SESSION EIGHT

EXTENSION SUPPORT SERVICES FOR BIOGAS

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8.1 Introduction

In developing countries, biogas technology is valued mainly for its household use. Therefore, the rate of adoption of the technology in these countries depends on family decisions. These families or the potential users are generally characterized by scattered dwelling, low literacy rate, low investment capacity, low access to infrastructure for communication and transport. Therefore, some special efforts arc necessary to influence these families to adopt the technology. Such efforts are categorically termed as extension activities which is the main subject of this session.

Biogas extension refers to activities and procedures for motivating people to adopt biogas technology. Extension activities aim to take an individual through the mental stages of being aware of the technology, getting interested in it, assessing the relevance of the technology in resolving problems faced or for getting additional benefits, and finally taking decision to adopt the technology hi the context of Nepal, a family is the basic unit for making such decisions. Therefore, the principal aim of the extension activities is to motivate a family to install a biogas plant.

By the end of this session, the participants will be able to:

- explain the importance of extension services in the development of biogas sector;
  select suitable extension method for use in a given situation; and
- enumerate institutions and their areas of expertize relevant to the extension of biogas in Nepal.

8.2 From a Single Plant to National Objectives and Strategy

8.2.1 Building Government Commitment

Biogas is not an indigenous technology of Nepal. The historical plant in Nepal was introduced in 1955 through the effort of a school teacher. Rev Father B R Saubolle, at St. Xaviers' School, Godavari, Kathmandu. The first plant that he installed in the school was mainly for making people aware of the technology through demonstration. Some of them who visited the plant got interested in it but did not take the decision to install one. After some time, a biogas plant, popularly called *Gobar Gas Plant,* of 250 cu ft capacity was demonstrated by Indian Aid Mission in an exhibition held in Kathmandu in 1968 where many of the high government officers saw this technology for the first time. By the end of 1973, there were a total of four biogas plants installed in Nepal, that too in the elite households of Kathmandu. Thus, it was 18 years after the first biogas plant that the first four families decided to adopt this technology.

Nepal responded to the World Energy Crisis of 1973 by forming the ERDG under the TU, Kathmandu. Some ERDG members were aware of the initiatives taken by Father Saubolle in promoting biogas technology. This awareness developed into interest in the technology, mainly due to the pressure on ERDG by the government to formulate a programme on alternate sources of energy. Father Saubolle was called upon to advise ERDG and a Biogas Development Committee was formed under ERDG. Thus, like other countries, the World Energy Crisis of 1973 played pivotal role in Nepal in making national institutions interested in biogas technology.

At that time, the Minister for Agriculture was Mr Hari N Rajauriya, also a progressive farmer, who had seen functioning biogas plants in India. This knowledge base of the Minister, coupled with the

World Energy Crisis and the initiatives of TU, led him to include biogas as a special programme of the MOA for the year 1974/75. Out of a total target set by MOA to construct 250 biogas plants, 199 were successfully installed in the year 1974/1975. The programme was implemented by the DOA through its DSSAC in the leadership of Dr Amrit B Karki, a Soil Scientist and Co-ordinator of Biogas Development Committee under ERDO. Interest free loan were provided as an incentive to users particularly in the auspicious of "Agriculture Year". However, in the subsequent years, the programme thus started could not be continued as MOA lost its interest in the technology because the manure value of slurry could not be effectively used.

By 1976. the country had about 350 biogas plants spread in different parts in Nepal. Each of these plants worked as demonstration unit and more and more people became aware of the technology. The encouraging results of biogas loan repayments and increasing demand for subsidized biogas loan led the involvement of ADB/N in the extension of the technology. Biogas became a permanent feature of rural technology exhibitions regularly organized by the bank. The field workers of ADB/N were directed to increase lending on biogas. ADB/N also introduced biogas in seminars, workshops and training that it organized in collaboration with and involvement of government and donor agencies. Thus, after 1974. ADB/N became the leading agency not only in financing biogas plant construction but also for extension of biogas technology in Nepal.

The demand for technical services also increased with the increasing number of biogas user households. ADB/N. being a credit institution, could not cope with this demand. To fill this gap, in 1977, ADB/N in collaboration with UMN and TCN established GGC as its sister organization in the private sector.

From 1977 to 1994, GGC remained the only specialized organization for the extension of biogas technology in Nepal and worked in close association with ADB/N. Besides providing technical services for the installation of biogas plants, it undertook various activities to make more people aware of the technology. It reached policy makers and planners in the government through seminars, workshops, and study tours in and out of the country. It reached a wider circle of potential users through field level workers of its own and that of ADB/N and the DOA. It used mass media such as radio programme and national news papers. It printed leaflets, calendars, posters and other such materials for distribution, hi addition to such extension methods, each plant that it constructed (for users) worked as a demonstration model to convince more people about the benefit of adopting the technology.

A large scale implementation of biogas programme is difficult without strong political commitment from the government. Realizing this. GGC worked with the MOF and NPC. By 1984, more than 1.600 plants were commissioned by GGC in different parts of the country. As a result of satisfactory performance of these plants and other extension activities of GGC. a massive national target of constructing 4,000 biogas plants was included for the first time in the Seventh Five Year Plan (19X5-1990) of the government. Since then, a national target for biogas plants installation has become a permanent feature of the Five Year Plans.

GGC. though in the private sector, assumed the responsibility for meeting the targets set by the government as there were no government line agency to do so, Thus established linkage gave GGC an informal status for working with the government. With this institutional linkage. GGC was able to work with various donors and government agencies. As a result, some of the development programmes included biogas as a part of their regular programme such as in community forestry and sanitation

8.2.2 Energy Related Objective of Eighth Five Year Plan

The Eighth Five Year Plan (1992-1997) has a target to construct 30.000 biogas plants. Some of the energy related objectives of the Eighth Five Year Plan include the following:

- To maximize the development of indigenous energy resources in a most efficient manner and if technically and economically feasible, to fully meet the energy requirements of the nation on a sustainable basis;

- To promote cost effective and environmentally sensitive energy conservation and demand management practices;

- To address environmental problems associated with energy supply and demand by the relevant ministries/agencies in collaboration with both non-governmental and international organizations and to keep balance between energy development, environmental protection and enhancement; and

- To examine the possibility of transferring ownership of government-owned energy sector utilities to the private sector in accordance with the privatization policy.

8.2.3 Objectives and Strategies of Perspective Energy Plan

To contribute towards attaining the national objectives put forth in die Eighth Five Year Plan, the Perspective Energy Plan of Nepal was formulated in J995 with specific objectives and strategies given below.

Objectives

- Provide lighting and improve the quality of life of rural people.
- Set the process of industrialisation in motion in rural areas.
- Provide employment opportunities to rural people, especially the youth, and prevent/reverse the process of rural to urban migration.
- Reduce drudgery of rural women by decreasing the amount of time spent in collecting fuel wood, washing utensils and in agro-processing activities.
- Improve the health of rural people, especially women and children, through reduced smoke level, improved sanitation and provision for medicine and vaccines.
- Protect natural forests to minimize adverse environmental and ecological impacts.
- Increase indigenous technology manufacturing capability.

