SESSION SIX

SUBSIDY AND INSTITUTIONAL FINANCING

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6.1 Introduction

It was seen in the previous session that some benefits of a biogas plant accrue not only to the user but also to the society as a whole. An example of this is the benefits to the society from the conservation of forest due to the adoption of biogas technology by a large number of families in a given area. It is not justifiable to make an individual user to bear the entire cost of the technology under the principle of users' pay all while the benefits are shared by the non-users as well.

This session discusses the need and justification for subsidy in the biogas sector in Nepal. In doing so, some of the past performance of subsidy programmes have been reviewed. The involvement of different institutions in administering subsidy and credit are also discussed. By the end of this session, the participants will be able to:

- explain why subsidy is needed in the biogas sector; explain the subsidy history in the biogas sector;
- enumerate credit institutions involved in biogas and explain procedures for using their services; and
- explain the role of institutional financing in the biogas sector.

6.2 Definition of Subsidy

Individuals work to maximize their personal gains or satisfaction, while organizations work to maximize gains for all of their members. There are situations when the organizational objectives are positively or negatively affected when some members try to maximize their personal gains. Penalty and subsidy are some of the tools that organizations use to discourage or encourage certain behavior of individuals. At the national level, it is the government as an organization that pays subsidies to the industry or directly to the users either for the adoption of the goods and services or to reduce cost to the users with an aim of maximizing the broader national objectives.

Subsidy could be provided at different levels. The local government could add to the subsidy provided by the central government. For example, a District Development Committee (DDC) could provide some financial support to a user household on top of what the user receives from the central government. Similarly, a VDC could also bear some part of the users' cost to add to the subsidy provided by the central and district government. Such multi-level subsidy schemes have been in practice in India. In Nepal too, the multi-level subsidy has been successfully practiced by specific projects for their target group population. Some NGOs have also been providing additional incentive to users in their particular area of work. However, such practices are yet to become common in Nepal.

6.3 Rationale of Subsidy for Biogas Plant Installation

Discussions in previous sessions have established that the adoption of biogas technology by an individual user has some positive impacts on broader and long term social objectives such as improved forest cover, improved productivity of soils, improved health of women, to name a few. The government has been making investments through other projects and programmes to attain these social objectives. Therefore, subsidy on biogas plants could be interpreted in two parallel ways: (a) the government payment to a biogas user for all the benefits that the society derives from the investment made by the user, (b) government incentive for individuals to invest for the attainment of the broader social objectives.

Each of these interpretations of subsidy has different implications in arriving at the right amount of subsidy. Principally, the amount of subsidy to a family size plant should be equal to the value of all net benefits of the plant minus the benefits that are exclusively enjoyed by the individual user or the investor. But, many of the benefits of biogas plants are not marketable and are difficult to express them in terms of money value. Because of such difficulties in fully accounting all costs and benefits of a biogas plant, for practical purposes, the amount of subsidy to be provided is generally guided by the questions : (a) what can the government afford as subsidy, and (b) what level of subsidy is sufficient to increase the demand above the existing construction capacity?

It is generally argued that subsidy creates market and price distortions and should be avoided to the extent possible. The validity of such an argument is questionable in case of biogas where some of the benefits from individual investment directly leads to reduction in social cost which otherwise would have to be borne by the government. For example, adoption of biogas technology by a large group of people in a particular area would decrease die government cost of aforestation project for that area. Similar argument can be made in terms of public spending on treating respiratory diseases in women caused by in-house pollution. However, like an individual, the government should also try to maximize social benefits at minimum cost or subsidy.

It was discussed in the previous session that the financial returns to users of a biogas plant are quite attractive in terms of NPV, BCR and IRR. However, to be able to realize these benefits from the plants to be constructed, an individual has to invest first. The level of investment required for a family size biogas plant is almost equal to the investment required for construction of a rural household. BSP estimates the average size of loan required at about Rs. 14,000 with annual interest of about Rs.3,122 for seven years. The number of households that are not already indebted and have sufficient annual gross saving to meet these requirements are about 110,960 and most of them are medium (land holding of 2 to 4 ha) and large scale formers (land holding of above 4 ha). But, it is the small and marginal farmers that are exerting greater pressure on sustainable use of common resources such as the forest and soils. This situation calls for subsidy for biogas installation in the absence of which the full technical potential can not be realized. The Perspective Energy Plan has recommended to continue the present level of subsidy for a decade to come (1994 to 2004).

