Opportunity & Constraints

for

Biogas Credit

in

Faisalabad Area

September, 2010

Four Corners Group (Pvt) Ltd.

LISTENERS
FOR BUSINESS INTELLIGENCE

Prepared under the
Terms of Reference for the Study on Constraints and Opportunities in Promoting micro credit for biogas plants installation
under
Pakistan Domestic Biogas Programme (PDBP)
Managed by
Rural Support Programmes Network (RSPN), Pakistan

Document:	**Final Report**
Project:	**Opportunities and Constraints for Biogas Credit in Faisalabad Area**
Client:	**Rural Support Programmes Network (RSPN)**
Global Publication by:	**SNV World , The Netherlands (www.snv.org)**

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The Embassy of the Kingdom of Netherland

Report Date:	**Final Version (June 25, 2010)**
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ACKNOWLEDGEMENTS

This document is very much the result of a collaborative effort. In particular, Four Corners Group (FCG) wishes to thank the PDBP project team: Mr. Sajjad Haider, Programme Manager PDBP, RSPN; Mr. Prem Sagar Subedi, Technical Advisor PDBP/Winrock International, Mr. Rajesh Shrestha, Senior Advisor, PDBP/SNV, Mr. Khaleel Tetlay, Chief Operating Officer, RSPN and PDBP Area Team at Faisalabad (Mr. Amir Rana and colleagues) for their participation and support at each level of the assignment.

The support and cooperation from microfinance institutions and credit organizations including, Pakistan Poverty Alleviation Fund (PPAF), RCDS, ASSASAH, Kashf Microfinance Bank (KMFB), First Micro Finance Bank (FMFB), Khushhali Bank and First Women Bank, cannot be ignored; indeed their cooperation made this study successful.

We would also like to acknowledge the practical assistance provided by many other stakeholders and project partners including Biogas Construction Company owners and bio-gas users and potential users.

Finally, we wish to thank the following FCG research team members:

- Ms. Rifat Sabzwari, Director and Principal Consultant,
- Mr. Ali Raza, Deputy Director, Research Services,
- Mr. Qasim Mumtaz, Sr. Research Manager and
- Ms Uzma Taha, Sr. Research Manager
- Mrs. Rubila Aga, Microfinance Sector Expert and
- FCG field team members (who carried out on–ground investigations)

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ABBREVIATIONS

BCC	Biogas Construction Company
FGD	Focus Group Discussion
FCG	Four Corners Group (Pvt.)Ltd.
IDI	In-Depth Interview
KBL	Khushhali Bank Limited
MFB	Micro Finance Bank
MFI	Micro Finance Institution
MOU	Memorandum of Understanding
NGO	Non Governmental Organization
NRSP	National Rural Support Programme
PDBP	Pakistan Domestic Biogas Programme
PPAF	Pakistan Poverty Alleviation Fund
PRSP	Punjab Rural Support Programme
QED	Quality Ensuring Discount
RCDS	Rural Community Development Society
RSP	Rural Support Programme
RSPN	Rural Support Programmes Network
SEBCON	Socio-Economic & Business Consultants
ZTBL	Zarai Taraqiyati Bank Ltd

EXECUTIVE SUMMARY

The main objective of this study is to explore the potential of promoting credit financing for the installation of biogas plants. The report explores biogas credit needs of consumers; it looks into concerns of MFIs', perspectives of wholesaler and finally recommends a course of action for promoting biogas credit in Pakistan.

Although in other studies it was explored that policy measures cannot single-handedly increase financial access, financial institutions' willingness to expand access in Pakistan has been stinted by slow technologic advances, weak legal foundations, and unsuitable financial processes and products. Poor socioeconomic conditions, gender bias, and low levels of basic education and financial literacy remain barriers, but perhaps the single most important determinant of low demand for financial access has been "low personal income".

This study analyses the position and interests of various stakeholders in the chain of biogas credit starting from households to MFIs and wholesale lending institutions.

The key insights from the study are summarised below:

Biogas Technology:

Biogas is an appropriate rural technology that helps increase the access of the rural farmers to clean source of energy for cooking and lighting. Number of cattle, cattle holding pattern of the farming households and appropriate temperature in Central Punjab make biogas a very appropriate alternative source of energy. The biogas industry in Pakistan is at a very nascent stage; it can be categorized as hovering around innovation and early adoption.

One of the strong aspects of the Pakistan Domestic Biogas Programme (PDBP) is its approach to create strong and responsible supply side for technology. As of June 2010, PDBP has trained around 100 masons, who are now grouped in 17 Biogas Construction Companies (BCCs). Capacity of the BCCs needs to be strengthened to cater the large untapped market. Plant construction technology, though relatively easy to learn, is yet to be mastered by a large enough number of masons and constructors before real competition sets in and potentially brings prices down.

Biogas Users:

Early adopters of this technology are mostly the relatively well off rural families, with more than 6 animals. The key trigger that prompted them for purchase was a hassle-free product that saves their time and energy. All the users viewed their plants as working effectively and

producing enough biogas to meet most of their cooking needs.

On an average, the biogas users were spending PKR 2,500 per month for various type of cooking fuels. After the installation of the biogas plant, the cost savings on cooking fuel is PKR 1,800 month (thereby lowering their fuel expenses to only PKR 700 per month). This rate of saving pays off the plant investment in 15-30 months.

Potential Biogas Users:

Overall, both men and women expressed strong interest in and willingness to opt for bio-gas technology. Households who are living in close vicinity of the cattle shed or have at least two adult animals and with some source of cash income can be considered as potential biogas users.

The average family size is 10 members and appropriate size of plant will be 8-10 cubic meter. However based on the animal holding, 45% of the potential users hold 3-4 cows/buffaloes. Therefore appropriate plant size for them will be 4 to 6 cubic meter, which provides gas that will be slightly lower than their energy requirement. The other problem is that even the households with sufficient number of animals do not have the upfront cash to install the biogas plant.

One of the elements that can speed up adoption of biogas plant is availability of credit for biogas plant installation. An overwhelming 89% of potential users responded favourably and viewed biogas credit as a facilitative factor that would enable them to benefit from the biogas technology.

Due to failure of the previous approaches and technologies in the past, potential users still want to see some functional plant before they make the investment decisions, for themselves.

Credit Need for Biogas plant

The average cost of the biogas plant ranges from PKR 33,000 to PKR 59,000 (depending upon the size of the plant), out of which PDBP provides a Quality Ensuring Discount (QED) of PKR 7,500 so the actual cost to the farmer would be around PKR 25,500 - 51,500. Households are ready to provide at least 25% of the cost (after deducting the QED) as equity for the installation of the plant. This contribution is inclusive of 10-15% as unskilled labour component, which the household can supply. Hence the credit need for the installation of domestic biogas plant ranges from PKR 19,000 to PKR 40,000 depending upon the size of the plant. A biogas credit product can meet this latent need.

Credit need with respect to plant size is tabulated below:

Plant	A	B
Size	4 cubic meter	15 cubic meter
Fed by dung from	2-3 animals	10-12 animals
Average total plant cost	PKR 32,870	PKR 60,000
Quality ensuring discount (QED)	7500	7500
Net cost to user	25,370	52,500
User equity (25%) – cash & labour	6,343	13,125
Users credit need	19,028	39,500

Micro Finance Institutions

Micro Finance Institutions (MFIs) in Pakistan are mostly engaged in financing income generating activities. They consider the biogas as non-income generating product. As MFIs provide loan to poorer households, they also think that there could be only a small share of their clients who could be eligible for biogas installation. MFIs agree on the fact that biogas plant helps save the existing fuel expenses, however they think that households should have another reliable source of cash income to pay the instalment if MFIs have to provide biogas credit.

MFIs are interested to include biogas as loan product if PDBP helps them to develop the biogas loan product, train their staff, and arrange a low cost wholesale loan for biogas financing. They believe that biogas lending can only be speeded up once there is enough awareness among their clients.

Issues/Barriers

Interest rates in the micro finance sector in Pakistan are relatively high up to 35% per annum. And the main motivation for this, quite correctly, is the objective of achieving sustainability. Although these high rates can be justifiable for income generating activities, these are viewed by potential users as being very high for investment in non-income generating activity like biogas plants. Their threshold interest rate which they are willing to pay on biogas credit is 10-12%.