Strategies

- New and renewable energy development should be based on proper assessment of resource to meet felt energy needs of rural people.
- Development and promotion of alternate energy resources technologies should be made an integral part of overall rural development activities.
- At least 10 percent of the total government subsidy allocated for this sector should be used for R&D purpose.
- Planning, development, promotion and dissemination of new and renewable energy resources and technologies should be done at DDC and VDC levels with maximum participation *of* local government bodies, local people, public institutions like schools and health posts and INGOs
- The private sector should be encouraged to play a leading role in the development and dissemination of alternate energy.
- In the beginning, new and renewable energy technologies must be supported by providing identified amount of financial subsidy, though the concept of revolving fund should be introduced for the sustainability of the programme.
- An independent and autonomous apex body solely responsible for all aspects of new and renewable energy development programmes should be established.

Thus, it took about 40 years for the biogas technology to become a permanent feature of national development plans in Nepal.

8.3 Institutions For Extension of Biogas Technology

Inclusion of biogas in national development plans and policies is a prerequisite for rapid expansion of the technology on a sustainable basis. Equally important is the institutional development for sustainable growth of the biogas sector. By early 1990s, the demand for installation of biogas plants had become more than the capacity of GGC to supply trained human resource and materials. It is in this respect that more companies arc now being established in the recent years.

8.3.1 Establishment of Biogas Companies and Biogas Related NGOs

The unsatisfied demand coupled with the government policy to encourage participation of private sector, led to the emergence of about 23 companies between 1992 and 1996 mainly as result of the flat rate subsidy of Rs 10,000 and Rs 7,000 in the hills and plains, respectively.

The second biogas company was registered in 1988 by Mr. Prem N Baral in Pokhara. Thereafter, one new biogas company was registered each year during 1989, 1990 and 1991. Four and five companies were registered in 1993 and 1994, respectively. These companies are specialized in providing technical services for installation of family size biogas plants and their technical capabilities widely vary, hi the process of expanding their business, they too started motivating potential users for plant installation. The names and addresses of these companies are given in Annex 8.1.

These private companies came together in 1995 to form a NBPG as an NGO with the mandate to undertake general promotional activities such as training, extension and research for the common good of all private companies.

By early 1990s, Nepal had several hundreds of NGOs involved in various rural development activities in different parts of the country. Many of them also included biogas as a part of their development programme. Their role has been mainly limited to make their target group aware of the biogas technology and assist them to procure technical services from a nearby biogas company, A survey conducted in 1995 by BSP revealed that there are 76 NGOs, five INGOs and 18 other agencies involved in the promotion of biogas technology in Nepal (Development Partners-Nepal, 1995). A brief description of these agencies is given in Annex 8.2

Biogas companies have started a practice of paying some incentives to any organized body including VDCs and NGOs that creates and collects demand for installation of biogas plants. The process requires an organization to submit the demand to a biogas company which then pays certain percentage of fee and profit to the organization. Biogas companies sign an agreement with the organizations willing to be involved in the process. This on-going practice has broadened the scope for involvement of all types of organizations in the process of biogas extension.

8.3.2 Formation of Biogas Steering Committee

The long existing need for the involvement of government agency in the promotion of biogas has also been filled since the formation of a Biogas Steering Committee in 1995 with the coordinating role of the MOFSC. The 11-membcr Steering Committee consists of representatives from the MOFSC, NPC, MOF, MOA, WECS, ADB/N, BSP/SNV/N. NBPG and GGC The main functions of this Committee are:

- to advise the MOFSC regarding the policy on biogas development;
- to discuss and approve the annual work plan and programmes;
- to review the norms used in construction, financing and operation of biogas plants;
- to review the quality standards of biogas plants and its appliances; and
- to assess the physical and financial progress on biogas development.

8.3.3 Proposed Alternate Energy Promotion Centre

In the study of "Future Structure of Biogas Sector in Nepal" conducted by CMS with support from BSP, a recommendation was made to establish a National Biogas Centre (NBC) to oversee the overall development of biogas in Nepal (karki, et al., 1993; de Castro, et at, 1994). The Centre was suggested to be a semi-autonomous body which should be integrated with the proposed AEPC.

For the first time, a comprehensive national programme on biogas is being prepared with the technical assistance from FAO The decision has also been taken in mid-1996 to establish an apex body. AEPC, as a government agency to oversee the development of alternative energy sources in Nepal-including biogas. However, AEPC is yet to be established. The main expected functions of AEPC are given below (BSP. 1996).

- Analysis of policy issues and advice on policy matters (subsidy, price, taxation and R&D policies)
- Co-ordination with other sectors and ministries Planning and co-ordination of biogas related R&D Preparation of sector-wise plans and targets
- Elaboration of regulatory frameworks; setting of sector-wise standards and guidelines, criteria for registration and licensing of companies, etc. Mobilization of funds and liaison with donors
- Review/approval of annual work plans in respect of donor-funded projects Monitoring of developments in the biogas sector as a whole and of the implementation of specific projects Organize and/or participate in programme and project evaluation.

It is visualized that AEPC would have a small number of staff and most of the work will be carried out through contractual arrangements with other agencies in the private and public sectors. AEPC is likely to be affiliated with the newly formed Ministry of Science and Technology (MOST). Also, the function of existing Steering Committee under the MOFSC could be taken over by the biogas eel! of AEPC.

8.4 Factors Affecting Biogas Extension

8.4.1 Government Commitment

As pointed out earlier, the government commitment for biogas promotion was first observed by the establishment of ERDG and its Biogas Committee under TU in the wake of the World Energy Crisis of 1973. This was taken a step further by the inclusion of biogas as a part of the special programme for the "Agriculture Year" celebrated in 1975. Both of these initiatives faded away as the effect of World Energy Crisis subsided and the Minister for Agriculture was changed. However, the government's facilitating role in the establishment of GGC and its activities continued- Government commitment has also been expressed in terms of the inclusion of target for biogas construction in the Seventh and Eighth Five Year Plans.

8.4.2 Subsidy

Subsidy is yet another expression of government commitment for the extension of biogas technology in Nepal. Following the introduction of biogas programme in 1975, the government has been providing subsidy in one form r the other except in the year 1992. The rate of adoption of biogas technology in Nepal has been very responsive to the levels and forms of government subsidy. The provision of subsidy has pushed the demand ahead of the existing national capability for plant construction in terms of the organization and the trained human resource. The provision of the flat rate subsidy has been conducive to boost the rate of installation of smaller sized plants and has increased the annual rate of plant construction in the hills compared to that of the plains. The subsidy is provided only to families possessing cattle. This could be one of the reasons for low application of the technology at the community level.

In Nepal, additional subsidy for attaching family latrines to biogas was provided by some projects with the aim of improving community health and sanitation. Although this concept was found effective, such practices are yet to become common.

8.4.3 Institutional Arrangements

A large number of 1/NGOs, private companies and consulting firms are currently involved in supporting the extension of biogas technology. The establishment of AEPC and formulation of a national biogas programme is expected to facilitate integration of biogas with the development programmes of other agencies in the private and public sectors.

8.4.4 Energy Pricing

The access to common property forest and availability of firewood is getting limited in most part of the country[1]. This scarcity of traditional fuel along with high prices of other energy sources such as electricity and kerosene has led people to adopt biogas technology.