6.4 Subsidy and External Financing

The subsidy on interest free loan provided to users in the "Agriculture Year" was fully met from the government's own resources. The government could not bear this cost for long and again farmers were required to pay interest in the subsequent years. Therefore, the government has to continue to look for external assistance in this sector.

The first external assistance for the biogas programme was obtained for die community biogas plants built under the Small Farmers Development Project (SFDP) and funded by the UNDP. UNICEF, USAID and UMN. UNCDF was the first organization that provided assistance for household level biogas plants in Nepal. It provided 25 percent subsidy on investment cost for 4 m^ to 10 m^3 plants.

Another significant subsidy scheme was provided by AsDB under the Forestry Sector Programme Loan. A total of 2,500 biogas plants were installed during 1991/92 to 1993/94 with the subsidy provided under this loan. AsDB is also involved in providing loan to ADB/N which in turn provides loan to the farmers for agriculture development programmes including that for biogas installation.

A large scale external assistance was obtained in 1992/93 when the Directorate General for International Cooperation (DG1S) of the Ministry of Foreign Affairs of the Netherlands Government (via SNV/N in cooperation with HMG/N) provided Dutch Guilders 8,085,000 equivalent to Rs 202.12 million for a period of five years. Out of this, Rs 164 million was allocated for subsidy on the

investment costs. The remaining budget was allocated for privatization study, institutional strengthening, programme management and evaluation. The implementation was carried out by a joint venture of GGC. ADB/N and SNV/N. The target of 20,000 biogas plant construction for the project period (i.e. 1992/93 to 1996/97) was met a year earlier. The implementation took place in two phases, i.e., 1992/93 to 1993/94 (Phase 1) and 1994/95 to 1996/97 (Phase II).

In the first phase, construction was carried out by GGC with financial support from ADB/N. In the second phase, besides GGC and ADB/N, 20 private biogas construction companies, 3 NGOs, RBB and NBL have also been involved in the promotion of biogas technology.

The encouraging progress in biogas not only made the Netherlands Government commit to assist Nepal in the future, but also drew the attention of other donors like the German Government to assist in the development of this sector. The third phase of the BSP is under consideration and a proposal for it has been prepared and approved by HMG/N. This phase will be of six years {1996/97 to 2001/2002) and will be assisted by the Netherlands and German governments. A total of Rs 3,500 million has been proposed for the implementation of this phase.

6.5 Review of Subsidy on Biogas Programmes in Nepal

The subsidy on biogas has been supply driven, i.e., guided by the capacity or willingness of the government to bear a part of the investment cost. Table 6.1 chronologically presents the different rates and forms of direct subsidy provided by the government for installation of family size biogas plants. It shows the continuation of government support even in the absence of a consistence policy. Frequent changes in the subsidy policy before 1992 is taken as one of the factors that inhibited the rate of adoption in the past.

Chart 2.3 of Session Two illustrates that the rate of installation of biogas plants has been very responsive to the flat rate subsidy of Rs 7,000. Also, the additional transportation subsidy of Rs. 3.000 has been instrumental in increasing the rate of installation of plants in hills compared to that in the plains. In 1991/92, the subsidy amount was sufficient to meet more than 40 percent of the total investment cost depending on the ease of access to construction materials. The flat rate subsidy has been preferred for its following advantages over the subsidy based on fixed percentage of investment cost.

- It is simple to understand.
- It encourages the installation of smaller sized biogas plant which is an important consideration as substantial number of plants are now over-sized in terms of the gas requirement and plant feeding capacity of the user family.
- It makes administration simple and transparent
- It almost equalizes the cost of biogas plants (per m^3 of gas production) irrespective of their sizes between 6 to 20 m^3. The subsidy reduces the cost for a 4 m^3 plant from Rs 9.90 to 5.40 per m^3 gas; for a 20 m^3 plant from Rs 4.70 to 3.80 as shown in Table 6.2.

