

GAP Fund Application Form

TECHNICAL APPLICATION GUIDELINES

The technical component is designed to determine the ability of the institution to clearly articulate the programmatic and budget activities of the proposed project. Organizations must demonstrate their ability to manage and implement the proposed program that contributes directly to the GAPFund objectives. Applicant must adhere to the following guidelines in order to be considered:

1. The Technical Application must include the following:
 - A. Cover Sheet
 - B. Technical Proposal
 - C. Budget Summary
 - D. Annex A - Objectives and Activities Table
 - E. Annex B - Implementation Arrangement Table
 - F. Annex C - CVs for Key Staff
 - G. Annex D – Budget (please follow the proposal budget guidelines below)
2. Application must be completed in English.
3. Please try to stay within the page limits as much as possible.

PROPOSAL BUDGET GUIDELINES

Instructions for completing Proposal Budget are:

1. All applicants must use the Excel budget template provided.
2. Budget figures must be provided in US dollars.
3. Provide a separate budget for each partner institution.
4. Applicants must submit their budgets as a separate Excel file, with separate tabs for each partner institution, and enter data using formulas rather than hard numbers wherever possible.
5. Budgets must show, per line item, the amount being requested of GAPFund, the amount being provided as match, and the total project cost.
6. Under Salaries, list each staff member separately, showing the individual's name, daily rate, and number of days.
7. Fringe benefits must be based on actual expenses or approved institutional rates.
8. Travel costs are reimbursed in amount of airfare, train, water transport or vehicle costs. Airfares are paid for economy class only. Per Diem payment may not exceed those provided for by the U.S. Government.
9. Under Activities, list specific items not accounted for in Salaries or Travel & Per Diem. Break each activity into its separate elements. For example, for a workshop, illustrative line items might include workshop venue rental fee, equipment rental fee, printing/photocopying of participant materials, meals, etc.
10. Indirect cost rates, if used, must be supported by an audited calculation, and applicant must provide proof of this approved, audited rate.



Technical Application Form

A. COVER PAGE

Project Title: *Promotion of Briquettes as an alternative to fuel wood for cooking and heating purposes in the towns and villages in Nepal*

Region/Country: South Asia Region/Nepal

Primary Institution: Center for Rural Technology, Nepal (CRT/N)

Name and title of primary contact person: Krishna Hari Maharjan, Program Development and Monitoring Advisor

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Implementation Partner (if applicable): Rural Energy Technology Service Center Pvt. Ltd. (RETSC)

Contact information:

Mr. Birjung Prajapati, General Manager, Rural Energy and Technology Service Centre Pvt. Ltd., GPO Box – 3628, Tripureshwor, Kathmandu, Tel No: 4260165, 4256819, Fax No: 977-1-4257922, Email: retsc@crtnepal.org

Expected Dates for Start: March 2006

Expected Dates for Completion: February 2007

GVEP Theme Addressed: Renewable Energy Technology

Requested Funding Amount:

Amount of funding being requested from GAP fund: US\$

Amount of cost-share being provided: US\$

Total cost of proposed project: US\$

A. Brief summary of the project: (Max. ½ page)

Biomass that includes crop residues, plant weeds, and cuttings from bushes in the forest as well as twigs of forest and fodder trees is abundantly available in Nepal. If these biomass resources are properly utilized through simple technology in making briquettes, a cleaner and efficient form of energy with reduced air/smoke pollution that includes CO₂ emission for both cooking and heating purposes is generated, which will bring many positive changes to the lifestyle and economy of the local people. It helps maintain clean surroundings using unmanaged biomass, provides efficient alternative fuel wood to villagers and saves their time in collecting fuel wood as well as protects forest, provides alternative fuel source to town dwellers and saves foreign exchange used in importing liquid petroleum gas (LPG) and kerosene, and also saves electricity used for cooking and heating.

There are two types of charcoal making devices, metallic drum appropriate for towns and villages and kiln appropriate for rural areas. Similarly, there are basically two types of briquette stoves, developed by Center for Rural Technology, Nepal (CRT/N) and marketed by the Rural Energy Technology Service Center Pvt. Ltd. (RETSC); mud and metal (rods) affordable by poor villagers and metallic stoves good for town dwellers' use for cooking and heating purposes. CRT/N together with RETSC will promote the appropriate stoves and briquette devices both in the towns and villages mainly focusing on high way and trekking corridors in Nepal. It will design and provide appropriate trainings to the target groups, producers and users of briquettes in both villages and towns, promote and disseminate the use of briquettes with an objective to replace fuel wood, which is polluting and of less efficient but commonly used energy source in Nepal. It will also minimize the use of LPG and kerosene and save the foreign exchange used in the importation of these imported fuels to a greater extent. The project will make a study and prepare inventory of all possible places for intervention and will select 3-5 towns and villages each along the high ways and 2-3 villages each along the trekking routes for pilot project implementation, which will spark the information on promotion and utilization of briquettes in all potential areas that are largely contributing to the cause of deforestation and fuel shortage in Nepal. This will also greatly reduce the expenses incurred in treating diseases related to air/smoke pollution, as briquettes do not produce smoke.