8.4.5 Education and Access to Technology

A high rate of literacy observed among the existing biogas users indicates that literate people are more likely adopt the technology faster than the illiterate people. The adoption rate is found higher in places near biogas company offices and ADB/N branch offices and in areas with easy access to road. Therefore, the rate of adoption is expected to be higher in the future because (a) the number of biogas companies and rural banks are increasing, (b) the literacy rate is on rise and people are becoming more aware of environmental concerns, (c) more areas are becoming accessible with the expansion of road and communication network, (d) the; availability of firewood is on decline in most part of the country, and (e) more agencies in the private sector are getting involved in the extension of biogas technology.

8.4.6 Performance of Existing Plants

A well constructed plant with satisfied user is the only way to ensure proper extension of biogas technology, It has been reported that more than 90 percent of existing plants in Nepal are functional. This is a very high rate of success compare to other countries including China and India. The single model (GGC model) and single institution (GGC) strategy adopted till 1994 may have been the main cause for this high rate of success, From 1994. Nepal too adopted the multi-design (GGC, Deenbandhu and other designs approved by BSP) and multi-institution (more than one institution involved in construction) approach to expedite the rate of installation of biogas plants. To maintain the existing high rate of success, a strong quality control programme has also been enforced in the construction of the plant and quality of appliances.

8.5 Extension Approaches

The main target groups for extension activities arc the potential users and the officials in government and non-government agencies who can influence the attitude of potential users through appropriate policies, programmes and projects. Some extension methods arc more suitable to one target group than others. Door-to-door visits, fairs and exhibitions, audio-visuals and demonstrations arc more suitable for the first category of the target groups. Seminars, workshops, training, study tours, books, technical reports, journals and audio visuals are more suitable for the second category of the target groups.

The selection of appropriate extension method depends not only on the availability of resources but also on the characteristics of the target group. For example, printed information in the form of books and booklets are not relevant when the majority of target groups are illiterate.

In addition to above, an extension worker should have a clear understanding of the information level of the target group before selecting a particular method of extension. For example, the mass media such as radio and newspapers are effective in making a large number of people aware of the technology.

Making people aware does not necessarily lead to the adoption of a technology. They should be provided with more information on the technology to inspire them to adopt it. At the interest building stage, individual contacts, group discussion, study tours, audio-visuals and demonstrations could be more effective than mass media. The information on comparative advantages of biogas and problem solving methods should be highlighted.

After developing interest about a new technology, people tend to evaluate the technology in their own ways. Some of the interested people may take initiative to collect more information while others wait. The demand for information at this stage would be more specific. It is also likely that most of the information demanded by potential users at this stage may not be readily available with the extension worker Therefore, access to library, technical and research papers, discussion with knowledgeable people, and other such activities become important at this stage. One of the important roles of the extension worker at this stage is to refer the potential user to a nearby biogas company or a user

Thus, the role of extension worker goes on changing as demand of information by potential users gets more detailed and specific. With this change, the relevance of a particular extension method differs as shown in Annex 8.3 (Leermakers, 1992).

8.6 Extension Methods

Following arc brief discussions on most commonly used methods for extension of biogas technology in Nepal.

8.6.1 Door-to-Door Visits

GGC in its early days relied on this method of extension. It requires a knowledgeable person to visit potential users to inform them about the technology and its potential benefits. This is an effective method for awareness building. This is not the most efficient way of mobilising the limited human resource that any single organization might have. However, this method can be efficiently practised in collaboration with agencies that already have large extension networks such as that of MOA. MOFSC and ADB/N

Junior Technical Assistant (JTA) and Technical Assistant (JT) of the DOA. Ranger of the Department of Forest and Loan Assistant of the ADB/N are village level job positions that require frequent visits to

households as part of their regular duties. These personnel can be mobilized to reach a large number of households in a short period with minimum cost for extension. The effectiveness of information passed through them are higher as they are familiar to the villagers.

One of the p re-requisites for use of this method is to first train these personnel on basic features of biogas technology and its relevance to a rural household.

8.6.2 Use of Local Leaders

Local leaders are the prominent people in the community who can influence the behaviour of local people in terms of adoption of biogas technology. This group includes political leaders, teachers, social workers, elders, progressive farmers, entrepreneurs and high ranking officials. The approach discussed in Section 8.6.1 can be combined with this one for effective mobilization of agency personnel for biogas extension GGC has been organizing one day seminars for local leaders to make them aware of the technology so that they become useful in motivating the local people

In this context, it is worth noting that the third biogas plant in Nepal was installed in the house of Mr. Ranjan R. Khanal, the then Chief Secretary to His Majesty the King. Also, one of the first ten biogas plants was constructed for the then Prime Minister Mr. Kirti N Bista. Such an effort made by pioneering biogas extension workers had positive impact in the rate of plant installation in Kathmandu.

8.6.3 Exhibitions and Demonstration

People believe more on what they see than they hear. Each plant works as a demonstration or exhibition site for non-adopters. From this point of view, there are now about 25,000 demonstration sites spread over 57 districts. Though each plant will automatically have some demonstration effects on non-adopters, the rate of information dissemination can be enhanced by conducting organized tour for potential users to a nearby successful plant

District Agriculture Offices periodically organize study tours for formers and exhibition of improved agricultural products and practices. Such opportunities can be used to inform a large group of potential users about biogas technology. This approach was also used in the past but not on a regular basis.

8.6.4 Use of Mass Media

Radio has been frequently used to disseminate information on biogas as this is the most efficient means for wide coverage in a short time. GGC, ADB/N, DOA, BSP and other development programmes have used this media in the past. Information on biogas has been broadcasted in the form of radio drama, news, information bulletin and other formats of presentation mostly in the Agriculture Programme of Radio Nepal. However, the frequency of such broadcast has remained less than desired. Though this form of information dissemination has its own limitations, it is still the best source of mass media for people to know about the technology. BSP and ADB/N have some of the recorded radio talk programmes on biogas

Many feature articles and news related to biogas have been frequently published in national daily and weekly newspapers. Like radio, this media too has the limitation of being a means for one way communication. Though effective in providing information to educated people in urban areas and office positions, its general impact on awareness level among rural population is low due to low level of literacy.

The regular publication of Biogas Newsletter was started in 1978 by Dr Amrit B Karki on his personal initiative. This publication in English has been the only means to maintain professional link with the outside world. Since 1995, this newsletter, renamed as *Biogas and Natural Resources Management*

(RNRM). is published four times a year by Consolidated Management Services Nepal (P) Ltd with Dr Karki as the Chief Editor It has a large number of subscribing institutions and individuals in and out of Nepal and is much appreciated by the professionals and people interested in higher form of information on biogas. Though priced, it can be available free of cost to interested individuals. So far, this has remained the only regular publication on biogas in Nepal.

BSP too has started regular publication of biogas bulletins in Nepali as one of its programme activities. The publication is not priced and gives information on BSP activities in Nepal. It can be obtained from the BSP office.

GGC, BSP and ADB/N have been publishing posters, calendars and charts highlighting various aspects of biogas technology that are used for extension and training purposes.

8.6.5 Occasional Publications

There are numerous occasional publications on biogas in Nepal *"Gobar Gas: Samaya Ko Mang Ra Hank"* (i.e. Biogas: Demand and Challenges of Time) is the first book in Nepali language on biogas published by Dr Amrit B Karki in 1978. Another important publication came out in 1984 as the book titled "Biogas Fieldbook" written by Dr Karki and Mr Kunda Dixit. Many books, booklets, reports, technical papers, workshop proceedings, manuals and other forms of print have been published since then. This in-country growth of literature on biogas has also been substantially supplemented by publications received from other countries. Following organizations have good collection of literature on biogas technology published from Nepal and abroad.

