

## **Improved Energy Access through Biomass Briquettes**

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Duration: 1st June – 31st August, 2014

Location: Nepal

### **Project Summary:**

This project will provide access to a healthier and more efficient energy source by training women on production of biomass briquettes using a locally available shrub. Engaging women in joint action to produce an alternative energy source will reduce their dependence on firewood for household needs, and increase their appreciation for and understanding of one another.

### **Brief Background:**

Firewood is the primary source of energy in rural Nepal, leading to deforestation. Dependence on firewood puts an extra burden on women and girls as they are typically responsible to cook the family meal. The problem is exacerbated by the fact that firewood has become increasingly scarce as deforestation continues and thus collecting firewood requires more time and effort. In addition, prolonged exposure to toxic smoke from firewood leads to severe health problems, in the form of respiratory illnesses. It is estimated that inhaling acrid smoke from open fires and rudimentary stoves leads to nearly two million deaths every year worldwide, primarily among women and children.<sup>1</sup>

In this project, I will improve energy access through production of biomass briquettes, an alternative energy source for household needs. Briquettes are healthier and more efficient compared to firewood. Biomass briquettes are made from agricultural wastes and other biomass materials. For this project, I will be using a weed locally known as Banmara (*Eupatorium adenophorum* Sprengel). Banmara is found in abundance in most forests in Nepal, with an altitudinal range of 800-2000m.<sup>2</sup> The local name loosely translates to 'the killer of the forest'; it is an invasive species that has caused extensive damage to the grazing lands and natural forests. I will train people to utilize Banmara as the main raw material to produce biomass briquettes.

### **Target Group:**

The project targets Kottandi, a village in Nawalparasi district in the central region of Nepal. There are around 80 households, almost all of which live below the poverty line. They depend mostly on firewood collected from the near-by forest for their energy needs. Most of the inhabitants are from Tharu tribe, who had migrated there after losing their land due to floods between 1980 and 2000. They do not have enough land either for settlement or for agriculture. They live on either the land they have borrowed from a landlord or the near-by public forest. The major source of income for the villagers is agricultural labor which is seasonal and marginal. The village is very close to a forest, which covers about 10 sq.km, but is rapidly depleting. The shrub Banmara is found in abundance in the forest, particularly in its periphery. The land area covered by Banmara is currently increasing and poses a serious threat to the local community as it makes the land unsuitable for grazing or for trees to grow.

Although the majority of people in the village belong to the Tharu tribe, there are also people from other ethnic groups. The Tharu community is one of the so called lower-castes and hence it has been further marginalized by segregation from the society. Historically, people from lower castes were denied of access to public resources such as tap, schools and temples. Although the situation is improving with time and education, people are still hesitant to embrace the notions of equality and work together. Through this project, I would like to bring together women from different castes and ethnic groups and give them an opportunity to engage in collective efforts that improve energy access.

### **Support Network:**

An agreement has already been reached with the following groups/ institutions for collaboration in this project.

**1. Shrijansheel Mahila Samuha (SMS), Kottandi, Nawalparasi, Nepal:** SMS is a women's group in the village that has already been actively involved with community initiatives such as adult literacy classes and livestock

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<sup>1</sup> Global Alliance for clean cookstoves, "Igniting Change".

<sup>2</sup> Shrestha, Wilson and Gay "Ecological and environmental study of *Eupatorium Adenophorum* Sprengel (Banmara) with reference to its gall-formation in Gorkha-Langtang Route, Nepal"

rearing. They will be the local partner for the project as they are based in the village and have earned trust and respect from the local community for their successful initiatives.

**2. Agriculture and Forestry University (AFU), Chitwan, Nepal:** AFU is a recently established university based in Chitwan district, around 50 km from the village. The university has taken special interest in initiatives that curb the spread of Banmara, so as to save forests. Dr. S. Thapaliya from AFU will help me in developing training materials and in supervising the manufacturing process.

### **Implementation:**

The project broadly consists of two phases— training and production. In the first phase, a group will be formed consisting of 20 women. Participants will be selected based on consultation with the local partner, Shrijansheel Mahila Samuha (SMS). The group will consist of women of different castes, to ensure that various castes and ethnic groups in the community will be brought together during the project. Experts from the Agriculture and Forestry University (AFU) will help me in finalizing the teaching tools and nature of training most suitable for the group, depending on the needs of the community. Then, a training program will be conducted, through which the group will first be made aware about the harmful impacts of smoke from firewood. Next, they will be introduced to biomass briquettes as alternative for firewood. Then, they will be trained on the procedure (collection and preparation of raw materials, drying, fabrication, compacting and briquetting) for producing biomass briquettes to meet their household energy needs. The training is expected to last for two weeks. In the second phase, the group will be subdivided into two groups, each of which will be given a manually operated briquetting machine. Each machine will be shared by a group of ten women to produce briquettes. Once the machines are handed over, the groups will begin production. I will provide them constant guidance throughout the production process, with the help of a team from AFU. The primary aim of the production process for each member will be to produce enough briquettes to meet her household energy needs so that firewood can be replaced.

The impacts of the project will be measured based on the amount of briquettes produced by each group member. In addition, the amount of firewood consumed in each of the member households (in a month) will be compared to the period before and after they began the production of briquettes.

### **Expected Outcomes:**

- 1. Community Building:** The project will bring together people from different castes and ethnic groups for a combined learning activity. This will strengthen the sense of community as they work together for a common goal. Thus, the project will help to deconstruct the social segregation by fostering mutual understanding and acceptance.
- 2. Improved Energy Access:** The member households will have access to healthier and more efficient alternative to firewood. The time spent on collecting firewood can be spent on other activities such as education and income generation.
- 3. Forest Conservation:** This is achieved through two ways. Firstly, by reduced dependence on firewood and secondly, by controlling the spread of an invasive shrub that destroys forests.

### **Sustainability/Scope for Expansion:**

Once the team members complete the first few rounds of production and start producing more than enough to meet their household needs, they can pursue briquette manufacturing on a commercial scale. I will provide them support in exploring sales opportunities and building a suitable business model. Since SMS has strong ties with the local community, they will act as the intermediary to follow-up on the progress of team members after the duration of the project.

### **About Me:**

I am from Nepal and my hometown is located near the target area. I had been involved in the adult literacy classes initiated by SMS in the village, three years back. Last summer, I learnt about decentralized clean energy services and products suitable for developing countries, through an internship I did with Embark Energy (an incubator for clean energy entrepreneurs). The proposed project is my attempt to pursue opportunities to improve energy access and to create a greater sense of oneness among the members of a community in my country.