B. Technical Proposal

I. Executive Summary (Max. 1 page)

Nepal is predominantly an agricultural country with above 85 percent of its people engaged in growing crops and rearing domestic animals. About 98 percent of energy consumption need of rural Nepal is met from biomass sources derived from the forest, shrub land, and animal waste and crop residues with lots of smoke having direct negative impact on environment and health, especially causing respiratory and eye diseases. Due to the population growth, demand for energy is increasing by 10% annually (National Strategy on Integration of Energy and Rural Development Policies and Program, WECS, 2005). The rapidly disappearing forest resources and expensive hydropower could not be the better answer for this ever-growing energy demand for cooking and heating purposes. However, the nation is endowed with abundantly available biomass resources such as forest waste, grassy weeds, shrubs, lantana and *banmara* - an undesired forest weed inhibiting the growth of new tree plants, and agricultural residues, which could be converted into briquettes to substitute the commonly used fuel wood that is considered the prime factor for fast depletion of green forest causing imbalance in the ecosystem.

Renewable energy such as briquettes provide feasible energy supply option in rural areas that is cleaner in terms of emission than fuel wood and also meet the concerns of social justice through employing poor people in biomass collection, briquette production and marketing. This proposed project would focus on promoting and disseminating briquette technology as most dependable,

sustainable and cleaner alternative energy source to household energy consumption for cooking and heating purposes. It will also provide self-employment opportunities to poor villagers and develop rural entrepreneurship. The transporters and distributors of briquettes will also get job opportunities. The users at villages or towns will get more efficient and cleaner form of energy for cooking and heating with almost no smoke. It will also substitute the consumption of kerosene and LPG in the villages and towns to some extent during the periods of stress in supply of these energy sources.

The pilot locations will be selected after a snapshot survey. The project will select 3-5 towns and villages each along the high ways and 2-3 villages each along the trekking routes for pilot project implementation. We believe this will spark the information on promotion of briquettes in all potential areas where lots of fuel wood and crop residues are directly used as energy for cooking. It would promote the use of kiln method for producing briquette charcoal in the villages, while in suburb areas of towns, it would emphasize in the use of charring drums for the same thing.

About 45 to 72 entrepreneurs will be trained and equipped with suitable technology, kiln or charring drums, and accessories for briquette production. About 450 to 720 households (10 per entrepreneur) will be employed with potential of engaging many seasonal laborers. About 10,000 households will be made aware of the technology through promotional efforts radio/TV programs, training, leaflets distribution, demonstrations, etc. Promotion of briquettes will offer an opportunity for a win-win-win situation to improving access to energy, good environment, and alleviating poverty situation. The project will help to prepare a cadre of trained entrepreneurs who will continue to use their gained knowledge and skills for production and distribution of briquettes in the community.

The monthly reporting will highlight on the progress made, problems faced, and solutions for solving the problems. At the end of the project, an impact assessment will be carried out and the resultant report will be submitted as the final project report to the GAP Fund Program. The project sites will continue to promote use of briquettes in a sustainable manner and will go for replication elsewhere in Nepal.

CRT/N and RETSC will complement each other doing mobilization and technology fabrication works, respectively. They will also make necessary contacts and enter into MoU with interested local parties, NGOs, CBOs, private companies and individuals. Necessarily, there will be at least one local partner in each selected site fully engaged in production and distribution of briquettes and/or doing promotional activities.

II. Implementation and Work Plan (Max. 10 pages)

1. Describe the problem the proposed project will address

Nepal is predominantly an agricultural country with above 85 percent of its people engaged in growing crops and rearing domestic animals both for farming as well as for cash income-earning purposes. About 98 percent of energy consumption need of rural Nepal is met from biomass sources derived from the forest, shrub land, animal waste etc. with lots of smoke having direct negative impact on health, especially causing respiratory and eye diseases. Due to the population growth, demand for energy is increasing by more than 10% annually (WECS). The dwindling forest resources and expensive hydropower could not be the better answer for this ever-growing energy demand mainly for cooking and heating purposes. Therefore, technologies related to alternative renewable energy sources have also been introduced and developed for adoption in different geographical regions. Bio-gas, solar energy, improved cook stoves, improved ghattas, peltric sets, solar home systems, are some of the technologies to name a few. However, these alternative energy sources are also not cheap and readily accessible to the rural mass and urban people. The nation is endowed with abundantly available biomass resources such as forest waste (fallen pine needles, pinecones, grassy weeds, dried leaves, shrubs, lantana and *banmara* - *Eupatorium adenophorum* - known

as undesired forest weed inhibiting the growth of new forest tree plants); agricultural residues - rice husk, wheat chaff, maize stalks, and tall pulse plants, e.g. *arhar* plants, which could be converted into beehive briquettes to substitute the commonly used fuel wood that is contributing to the fast depletion of green forest causing misbalance in the ecosystem and environment and generating a lot of carbon monoxide to the kitchen resulting more expenses in the treatment of eye and respiratory diseases.