(a) BSP Head Office at Dhobighat, Lalitpur

(b) GGC Headquarters Office at Kupondole, Lalitpur

(c) CMS Library at Lazimpat, Kathmandu

(d) WECS Library at Singh Durbar, Kathmandu

8.6.6 Audio-Visuals

Video cassettes are effective means of presenting information on biogas to groups of people. The main agencies that have video-cassettes on different aspects of biogas technology are GGC, ADB/N, BSP and CMS. Most of these video-films are about 30 minutes long and their subject or main theme vary. Some highlight the relevance of technology to Nepal while others are specific on the techniques of plant construction, O&M and quality control. These cassettes can be borrowed for public viewing.

8.6.7 Seminars and Workshops

These are the most suitable methods to inform officials on various aspects of biogas technology. Since the early days of biogas development in Nepal, ADB/N and GGC have been the two mam agencies to organize seminars and workshops for educating planners, policy makers, administrators and other concerned personnel. Since 1992, BSP has also been assigning high priority to these activities

A two day national level biogas workshop was organized by BSP in collaboration with ADB/N and GGC in 1993. More than 100 high ranking officials from the government, donor and non-government agencies participated in the workshop. The workshop was inaugurated by the then Prime Minister Mr Girija P Koirala. Following this and with BSP support, CMS organized regional level workshops in all five regions of the country. Participants of these two day workshops included Members of Parliament, DDC Chairmen of biogas potential districts in the region, and regional level officers of related government and non-government agencies (Karki, et al., 1994).

To take the message further down. CMS organized district level biogas workshops in eight districts with high potential for biogas plant installation. These two day workshops were supported by BSP Each workshop was participated by about 100 participants representing people from various walks of life in the district, including the district level officials (Karki, ct al., 1995). Though formal evaluation on the impact of these workshops has not been carried out yet, they were found to be very effective means of disseminating the technology to a wider circle of potential users and the promoters. It is expected that similar workshops will be organized in die future at the district and VDC levels.

The utility of biogas technology contributes to the attainment of social objectives which are the concern of various departments and ministries. These related ministries and departments periodically organize seminars and workshops for their own purposes. Biogas can be included as one of topics for discussion in such workshops and seminars.

8.6.8 Training

Training as a method of extension is more suitable for officials and users. However, it is not a very cost effective method for building awareness.

ADB/N has been organizing biogas training since early 1980s in the areas of construction, repair and maintenance. Training has been one of the important functions of GGC. It has been organizing field based training on various aspects of biogas programme including the following.

(a) *Farmers' Training* : A 1-day training for users and non-users.
(b) *Women's Training/Seminar :* A 1 -day training to motivate women in the locality.
(c) *O&M Training* : A 1-day training for users.
(d) *Local Masons' Training* : This is a 60-day long training with 5 days of theoretical and 55 days of practical work.
(e) *Repair and Maintenance Training* : A 7-day training for local masons.
(f) *Staff Training* : Duration of this training varies from a few days to a week depending on the subject to cover such as supervision techniques, loan processing etc.

The new biogas companies have also started conducting training mainly to expand their technical base (masons and foremen) and to enable users to operate and maintain their plants. With support from BSP, these companies have been conducting Extension Orientation Training for personnel from the banks and 1/NGOs. In all of these training, the participation of women has been highly emphasized. Some of the training on O&M include women users only.

In the process of developing this manual, 150 senior officers from departments of Forest, Soil Conservation, Agriculture, Livestock Services and personnel from the banks and I/NGOs were also trained.

Nepal now has substantial experience and skill base necessary to design and implement training programmes on different aspects of household size biogas plants. The major organizations with this capabilities include the following.

(a) Gobar Gas and Agricultural Equipment Development Pvt. Ltd.
- Specialized in skill level training for construction and O&M

(b) Agriculture Development Bank of Nepal
- Specialized in process and knowledge based training. Has sufficient physical facilities, for training.

(c) Consolidated Management Services Nepal Pvt. Lid.
- Specialised in process and knowledge based training, to be organised in and out of Nepal

(d) Nepal Biogas Promotion Group
- This is a newly established organization and has potential for skill and knowledge based training

There are also various training manuals prepared by CMS and GGC that enable trainers to organize training for biogas technicians, users, masons and extension workers.

8.7 Session Plan

Activity No	Topic and Area of Discussion	Time (min.)	Methods of Training	Teaching Aids
1.	Introduction and highlight of the objectives of the session	3	Lecture	Transparent sheets or flip chart
2.	From a single plant to national objectives and strategies	5	Lecture	O/H projector. screen, and flip chart
3.	Institutions for extension of biogas technology	8	Lecture cum discussion	O/H projector
4.	Factors affecting extension of biogas	8	Lee lure cum discussion	O/H projector
5.	Extension approaches	8	Lecture cum discussion	O/H projector, flip chart
6.	Extension methods	8	Lecture cum discussion	Flip chart
7.	General discussion	20	Discussion	
Total Time		60		

8.8 Relevant Questions

- Is the Government of Nepal committed for extension of biogas technology in a mass scale? Substantiate your answer with evidences.

- What are the stages that a user goes through before taking a decision to adopt biogas technology.

- Why are all extension methods not equally effective in building awareness on biogas technology? Substantiate your answer with examples.

- What are the major institutions involved in promotion of biogas technology in Nepal? What institutions would you visit to acquire more information on biogas in Nepal?

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List of the Recognised Biogas Companies

S.N.	Name of the Company	Place
1.	Birat Biogas Company (P) Lid.	Tinkune, Kalhmandu
2.	Baral Gobar Gas Scwa Kendra	Rastra Bank Chowk. Pokhara.
3.	Bhairabi Gobar Gas Udyog (P) Lid.	Chaughada Bazar. Nuvvakot
4.	Baikalpic Urja Bikash Company (P) Ltd.	Bharaipur, Chitwan
5.	Chitwan Gobar Gas Nirman Talha Sewa Co. (P) Lid.	Bharatpur, Chilwan
6.	Gobar Gas Tatlia Krishi Yantra Bikash (P) Ltd.	Kupondole, Lalitpur
7.	Gandaki Gobar Gas Sewa Kendra	New Road, Pokhara
8.	Gramin Urja Bikash Company (Pvt.) Ltd.	Shrijana Chowk. Pokhara
9.	Himalayan Gobar Gas Talha Gramin Sewa (P) Ltd.	Bharaipur, Chitwan
10.	Janata Gobar Gas Nirman Talha Baikalpic Urja Bikash Aimshandan Kendra	Besi Sahar, Lamjung
11.	Jana Bhawana Gobar Gas Udvog (P) Ltd.	Bidur, Nuwakot.
12.	Khanal Gobar Sewa Kendra, (P) Ltd.	Damauli, Tanahun
13.	Kishan Gobar Gas Udyog Man	Bidur, Nuwakot
14.	Shanti Gobar Gas Udvog (P) Ltd.	Bidur Nuwakol
15.	Nepal Biogas Company (P) Ltd.	Min Bhawan, Kathmandu
16.	Nepal Gobar Gas Bistar Tatha Bikash Co. (P) Ltd.	Bharaipur, Chitwan
17	Nepal Rastriya Gobar Gas Company (P) Ltd.	Sltyanja Bazar, Shvanja
18.	Nil Kamal Gobar Gas Company (P) Lid.	Bharatpur, Clvitwan
19.	Pokhara Gobar Gas Sewa Kendra (P) Lid.	New Road, Pokhara
20.	Rastriva Gobar Gas Ninnan Tatha Sewa (P) Ltd.	Bharatpur, Chitwan