Given the size of the potential market for micro credit in Pakistan, the existing outreach of MFIs is limited and the main reason for this is the lack of capital from wholesalers for extending outreach.

MFIs are not familiar with biogas technology and biogas credit products. Most MFIs have limited knowledge of biogas credit. Although PRSP has introduced a product, biogas has not yet been accepted widely so far as means of domestic fuel.

Recommendations

- In order to complement PDBP's sector development initiatives, biogas credit mechanism needs to be developed to meet the latent need for biogas plants. Potential users do not have ready capital to make up-front investment; they have a liquidity gap. If they could access biogas credit to meet this gap then they will be able to benefit from biogas technology. With the development of a suitable biogas credit product, relatively poorer segments of the rural households can also benefit from the biogas technology.

- In order to develop a sustainable clientele for biogas credit, more effective awareness and demand creation activities need to be undertaken.

- In the short- to medium-term, to jump start the biogas credit, a dedicated Biogas Credit Facility needs to be created within RSPN. MFIs will access this Fund to provide biogas credit to potential users. Such fund should be exclusively for financing biogas plants. Over the long term, as the biogas sector takes root and grows then not only MFIs but other financial institutions are likely to enter the biogas credit market.

- In order to keep biogas interest rates at a reasonable level, it is recommended that the Biogas Credit Facility should provide capital to MFIs at around 5% per annum, and that MFIs in turn provide biogas credit at 18-20% per annum to biogas clients.

- In order to build the capacity and confidence of MFIs, various capacity building activities need to be designed and implemented, especially in saving – based development, marketing and operations management.

CHAPTER 1: INTRODUCTION AND STUDY DESIGN

Introduction of the programme

Pakistan Domestic Biogas Programme (PDBP) is a 4 year programme, which aims at installing 14,000 domestic biogas plants across central Punjab in its first phase with the financial support of the Embassy of the Kingdom of the Netherlands.

This Programme envisions the creation of a commercially viable biogas sector in Pakistan in next 10 years. During the period, the vision is to set up 300,000 domestic biogas plants across Pakistan. To ensure that the vision materializes, partnerships and agreements with various stakeholders such as Rural Support Programmes (RSPs), Government Organizations, Micro Finance Institutions (MFIs), Non Governmental Organizations (NGOs) etc will be formulated. Strong, dynamic and profitable biogas construction companies will constitute significant component of the new and viable biogas sector in the country. To that end, the main actors at the supply side of the sector are private Biogas Construction Companies (BCCs), providing biogas construction and after sales services to households. On the demand side, RSPs will be the main executing partners, as well as NGOs, farmers' organizations , dairy organizations and local opinion leaders as Independent Marketers.

RSPN has already signed a memorandum of understanding (MoU) on August 6, 2009 that establishes the Ministry of Environment as the "patron" of the Programme and will facilitate coordination among government institutions for the successful implementation of the programme to meet the energy needs of rural people. Operations have begun in Central Punjab and will subsequently expand to other districts of Punjab, Sindh, Khyber-Pukhtunkhwa, and Baluchistan provinces. In order to be able to provide adequate support, provincial biogas offices will be established in the provinces and Quality Control Centres will be established to support their activities.

Study Design

The average cost of the biogas plant ranges from PKR 33,000 to 59,000 (depending upon the size of the plant), out of which PDBP provides Quality Ensuring Discount (QED) of PKR 7,500 so the actual cost to the farmer would be around PKR 25,500 - 51,500. So far, all users have funded the biogas plant by using their own financial resources.

RSPN's Energy Utilization and Demand Baseline Assessment Survey 2009 showed that around 57% of the women respondents were interested to have a biogas plant in their house.

However the high upfront cost of the plant is major hurdle to install a plant.1 Households that can afford to pay the upfront cost can install the biogas plant. However, those households who cannot pay the cost upfront of the biogas plant would be deprived from the benefits of the biogas plant and cannot enjoy the discount given by the programme for biogas installation. Hence this study was designed to explore the need of credit and opportunities for promoting micro financing for biogas installation.

Objectives of the Study

The overall objective of this study was to identify the constraints and opportunities in promoting the credit for biogas plants in the programme areas of PDBP. The idea was to establish a feasibility of biogas credit and to provide a model for biogas credit which is appropriate for MFIs and rural households. The specific objectives were:

- To assess the relevant stakeholders in promoting biogas credit in terms of their interest, capacity and position.
- To analyze the need of the credit for the biogas installation in the programme area
- To identify the constraints and opportunities in financing of biogas plants (biogas credit) in the programme area.
- To recommend the appropriate models, mechanisms and products to promote the credit for financing of biogas plants.

Scope of Work

The scope of the study mainly focussed on the following:

- **To assess the existing situation of Biogas credit facilities**
  - ✓ Overview of biogas and micro finance sector in Pakistan.
  - ✓ Assessment of credit need (liquidity gap) for biogas installation.
  - ✓ Assessment of modalities and practices in financing biogas plants including accessing knowledge from the region.
- **To analyze the policy framework and the concerned stakeholders**

[1] Baseline Survey Report- Energy Utilization and Demand Baseline Assessment (2009), RSPN and The Netherlands Development Organization (SNV)

- ✓ Map the financial institutions and supplier of biogas credit offering the micro credit in Punjab province.
- ✓ Analysis of legal frame work concerning biogas credit through MFIs.
- ✓ Assessment of institutional capacity of MFIs in reference to providing credit finance access to biogas plant users.
- ✓ Position and interest of the local micro finance institutions.

- **To analyze the opportunities and constraints for access to credit for biogas plant installation**
  - ✓ Analysis of opportunities to increase access to credit for biogas installation.
  - ✓ Analysis of policy and operational barriers.
  - ✓ Analysis of the sources of credit for biogas financing.
  - ✓ Analysis of risk mitigation measures.

- **To develop appropriate financing models**
  - ✓ Assessment of the need for establishing the biogas wholesale credit fund
  - ✓ Institutional framework
  - ✓ Defined roles of various stakeholders
  - ✓ Identification of parameters of a biogas credit product suitable for various types of clients and appropriate for MFIs
  - ✓ Procedures for wholesale lending to MFIs/local partner organizations and on-lending to the biogas clients
  - ✓ Necessary interventions required; policy lobbying, capacity building, linkage facilitation
  - ✓ Preparation of action plan for implementation

Methodology

Keeping research objectives and information sought in consideration, it was suggested to collect both qualitative and quantitative information for final analysis.

Following methodologies were used to address:

Sr.	Instrument	Target Audience
1	**Literature Review**	Various reports, research papers and literature exclusively designed and prepared in context to biogas development and promotion in Pakistan Internet search for best practices, issues and constraints in biogas sector specially with related to credit facilities
2	**Meetings**	Meeting with micro-credit wholesale organization i.e. PPAF Meetings with microfinance institutions i.e. PRSP, ASASAH, RCDS, Kashf Microfinance Bank, Khushhali Bank Ltd etc
3	**Focus Group Discussion**	8 FGDs were held with biogas users and potential-users about their detailed insights on biogas usage. Their attitudes and perceptions were tapped to generate insights about biogas, its utility for them and their credit needs.
4	**Face-to-Face Interview**	78 face to face interviews were conducted with users and potential users of Biogas (including both male and female users) Different stakeholders were be interviewed (i.e. farmers, biogas construction companies and policy makers etc) to obtain their opinion, concern and fears regarding the use of biogas and related
5	**In-Depth-Interviews (IDIs)**	3 MFI$_s$ were also interviewed for getting their positions and interests regarding possibility of biogas credit, to potential biogas users. Interviews were also held with biogas construction company (BCC) members and owners to understand the issues and gaps in the construction of biogas plants and how credit supply could facilitate construction process.

Sampling Methodology

As agreed in inception report research was conducted in Faisalabad and Khushab districts of the Punjab province.

Potential Users Selection Criteria:

Before the start of the study, potential users were selected on the following basis for both qualitative and quantitative phase

- They must have at least 2 animals
- Must have sufficient land for biogas plant installation
- Must have potential income to pay the fund or equity contribution of the project
- Living in close vicinity to a constructed biogas plant
- Living in an area where Sui gas is not available (Sui gas is natural gas supplied by the utility company).