Historically, Nepal's rural populations have been meeting the energy needs from the traditional sources like fuel wood and other biomass resources. It is evident that traditional way of biomass consumption for energy is neither sustainable nor desirable for environment, health and efficiency concerns. Therefore, there is a need to substitute as well as supplement the traditional energy supply system by modern forms of energy in terms of resource and technology. Because of the country's dependence on imported fossil fuel, high cost of grid connection and low and scattered demand, a decentralized energy supply system becomes natural choice. Decentralized new and renewable energy systems such as biogas, enhanced biomass such as briquettes provide feasible energy supply options in rural areas that are clean in terms of emission and also meet the concerns of social justice. This proposed project would focus on promoting and disseminating briquette technology as most dependable, sustainable and cleaner alternative energy source to household energy consumption for cooking and heating purposes.

2. Project description – Describe how the proposed project will address the above problem

The proposed project will address the problem at different levels in different magnitudes. Since briquettes can be made out of unwanted bushes that inhibit the growth of forest tree plants, it will not compete with fuel wood rather substitute it giving a chance to thrive the growth of forest trees that would greatly contribute to maintain the greenery or better natural environment. It will also give self-employment opportunities to the raw material collectors who are generally poor men and women of the villages helping them to generate some additional income and contribute to empower them economically (MDG – 3). The persons engaged in production of briquettes will also get good employment opportunity. The transporters and distributors of briquettes will also get job opportunities. More over, the users at villages or towns will get more efficient and cleaner form of fuel wood substitute that provides energy for cooking and heating with almost no smoke. It will also substitute the consumption of kerosene and LPG in the villages and towns to some extent during the periods of stress in supply of these energy sources as it oftentimes happen in Nepal due to various reasons domestic as well as increase in importation price factors.

The locations where this project will be piloted will be selected after a snapshot survey and using the general knowledge of the country situation. The project will make a study of all possible places for intervention and will select 3-5 towns and villages each along the high ways and 2-3 villages each along the trekking routes for pilot project implementation. We believe this will spark the information on promotion of briquettes in all potential areas that are largely contributing to the cause of deforestation in Nepal. This will also greatly reduce the expenses incurred in treating diseases related to smoke pollution, as briquettes do not produce smoke. The project intends to promote use of briquettes both in the villages and towns along the high ways and trekking routes where the demand for fuel wood is quite high compared to other farm areas where lots of crop residues are directly used as fuel wood. It would promote the use of kiln method for producing briquette charcoal in the villages, while in suburb areas of towns, it would emphasize in the use of charring drums for the same thing.

CRT/N and RETSC will define their roles in the implementation of the project and expedite their roles effectively. They will also make necessary contacts and enter into memorandum of understandings (MoU) with the interested local parties, NGO, CBO, private companies, GO,

and individuals. Necessarily, there will be at least one local partner in each selected site fully engaged in production and distribution of briquettes and/or doing promotional activities.

Briquette Making Process

The raw materials needed for making briquettes as mentioned above include biomass derived from agricultural residue and forest products, shrubs, pieces of fuel wood trees, saw dust, etc. and sticky clay soil as binder. When briquettes are produced using charring drum, funnel is inverted first inside the drum, dried materials are then spread over funnel and burnt. As the dried biomass materials start burning a little, dried materials are continued to add and burn. Raw materials should not be burnt completely. Chimney is attached to the top of the inverted funnel through which white smoke is ejected. The process of semi burning of biomass is done layer by layer until the drum is filled 2/3rd. Then the chimney is taken out and drum is covered and water-sealed to completely extinguish the fire. Once the fire is extinguished and cooled down then the coal is taken out, pounded into powder, mixed with the binding sticky clay soil with water all in appropriate ratio (3 parts of coal: 1 part of binding clay soil). Then the well-mixed coal is put in the briquette mould and compressed well with hand or machine. The briquette is then taken out and dried for 2-3 days under the sun. While drying, briquettes should be kept on plane and hard surface and should be covered with plastic during the night to protect from rain and wind. Once the briquette is dried and made hard, it is ready for burning in the briquette stove. When produced manually, one person can make about 30 round beehive briquettes with 19 holes through which blue fire-flame comes out when burnt. Depending on the quality of briquettes, one beehive briquette burns for an hour to two and half hour. If the semi-burnt charcoal is machine pressed, it results better fire efficiency. The cost of the briquette piece ranges from 10-20 rupees (about 15-30 cents). A normal meal for a nucleus family of 4-5 members can be cooked with one briquette.