Inventory of Organizations Involved in Biogas Programme

S.N.	Name & Address	Current/Past Activities	Working Areas	Future Biogas Related Activities
1.	Arjun Khola Project Arjun Khola. Dang	Mobilization of community for plant construction	Dang	
2.	Ashahaya Mahila Kalyan Kendra Chabahil, Kathmandu	Health Education. Primary Health Care, Non-formal Education. Self-reliance programmes.	Indrayani VDC. Kathmandu, Rajgadh, Jhapa	To promote biogas programmes in Rajgadh, Rajgadh. Jhapa
3.	Association for Protection of Environment Culture Hatkhola Road, Biratnagar-10. Morang Tel: 021-21176. Fax : 977-21-25617 Contact Person (CP): Medini Bhandari	Wetland conservation programme study about the wetland species, wild water buffaloes and other wild animals in wetland area. study of wildlife and forest areas in eastern terai. various education programmes/talk programmes/audio/ visual programmes on wildlife, soil water and forest, tree plantation.	Koshi Tappu, Sunsari. Saptari, Udayapur, Morang, Terhathum, Taplejung, Panchthar and Bhojpur	To raise people's awareness in environment, to promote biogas programmes in the area
4.	Awareness Campaign Against Forest Fires, Central Office, Pokhara P.O. Box #6, Tel: 20299 CP : De\i P Aryal	Conservation of environment through public awareness and installation of biogas plants.	Terai, Chure range	To raise awareness GO biogas programmes
5.	Backward & Interest Group Empowerment Cenler (BIGEC) Taranagar. Gorkha CP : Khadga Bahadur Kumal	Adult literacy classes, establish nurseries. kitchen garden, farming of ginger and banana.	Gorkha	To implement integrated activities including biogas programmes
6.	Baivanath Yuba Club Tikapur. Kailali	Motivate community for plant installation. community development activities.	Tikapur	To be involved in biogas sector
7.	Basuki Yuba Club Kharkhare, Thankot	Motivate community to install biogas plant.	Thankot	Motivate community for biogas plant installation
8.	Bijaya Yuva Club Barathawa-4. Sarlahi	Various welfare projects	Sarlahi	To implement biogas related programmes
9.	BFDC Co-operation Committee Chitwan	Motivate community in biogas plant installation	Bharatpiir	To raise awareness biogas programme

S.N.	Name & Address	Current/Past Activities	Working Areas	Future Biogas Related Activities
10.	Center for Development Services Dharapani. Gorkha Bazaar CP: Manoj Acharya	Non-formal education, environmental sanitation, biogas extension & promotion	Gorkha	Biogas extension and promotion. credit facilities to install biogas plants
11.	Center for Disaster Management and Environment Protection, Naya Baneswor P.O.Box. 9229. Ph : 472516 CP : Krishna Pd. Poudel	Training, awareness programme on environment, adult literacy classes, income generation activities	Ka™	To implement biogas related programmes through community organization already formed by them
12.	Chetana Club Bijauri-5. Dang CP : Suduan Poudval *C/-* Pradip Regmi. Ph : 412674	Environmental protection, skill development programmes for women, tree plantation	Dang	To participate in biogas programme, to link biogas with livestock, and environmental programmes
13	Chura Foresl Development Lahan Siraha	Forest conservation motivate people for biogas plant installation	Lahan	Forest conservation through biogas plant installation
14.	Committee for the Promotion of Public Awareness and Dev. Studies Chakratirtha. Lamjung CP: DikendraKandel C/- P.O. Box : 5926. Kathmandu Ph . 414879	Rural literacy- & self reliance programme Raise Public awareness on biogas plant construction	Lamjung	To make aware the community on environmentally sound, energy alternative and to involve them in installation of biogas plants
15.	Community Dcv. & Research Center CP Hari P Pandev. Chana Phannac\, Maharajgunj Katlunandu Ph:418064	Adult Literacy Classes	Dhading	Participate in biogas programme including motivating community for biogas plant installation
16.	Ecological Sendees Center Narayangadh. Chitwan CP . Maheswor Ghimire Ph : 056-20560	Environmental protection including awareness building, agroforestry programme and biogas promotion and extension	Chilwan, Tanhun	Promote biogas as alternative energy source and motivate community lo install biogas plants

S.N	Name & Address	Current/Past Activities	Working Areas	Future Biogas Related Activities
17.	Environment and Population Awareness Programme 2049 Charikot, Dolakha CP : Shankar Upreti	Environmental conservation, non-formal education, skill development training, raise awareness.	Charikot, Dolakha	To participate in biogas related programmes
18.	Environmental Camps for Conservation Awareness P.O.Box :9210 Ph: 475210 Km CP ;Neeraj Nepali	Environmental camps, to raise sense of awareness among children about the need for conservation and better resource management	30 districts of Nepal and Bhutan	To dis seminate information regarding biogas program in the project area and train the local people.
19.	Forest Development Committee, Bandipur, Tanahun CP : Hari B Adhikari	Forest conservation, management and protect-ion, livestock extension services including fodder tree plantation, provide support to the communities to install biogas plants	Tanahun	Provide credit facilities to the community to install biogas plants and extension, organize and motivate communities
20.	Forum for the Community Development (FOCOD), Nepalgunj. Banke, Ph : 081-21169 CP : Sarita Devi Shanna	Adult literacy programme, raise public awareness and organize various workshops on environment and fuel consumption	Banke. Bajura	To be involved in biogas related programme and motivate people for the same
21.	Gaindakot Yoova Club Gaindakot-2, Nawalparasi CP : Tara N Lamichhane	Tree plantation and conversation, forest conservation	Gaindakot VDC	To interact between people on alternative energy and to promote biogas sector
22.	Ghusel Community Development Project Committee, Ghusel *CJ*- USC-Canada, Nepal, P.O. Box : 2223, Kathmandu	Integrated community development programmes	Ghusel VDC	Install biogas plants in working areas
23.	Glory Foundation Lazimpat, P.O. Box 10872 Kathmandu Ph : 977-1-230577 CP : K. M. Gautam	Planning, designing and conducting Trainings, seminars, workshops, study tours and information dissemination programmes and conducting applied research and socio-economic studies; and formulating. implementing and managing development projects and programmes on various aspects		