"Users" were selected randomly from the list given by client with the condition that their plant should be in operation from the last three months at least.

Qualitative Focus Group Discussions (FGDs):

In all, 8 FGDs were done to gather insights in detail.

Sr.	Type	Faisalabad	Khushab
1	Biogas Users	4	0
2	Biogas Potential-Users	2	2
Total		**6**	**2**

Qualitative In-Depth Interview (IDI's):

In all, 9 IDI were done to gather insights in detail.

Sr.	Type	No of IDI	Regions
1	BCC	4	Faisalabad
2	MFI's	2	Lahore
		1	Nankana
3	Wholesalers	1	Islamabad
4	Policy Level	1	Islamabad
Total		**9**	**--**

Quantitative Face to Face Interviews:

In all, 78 Face to face interviews were done to gather insights

Sr.	Type	Faisalabad	Khushab
1	Biogas Users	18	0
2	Biogas Potential Users	30	30
	Total	48	30
	Grand total	**78**	

Implementation:

Prior to start any activity of the project, a meeting was essential to understand the client's perspective. Detailed terms of references were shared by RSPN. In a briefing on biogas, expected outputs were clarified. Multiple meetings were held in RSPN head office prior to field implementation.

Development, Pre-Testing and Finalization of Data Collection Tools

After the meeting with the RSPN team, a range of data collection instruments were prepared including the following

Focus Group Discussion Questionnaire

#	Tool	Expected Outcome
01	Biogas Consumers & Users	Farmer's perspectives on benefits and constraints of using biogas Feasibility and process of biogas installation and size of plant preference. Finance management and possible finance solutions for biogas plants.
02	Biogas Potential Users	Community awareness regarding biogas and its benefits Constraints and limitation in installation of biogas plan at home with special emphasis on finances related issues.

In-Depth Interview Guide

#	Tools	Expected Outcomes
01	Biogas Users & Potential-Users	Benefits and limitation of using biogas The process of biogas installation and preference in choosing right or desired size of plant Finances management for biogas plant related issues
01a	Biogas Users SECTION Only	Community awareness regarding biogas and its benefits Constraints and limitation in installation of biogas plan at home and finance related issues
01b	Biogas Potential-Users Only	Benefits and limitation of using biogas Constraints and limitation in installation of biogas plan at home with special issues faced regarding installation and finances.
02	Microfinance Institutions (MFI_s)	Categories and type of credit facilities offered. Policies and standard for introducing new policies Policy level support if biogas credit line introduced, constraints and limitations
03	Credit Wholesaler	Knowledge about the existing status of credit lines Standard operating procedures for introducing new credit lines Constraints and limitations in introduction new credit line for biogas
04	Biogas Construction Company (BCC)	Financial constraints and possible solutions for financing plants in partnership with MFIs.
05	Discussion Guide for Policy Making Institutions	Mainstreaming biogas credit line in microfinance sector as promotion tool of alternate energy medium

The draft tools were shared (in Inception Report) with the RSPN team and management to get their feedback. The approved questionnaires and checklists were finalized after pre-testing. All instruments and tools are attached in the Annexure.

Team Composition

The following team was mainly responsible for the conduct of study in Faisalabad and Khushab:

#	Member	Responsibility
1	Shahzad Bukhari	Enterprise Development and Gender-Specialist
2	Ali Raza	Quantitative Research Specialist
3	Qasim Mumtaz	Senior Researcher, Client- Liaison and Field Manager for study execution
4	Rifat Sabzwari	Qualitative Research Specialists
5	Shadab Fariduddin	Lead Research Advisor, Development Sector Specialist
6	Uzma Taha	PMDC Psychologist & Expert in Qualitative Research
7	Robila Agha	Micro Finance Expert
8	Field Enumerators	8 Persons in Faisalabad 6 Persons in Khushab
9	Quality Assurance	2 Individuals

Survey

A detailed work plan was prepared and shared with RSPN's PDBP team for approval. The study was carried out as per agreed and approved timeline.

Quality Assurance

The Field Team Supervisor was nominated to review the process in the field and ensure the quality information before sending information to head office, of four corners group (FCG).

FCG's monitoring expert also joined the survey team in their initial field work and observed the field consultation process. The field schedule was shared with RSPN's PDBP team and they observed some of the FGD or interview processes when and where they

wanted.

Data Entry/Cleaning/Processing

The FCG has an in-home quality control and data entry team equipped with required data entry hardware and software. The data analyst supervised data entry and carried out data cleaning by using different statistical tests.

Documentation

Two reports, inception and final were promised to submit to RSPN for their review record and approval.

- **Inception report** is already submitted and approved.
- A **draft of final report** was submitted that contained findings of the study. After receiving comments from PDBP team a final incorporated version appears as this document for RSPN's approval and record, which constitutes the Final Report.

CHAPTER 2: LITERATURE REVIEW ON ENERGY FINANCING

The Role of Credit therefore becomes central to promoting alternative energy sources:

Energy, being a common human need, enjoys a global demand from the poorest of the poor to the richest of the rich. It is also an established fact that the energy cost is rising, which puts an unbearable burden on household budget especially of middle and lower income strata of societies. Rising energy cost, depleting fossil fuel reserves and environmental concerns have unleashed search for cleaner, cheaper and sustainable source of energy. Closely tied to this search is the question of affordability: making investment to create or switch to a newer source of clean energy. The Role of Credit therefore becomes central to promoting alternative energy sources like solar, wind, biogas etc. World experience amply demonstrates that availability of and access to credit has helped achieve accelerated growth on both sides of the sector: demand (accelerated growth in use of biogas) as well as supply (portfolio diversification of vendors and microfinance institutions, i.e., MFIs).

People living in poverty, like everyone else, need a diverse range of financial instruments to run their businesses, build assets, stabilize consumption, and shield themselves against crises. Microfinance offers many of the financial services needed by the poor—working capital loans, consumer credit, savings, deposit facilities money transfer services, pensions, and insurance. By reducing vulnerability and increasing earnings and savings, financial services allow poor households to make the transformation from every-day survival to planning for the future.

The microfinance sector has grown 12 percent per year in total outreach over the last decade and now reaches over 500 million people across the globe with financial services. However, penetration of markets is still very low with the most concentrated microfinance markets in Asia only reaching 2.5 percent of estimated potential clients. The boundary between microfinance and the larger financial system is beginning to blur with the increasing participation of commercial banks and other financial institutions in microfinance activities over the last decade. As more traditional financial institutions recognize that serving poor and low-income clients can be a viable business proposition, there are considerable challenges to be overcome as the sector scrambles to scale up existing services to larger numbers of people, to reach deeper into increasingly poorer and more remote sections of the market, and to find ways to lower costs faced by both MFIs and clients. Partnering with the energy sector can open new financial and energy markets, attract new clients for financial services and existing clients to energy services, and help alleviate or ameliorate poverty for millions of poor people

worldwide. Access to modern energy services can be greatly enhanced if people also have access to microfinance loans to pay for these services.

Over the last 20 years, microfinance has played an important role in enhancing the economic opportunities available to poor people, but the experience to date with loans for energy services and products is limited. On the energy side, especially for people living in rural areas, energy services may not be available because energy companies do not typically view them as a strong, viable market for their products and rarely offer company-provided financing options. Microfinance institutions, however, can expand access to energy for poor clients by offering credit and/or loans for energy products and by partnering with local energy companies to help them branch out into new markets that include poor and rural people. As linkages are built between the microfinance and energy sectors, financial institutions may be more willing and able to channel capital into loans for energy services.

Worldwide, MFIs have taken a somewhat progressive approach by offering a wide selection of energy products, ranging from solar home systems, solar battery charging, solar lanterns, solar hand pumps, sarai cookers, biogas plants and improved cook stoves. Different kinds of credit intervention were introduced in different areas of globe which clearly indicate the importance of credit in making any service, available to those who need them.