Table 6.1
Subsidy Provided by HMG/N for Biogas Installation (1975/76 to 1991/92)

Fiscal Year	Subsidy	Remarks
1975/76	Interest free bank loan	Only for "Agriculture Year"
1976/77	Subsidized or preferential interest rate of 6 percent	Normal interest rate was 11 percent
1981/82	11 percent interest	Subsidy on interest removed
1982/83	Rs 5,500 for each plant constructed in Dhanusha. Sunsari, Rupandehi and Banke districts under Special Rice Production Programme,	Other districts continued with the increased interest rate of 11 percent
1985/86 and 1986/87	50 percent subsidy on bank interest for biogas loan	
1988/89 and 989/90	25 percent subsidy on investment and 50 percent subsidy on bank interest	Normal bank interest rate was 15 percent
1990/91	25 percent subsidy on investment for 6 in^{1} and 10 m$^{?}$ plants only	This provision was removed after the new government took a policy to do away with all forms of subsidies, in late 1991.
1991/92 till present	A flat rate investment subsidy of Rs. 7,000 for all size plants in the country with additional subsidy of Rs. 3,000 for hilly districts.	Has been continued since then with SNV/N support

Table 6.2
Cost of Biogas per m^3 Gas Produced
With and Without Flat Rate Subsidy of Rs 7,000 (1995/96)

Plant Size	Yearly Gas Production (m^3)	Investment Cost (Rs)		Yearly Cost (Rs)		Cost of Biogas (Rs/m^3)	
		Without	With	Without	With	Without	With
4	350	15,500	8,500	3,457	1.896	9.90	5.40
6	525	18.000	11,000	4.014	2,453	7.60	4.70
8	700	21.000	14.000	4,683	3.122	6.70	4.50
10	875	24,000	17,000	5.352	3.791	6.20	4.30
15	1,315	30,000	23,000	6,690	5,129	5.10	3,90
20	1,750	36,500	29,500	8.140	6,579	4.70	3.80

Source: BSP, 1996

BSP aims to continue with the on-going rate of subsidy in its third phase of programme implementation. On an average, it will amount to a flat rate subsidy of Rs 9,000 for the first three years of the programme which will be reduced to Rs 8.000 for the final three years period. The subsidy amount will remain fixed and will not be adjusted for inflation. Assuming a 7 percent annual rate of inflation over this period of six years, the share of subsidy in the average construction cost for a 10 m biogas plant will decline from 29 percent in 1995/96 to 16 percent in 2001/02 (BSP. 1996). This approach establishes a basis for gradual reduction of subsidy on the total investment cost.

A recent study on biogas subsidy has come up with a suggestion to provide Rs 12.000 for each plant constructed in remote areas defined as districts not linked with national road network. This suggestions is being favorably considered but has not become effective yet (Silwal and Pokharel, 1995).

In addition to the subsidy on family size plant installations, the government has also made regulatory

provision to exempt taxes on biogas appliances and accessories. However, making use of this provision by biogas companies has been complicated due to lack of well defined institutional arrangement and clear administrative procedures.

Followings are the three important features of the existing subsidy policy :

- Subsidy is made available only for the installation of family size plants. Subsidy is not provided for community size biogas plants.

- Designs other than approved by BSP are not subsidised. So far, GGC and Deenbandhu are the only designs approved by BSP. However, BSP has an open policy to approve other designs after a careful performance test in the Nepalese conditions.

- Subsidy is not provided to plants fed with materials other than the cattle dung.

6.6 Institutional Financing

Almost all plants in Nepal are constructed with institutional loan mainly from ADB/N for the following reasons.

- ADB/N has an extended network of 244 branches and sub-branches and 420 SFDP offices in the rural areas. No other bank has such a strategically located and scattered network. It has a good knowledge base of local conditions and credit worthiness of its customers which joint venture banks and private banks lack.

- ADB/N is a development bank. Unlike other commercial banks, ADB/N is prepared and willing to accept high overhead costs for small loan administration.

- ADB/N has about 85 percent of the shares in GGC, the largest producer of biogas plants, and the major creditor of GGC.