S. N.	Name & Address	Current/Past Activities	Working Areas	Future Biogas Related Activities
24.	Godavari Environmental Protection Forum Lalitpui, Godavary. Kathmandu	Involved in environmental protection		
25,	Gramin Jana Bikash Kendra Birtamod, Jhapa Ph : 023-29233 CP: Kundan Bhattarai	Awareness raising on education, health and community development	Jhapa	Awareness raising on biogas programmes
26.	Group for Environment Awareness and Research Sahid Marga. Gyaneswor Kathmandu Ph : 419652 Cp : Binod K Guragain	Environmental protection and awareness raising		To implement biogas related programme
27.	Helambu Ekikrii Vikash Pariyojana Sindhupalchowk P.O. Box: 3702, Ph: 416581 CP : Gopal Lama	Alternative energy, environmental education, health, agriculture, conservation of cultural heritage related programmes	Sindhupalchowk	Participate in biogas related Activities
28.	Him Ganga Dudhkoshi Sewa Kendra P.O. Box ; 5102. Kathmandu, Nepal CP ; Sita Ram Gurung Ph: 416611	Awareness raising programmes, tree plantation, literacy programmes, water source conservation and environmental education	Okahldhunga	To participate in biogas programme
29.	Human Welfare & Environment Protection Center, Tribhuban Nagar, Dang CA HWEPC, P.O. Box : 606, KTM. Ph : 082-60320, Fax : 082-60311 CP : Shreeman Neupane	Environmental education, distribution of first-aid medicines, rural agroforestry management sanitation education for rural community, literacy program, provide information regarding biogas.	Dang	Implement biogas programmes in the project area
30.	Integrated Rural Community Development Committee CP: Mukunda Naupane	Forest conservation plant conservation, plant construction	Chitwan	Installation of biogas plants
31.	Integrated Community Development Project Lele, C/-USC-Canada Nepal P.O. Box : 2223, Kathmandu	Integrated community development programmes	Lalitpur	Install biogas plants in the area

S.N.	Name & Address	Current/Past Activities	Working Areas	Future Bio gas Related Activities
32.	Jana Adarsha Yoova Club Mangalpur-3, Chitwan. Ph : 21240 CP : Ram Hari Thapa	Tree plantation, adult education, child and mother help programme, publication of "PUKAR"	Chitwan	To raise awareness about biogas Programme
33.	Jana Milan Yoova Club, Pulchovk *C/-* USC-Canada Nepal P.O. Box : 2223, Kathmandu	Integrated community development programmes	Dalchowki	Install biogas plants in the area
34.	Kailali Samudavik Parvavaran Tikapur, Kailali	Environmental conservation motivated people for plant construction	Dhanagadhi	To be involve in biogas sector
35.	MANAVOTTHAN, 1/453 Shivapath. Janakpur-1 Ph- 410406.056-20657 CP : Kamal Bachhar	Literacy and income generation programme, operation of CMA Campus. Malangavva	Mohattari, Rupandehi, Chitwan	Promotion of biogas programme by helping concerned agencies in installation of biogas plant
36.	Mulli Dimensional Development Forum Panchakanya-9. Jayamangala, Chitwan Ph : 523019, Kupondole CP : KishorCKhanal	Awareness programme on health education and community development	Panchkanya & Jutapani VDC. Chitwan	To promote biogas sector
37.	Multipurpose Community Development Center P.O .Box : 9684 Baneswor, Kathmandu Ph : 473606.476637 CP : B P Niroula	Income generation and informal education programme	Sankhuwasabha	Install alternative source for fuel viable in the local condition mainly the biogas plant in Arun III project area
38.	Neighbourhood Society Services Center. Maitidevi, Kathmandu P.O. Box. 7629 Ph: 414144 CP : Udava R Khatiwada	Water supply and sanitation, credit programme for income generation. NFE health and community development activities, environment protection	Katlimandu, Chitwan & Mohottari	To initiate biogas programme in Chitwan & Mahottari including motivation and promotion
39.	Nepal Capable Society Chabahil. Kathmandu Ph :474804.474797 CP : Sita Ojha	Environmental awareness, rural reliance programme	Lapsiphedi VDC. Sindhupalchowk	To participate in biogas related Activities

S.N.	Name & Address	Current/Past Activities	Working Areas	Future Biogas Related Activities
40.	Nepal Jesuit Social Work institute. GPO Box 50, Kathmandu Ph :524842 CP : Paras M Lama	Training of social works, community development activities	Bandipur, Sarlahi. Syanja Baitadi & Okhaldhunga	Co-operation in training and implementation of biogas plants in the project areas
41.	Nepal Rural Development Center P.O. Box :5367 Maharajgunj, Kahtmandu Ph : 10-418978, Fax : 977-1-413641 CP : *C* M Golay	Adult literacy classes, training and other community development activities		Participate in biogas related activities
42.	Nepal Sana Byabasahi Sangh Head Office, Dharan	Fruits & vegetable farming and other agricultural activities	Eastern Development Region	Promotion & extension of biogas technology, credit facilities to install biogas plant
43.	Nepal Sustainable Community Development and Research Center GPO Box : 6202, Kathmandu CP : R B Shrestha	Income generating activities, education on utilization of local resources bv the self-help group	Bhojpur & Jhapa	Motivate people residing in project sites for the installation of biogas and establish contact with Agricultural Development Bank
44,	New ERA P.O. Box : 722 Maharajgunj, Kathmandu Ph: 410803, 413603	Research & training activities in the field of education, manpower, agriculture, population, health, appropriate technology rural development etc.		Carryout research & development activities on biogas technology
45.	Nuwakot Gramin Sewa Shangh Bhalche VDC-4 Kola Gaon, Nuwakot CP : Lok B Ghale	Management for goat-raising and drinking water	Nuwakot	Motivate community to install biogas plants in local areas
46.	Patalekhet Samudayik Club, Patalekhet VDC-3, Kavre P.O. Box : 9064	Primary health care training, discussion programme on children's rights, drinking water & health programme, forest conservation	Kavre	To disseminate information regarding biogas programme, to play mediator's role
47.	People's Participation & Development Center, Maligaon, P.O. Box : 874. Kathmandu Ph ;412934 CP : Nita Pokhral	Services to child and mother once a month, conservation of Devghat area	Gokarna VDC Kathmandu, Devighat VDC Tanahu	To implement gobar gas programmes if support provided

S.N.	Name & Address	Current/Past Activities	Working Areas	Future Biogas Related Activities
48.	Pindali Yoova Club Pinda VDC. Ward # 2, Dhading CP : Pramod Raj Rupakheti		Dhading	To raise awareness on biogas programme
49.	Plant for Life, Hetauda, Makawanpur CP ; Rajesh Sharma	Mobilize community to biogas plant construction	Heiauda	
50.	Progressive Forest Conservation Committee. Gagangauda. Kaski CP : Shanker KC	Provide support on installation of biogas plant. forest conservation and management	Pokhara	Organize and motivate community, installation of biogas plant
51.	Project Approach Team for Rural Organization Nepal Dhankuta-5 Ph : 026-20036	Construction of 6 cum. biogas plant, skill development and income generation training. adult and non-formal education basic health. drinking water and conservation of environment programmes	To participate in biogas programme	Awareness raising and community motivating to install biogas plants.
52.	Red Cross Society Pokhara Branch	Assist communities in installation of biogas plant, community development programmes, such as : health education, water supply & sanitation, environmental protection	Pokhara	Assist communities in installation of biogas plant, community dev. programmes, including promotion. motivation and construction of biogas plant
53.	Rural Awareness Forum C/- Hem R Sharma Paiyunpala-1, Baglung CP : Tuk R Sharma	Saving and credit programme, adult literacy, awareness raising	Banglung	To implement biogas programmes in the project area
54.	Rural Community Development Society Dhulikhel-5. Kavre Ph: 011-61441/01-61069 CP : Yadav P ShTestha	Involvement in biogas programmes, such as links and coordinate between community and Gobar gas company, weaving training, income generation programmes, promotion of saving and trade scheme, promotion of non-formal education	Ka\re, Sindhupalchok, Dokakha & Sindhuli	To develop its' own manpower to work with BSP independently in promotion of biogas sector