3. List the project's objectives

The key objective of this project will be to provide an alternative energy source to the users of villages and towns to substitute the commonly used fuel wood, which is less efficient, more polluting and negatively contributing to the environment. The specific objectives, thus, are provided as follows:

- a. To promote use of more efficient and cleaner briquettes among the users of fuel wood that requires frequent trips to collect or buy fuel wood causing health hazards due to indoor air pollution.
- b. To utilize the unwanted biomass resources such as lantana and *banmara* that inhibit the growth of forest plants and convert it into briquettes to substitute the use of fuel wood, which is the major cause of deforestation and environment degradation in Nepal.
- c. To generate self-employment to the collectors of raw materials, transporters, dealers and entrepreneurs who produce and distribute briquettes to the users.
- d. To promote food-based micro enterprises with the use of briquettes as source of energy, e.g. roasting meat, corn, and various other foodstuffs for immediate sale.

4. List the concrete results the project plans to achieve

- a. Six to nine villages along a minimum of three trekking routes and nine to fifteen towns and villages along the east-west and north-south high ways in five development regions will be covered as pilot project sites for briquettes promotion and dissemination.
- b. Three entrepreneurs from each village or town (45 to 72 entrepreneurs) will be trained and equipped with suitable technology, kiln or charring drums, crushing manually or with machine, moulds and manual or machine compressing, etc. for briquette production.

- c. At least one set of charring drum and accessories will be distributed on cost sharing basis to the interested entrepreneurs. In case of villages, technique of constructing kiln and using it for production of charcoal will be taught and necessary accessories will be provided on cost sharing basis.
- d. About a minimum of 450 to 720 poor households (women & men @ of 10 per entrepreneur) will be employed in the process of briquette making and distribution, from collection of raw material biomass to briquette making to transportation and distribution of the same. There could be many more seasonal laborers involved.
- e. During the piloting period, about 10,000 households around the project sites will be made aware of the technology through promotional efforts (awareness raising efforts such as mass communication through radio/TV programs, orientation/training sessions, information leaflets publication and distribution, demonstrations, etc.) and let them be promoters for future expansion of achieving project objectives all over Nepal.

5. *Implementation methodology*

- Immediately after the award of the proposed project, a snap shot survey will be carried out to locate 6 to 9 villages along a minimum of 3 trekking routes and 9 to 15 towns and villages along the east-west and north-south high ways in 5 development regions as pilot project sites for briquettes promotion and dissemination.
- Thereafter an inception report with detailed plan of activities and implementation schedule will be prepared and submitted to GAP Fund Program for approval.
- Comments and suggestions of the GAP Fund Program staff and findings of the snap shot survey and consultations with the stakeholders, and available secondary data will be used as guidance for finalizing the inception report for implementation.
- Three entrepreneurs from each village or town (45 to 72 entrepreneurs) will be selected based on their interest and time availability. They will be orientated, trained and equipped with suitable technology, kiln or charring drums, crushing manually or with machine, moulds and manual or machine compressing etc. for briquette production.
- Awareness raising efforts will also be carried out through mass media such as radio and TV programs besides carrying out a number of orientation and training sessions at various locations.
- A series of appropriate capacity building training courses for different target groups, entrepreneurs and other associated villagers will be designed and conducted at all pilot sites.
- Information leaflets publication and distribution, and demonstrations of the technology will also be carried out in all the selected pilot project sites.
- A team of experts from CRT/N and RETSC will consult with the local and national stakeholders, identify the services required including capacity building training and other material support and expedite them in time.
- Monitoring and feed back mechanism for overseeing the project implementation will be designed and put in place. Regular monthly progress reporting and problem solving suggestions will be gathered and reviewed for making correct and timely decisions.

6. *Expected capacity building results and tools*

- A team of experts from CRT/N and RETSC has consulted with the local and national stakeholders, identified the services required including capacity building training and other materials required to expedite implementation of project activities.
- More than 10,000 households during pilot phase are made aware of the use of briquettes through mass media, radio and TV programs, information leaflets publication, distribution and demonstrations of the technology.

- At least 60% of these households started demanding and operating briquette stoves with a huge demand for briquettes for cooking and heating purposes.
- Selected entrepreneurs are well trained and equipped with suitable technology, kiln or charring drums, crushing machine, adequate number of briquette moulds and manual or machine compressors for adequate briquette production to meet local energy needs for cooking and heating purposes.
- Three entrepreneurs from each village or town i.e. 45 to 72 entrepreneurs are trained and capacitated to operate briquette production during the pilot phase.
- At least 450 to 720 people would have received self-employment in the process of production and distribution of briquettes.
- Monitoring and feed back mechanism for overseeing the project implementation is put in place for further dissemination of this technology elsewhere in the country.