Till 1995. ADB/N was the only bank to administer credit and subsidy for biogas plants. After 1995, RBB and NBL too took interest in administering loan and subsidy for biogas installation. Biogas is a priority sector for government investment. Any bank willing to administer loan in biogas sector has to first notify the MOF

RBB is a state owned commercial bank with 206 branch offices. Out of these, 164 offices are involved in lending for priority sector areas and 71 percent are located in the rural areas. These offices are located in areas not well covered by the offices of ADB/N. therefore the two banks do not heavily compete in the same geographical area but complement each other.

RBB has a Priority Sector Credit Department that actively seeks to expand credits in the priority sectors of the government. One programme of the RBB is "Banking with the Poor" which has a facility to extend group loans up to Rs. 10,000 without collateral. Interest rate charged for loans in the rural sector is 2 to 3 percent lower than that charged by ADB/N.

In the recent past, RBB received several requests from its clients for loans for biogas plants. The RBB had to refuse these loan applications as the government subsidy was channeled through ADB/N only. As biogas is a priority sector, the government was inconsistent in its policy to impose a 12 percent target for priority sector loans on one hand and to effectively prohibit the RBB to provide loans for biogas plants on the other hand. This issue has now been resolved and RBB has become one of the partners in the implementation of BSP.

NBL, the other state owned commercial bank, has about 250 branch offices, of which 71 percent are located in the rural areas. This bank too has now started administering loan and subsidy for biogas plants,

A recent development has been the creation of rural development banks in the eastern, central and far-western development regions of the country. These banks, inspired by the success of the Grameen Bank in Bangladesh, have adopted a similar strategy and extend group loans up to Rs 5,000 without collateral. These banks are not yet involved in financing biogas plants but certainly have a great potential for doing so in the future.

Other private sector banks arc mostly located within or near urban areas. Their core business is short to finance trade and short term investments. Long term investments in biogas plants are probably too risky and too costly for these banks.

On the basis of present trend, BSP has estimated that 25 percent of all plants that will be constructed during BSP Phase III will be paid in cash, while 75 percent will be financed through bank loans. The amount of loan required for this phase is calculated on the basis of the following assumptions :

- of the 75.000 loans, the shares of the ADB/N and of the two commercial banks will be 86.67 percent (65,000 plants) and 13,33 percent (10.000 plants), respectively: and
- the average loan size after deduction of subsidy is Rs 14.620. Higher investment cost; of biogas plants in the hills (accessible and inaccessible) will be compensated by higher subsidy rates for these areas.

Table 6 3 presents the estimated loan requirement for the BSP Phase **III.** Total gross loan requirement excluding physical and price contingencies is Rs. 1,097 million (US$ 19.6 million). Besides this, an amount of Rs. 365 million (US$ 6.5 million) is expected to be generated by customers willing to install biogas plants on a cash basis.

Working capital requirements for the biogas construction companies are not included in the above loan calculations although the companies indicate a significant need for such capitals. Commercial banks have indicated that they will consider providing working capital loans to recognized biogas companies.

Table 6.3
Estimated Loan Requirement for BSP Phase III by Nepalese Fiscal Year
(Excluding Physical and Price Contingencies)

	1996/97	97/98	98/99	99/00	2000/01	01/02	Total
Target (No.)	10,000	12,000	14,500	17,500	21,000	25,000	100,000
Cash (No,)	2,500	3,000	3,625	4,375	5,250	6,250	25,000
Loan (No.)	7,500	9.000	10,875	13,125	15,750	18.750	75,000
-by ADB/N	7,200	8,400	9,675	11,025	13,250	14,850	65,000
- by NBL	150	300	600	750	1,250	1,950	5,000
- by RBB	150	.100	600	750	1,250	1,950	5,000
Loan Requirement (Rs in million).							
	112	131	154	1%	232	272	1,097

6.7 Flow of Funds

It is estimated that about 15 percent of plants will be constructed with institutional loans during the BSP Phase III. Since the well established banks have just started to finance biogas plants, the two commercial banks, NBL and RBB, are expected not to have problems of fund shortage for the loans. ADB/N, however, due to liquidity constraints, may not be in a position to provide the full amount for the credit component. Taking into account the actual collection of the already financed biogas plants under BSP

Phase I and Phase II, the fund shortfall of the ADB/N has been estimated to be Rs. 261 million for the first stage of BSP Phase III. In this regard, KfW, a German development bank, has agreed to provide a financial contribution of DM 6.9 million for the credit interest rate reflecting the savings rate in Nepal which is an average of 8 percent per annum. This amount is to be transferred to a special Biogas Support Fund. For the remaining portion of the credit requirement, ADB/N is committed to fund through its own sources.