S. N.	Name & Address	Current/Past Activities	Working Areas	Future Biogas Related Activities
55.	Rural Reconstruction Nepal P.O. Box 8130, Lazimpat, Kathmandu Ph : 415428 CP : R B Karki	Socio-economic rehabilitation in flood affected areas, training to the farmers which includes biogas, its importance and significance	Chitwan, Panchthar	Install more than 200 plants in the project area, provide biogas support service to more than 35 groups of farmers with more than 1500 members
56.	Safe Water and Environmental Conservation Group, P.O. Box 46, Dilli Bazaar. Kathmandu Ph : 410126, Fax : 977-1-411642 CP : Pankaj Shah	Water and waste treatment, sanitary programme	Katmandu and Janakpor	Implement biogas programmes using public toilets, hotel, lodges etc.
57.	SAGON Ph:214015 CP : Mukta Singh Lama	Awareness raising on biogas technology', action research on local indigenaration knowledge & skills on community development and human research development	Kabnie and Sankhmvasablia	Awareness raising and community motivation for biogas plant installation
58.	Sri Jana Shanti Adarsha Yuba Club Mangaltar, Kabhre	Motivate community for installation of biogas plants	Kabhare	
59.	Samaj Bikash Samiti. Kavre Rikhebagar, Salyan Contact Add : Nagendra Shah, Himalayan Princep Smriti School. Tahachal, Kathmandu, Ph : 270898	Literacy classes	Salyan	To apply biogas training in the field
60.	Samaj Kalyan Pariwar Chhoprak, Gorkha CP : Ramcsh C. Pokharel	No activities started (new organization)	CtfooprakVDCGoifcha	To participate in biogas programme
61.	Samaj Sewa Uddhar Club. Khiratadi VDC-8, Bijagada. Bajhang CP : Toya R Joshi	Adult literacy, health, environment programme	Bajhang	To participate in biogas programme
62.	Sami-Bhaniyang Samaj Siidhar Sangh, Sami-Bhanjvang. Lamjung CP : Bal K Joshi C/- Bishnu K Shrcstha. CECI Ph : 414430	Programmes on environment, bee keeping, agricultural farm, based on permacultural principle	Sami Bhanjyang and Bhodetar VDCs Lamjung	To install biogas plants in the project area

S. N.	Name & Address	Current/Past Activities	Working Areas	Future Biogas Related Activities
63.	Sarbodava Sewa Sangh Mangalbare. Sarlahi		Sarlahi	To provide information about biogas. to facilitate the community people to install biogas plant
64.	Save The Environment of Nepal Chandranigahapur-1. Rautahat Ph : 053-50243 CP : S B Ghimire	Environmental programme, sanitation programme and tree plantation	Rautahat	To promote biogas sector, to provide assistance in mobilization community
65.	Self Reliance Society Service Center Besi sahar, Lamjung CP : S B Ghimire	Environmental sanitation programme, non-formal education programme, rural credit. promotion of biogas programme and plant installation, masons training etc.	Lamjung	Promotion, extension and construction of biogas plants with toilet connection, mason's training, biogas users training and other biogas related activities
66.	Subba KrishnalaJ Smriti Sewa Ssmiti Kathajor, Ramechhap	Adult literacy, agro-forestry extension programmes	Ramechhap	To install 100 biogas plants in project area
67.	Small Farmers Development Group Ghvalchowk, Gorkha	Motivate community for biogas plant installation	Gorkha	Motivate community for biogas plant installation
68.	Social Development and Motivation Center Jorpati, Ph; 472301 CP . Kalpana Rana	Free health camp and adult literacy programme, training for women on skill development	Gokarna, Nayapati. Kapan, Chaunikhel. Baluvva VDC in Kathmandu	To participate in biogas programmes and its implementation in the project areas
69.	Society for Integrated Development Cha-3-701-1, Nayabazar, Kathmandu CP : Bharat J Upreti	Rural women development programme, adult literacy classes, smokeless stoves, toilet construction, calendar distribution	Nuwakot	To raise peoples' awareness on biogas plants to protect environment
70.	Society of Local Volunteers' Effort Dhankuta-6 P.O. Box 5556 Ph : 026-20076, Fax : 977-1-220219	Human resource development, education income generation and skill development training, community development	Dhankuta and Rasuvva districts	Participate in biogas activities
71.	Society for Partners in Development Gyaneswor. Kathmandu P.O. Box : 2594, Ph: 418281, Fax: 977-1-220161	Sericulture development, income veneration, non-formal education. agro-forestly and environmental protection activities, community development, group formation, group saving etc.	Lapsiphedi VDC S indhupalchowk	To promote biogas programme in the project area which is potential for it

S. N.	Name & Address	Current/Past Activities	Working Areas	Future Biogas Related Activities
72.	Society for Participatory Cultural Education, Chakupath, Lalitpur Ph :523774 CP : Keshav Gautam	Non-formal education, biogas technology promotion and extension, organize training for community development workers on biogas, rural credit programme	Sindhuli, Kapilvastu & Rupandehi	Promote biogas programme. provide credit facilities to potential users and organize biogas users Training
73.	Social Service Center, Siwa Shaktipur. Jamuni-2. Bardia CP : Udava R Bista	Education programme and agricultural extension programmes	Bardia	To participate in Bio-gas Programme
74.	Village Development & Save The Environment Forum Kalikot, Nepal CP : Hem R Sanjval	Literacy programme and rural co-operative saving programmes	Kalikot	To participate in biogas Programme
75.	Women Self Reliance Center Mclamchi, Sindhupalchoek C/- Rural Development Area 1 Action Aid Nepal Bahunepati, Sindhupalchowk Ph :410929 CP : Bhagabati Nepal	To organize- motivate, educate women to conserve, environment, improve health education programmes on girls trafficking. ATDs awareness	Sindhupalchowk	To involve in biogas programme for improvement of women's health and environment Conservation
76.	Youth Club Narayangaih Chim an-NepaJ Ph :21456 CP : Tika R Sapkota			
77.	Action Aid Nepal Lazimpat. P.O. Box : 6257 Phone:410929.419115 Fax : 977-1-419718 CP : Bimal Phnuval	Integrated community development programmes	Sindhuli, Smdhupalchok, Nawalparasi	Extension and promotion of biogas technology including training to community construction workers on biogas plant construction
78.	CARE International/Nepal Krishan Galli. Lalitpur Phone:522153 CP : Nalini Subba	Integrated community development programmes	Gorkha. Mustang. Syanja, Solu Bajura. Mahottari. Kaski	Extension and promotion of biogas Technology

S. N.	Name & Address	Current/Past Activities	Working Areas	Future Biogas Related Activities
79.	Plan International P.O. Box 1670 Tripureswor, Kathmandu Phone: 216310	Integrated community development including financial support to community to install a biogas plant	Kathmandu, Rautahat, Bhojpur. Morang, Makawanpur. etc.	Motivate farmers to install biogas plants and provide additional financial help to the farmers to install such plants. Provide O&M training to biogas plant owners.
80.	Save The Children USA P.O. Box 2218 Maharajgung, Kathmandu Phone: 412447 CP : Keshav Dutta	Intrigated community development activities including raising awareness for promotion of biogas related activities. including raising awareness for the promotion of biogas related activities.	Siraha	Raise awareness on biogas related activities and motivate the farmers for plant installation
81.	South Asia Partnership/Nepal Nepal India Conservation of Environment P.O. Box : 3827. Kathmandu Phone : 476163	To motivate, educative and organise people in general to conserve their environment in the Terai region of Mid-Western Nepal; to form and foster people's organization and group for extension and promotion of Biogas, smokeless Chulas, development of afforestation, livestock and low cost sanitation; to enrich human resource by imparting skill training in construction of biogas, smokeless Chulas and the development and management of live-stock. Afforestation and sanitation; to complement and supplement in the international and national effort of conserving and managing the environment.	Bardia	Continue the ongoing activities
82.	Agricultural Development Bank, Nepal	Promotion & extension and provide loan facility to fanners to ipsiall biogas pbrts. Involve in R & D works.	Nepal	Promotion & extension and provide loan facility' to farmers to install biogas plants. Involve in R & D works.