The role of Donor and Government can help address the challenges of introducing energy lending with credit enhancement and technical assistance scheme offered. Successful energy lending in MFIs in Africa, Asia, Latin America and Caribbean region tends to feature a strong partnership between an MFI and one or more energy enterprises as the foundation.

Internal capacity and market education are integral parts of the partnership between an MFI and energy company, and joint endeavours in these two areas are critical to the success of energy lending and to the partnership. They are important in expanding energy lending because the costs, benefits, and uses of modern energy tend to be relatively unknown to the MFI staff and its typical client base. Like any other new product, MFIs will need to invest sufficiently in marketing and promotion of energy loan products that emphasizes education about the benefits of modern energy. This can be done jointly with energy companies or collaboratively with NGOs or development organizations that are able to reach the clients and encourage them clients to take advantage of the energy loans. Lending officers and key management staff at the MFI will also need to have some basic knowledge of the various energy options in order to adequately promote the products to clients.[2]

Lessons from various countries suggest that MFIs will need to allocate sufficient human

[2] ibid

resources and budget to work with the energy companies to market and promote energy lending products in order to expand in this area. Moreover MFIs and energy companies needs to learn about each other and need to work closely together.[3]

One finds two distinct phases of growth in adoption of biogas as energy source: before and after availability of credit. Biogas programmes typically starts with a subsidy to the user. Adoption rate is slow and quality poor. This phase is also of long duration. For example, in Bangladesh from 1972, when first biogas plant was built to 1994, biogas plants were primarily financed through subsidy amounting to USD 70 (Taka 5000).[4] Biogas subsidy usually turns into soft loan to users on concessional terms.

Biogas users and microfinance clients have almost very similar demographic profiles. As soon as MFIs are educated about biogas users' credit needs, they realize the potential and diversify their credit portfolios to include biogas credit as well. Concerted efforts by biogas promoters are required to in order to facilitate MFIs' development of credit products.[5] Once this happens, biogas usage witnesses wide-spread adoption quickly. This pattern is common across cultures in Asia, Africa and Latin America.[6]

While the latent demand for biogas credit has to energised by way of proper need identification in terms of amount and tenure of loans, it is also evident from international experience development of need-responsive biogas credit (or energy credit) products is not easy or automatic. Although they may not have funding constraints, MFIs generally resist the ideas because of internal factors such as efforts required to develop a new product, a new method of loan appraisal, etc. There are external obstacles as well that MFIs need to overcome in order to make biogas credit products available to potential lenders: policy environment, governmental support in terms of credit-enhancement schemes, availability of energy and electricity price subsidies, availability of low-cost base funds for wholesale microfinance institutions etc.[7]

Moreover according to World Bank study of only 14% of Pakistanis are using a financial

[3] ibid

[4] Haque, Nizamul, October 2008, Country Paper for Bangladesh on Biogas Financing, The Netherlands Development Organization (SNV)

[5] Dhakal, Nara, September 2008, Financing Domestic Biogas Plants in Nepal, The Netherlands Development Organization (SNV)

[6] Hilman, Subedi, Gilman et al, November 2007, Using Microfinance to Expand Access to Energy Services, Experience in Asia, Latin America and Caribbean, USAID and Citi Foundation

[7] ibid

product or service of a formal financial institution (including saving, credit, insurance, payments and remittance services). When informal financial access is taken into account, 50.5 percent of Pakistanis have access to finance. Informal access can occur through the organized sector (through committees, shopkeepers, moneylenders, hawala/hundi money transfers, and so forth), or informally through friends or family.[8]

Only 14% of Pakistanis are using a financial product or service of a formal financial institution

Major constraints to financial access, in spite of policy reform, arise from the high levels of poverty, combined with low awareness of information about available financial services, as well as gender bias.

Microfinance in Pakistan represents a low 0.2 percent of total financial assets, though formal markets growth is second fastest in South Asia (after Afghanistan). The informal sector can be competitive, and has good lessons to offer to its formal counterpart. There is still a considerable room for growth of microfinance in Pakistan.

A key challenge to MFIs in Pakistan is raising considerable funding to grow, attaining sustainability, and better integrating with financial markets. The Pakistan microfinance market has much potential for a rapid outreach expansion, and face & considerable unsatisfied demand, especially for saving products.[9]

Poor people save in both financial and nonfinancial forms but often lack the ability to make use of small savings flows when large lump sums are needed. Even the committees system does not always meet this need. Given the dearth of institutional channels to tap into rural savings, people in rural areas save through traditional channels. Saving in livestock, which can be bought and sold when needed, is a good livelihood diversification strategy for low-income households. Although the tradition of "savings" is very strong in Pakistan as found out in the World Bank study, formal financial sector in general and microfinance sector in particular has failed to come up with saving – based product. Any biogas credit product has to be based on pay book from cost savings, and not income generations. Countries like Nepal, Bangladesh, Vietnam and Rawanda have successfully developed a viable and vibrant energy credit system mainly run by MFI, there.[10] And so can Pakistan. This study by RSPN is an effort to understand and profile constraints and opportunities related to biogas credit in Pakistan.

[8] Nenova, Tatiana, 2009, Bringing Finance to Pakistan's Poor; The World Bank (Report # 51834)
[9] ibid
[10] ibid

CHAPTER 3: SURVEY RESULTS

Findings in a Nutshell

Sr.	Areas	Faisalabad	Khushab
Awareness and Usage			
1	Awareness of bio-gas plant	Moderate to low	Moderate to low
2	Use of biogas	Moderate	Not as such (recently installed)
3	Potential users of biogas	Average	Quite a few
4	Quality of plants	Good	Good
5	Economic profile of user	Middle class	Middle class
6	Operation & management of plants	Good	Good
7	Affordability	Perceived expensive	Perceived expensive
8	MFI's awareness about biogas	Almost none	Almost None
Microcredit Availability			
1	Presence of micro-finance institution (KASHF, First Women Bank, First Micro Finance Bank, Khushhali Bank, ASASAH, RCDS, PRSP, NRSP etc)	MFIs are active in providing income generating loans.	MFIs are active in providing income generating loans.
2	Credit facility for biogas	None	None
3	Willingness to provide credit for biogas (all MFIs)	Conditional on meeting certain prerequisites	
Services			
1	BCC	Functional but limited in number	Very Limited presence

Hence, the key insights extracted are:

- At present biogas has moderate awareness in Faisalabad region. There are quite a few users of plant which adds to the awareness and usage. However in Khushab, the awareness is very limited as the biogas plant installation is quite recent.
- The plants are of good quality. A plant works best in summers and is somewhat less

productive in winters.

- Overall, in Faisalabad the financial capability of the biogas users is relatively higher than in Khushab.

- At present except perhaps PRSP, MFI's are not playing any role in credit for biogas plants. Moreover, MFIs say that there might be a need for biogas credit but they are reluctant to offer because they perceive that the actual concern is of awareness of its benefit both among the MFIs and the potential households and secondly the fact that it is not an income generating activity; rather it is income saving.

Women: Biogas and Biogas Credit

In current rural scenario access to and control over resources exists as gender issue. While women are the direct beneficiaries of biogas, out of various biogas plants visited, only one plant is owned by a female in Faisalabad districts. Beside ownership, various houses were visited to get female perception and acceptance regarding biogas and following were found:

- Less hassle in cooking, etc
- Less effort in fire-wood collection
- Freedom from making dung-cakes
- Biogas is an excellent energy alternative.
- Reduction in expenditures and workload.
- Clothes are no longer stained by ash and kids are cleaner than before.
- Important health benefits due to smoke free cooking.
- Utensils are easy to clean
- Time saving

Biogas, no doubt, comes out as a tool of women's empowerment in the rural areas. However there is also an important linkage between women and microcredit and, by the same token, biogas credit.

Women have been main targets of MFIs because of women being considered more credit worthy than men. Women are better at generating savings from household budget provided by men.

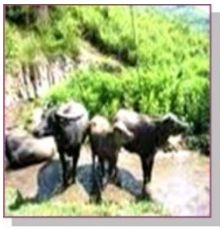
This last point is of special significance and needs deeper analysis. Microfinance all over the world has proven to expand income generating possibilities for women. This role played by microcredit is laudable and has developed entrepreneurial capacity of women. The emphasis

on income generation has at the same time, over shadowed women's inherent ability to generate savings from the household budget.