The number of plants constructed without bank loans (self financed) has been increasing in the recent years. In 1992, 6 percent of the plants were constructed on a cash basis (without loans) and this has increased to 23 percent by 1995. This trend is marked by the introduction of provision for subsidy even to plants that are not financed through the banks. This is a reflection of (a) the existing cumbersome procedures of obtaining bank loans and (b) people with the ability to afford biogas plants are willing to install them. In view of the present trend, it is estimated that about 25 percent of biogas plants in the future will be constructed on a cash basis.

Financing of BSP Phase III comes from two donors, i.e., KfW and the DGIS, Besides these, HMG/N. biogas companies, banks and farmers are also proposed to contribute, as shown in Table 6.4.

Table 6.4
Proposal for the Financing of the Three Components of BSP Phase III by Different Parties (Rs in million)

Component	Subsidy	Credit	Technical Assistance	Total	(%)
Users	-	575.9	-	575.9	16
Biogas Companies	-	-	52.5	52.5	2
NBL, RBB	-	244.0	-	244.0	7
ADB/N	-	1,222.8	-	1,222.8	35
HMG/N	139.5	-	-	139.5	4
DGIS	109.2	-	266.4	375.6	11
KfW	629.6	261.0)	-	890.6	25
Total	**878.3**	**2,303.6**	**318.9**	**3,500.8**	**100**

Source : BSP Phase III, pp 49

Procedures for Flow of Funds

For the FY 199V96. the procedures for disbursement of subsidy, participation fee and guarantee charge are outlined below.

Flow of Subsidy: The grant aid received from the Netherlands Government and KfW is the only source of subsidy. The subsidy is administered by the Nepal office of SNV. Disbursement of subsidy fund by SNV/N is done on the basis of biogas plant completion reports submitted by recognized biogas companies and compiled by BSP as monthly progress reports. Following steps are involved in the process of transferring subsidy from SNV/N to ADB/N and other banks and users.

Step 1: SNV/N forwards a cheque to the Financial Controller General's Office (FCG) of Nepal with a covering letter in which die budgel release is explained.

Step 2: SNV/N sends copies of the covering letter to the MOF (Foreign Aid Coordination Division), and ADB/N (Financial Management Division and Loan Division).

Step 3: FCG transfers the fund to the ADB/N within a period of three weeks.

Step 4: ADB/N's Financial Management Division transfers the subsidy money to ADB/N field offices according to its own regular plans and procedures.

Step 5: After the construction of a biogas plant is fully completed, which has to be certified by the user to the biogas company, the ADB/N field office deducts subsidy amount from the total loan taken by the user.

In case of plants constructed on cash basis. SNV/N requests ADB/N to pay the concerned company the total subsidy amount for all plants that it constructed on cash basis in the last month. In doing so, Rs. 500 as participation fee and Rs 1,000 as guarantee fee are deducted from the subsidy amount to be paid to the companies for each plant constructed without loan. SNV/N makes such a request on the basis of monthly report that it receives from each company on the number of plants constructed on cash and loan basis. Accordingly, ADB/N transfers such amount to Current Account of the concerned companies.

In case of banks other than ADB/N, request is made by SNV/N to ADB/N to transfer the total subsidy amount to the bank that has provided loan to users. Such request is based on the progress report sent by the companies to BSP which include information on the bank involved.

Transfer of participation fee by ADB/N to SNV/N : Participation fee is the amount paid by a user to the biogas company. Presently, it is Rs 500 per plant. When government subsidy or support for the promotional activities is phased out, the fund thus created is planned to be used for these activities such as training and research. This approach is taken to make the biogas more complete and self sustainable programme of the private sector. Every month, SNV/N requests ADB/N to deposit the total amount of the participation fee based upon the progress report submitted to SNV/N by the companies.

