 | 4 |

From Table 14 below, skills training remained one of the most sought after alternatives contrary to the community Bio-briquette project. The respondents shared interest and curiosity in various other alternatives. Respondents were keen in taking Knitting/sewing classes, incense making, basket weaving, making bead necklace, making pickles and learning gardening.

Respondents also discussed that they were looking into adult education classes offered through the government.

Table 14: Alternatives to Community Bio-briquette Project

| | |
|---|---|
| Skills Training | 5 |
| Making Pickles | 1 |
| Knitting/Sewing | 4 |
| Incense making | 3 |
| Making bead necklace | 2 |
| Flower plantations | 1 |
| Wondering if something can be worked out with <i>sal</i> trees (basket weaving) | 3 |

The majority of respondents (Table 15) rated time consumption and efficiency during production of Bio-briquette as Good. Of those who reported the reasons, indication of inefficiency and time consumption were mainly due to the dust produced in the process, cracked skin on hands and dirty clothes.

Table 15: Rating of time consumption and efficiency during the production of Bio-briquette

| | |
|---------------------|---|
| Very Good | 3 |
| Good | 5 |
| Neutral | - |
| Satisfactory | 4 |
| Dissatisfied | - |

From Table 16 below, the number one issue in marketing of Bio-briquette was transportation followed by packaging, higher demands than supply, lack of *Banmara* resources, returns, time consumption and lack of proper advertisement. The respondents talked about being unable to meet rising demands of Bio-briquettes due to lack of *Banmara* resources. Proper packaging was required to store and transport briquettes without which returns could be costly. Other factors such as requirement of longer time in burning were disadvantages in selling briquettes.

Table 16: Issues and bottlenecks in marketing of Bio-briquettes

| | |
|--|---|
| Demand higher than production | 2 |
| No problem for marketing | 4 |
| Lack of <i>banmara</i> | 2 |
| Transportation | 6 |
| Packaging | 4 |
| Returns | 1 |
| Consumes a lot of time initially to burn | 1 |
| Not enough advertisement | 1 |

Conclusions and Recommendations

There is dire need to conduct a training and/ or orientation course for the Bio-briquette community on the sustainable harvest of the *Banmara* weed instead of uprooting in its early stages before maturing.

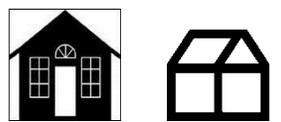
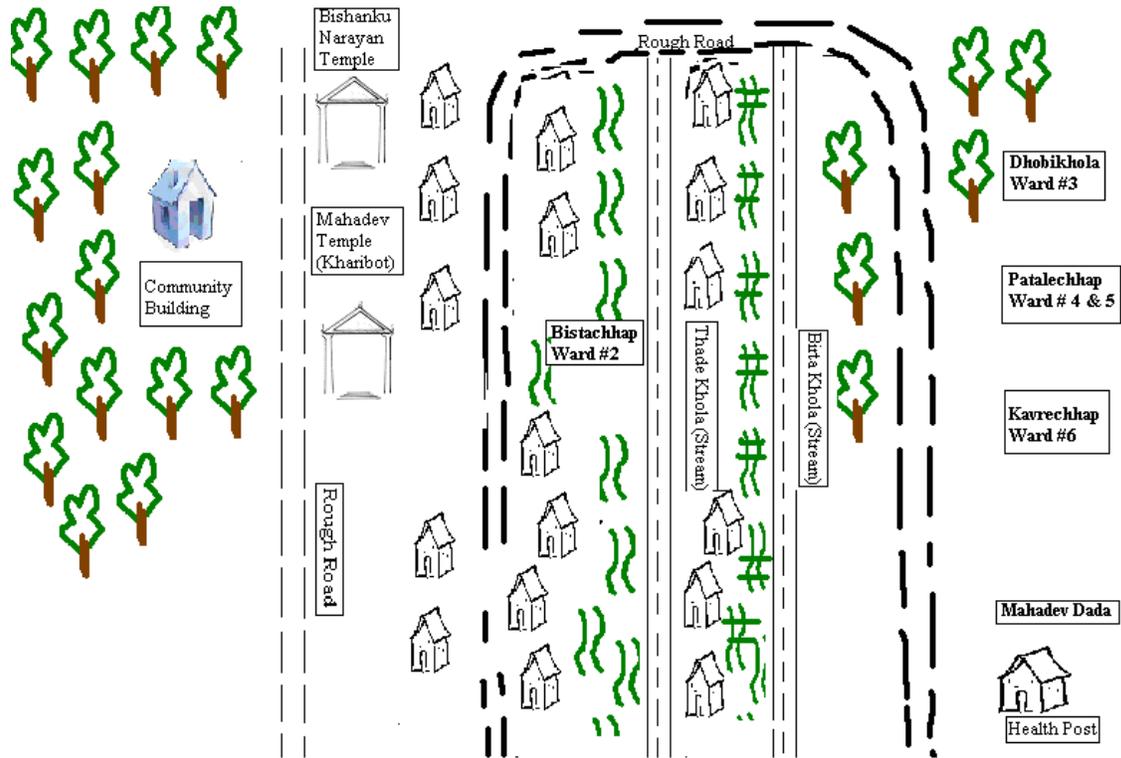
One or few households in the Bio-briquette community should be encouraged to take up Bio-briquette production as a business so that private entrepreneurship could be developed as a model and others can be inspired from the business. This may also help identify the solution of proper packaging and transportation of Bio-briquette from the production site to the market.