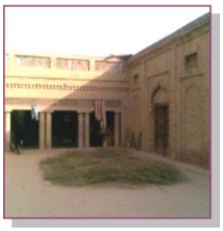
Wide spread prevalence of "committee" system among women is a testimony of women's keen interest and abilities to benefit from savings. In doing so they operate as a collective, a social feature successfully exploited by MFI's to manage risk of their loan portfolios.

This research study did not delve into women's role in household saving management. The respondents were mostly men. Accordingly the findings capture mainly their perspective. Women's role vis-à-vis biogas credit needs deeper inquiry.

BIOGAS USERS



Majority of biogas users has 6+ buffaloes and biogas plants from 4 cubic meters to 15 cubic meters are installed as per requirement at each consumer's place respectively. The land owned by users is mostly covering area of about 23 acres. The biogas user's household average monthly income is PKR30, 000/. The biogas plant users also use gas cylinders and wood simultaneously to manage continuous gas availability. Last, but not the least the men are the key decision makers in biogas plant installation.



Having a joint family system the nature of work is divided among family members. Males are usually occupied with work such as looking after their land however females are mostly confined to their homes. Despite being at home females also contribute in preparing dung cakes which is later used as a fuel. All biogas users have financed their plants from their own resources. Mostly the source of awareness for users was word of mouth. Many had seen their neighbours using the plant.

The key trigger that prompted them for purchase was a hassle free product that saves their time and energy. Mostly all the users view their plant working effectively. It prepares enough gas to meet their most of the cooking needs. Hence, they showed willingness to share about the efficacy of the plant to their relatives, neighbours and friends.

All users can be classified as early adaptor of the technology and exhibited typical characteristics: they are relatively high income households and can afford to take risk of testing the new technology. Once the plants have started working, the confidence on technology will grow. The users/early adopters will attract potential users to have biogas plant at their locations and thus relatively lower-income strata of the society will adopt this technology. Availability of credit is likely to make such a trial less risky for them. Instalments plans can well be expected to attract those household which cannot afford to pay in lump sum the upfront cost of a biogas plant.

Based on individual's livestock holding and energy requirement majority of the users were using 10 cubic meter plant, followed by 8 and 4 cubic meter plants in Faisalabad.

Capacity	Users
10 Cubic Meter	44%
8 Cubic Meter	39%
4 Cubic Meter	17%

Financial Management for the Biogas Construction

The consumers shared at the upfront that biogas installation is quite expensive. The cost of the plant after deducting the QED ranges from PKR 25,500 /- to PKR 51,500/- depending upon the size. However for the households which manages some of the construction materials and unskilled labor, the actual cost was apparently less than the above mentioned cost.

It is imperative to share, that most of the consumers who were part of the research were the ones who arranged and installed biogas plant by self investment instead of getting a loan from anyone. About 50% of the users had this amount by selling an asset, while one third 33% got it from their saving. The most encouraging point is that, people are getting benefits from it both financial and functional and they are selling animals or property to install biogas plant.

Profile of Biogas Users

In Faisalabad, 18 Biogas users (age 26 +) were interviewed for the study. A typical user can be profiled as under:

- Mostly upper middle class family comparison 8-10 members on average including children.
- The chief wage earner is mostly the adult male of the house (husbands and fathers).
- He is the sole decision maker of any family matter and enjoys complete authority in this respect. He seeks less or no consultation from his family specially females.
- About 33% of the users were member of any MFI or community organization and same percentage had taken loan before from any institution.
- Most of the interviewed users had 6+ buffaloes with a land area of 23 acres
- Average monthly income of users was PKR 30,000

Biogas Potential Users

Majority of biogas potential users have 2-4 cows/buffaloes. The average land owned by potential users is about 11 acres in Faisalabad & 9 acres in Khushab. The biogas potential user's household average monthly income is PKR 25, 000/- per month in Faisalabad and PKR 20,000/- in Khushab. The potential users mostly use fire-wood and gas cylinders as fuel. However in Khushab the use of fire-wood is significantly higher



The chief wage earner is mostly the adult male of the house (husbands and fathers) in both areas. He is the sole decision maker of any family matter and enjoys full authority. He seeks less or no consultation from his family especially females.

Joint family system dictates that the nature of work is divided among family members. Males are usually occupied with work such as looking after their lands however females are mostly confined to their homes. Females also have to contribute in preparing dung cakes which is later used as a fuel.

Mostly the concern of potential user is frequent rate of inflation and energy crisis especially price of electricity, which affects their decision power in terms of demand for necessities.

One of the elements that will speed up adoption of biogas plant is availability of credit for biogas plant installation. 89% of potential users responded favourably and viewed biogas credit as a facilitative factor that would enable them to benefit from the biogas technology.

Due to failure of the previous approaches and technologies in the past, potential users still want to see the working plants before they make the investment decisions.

A potential user, who is keen in searching for biogas credit is willing to pay up to PKR 2500 per month in repayments. Their target threshold of annual interest rate is about 10-12%, which is perhaps due to them borrowing no- or low-cost funds from friends and families for personal needs. He does not know from where and how to seek credit.

Profile of Potential Biogas Users Interviewed

In Faisalabad and Khushab a total of 60 potential users (mostly age 26+) were interviewed for the study. The potential users can be profiled as under:

- Mostly lower middle class a family comprises 8-10 members on average including children. However, it is important to note that the average financial status of a

Khushab user is lower than that found in Faisalabad due to limited resources and earning opportunities.

- Most of them had minimum of 2-4 cows/Buffaloes
- The land owned by the potential users were about 11 acres and 9 acres in Faisalabad and Khushab respectively
- Average monthly income of the interviewed potential users is PKR 25,000 and 20,000 in Faisalabad and Khushab respectively
- The main sources of cooking energy in Faisalabad are fire- woods, dung cakes and gas cylinders and in Khushab they only rely on fire-woods and dung cakes only

Technical Potential of Domestic Biogas Plants in Punjab

According to the national Livestock Census 2006, the population of buffaloes/cattle stood at 56.9 million at the country level which was 40% per cent higher than that of 1996 Livestock Census[1]. Among 56.9 million Buffaloes/cattle across Pakistan, 57% is present in Punjab. Out of 7.6 million households, in Punjab, 4.1 million households have 3 or more animals, which give an indication of huge potential of domestic biogas plants in Punjab.

TRIGGERS AND BARRIERS FOR THE INSTALLATION OF BIOGAS PLANTS

Awareness of Biogas Plants

The consumers' perception to Biogas plants is positive. Biogas is viewed as an alternative energy source by using natural waste which can fulfil the domestic energy needs and can be an alternate to gas and fire wood.

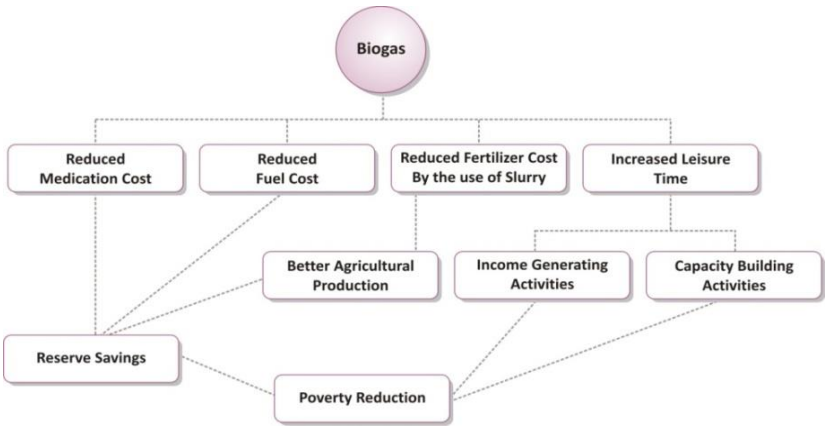
> *"It's a very beneficial way to utilize energy"*
> ***(Mr. Saifullah, bio-gas user of Jaranwala village, Faisalabad)***
>
> *"Biogas is easily produced by animal dung"*
> ***(Mr.Nadeem, bio-gas user of Jaranwala village, Faisalabad)***

However, the awareness of biogas among potential biogas users is limited. They were not so aware of the plant and thus were not confident in sharing their views about it. The potential users had either just heard the name, or have seen it in the neighbourhood village. Only a few mentioned that people from BCC representative have come and created awareness about biogas plant.