Transfer of guarantee charge by ADB/N to Joint Account of companies and SNV/N: The guarantee charge of Rs. 1,000 is the fee taken by the biogas company from each of its users to create a fund that will be used for free repair of the plant in case some structural defect is developed within six years from the time of plant construction. Every month, SNV/N requests ADB/N to transfer the total amount of the guarantee fee to a savings account jointly operated by SNV/N and the companies.

All progress reports need to be prepared in a monthly basis by the bank and the companies. All financial transactions are to be completed within three weeks of requests made by the concerned parties. In the implementation of BSP Phase III, the procedure on disbursement of subsidy fund, participation fee and guarantee charge is planned to be reviewed while preparing the annual programme for approval by HMG/N,

6.8 Procedure for obtaining Loan and Subsidy with Technical Assistance

It is important for a user or an extension worker to understand the procedures for obtaining loan, subsidy and technical assistance. The sequential process is given below.

a) The potential user (client) either gets self motivated by seeing a biogas plant in the neighbourhood or is motivated by the biogas company staff or by NGO personnel

b) The client is either willing to invest her own savings or decides to take a loan from the bank for installing a biogas plant,

c) If the client wishes to pay cash, the biogas company and the client decide on the plant size. The cost estimate of the plant is made by the company based on the standard norms. The company receives the subsidy from the bank or BSP on behalf of the client after the plant construction is completed. The client pays the remaining amount to the company.

d) If the client decides to take loan from the bank, the staff of the company assist the client in receiving loan from the bank. The client has to mortgage her property (generally house and land) as collateral for the loan.

e) After the loan is sanctioned, the bank provides a portion of the loan directly to the client for the part of the work that she wants to do. e.g. collection of sand, stones, gravel and digging of pits, etc.

f) The bank sends a coupon to the concerned biogas company for the delivery of the biogas appliances and other goods that are to be supplied by the company.

g) The company supplies the appliances and other goods to the client according to the bank's coupon.

h) The company then sends the receipt to the bank requesting for the reimbursement of the amount that was paid by the company to the user.

i) The bank then reimburses the amount to the company.

j) The bank interest is charged to the client effective from the data of amount paid to the client. Similarly, the interest for the amount paid to the company is charged to the client effective from the date the money is provided to the company

k) Since the subsidy is paid by BSP to the banks in advance, the clients are not charged for the interest on the subsidy amount.

l) The loan pay back period for ADB/N is six years, whereas that for the RBB and NBL is three years.

m) For loan taken for the installation of a biogas plant, the interest rate of ADB/N is 16 percent and that of NBL and RBB is 14 percent.

6.9 Session Plan

Activity No.	Topic and Area of Discussion	Time (min.)	Methods of Training	Teaching Aids
I.	Introduction and highlight of the objective of the session	4	Lecture	Transparent sheet or flip chart
2.	Definition of subsidy	4	Lecture cum discussion	O/H projector, screen and flip chart
3.	Rational of subsidy for biogas plant installation	4	Lecture cum discussion	Transparent sheet
4.	Subsidy and external financing	4	Lectures cum discussion	Transparent sheet
5.	Review of subsidy on biogas programmes in Nepal	4	Lecture cum discussion	Transparent sheet
6.	Institution financing	4	Lecture cum discussion	O/H projector
7,	Flow of funds	6	Lecture cum discussion	Transparent sheet
8.	Procedure for Establishing a biogas plant	5	Lecture cum discussion	Flip chart
9.	General discussion	15	Discussion	O/H projector, flip chart
Total Time		**50**		

6.10 Review Questions

- What is subsidy? What are the objectives of subsidy?
- What is the rational for biogas subsidy in Nepal?
- Explain the fact that the subsidy policy of the government on biogas was not stable till 1991. What is the present subsidy policy of the government?
- What are the recommendations of the recently made study on the review of subsidy policy on biogas?
- Explain the fact that the subsidy policy of the government on biogas was not stable till 1991. What is the present subsidy policy of the government?
- What are the recommendations of the recently made study on the review of subsidy policy on biogas?
- What sectors arc involved in financing the biogas development programme?
- How are the internal and external resources mobilized for biogas development programme?
- Besides SNV/N, what other donors are assisting Nepal in biogas development?
- Explain the financing of biogas programme in Phase III of BSP.
- Give the sequential procedures involved in financing a biogas plant.

6.11 References

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