There is high demand of Bio-briquette in the nearby big city of Kathmandu. However supply remains very limited. Therefore, partnership and understanding among the CFUG network members around Bishankhu Narayan has been felt necessary so as to harvest and supply *Banmara* weed in a sustainable way.

It was learned from the community that there were few (about 3-4) studies that had been conducted in the past at Bishankhu Narayan from different agencies and individuals. However no one had ever submitted to the community the report generated after the studies were conducted. Hence, respondents should be ensured access to the generated report.

Annex 1. SOCIAL & RESOURCE MAP (BISHANKHU NARAYAN)

N
↑



VDC School

Bistachhap Ward #1

Legend

- Household
- Trees (Forest)
- River/ Stream
- Road/ Trail
- Temple
- Rain-fed Farm
- Irrigated Farm

Prepared By: Kamal Bista
Facilitated & Copied By: Rasna Sherchan

Annex 2. Time Line

| Bikram Sambat | A.D | Events |
|----------------------|------------|---|
| 2002 | 1945 | First time in the history, plantation of pine saplings was carried out in Sawarikot (ha) and Bishankhu Narayan (3 ha). |
| 2015 | 1958 | First Primary School was established in Bishankhu Narayan. This was a notable outcome of a conference of Bista dynasty (families) of rural Bishankhu Narayan and Kathmandu town. The meeting decided to establish a primary school for kids of rural Bishankhu Narayan area with the financial support of Bista families from the town. |
| 2022 | 1965 | As a result of an all- party meeting, the school was transferred from Bishankhu Narayan to Godamchaur for achieving maximum enrolment. Besides, the new venue had enough playgrounds and was located in between two villages. |
| 2034/5 | 1977/8 | Health Post established in Ward 9 of Bishankhu Narayan. |
| 2036 | 1979 | While the nation was to go for referendum to choose for Multiparty Democracy system or Party-less Panchayati Regime, there was rampant deforestation across the nation including this area. However, the unwanted activity gradually reduced after the referendum was over. |
| 2039 | 1982 | National grid of electricity in Godamchaur. |
| 2041 | 1984 | Establishment and operation of an Ayurvedic clinic in the village. |
| 2042 | 1985 | National grid of electricity in Bishankhu Narayan. |
| 2046 | 1989 | Pipelines and taps fitted in the village for drinking water. |
| 2051 | 1994 | Initiated to form forest users group (FUG) and establish community forest (CF). |
| 2053 | 1996 | Formal establishment of a community forest by registering the local forest in the District Forest Office with the formation of forest users group headed by Mr Govind Bista. |
| 2053 | 1996 | Telephone land line. |
| 2053-59 | 1996-2002 | Formal establishment of CF alone did not produce any good results for the rural community except some grasses and grazing facilities. This was because the area had only pine forests. |

| | | |
|------|------|---|
| 2059 | 2002 | Mr Kamal Bista succeeded Mr Govind Bista as the chair of the FUG. Community forest management plan was prepared and as a result of this 25 percent of the firewood demand of the community was met. |
| 2061 | 2004 | <p>Everyone got surprised when IDS man came to our village and said that briquette (smokeless fuel for cooking) could be made out of Banmara weeds (<i>Eupatorium sp</i>). Villagers asked the man as to how could it be possible. Then the IDS man took to ICIMOD (International Centre for Integrated Mountain Development) some of the villagers to show the process of briquette making. He also explained them the benefits of the product.</p> <p>Banmara had been a big problem for the villagers and hence they were excited to use the weed for making briquettes. IDS facilitated the villagers' access to bio-briquette making training at ICIMOD.</p> <p>When the villagers started to produce bio-briquette at their village, they used a pit for charring as charring drums were expensive (Rupees 900). Twigs and leaves were used to cover the pit while charring before they finally came to use GI sheets.</p> |
| 2061 | 2004 | <p>IDS helped he community transport and sell 5000 pieces of bio-briquette at the rate of Rupees 8 per piece. Women members were very happy as they heavily benefited the sale of the products.</p> <p>Sustainable Development Forum with assistance of GEF SGP made a documentary film of the community bio-briquette which was telecasted through Nepal Television (NTV) and Channel Nepal TV at six occasions. Local FM radio broadcasted the news and the community endeavours in briquette making in title of GODAVARI SERO-PHERO. Kantipur TV telecasted the development initiative in its programme on HIRDA-HIRDAI. Sagarmatha FM also broadcasted the initiative. Nepal Federation of Environment Journalists (NEFEJ) and Kalpabriksha published the news and development in their journals. CNN crew members also visited the area and filmed for four hours the community bio-briquette initiative of the women of Bishankhu Narayan and telecasted worldwide.</p> |
| 2063 | 2006 | 4 hectares of forest was destroyed by a human induced fire. Locals tried hard to extinguish the fire but all in vain til the fire reached to the nearby fireline. Fireline is a strip of forest land cleared to protect from further fire spread and used as walking trail or road for various purposes. The fire was an intentional action taken by local villagers to get rid of leopards. |