About half of the potential users in Khushab mentioned that they have consulted someone living nearby about biogas. The discouraging point was that, more than three fourth of them could not access the most relevant person (actual users) to seek advice from.

Purpose of Having Biogas Plants

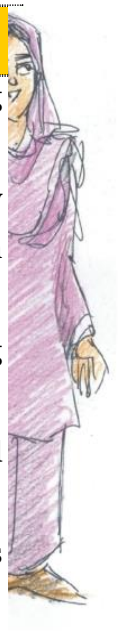
Users eagerly shared the positive aspects of the Biogas plant. It was delivering well on every aspect. On functional level, it provides an alternate to other fuel items such as woods/oil and gas cylinders. Along with that it satisfies owners in terms of good value for money. However, it is important to note that the users or the potential users did not show their concerns over health or hygiene factor at present. It is more to do with time and monitory saving than any other benefits.



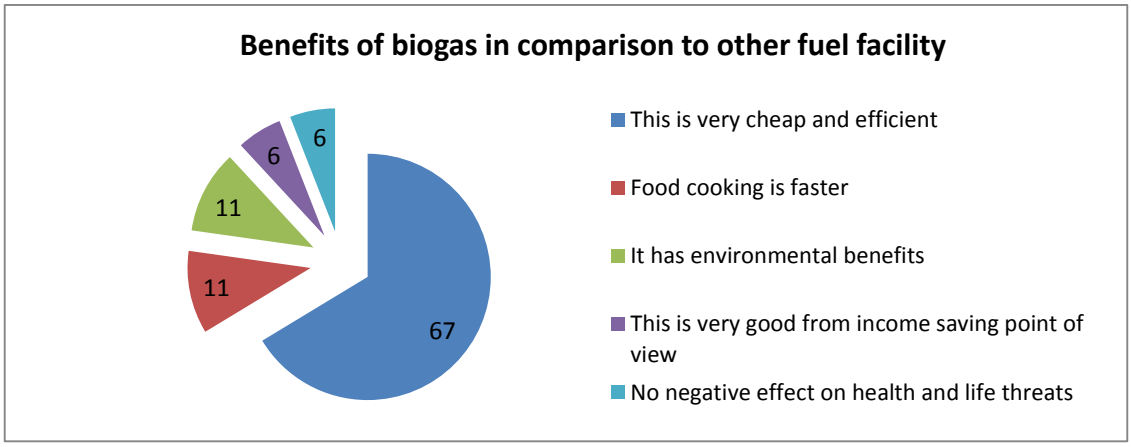
Triggers – Biogas Plant

Nonetheless, the key triggers perceived of having biogas plant are:

Male	Female
➢ It saves money ➢ It saves time for cutting wood (for males to go to woods) ➢ It saves the cost of fire-woods ➢ It saves cost of gas cylinders and kerosene ➢ Can get good fertilizer out of it ➢ It is hassle free	➢ It saves drudgery of making dung cakes etc ➢ Saves from smoke (especially from smoke while cooking with fire-woods) ➢ Saves utensils from getting black ➢ Leaves the kitchen neat and clean (no mess) ➢ Keep the kids clean, saves labour of cleaning them



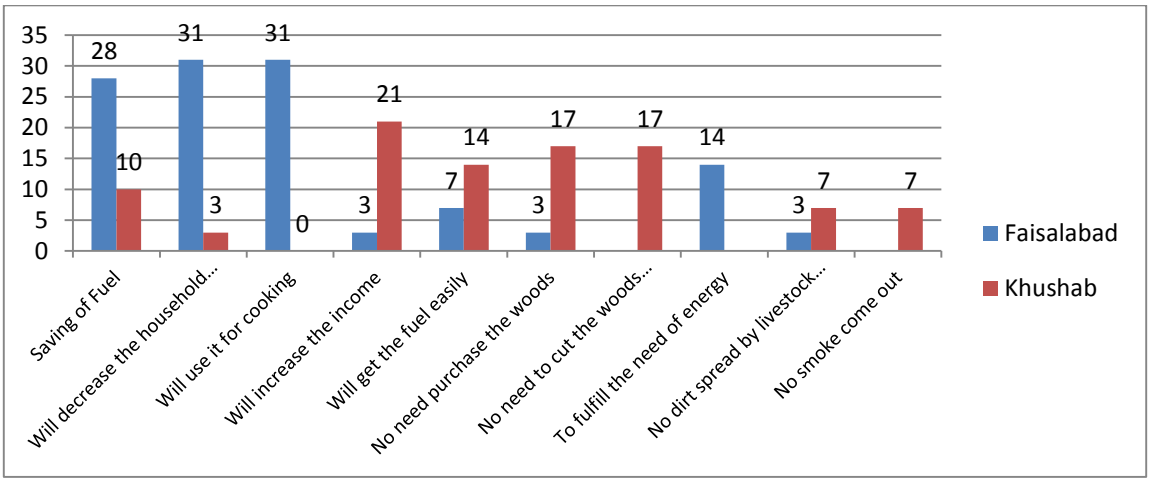
Almost all the users mentioned that biogas is better option than the fuels they were using before, about 67% like biogas because of reduction in fuel cost, however 11% each mentioned for time reduction in cooking food and the environmental benefits of biogas and 6% mentioned the health benefits of biogas.



More than half (57%) of the users were using gas cylinder facility before the biogas plant installation, while 43% were using wood as energy source. Approximately PKR 2500 per month was the expense of each household; however this expense has now been significantly reduced after the biogas plant installation or reach to PKR 700 to 750 per month which means they saved about PKR 1800 per months after having a biogas plant. Similarly about PKR 2,000 plus being spent by potential users on gas or fire-woods in a month. The financial status of

Faisalabad respondents was better than Khushab potential users.

Almost all the potential users were like to have biogas plant at their home; the perceived benefits of biogas were as follows (percentage data):



It is encouraging to note that potential user's perceive the benefits in very concrete and tangible terms, such as increased saving, decrease household expense, more disposable income, ease and convenience. Given the fact that there is wide spread lack of awareness, such benefits are easily communicated and generally very well understood. The task of demand generation therefore, becomes easier.

A related, but no less important, aspect of general lack of awareness is that it applies to sources of credit as well: those unaware about biogas also have no idea about biogas credit facilities.

Barriers to Biogas Plant Installation

Along with the advantages there are a few barriers related to biogas plant installation shared by potential users

Barrier to Biogas Plant installation
➢ For some consumers the cost is quite high, which might be difficult for individuals to think about installing it. ➢ The usefulness/worth is yet not convincing enough hence, it's a risk to install such a plant ➢ The slurry output from plant is a big hassle for them to dispose off. ➢ Consumers cannot pay in lump sum to purchase the plant

Awareness about the cost and benefit of the technology is one of the major barriers for not

having biogas plants in their house. Among the households which are aware about the biogas plant feels that high upfront cost is the main barrier. In Faisalabad, on an average people spend PKR 2,200 on gas and fire-wood, while people living in Khushab were spending PKR 2,050 on wood per month, which can be diverted to pay the instalment of the credit. This clearly outlines the need of credit for the installation of biogas plants. .

Credit Need for the biogas installation

The average cost of the biogas plant ranges from PKR 33,000 to PKR 59,000 (depending upon the size of the plant), out of which PDBP provides Quality Ensuring Discount (QED) of PKR 7,500 so the actual cost to the farmer would be around PKR 25,500 - 51,500. Households are ready to provide at least 25% of the cost (after deducting the QED) as equity for the installation of the plant. This contribution is inclusive of 10-15% as unskilled labour component, which the household can supply. Hence there is a need of credit for the installation of domestic biogas plant is of PKR 19,000 to PKR40,000 depending upon the size of the plant

89% of potential users responded biogas credit as a facilitative factor that would enable them to benefit from the biogas technology. Looking at the savings the households can make after installing the biogas plant, a monthly instalment of PKR 1,500-2,500 can be payable from the potential users if they decide to take loan.