S.N.	Name<& Address	Current/Past Activities	Working Areas	Future Biogas Related Activities
83.	Asian Development Bank, Manila Nepal Office	Supported installation of some 5000 biogas plants which due conciliation of second trench of the agreements has been reduced to 2,500. This support is given as a loan earning an interest of l -2 % to HMG/N which passes this loan to the farmers as subsidy	Nepal	
84.	Centre For Rural Technology P.O. Box : 3628 Tripureswore, Kathmandu Phone: 211919 CP : Lumin K. Shrestha	Promotion & dissemination of rural technologies		Provide necessary technical support services to needy individuals and institutions for biogas promotion & dissemination
85.	Consolidated Management Services Nepal (P) Ltd., P.O. Box 10872 Lazimpat. Kathmandu Phone-421654. 410498 Fax: 415886	Research & development on biogas related activities		Research & development works on biogas related activities
86.	Development Partners - Nepal P.O.Box : 5517 Battisputali. Katlunandu Phone 476264 CP : Prakash C Ghimire	Various consulting services on engineering, socio-economics, action researches and gender issues		Conduct various training programmes relating to biogas technology[1] promotion, plant installation & other related research & development activities
87.	FAO UN Building, Pulchowk, Lalitpur Phone : 523239, 523200 Ext. 300-312	Support for the development of national Biogas programme	All over the country	To assist the government in designing and developing a national biogas programme and in upgrading the human resources necessary to implement it
88.	GTZ, Lamjung Self-reliance Project. Phone:523110 CP : Dr Kcshav Shakya	Integrated community development activities including assisting local NGOs to promote and construct biogas plant, organize technical training etc.	Lamjung	Future programme remains under planning process. There has been an opportunity for the HMG/N of obtaining funding from the GEF programme (a total of 6.5 million US$)

S.N.	Name & Address	Current/Past Activities	Working Areas	Future Biogas Related Activities
89.	Ma Shakti Traders C/- Manikaj Consulting Services Birendra Nagar. Surkhet	MuJtipurpose turbine, solar water, biogas rural water supply, consultancy service	Surkhet	Promote biogas technology
90.	Nepal Bank Limited, Nepal	Recently started to provide loan facility through it seven branches to install biogas plants	Nepal	Recently started to provide loan facility through its seven branches to install biogas plants.
91.	No-Frills Consultants Man Bhawan. Lalitpur P.O. Box : 3445. Kathmandu Phone : 523245. 522782 CP : Badri Kavastha	Consulting services on agriculture related activities		Motivate community to install biogas plants.
92.	Rastriva Banijva Bank. Nepal	Recently started to provide loan facility through its some branches to install biogas plants.	Nepal	Recently started to provide loan facility through its some branches to install biogas plants.
93.	Rural Water Supply and Sanitation Project. Bultval P.O.Box: 12. Tel: 73-20782	Drinking water (tube-wells and gravity schemes), sanitation, health education and human resource development	Six districts of Lumbini zone	To participate in biogas programme
94.	Small Farmer Developing Group Mahottan. Phone : 044-29028	Conduct different small farmer development related activities including biogas programme	Mahottari	Promotion and extension of biogas technology, motivate the community lo install biogas plants.
95.	SNV/Nepal Biogas Support Programme Lalitpur	To support in promotion and extension of biogas technology in Nepal by providing subsidy for plant construction and carrying out R & D works to make biogas more attractive to small farmers. Help government in policy making to promote biogas programme.	Nepal	To support in promotion and extension of biogas technology in Nepal by providing subsidy for Plant construction and carrying out R & D works to make biogas more attractive to smaller farmers. Help government in policy making to promote biogas programme.
96.	UNICEF, Kathmandu UN Building, Tel: 523200	Financed some 970 biogas plants bus stopped in 1991. Provided assistance to attach latrines in biogas plants.	Nepal	UNICEF is supporting the biogas programme from an environmental and sanitation point of view.

S. N.	Name & Address	Current/Past Activities	Working Areas	Future Biogas Related Activities
97.	Water and Energy Commission Secretariat, Kathmandu	Develop water resources potentiality, prepare future policies on water energy and environmental programmes Recently, organised a training course for masons	Nepal	
98.	Women Development Division, Tansen, Palpa	Raise awareness for biogas plant installation	Palpa	Willing to motivate and mobilize community if support provided.
99.	Women Development Division, Lalian, Sirana	Raise awareness for biogas plant installation especially focus on woman	Siraha	Willing to motivate and mobilize community if support provided

Source: BSP

Extension of Biogas: A Working Model

Phase I Promotion	**Phase II** Information/Education	**Phase m** Personal Persuasion	**Phase IV** Decision/Adoption	**Phase** V Training	**Phase VI** After-Sales-Services
Target group : all potential users	**Target group** : potential users with differentiation in	**Target group** : potential users who have shown active interest in biogas		**Target group**: users (men and women)	**Target group** : users (men and women)
Aim : - to create awareness on the advantages of biogas technology - to raise interest in biogas technology	**Aim** : to raise active interest of potential usei s in a way that they can evaluate the advantages and disadvantages for a possible adoption of the biogas technology	**Aim:** to give the final 'push' for adoption	the time period between awareness and adoption is influenced by and social/cultural factors and by the individual characteristic of the adopter	**Aim**: to provide the necessary knowledge and skills for proper 0 & M to use the biogas plant efficiently and effective	**Aim** : to have good functioning plants in operation with satisfied and positive users, leading to farmer-to-farmer-motivation
Actors : - GGC,ADB/N, other construction companies, HMG	**Actors** : - GGC, other construction companies, GO, NGO, INGO	**Actors** : - GGC, other companies, GO, NGO, INGO		**Actors** : - GGC, other construction companies, ADB/N, training institutes, GO, NGO, INGO	**Actors** : - GGC, other biogas companies
Means : - mass communication - after-sales-services - subsidy	**Means** : - group approach communication with use of extension	Means : - personal worker to potential - farmer-to-farmer communication		**Means** : - training on the spot **or** elsewhere	**Means** : - fast and reliable service after complain - regular (yearly) visits with emphasis on O&M

Promotion (Phase I) leads to awareness, information and education (Phase II) to evaluation, personal persuasion (Phase III) to decision/adoption (Phase IV) to use, training (Phase V) to effective use, and after-sale-service (Phase VI). This Hill keep the plants in good function which is a precondition for the promotion of biogas (Phase 1).