7. **Beneficiaries:** list the individuals and institutions to be reached and how they will benefit

- The project officials will contact local agencies or CBOs to involve in the venture if they are interested.
- The project will build the capacity of all interested parties, individuals, CBO, NGO, GO and private companies from all selected pilot project sites through capacity building training courses. The number of beneficiaries who would be converted into entrepreneurs ranges from 45 to 72.
- Besides, 450-720 poor women and men would also receive self-employment in the process of biomass collection, production, transportation and distribution of briquettes during the pilot period with more potential to grow this number after the pilot phase.
- Some 10,000-user households would also get information on the advantages of using briquettes and 60% of them would have already started using briquettes instead of fuel wood improving their life style from using smoky and less efficient fuel wood with a potential of health hazard to cleaner and more efficient energy alternative – briquettes.
- It will avoid users from going to forest for collection of fuel wood or buying it at higher cost, which otherwise acts as the prime factor for environment degradation.

8. ***Proposed project's contribution to the objectives of GVEP and relevance to other GVEP activities and country action plans***

Briquette production facilities – which have to be located in rural or near rural areas, close to where the feedstock is grown – will generate additional economic activity in the pilot project sites. Transporting the feedstock to the plants and distributing briquettes produced will also benefit rural areas. Briquettes bring environmental benefit when environment is improved through less use of fuel wood as well as production of native perennial grasses used for producing briquettes. There can be significant gains in reducing erosion and in improving water quality as well. Even people who do not produce briquettes get benefited as a result of improvement in air quality and reduction in reliance on fossil fuels.

Access to energy sources is linked to development and to alleviating poverty. Energy is first needed to satisfy the basic needs of cooking and heating, then to producing power needed for income generating activities, which will break the cycle of poverty. Thus, promotion of briquettes offers an opportunity for a win-win-win situation for improving access to energy, good environment, and alleviating poverty situation. There are many other benefits that could occur to the community from promotion of briquettes. By using improved cooking fuel, the biomass briquettes, women in the pilot project sites will ameliorate or eliminate problems related to indoor air pollution caused by burning biomass fuels. Greater efficiency will reduce the amount of fuel families need for cooking and heating and thereby the amount that needs to be collected or purchased saving their time and money. The project also helps to prepare a

cadre of trained entrepreneurs who will continue to use their gained knowledge and skills for production and distribution of briquettes in the community. The rural enterprises will benefit from a new product for sale in the marketplace.

Proposed project's relevance to the Millennium Development Goals

Promotion of briquettes contributes to MDG Goal 3 – promote gender equality and empower women and Goal 7 – ensure environmental sustainability through use of alternative renewable energy sources. Promotion of cleaner and more efficient briquettes for cooking saves time of women who devote much of their time in the kitchen works, and also protects them from smoke related diseases. Children and baby infants, who generally hook with their mothers would also get rid of smoke related diseases with the use of briquettes instead of polluting fuel wood. Renewable energy development is one of the priority areas of 10th five year Plan of His Majesty's Government of Nepal.

Given the relief variation and difficulty in providing access to electricity from the national grid, use of alternate sources of energy and technology would have positive benefits to fuel substitution as well in the prevention of indoor air pollution and other health hazards thereby contributing to MDGs 4 and 5 (reduce child mortality and improve maternal health through reduction of indoor air/smoke related disease like acute respiratory infection (ARI) affecting mainly newly born and young children and their mother who are exposed to smoke during cooking and food preparation. Recently use of alternative energy sources has gained momentum. Biogas, improved cook stoves (ICS) and lately promotion of briquettes have been found effective in reducing or reversing deforestation. These are also found employing rural people in the process contributing to reduction of poverty situation. The project concept is also in line with Govt.'s 10th Five Year Development Plan as briquette is one of the energy alternative derived from abundantly available biomass.

9. Knowledge dissemination plan/tools

(Provide specific names or illustrative examples of individuals and institutions to be targeted by the project's outreach/dissemination efforts)

The key project staff of both partner institutions CRT/N and RETSC will consult and design the knowledge dissemination plan and tools to include in the detailed inception report once the project is selected for funding under the GAP Fund Program. The project team will use mass media such as local and national radio and TV for broadcasting or televising the short programs on the promotion of briquettes as a better alternative source of energy for cooking and heating purposes. [It will also conduct practical orientation demonstration on the production and use of briquettes and its economy.](#) It will also publish bulletins and information brochures for distribution among the potential users and entrepreneurs in the selected project communities. Awareness programs and orientation sessions with visuals and hands on practical sessions will also be carried out in sufficient numbers. The potential local partners and entrepreneurs will be identified later during the snapshot survey, which may include CBO, NGO, private organizations, individuals and line agencies.

The overall activity plan and budget required will be prepared now and the detailed work plan and budgeting will be included in the inception report for implementation of project activities not exceeding the approved budget. The snapshot visit to the potential areas and identifying the potential partners and consultation with them will reveal the pragmatic implementation plan, later. However, the overall tentative activity plan is provided below.

Implementation Plan of Project Activities

SN	Activities	2006	2007	
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10. Implementation monitoring and reporting plan

Process monitoring will be done once the trained entrepreneurs start the production of briquettes. While progress reporting of all project activities including those of preparation plan phase will be done at the end of each month. The progress reporting will highlight on the progress made, problems faced suggested solutions for solving the problems and looking forward for further improvement. At the end of the project, an impact assessment will be carried out and the resultant report will be submitted as the final project report to the GAP Fund Program. We make sure that the project sites will continue to produce and distribute briquettes to the local community in a sustainable manner. We will also make efforts from our own to promote replication of the project activities elsewhere in Nepal after the project tenure is over.