The households feel that the loan amount should be in between 50% -80% of the total cost of the biogas plant, so that it can be paid within 2-3 years time with the savings from the existing fuel expenses.

CHAPTER 4: LINKING MICRO FINANCE FOR BIOGAS INSTALLATION

Most of the micro finance players in Pakistan are active in Punjab. Punjab Rural Support Programme (PRSP) and National Rural Support Programme (NRSP) are mainly working in rural areas and target the relatively poorer households of the communities. Other MFIs like First Micro finance Bank, Khusali Bank, ASASAH, Tameer Bank, Kashf Bank are working in the urban and semi urban areas. So of these institutions have presence in the rural areas, however it is still limitted. Most of these MFIs provide loan on personal and group guarantee.

Zarai Taraqiati Bank Ltd (ZTBL) also offers a wide range of financial and credit products in rural areas. ZTBL generally provides loan against land paper as collateral.

Interest rates in the micro finance sector in Pakistan are relatively high. It varies across the institutions and ranges from 20% to 35% per annum. Compared to others PRSP offers relatively lower rate of 20% per annum. Although such high interest can be justified for income generating activities, it is high for investment in non-income generating activities like biogas plant.

Rural Households in general feel insecure borrowing loan that might have underlying costs and rates which they do not understand upfront. It is perceived to be much higher than their desire. The interest rate of 20% and above is perceived high by the individuals and if it would have been 10% than it was believed to be justified. Due to the perception of high interest rate and collateral requirement, around 94% users and 65% potential users felt that if they would need loan then they would go to their relatives. In reality about 50% of the respondent had taken loan and among those all loans were taken from relatives, free from any special condition like collateral and interest. However these arrangements not sufficient to meet their all credit needs.

Credit facility availability for Biogas Installation

Microfinance institutions feel that biogas could be a very good option to provide alternative source of energy for the rural households; however they have not yet explored the credit need for it. At the time of survey , only PRSP was offering PKR 12,000 as loan for biogas but they had not received any application for a loan. The key reasons for people not getting loan from PRSP were;

- The amount of loan was not sufficient for installing a biogas plant
- Secondly they were already on loan from PRSP and cannot get parallel loans unless they pay the existing loan completely.
- And thirdly, PRSP was not in fact promoting the biogas loan product.

Target market for biogas plants installation is the rural areas and target clients are the middle class farmers. At present, it is for someone who is relatively better off and has enough space, at least 2 animals and has enough budgets to give equity payment for biogas plant installation. On the other hand most of the MFIs are concentrated in urban and semi urban areas and they are targeting relatively poor households.

Kashf Microfinance Bank assumes that, biogas could be the most inexpensive alternate source of energy, which can be made available to the rural community with extended credit facility. KMFB clearly feels that the benefits or value addition of such energy source needs to be demonstrated before offering the credit for such product. PRSP thinks biogas Credit is not yet demand driven and also does not address the "poor", as people who can meet the minimum requirement for biogas installation are not the poor. PRSP feels that the biogas loan could be a second loan after the livestock loan as the main input for the plant is animal dung. In general MFIs feel that there is very limited demand for biogas credit as of now. Demand can also be generated by introducing a product and marketing it aggressively. There is so far no biogas credit product and therefore no demand. They mention that the issue lies in awareness campaign to market the product as alternate energy source for domestic and value addition.

It was observed among potential users that there was a strong need of credit to install a biogas plant but MFIs thinks that it is an awareness issue which clearly indicates that there is a communication gap between MFIs and household in this regard.

Views and Perceptions from Wholesale Credit Institution

The Pakistan Poverty Alleviation Fund (PPAF) represents an innovative model of public private partnership. It is a non – profit corporation and follows the regulatory requirements of the Securities and Exchange Commission of Pakistan.

As the lead apex institution of the country wholesaling funds to MFIs, the PPAF forms partnerships on the basis of rigorous criteria. Before finalizing partnerships, the PPAF ensures that the partners have well targeted community outreach Programmes that are committed to

enhancing the economic welfare and income of the disadvantaged peoples.

According to PPAF, 30% of the wholesale investment is in the livestock sector. PPAF issues short and medium term loans to MFIs. PPAF encourages investing in a product where income generation can take place however they do not force any MFI to invest in any particular segment. PPAF usually give the loan at 8% mark up to MFIs which is further charged to client at 15-25% range.

The awareness level of wholesale regarding biogas is limited. PPAF is aware of the fact that in areas where natural (Sui) gas has not reached yet, biogas can be an alternative. However, the need of credit for biogas plant installation has not been explored yet. It is observed that PPAF was not very much aware about the biogas plant and biogas credit needs. This is mainly because most of the cases, wholesalers invest through MFIs and depend on their input for credit needs and as of now none of the MFIs has so far indicated any credit need for biogas. One of the issues is also that the MFIs are not entrepreneurial themselves in seeking new opportunities (like biogas) and investing in developing new market. MFIs must also have developmental objectives as long as they can financially sustain it.

Although biogas generates saving, improves health and improves the general quality of life, it is not a direct poverty alleviating product. PPAF sees this as one of the obstacles for extending loan for biogas financing. Hence need for educating the policy makers and facilitation of product development is very obvious. PPAF is of the view that MFIs need to be convinced to make an investment in the biogas sector.

The loan if given at all would be according to existing rules and regulation, which are framed for income-generation activities; thus current parameters need to be updated to fit to the biogas credit needs. Hence Capacity building for MFIs should be an essential component to introduce biogas loan product.

Biogas Construction Company's view on Biogas credit

Biogas Construction Companies (BCCs) are the PDBP trained and certified group of masons to construct the biogas plants under this programme. These BCCs also provide 4 years guarantee on the biogas plants and provide after sales services. PDBP works towards strengthening the capacity of these companies so that they can become responsible private sector to make the biogas plant widely available in the market.

BCCs shared that many of the clients they have approached are constrained by the upfront payment for the installation of biogas plants. By the discussion it was observed that majority

of BCC feels that loan requirement is an important aspect and it will generate more business for BCCs.

Constraints in the Micro financing of biogas plants

Lack of awareness of end users

Households in the rural areas, which do not have access to clean energy services, are also often not aware of biogas technologies and financing options. Those who know about the technology consider it unaffordable due to its high upfront cost.

Limited availability of credit

As the target households are located in the rural areas, there are a limited number of options available to obtain credit facilities. Most of the MFIs' have a strong presence in the urban and peri-urban areas but not many of them venture into the rural areas where dispersion of the population, lack of collateral, high transaction costs and other factors limits their presence. There are some institutions and organisations that do have presence but these institutions are not offering credit for biogas plants.

Lack of fund for financing biogas plants

The microfinance sector in Pakistan is still at an early stage. There are many gaps in Pakistan's microfinance sector. Competition in the market is somewhat limited: there are very few microfinance players in Pakistan that have achieved a size sufficient to benefit from economies of scale. For those MFIs interested in financing biogas, lack the funds for financing biogas is also a major issue. The deposit that MFIs collect from the local level is not sufficient to meet the credit need of their members/clients for the installation of biogas plants. Even for the limited number of players in the market, the existing funding supply for microfinance providers and microfinance wholesale investment vehicles (e.g., PPAF) is inadequate. It is estimated that loan demand will exceed $650 million by 2010.11 Currently the network of microfinance providers in Pakistan spans 1,343 branches and services about 1.5 million clients with a gross loan portfolio of PKR 15.1 billion ($250 million).

[11] PAKISTAN: MICROFINANCE AND FINANCIAL SECTOR DIAGNOSTIC STUDY, April 2008

Limited capacity of MFIs in biogas financing

Limited organisational and financial capacities of MFIs are the major barriers for expanding their role in financing biogas plants.

One of the major obstacles is that MFIs are not confident about the new technology and repayment of the client on such product. There can be a credit risk involved for biogas loan, as there is no clear statistics available for the repayment capacity of the target market. Keeping in view that it is not considered an income generation activity; biogas credit is a totally new and innovative field for MFIs in which they have no experience.