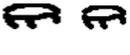
Interview Participant: Kamal Bista
(Timeline Table) Prepared by: Rasna Sherchan

Annex 3. Daily Routine Chart

Mid-night → → → → → → → → → → Mid-day → → → → → → → → → →

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|--|---|---|---------|----------|-----------|-------------------------|-------------------------|-----|-----------|----------------|----------------|----------------|----------------|-------------|----------------|----------------|----------------|-----------|-------|-------|---|----|----|----|
| Woman April thru November | | | | Wake up | Tea time | Free time | Prepare kids for school | | Eat | | Free time | Free time | | Free time | Free time | Fetch Water | Fetch Water | Free time | Sleep | Sleep | | | | |
| December thru March | | | Wake up | Tea time | Free time | Prepare kids for school | | Eat | Farm Work | Farm Work | Farm Work | Farm Work | | Fetch Water | Fetch Water | Fetch Water | Fetch Water | Free time | Sleep | Sleep | | | | |
| Man April thru November | | | | Wake up | Tea time | Free time | Prepare kids for school | | Eat | | | | | | | | | | Sleep | Sleep | | | | |
| December thru March | | | | Wake up | Tea time | Free time | Prepare kids for school | | Eat | Work in Office | Work in Office | Work in Office | Work in Office | | Work in Office | Work in Office | Work in Office | Free time | Sleep | Sleep | | | | |

Legend

- Wake up 
- Cooking 
- Brooming 
- Tea time 
- Free time 
- Prepare kids for school 
- Eat 
- Farm Work 
- Sleep 
- Work in Office 
- Fetch Water 

Interview Participant (female):

Renu Bista

Interview Participant (male):

Prakash Basnet

(Chart) Prepared by: Rasna Sherchan

Annex 4. Survey Informed Consent Letter and Semi-structured questionnaire

Informed Consent Letter

Research Project Title: Public Awareness and Participation in Community Bio-briquette Production

Researcher: Rasna Sherchan

This consent form indicates your agreement on voluntary participation for the research being conducted. A copy of this consent form will be provided for your records and reference should you decide to partake in this research. If you would like to know more about the research, please feel free to ask questions and clarify matters.

The purpose of this research is to conduct a study on community awareness and participation in adopting bio-briquette technology, and marketing options of the product. I am interested in understanding your views on bio- briquette technology since its inception, the changes it has brought in livelihood-use and production, income generation, socio-economic factors, sustainability and environmental condition.

This research will involve workshops to acquire knowledge about community perspective on bio-briquette technology, followed by community meetings to allow active participation and verification of results. A household- level survey and focus group discussion will be conducted through the collection of quantitative/qualitative information which will serve to enhance the community generated data. Household research will take place exclusively in the month of April 2009. Names will be published in the NGO report and subsequently the information will be verified for feedback and reflection with individual households before incorporating the household-level data into the research. The community will decide on a location and will have access to all the copies of reports generated in Nepali and English.

Please make sure that you have read and understood the accompanying information. Your signature or thumbprint indicates that you are satisfied with the information regarding participation in the research project and that you agree to become a participant. You are free to refrain from answering any questions you prefer to omit and are also free to withdraw from the study at any time. There are no legal or institutional consequences in doing so. Your participation in the process should be as informed as your initial consent, so please feel free to ask for clarification or new information throughout the process.

Signature

Date

I have read and understood the Informed Consent Form.

Date: _____

| SN | Name of participant respondents | Signature/ Initials |
|-----------|--|----------------------------|
| 1 | | |
| 2 | | |
| 3 | | |
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| | | |
| | | |
| | | |

Personal Data Section (5 questions)

(close-ended)

** Please note that names are collected for the purpose of this study and will be published with the consent of the respondents.*

- 1) How many years have you lived in the village for? -----

- 2) How many people are living in your household? -----

- 3) Who is the head of the household? -----

- 4) Who controls over your household resources? Circle.
 - a. Head
 - b. Spouse

- 5) What is the major source of income in your household? Circle.
 - a. Farming
 - b. Cattle
 - c. Production of bio-briquette
 - d. Marketing of bio-briquette
 - e. Other (specify) -----

Awareness on the bio-briquette (10 questions)

(open-ended/ close-ended/ matrices/ scale)

- 1. When were you or a member of your household first introduced to bio-briquette making training?
 - a. 10 years ago
 - b. 5 years ago
 - c. 3 years ago
 - d. Other (specify) -----

- 2. Who introduced to you about bio-briquette and its utility?