IV. Sustainability & Risks (Max. 1 page)

1. Project sustainability after completion, both institutionally and financially

The project will sustain after the completion of one-year project tenure. Since, promotion of briquettes provide economic incentives to all those involved in the process, there is more or less a guarantee for the continuity of the process once the chain of beneficiaries have a taste of the potential gains from their involvement. Biomass collectors, briquette producers, transporters, and distributors get financial reward in the form of service charges, wages, and profit margins; while users save their time and money otherwise spent in collection or purchase of less efficient fuel wood, which also necessitates them to spend money in treating smoke related eye and respiratory diseases. The expected increase in the demand for briquettes would encourage the private firms to continue their production, while the CBO and NGO in the locality would get job to mobilize the forest users groups (FUGs) or other women and men's groups for involving in the process. They will need to prepare training plans for various target groups in the community and beyond and thus, continue to get opportunity to serve people.

2. Project larger-scale replicability

Energy for cooking and heating purposes is the most essential item in rural Nepal. Fuel wood availability is rapidly diminishing despite of the successful implementation of community forestry program. However, the raw materials required for briquette making is abundantly available in the forest, unused government land and in the private farms. Once people understand the efficiency of this cleaner form of energy that can be used for cooking and heating purposes, they will also have better understanding of the utility of all wasted grass and bushes found in their vicinity. They might even grow such grasses in such land without any competition to cereal and other edible crops. Thus, there is a high chance of larger-scale replicability of promotion and dissemination of briquette technology in Nepal and similar other countries in South and South East Asia.

3. *Major risks to the successful implementation of the project and measures to manage risks*

The uncertain announcement of strikes and *bandhs* might disturb the timely implementation of training and visit programs, and mobilization of equipment and transportation of briquettes. This might increase the project cost. However, we are now used to work under the strained situations. We keep all alternative options open and find the best alternative to solve the emerging problems. What is needed from the donor agency is some flexibility in the implementation of the project activities both time-wise and cost-wise without exceeding the available total amount of time and budget.

V. Team Composition (Identify the Task Manager and team members, including their organization and area of expertise.) (Max. ½ page)

The team will consist of five core members from within CRT/N and RETSC. Mr. Krishna Hari Maharjan, Program Development and Monitoring Advisor, CRT/N, will take the role of the Task Manager, Mr. Mahendra Chudal, Engineer, RETSC will take the position of Technology Expert, Mr. Gyanendra Raj Sharma, Program Officer, CRT/N will work as the RETs Training Expert, and Mr. Ghana Shyam Poudel, Technician, CRT/N will work as Hands-on-Trainer in the project. The detailed CVs of the team composition are presented in the corresponding Annex – C. In addition, the key implementing institutions will make MOUs with the local partner organizations (LPOs), private parties, CBOs, NGOs and GOs for effective implementation of the project in the identified locations (details will be included in the inception report).

The Task Manager will take overall responsibility for effective implementation of the project and will provide necessary guidance to the team members. He will also coordinate with all relevant stakeholders and deal with the donor agency. The Technology Expert (TE) will assist the TMS in the fabrication and distribution of the necessary equipment. He will also help standardize the efficiency of the equipment prior to dissemination. Similarly, the TE will take the lead role in designing and delivering the necessary training programs in consultation with other team members based on the TNA. Finally, the Hands-on-Technician will assist all other team members in carrying out their job. He will also assist the training and demonstration sessions with assembling and disassembling of the technology/equipment. He will also provide hands-on-sessions to the trainees.

VI. Institutional Capabilities (Max. 2 pages) (Provide a brief description of each institution and a table listing the relevant previous projects or programs of each institution, which demonstrate the institutions' abilities to successfully implement the proposed project, highlighting local participation)

1. Center for Rural Technology, Nepal (CRT/N)

The Centre for Rural Technology, Nepal (CRT/N) is a professional non-governmental organization engaged in developing and promoting renewable/appropriate energy technologies effective in meeting the basic needs of the rural mass and improving their life support systems. It was established in August 1989 with a mission of promoting and propagating environmentally sound renewable/appropriate energy technologies thereby strengthening the capability of rural people specially empowering women to respond to their basic needs by creating better opportunities to improve their livelihood and upgrade the socio-economic condition. CRT/N's major area of operation includes renewable energy technology development, environment and natural resource management, and small-scale irrigation management, technology for women and micro-enterprise development and local water harvesting systems.

Nevertheless, CRT/N has a leading role as one of the key implementing organizations of renewable energy development program supported by the Government of Nepal and has contributed in developing renewable energy models for the rural sector and meeting the needs of rural energy, which are critical to the socio-economic development and poverty alleviation.

CRT/N, with the support of ICIMOD and UNEP, has executed the regional project namely 'Women in Energy and Water Management' since 2002 with the cooperation of other partner organizations based on 2 hilly districts of Nepal. It was a regional project implemented also in India and Bhutan. The participation of local people, especially the women is being prioritized right from the initiation of the project. Though the project has targeted the local women, the ultimate users/beneficiaries were the whole community within the micro-watershed areas. They better utilized energy and water related technologies, conserved and managed better household practices related to energy and water resources. The project aimed to achieve enhanced integration of women in decision-making process in the management and use of environmental friendly water and energy schemes; and availability of Case Studies, Baseline Data, Training Manual & Guidelines, Documentation of Practices, and Project Implementation Process. Within this regional project, CRT/N has provided technical support services to Royal Society for Protection of Nature (RSPN), a national NGO in Bhutan, for the promotion and dissemination of Solar Dryers to benefit the beneficiaries.

CRT/N, which has actively been taking part in the improvement of traditional water mills for rural electrification and processing of agro-products in Nepal since its establishment in 1989, has been providing required technical support services with the cooperation and support from various development agencies like GTZ, ICIMOD and SNV. *The Improved Water Mills* have the potential of improving significantly on the service to the rural community they serve, both regarding rural electrification and as well as in terms of diversifications of services. Some 1500 IWM are currently improved with the technical services of CRT/N, private workshops and financing agencies/banks. These IWMs are currently in operation, offering electrification service, grinding, hulling and oil extracting. Consequently, this program has been able to bring the positive changes in the socio economic condition of local millers and the community as a whole especially of women.

Realizing the need to promote energy efficient cooking stoves throughout the mid hills of Nepal which help to reduce the indoor smoke pollution and reduce the drudgery faced by women as well as minimize the pressure on forest resources, CRT/N has also initiated with the *Improved Cook Stove* program since 1993. With the support of ESAP and AEPC/HMGN, CRT/N has been the major implementing organization of this program for about 4 years and now is playing the role of Technical Support Organization to facilitate the local level implementers in 21 mid hill districts. In order to establish an efficient and effective NGO network in Nepal to improve the health of the cooking stove users and to prevent ecological degradation through popularities of ICS strengthening of collaboration among NGOs, INGOs and GOs, CRT/N is also working as a Country Contact Point for Asia Regional Cook stove Program (*ARECOP*), Indonesia since 2000.

Also, CRT/N was involved in the preparation of *User's manual* for Energy Resource Assessment & Consumption Survey and Institutions & Social Mobilization for Decentralized Energy Management Initiatives with the support of Energy Sector Assistance Program (ESAP) and Alternative Energy Promotion Centre (AEPC). This job was performed with the objectives of development of rural energy system enhancing rural economic growth through productive end-use of energy, involvement & mobilization of end-users in identifying rural energy resources, demand & planning to maintenance of the rural energy systems based on people's felt-needs.

Besides, CRT/N is coordinating *Gender, Energy and Water Network (GEW Net)* as the National Focal Point for ENERGIA since 2002 (International Network on Gender and Sustainable Energy) with an aim of networking of individuals and development organizations involved in energy and water sector to promote equitable access, control and decision making in the utilization and management of energy and water sector. Also CRT/N is the focal point of **InforSe** who is engaged in the area of renewable energy.

2. Renewable Energy Technology Service Center (RETSC) Pvt. Ltd.

The Rural Energy and Technology Service Center (RETSC) is a Private Company engaged in the promotion and dissemination of rural energy and other appropriate technologies to meet the basic needs of the rural people in Nepal. RETSC was established in 2003 under Company Act of Nepal.

It focuses its efforts towards development and promotion of appropriate rural and renewable technologies for poverty alleviation in a sustainable manner easing the life style of the rural poor. Its areas of operation include, renewable energy, small-scale irrigation, sanitation and drinking water, technology for women and micro enterprise, and local water harvesting

It aims to:

- Make contacts with partners and promotional organizations on collaborative effort.
- Produce/fabricate, develop and RND of different types of renewable energy technologies appropriate to the rural people
- Link the sales promotion of appropriate renewable energy and rural technologies manufacturer by other individual service providers, suppliers and other Government and non-government organizations
- Conduct operation and repair & maintenance of sold products of different technologies to give technical service to the users
- Conduct sales promotion of appropriate renewable energy and rural technologies to receive it easily by amidst the rural people

RETSC'S services involvement include:

- Organized a number of Orientation/Demonstration activities at various places for awareness creation among the potential partners/promoters and users.
- Conducted promotional activities of various technologies for awareness creation to rural population
- Conducted training and technical support services for technical transfer and local capability development.
- Participated in a number of technology related programs organized by various partner organizations
- Supplied Solar Dryers, Solar Parabolic Cookers, Bee-hive Briquette with Charring Drum and its Die set.
- RND done in following products:
 1. Modified Outer ring of diameter 1.4m in semi-circular ring for easier handling and to reduce transportation cost.
 2. Modified fixed wooden solar Dryer in collapsible type wooden solar Dryer for easier handling and reduce transportation cost.
 3. Fabricated metallic Solar dryer
 4. Designed Screw type Beehive Briquette machine for highly compressed beehive briquettes production to increase its efficiency.

VI. Additional Comments on Technical Proposal

There are no additional comments on the proposed project as of now.

C. BUDGET SUMMARY (Max. ½ page) (Provide a brief narrative of your budget and how it will be allocated among the activities planned)

The budget projection for the proposed project is of US\$ -----, of which GAP Fund is requested to support amount equivalent to US\$ ----- and the match fund will be equivalent to US\$ -----. Support to RETSC will be of US\$ ----- and to other local partner organizations will be US\$ ----. There will be 5 units of program initiation workshops each costing US\$ ----, Briquette Production training 5 units each costing US\$ ----, and 8 units of orientation and demonstrations each costing US\$ -----. The budgets allocated to partner organizations, RETSC and LPOs are provided in the given budget template attached to this proposal. Of the total GAP Fund of US\$ ----, US\$-----will be expended in salaries, US\$ ----- in travel and perdiem, and US\$ ----- for direct program costs that include distribution of technology units such as charring drums, accessories and briquette stoves on cost sharing basis to entrepreneurs and users. It also includes some rent, electricity, water charge, communication and postage expenses and assessment survey cost.

ANNEX A – OBJECTIVES AND ACTIVITIES TABLE

Please fill out the following matrix:

Objective	Activities	Deliverables	Impact indicators
<p>Overall Objective: what is the project intended to achieve? The key objective of this project will be to provide an alternative energy source to the users of villages and towns to substitute the commonly used fuel wood, which is less efficient, more polluting and negatively contributing to the environment.</p>	<p>Task 1: what the project will do? The project will promote and disseminate the use of briquettes as an alternative energy source to fuel wood for cooking and heating purposes. It will provide technology for production and distribution of briquettes to the villages and towns close to the rural settings.</p>	<p>Output 1: what the project will deliver at the end of each task? 45-72 entrepreneurs are made capable to produce and sell briquettes to the rural people in villages and towns along the high ways and trekking routes. About 450-720 households will be engaged in briquette business. 10,000 people will be made aware of briquette usage.</p>	<p>How to measure the success of each output and impacts? The success will be measured through site visits and monthly progress reports.</p>
<p>Goal 1: what are the sub-goals to achieve the overall objective? 1. To keep the rural areas clean and environmentally sound by converting wasted/unwanted biomass into cleaner and more efficient energy source.</p>	<p>Task 2: <ul style="list-style-type: none"> • Utilize all biomass available in the rural areas including unwanted bushes. • Promote agro-forestry and growth of bushes in fallow land for use in briquette making. </p>	<p>Output 2: Sufficient raw material for making briquettes for all interested villagers and town dwellers is collected/produced.</p>	<p>Monthly progress report.</p>
<p>2. To generate self-employment among the rural people and discourage emigration process.</p>	<p>Task 3: To provide training and briquette production materials to the interested parties.</p>	<p>Output 3 45-72 interested entrepreneurs start production and distribution of briquettes.</p>	<p>Monthly progress report.</p>
<p>3. To protect people from smoke and dirt related eye and respiratory diseases.</p>	<p>Task 4: Awareness raising activities will be carried out.</p>	<p>Output 4 10,000 people knew the benefits of using briquette and 60% of them already use briquette as substitute to fuel wood.</p>	<p>Monthly progress report.</p>

ANNEX B – IMPLEMENTATION ARRANGEMENT TABLE

Please fill out the following matrix

Activities	Timeline When each task will be undertaken?	What are the major milestones?	Responsibilities Who will do what from each agency?	Budget How much does it cost to undertake each task?
Task 1 The project will promote and disseminate the use of briquettes as an alternative energy source to fuel wood for cooking and heating purposes. It will provide technology for production and distribution of briquettes to the villages and towns close to the rural settings.	Please refer table on implementation plan in the text.	Sufficient raw material for making briquettes for all interested villagers and town dwellers is collected/ produced.	CRT/N will do social mobilization and training activities, while RETSC will do fabrication and distribution of the technology among the target groups.	Paste sub-total from the budget summary given in ‘C’
Task 2 Utilize all biomass available in the rural areas including unwanted bushes. Promote agro-forestry and growth of bushes in fallow land for use in briquette making.	-Do-	Please refer output 2 in Annex A	-Do-	-Do-
Task 3 To provide training and briquette production materials to the interested parties.	-Do-	45-72 interested entrepreneurs start production and distribution of briquettes.	-Do-	-Do-
Task 4 Awareness raising activities will be carried out.	-Do-	10,000 people knew the benefits of using briquette and 60% of them already use briquette as substitute to fuel wood.	-Do-	-Do-

ANNEX C: CVs FOR TEAM (KEY MEMBERS)