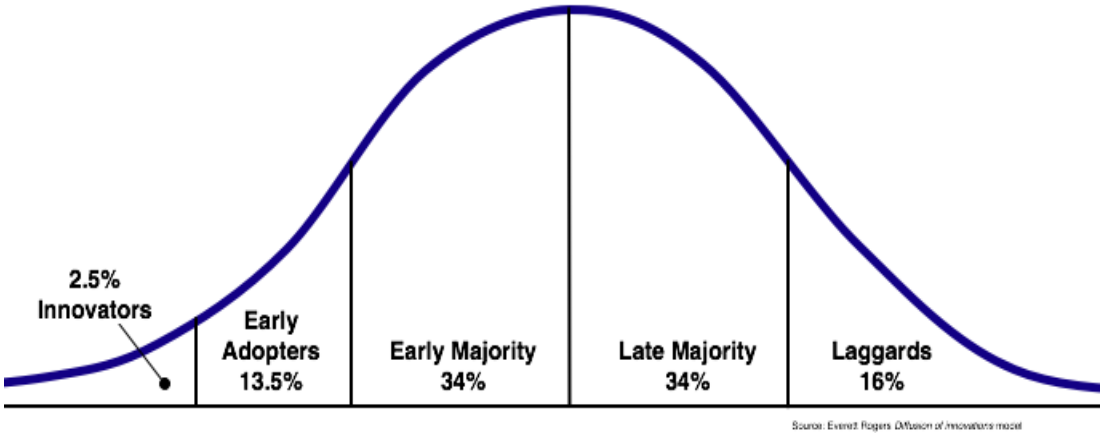
MFIs lack the capacity and confidence to enter the business of biogas financing, are not confident nor familiar with ways to work with biogas construction companies to market biogas among their clients, and do not have the experience to set appropriate terms and conditions for biogas loans.

MFIs feel that if and when they will introduce biogas credit as a product, capacity building for both clients to install, run and maintain biogas as well as for MFI to market and price the product would be a key prerequisite.

CHAPTER 5: CONCLUSIONS & RECOMMENDATIONS

Biogas as Technology Adoption Model

It is evident that biogas usage is following a classic technology adoption lifecycle.



The **technology adoption lifecycle** is a sociological model developed by Joe M. Bohlen, George M. Beal and Everett M. Rogers. The technology adoption lifecycle model describes the adoption or acceptance of a new product or innovation, according to the demographic and psychological characteristics of defined adopter groups. The process of adoption over time is typically illustrated as a classical normal distribution or "bell curve." The model indicates that the first group of people to use a new product is called "innovators," followed by "early adopters". Early adopters of this technology are mostly 'upper middle class' rural families, with more than 6 animals. The key trigger that prompted them for purchase was a hassle free product that saves their time and energy. All the users viewed their plants working effectively and that enough biogas is produced to meet their most of the cooking needs. Next come the early and late majority, and the last group to eventually adopt a product are called "laggards."[12]

True to the characteristics of innovators, who are typically more risk oriented, the current users have taken a risk by self-financing the plants. Early adopters follow the lead provided by innovators. They wait for some support structures to emerge and join later; they seek rational justifications and concrete evidence of benefits experienced by others before making a go-decision. They seek practical demonstrations. Next to follow is early majority who are typically influenced by the desire to benefit from a trend early on. They are susceptible to advertising and promotion influences. Providing timely and relevant information that answers questions raised in the minds of waiting-on-the-sideline majority is the key to speeding up the adoption

[12] http://en.wikipedia.org/wiki/Technology_adoption_lifecycle

process.

The biogas industry is at a very nascent stage; it can be categorized as hovering around innovation and early adoption. Both the demand and supply characteristics exhibited, and found by the research, testify to the fact.

There is limited availability of credible information and general awareness about uses and benefits of biogas. Potential users have apprehension, fears and questions that need to be answered.

One of the strong aspects of the Pakistan Domestic Biogas Programme (PDBP) is its approach to create strong and responsible supply side for technology. As of June 2010, PDBP has trained around 100 masons, who are now grouped in 17 Biogas Construction Companies (BCCs). Capacity of the BCCs needs to be strengthened to cater the large untapped market. Plant construction technology, though easy to learn, is yet to be learned by a large enough number of masons and constructers before real competition sets in and potentially brings prices down.

Third element that speeds up adoption is availability of biogas financing. 89% of potential users identify financing as a facilitative factor. Few of the BCC in the future market can sell the biogas plant on credit. As the BCCs as of now have limited capacity, institutionalizing the BCC financed model takes time. All this is indicative of an unmet biogas financing need.

All this is indicative of an unmet biogas financing need

MFIs and MFBs are positively disposed towards the concept of biogas credit. They also highlighted the need for more information. Due to limited information passed on to them, and their existing focus on income – base credit product, are main reasons for lacklustre response in coming up with any appropriate biogas credit product.

Findings of this study may well be used to come up with useful biogas credit product that can be offered through MFIs. Following are some suggested models of biogas financing.

Analysis of a Biogas Loan Product

It clearly emerges from the research that there are common challenges on both supply and

demand side of the biogas credit equation.

Here is a summary of issues highlighted by this research

Supply-Side Analysis ***(MFIs/MFBs/Wholesale Credit Supplier)***	***Demand-Side Analysis*** ***(Users and Potential Users)***
Lack of Knowledge and Information Supply-side is constrained by a veritable lack of credible information as to: What biogas is What socio-economic benefits it brings How it can be a subject of financing	**Lack of Awareness** Users and potential users do not know if financing for biogas plant is available and from where to get it. They are ill-informed about procedures involved, operating interest rates of the scantily available biogas financing
Lack of knowledge of Target Market Biogas users fit the marketing definition of a serviceable segment: they have distinct needs, they are willing to avail of credit and they are likely to grow in future. The available MF products are pitched below, and the agricultural credit product above, their needs. MFIs acknowledge financing needs of biogas users but cannot fit them in current categorizations/profiles used for loan approval	**Profile Mismatch** Potential demand is hampered because the potential users are: Either not reached by MFBs, Or, because of their income status fall outside the target beneficiary profile of most MFIs
Low-Cost Source of Funding MFIs are willing to extend biogas credit provided they have access to soft loan funds from wholesale institution, which in return are open to the idea, are willing to support biogas financing provided the case for it is justified to them. They also expressed the need for establishing linkage with foreign sources of subsidized "energy funds".	**Access to Biogas Credit** Lack of availability of soft funds translates into MFIs unwillingness to expand biogas credit to potential users.
Product Development* MFI current products are income-based and it is difficult to accept a departure from the norm and think of a saving-based financing product.	**Product Availability** Credit need is being fulfilled with borrowings from relatives and friends. These loans have no or low interest payment and require no collateral. Family financing is limited in scope and by definition not scalable.

*As biogas replaces fuels and thus generates household savings. In essence any biogas credit

product ought to be, by definition, based on savings stream rather than the income stream of the household. All micro credit products in vogue are income based: repayment schedules are worked out from the anticipated income stream of an enterprise created by microcredit. This current practice is wide spread across the sector and therefore is a constraint in acceptability of biogas credit products. The two approaches may seem different; however fundamental principles are exactly the same as shown below:

Comparison of Biogas Credit and other Micro-credit Products

Features	**MFI Current Products/ Agri- Credit Products**	**Biogas Credit Product**
Repayment Based on	Cash flow	Cash flow
Nature of Cash flows	Future Income (from sale)	Future Savings
Source of Cash Flows	Market prices of output produced	Market prices of fuel replaced
Financial Appraisal Methods Used	Payback period Net present value Internal rate of return	Payback period Net present value Internal rate of return
Interest rates	20-30% (prevalent)	15-20% (expected)
Need for Subsidy	No or Low	No
Pay Back Period	Mostly 1 year	2-3 years
Monthly instalment	Varies upon the loan size	PKR 687 to 2088 per month
Other Factors	– In common practice – Staff well trained – Product knowledge well spread – Risk mitigation procedure well laid out – Focus: poverty alleviation	– No common precedence – Capacity building required – Product being developed – Risk mitigation procedure will be laid out – Focus: environmental impact and alternative energy usage

Looking at the analysis above, there is a clear demand for the biogas credit and MFIs can use this opportunity as expanding their lending portfolio. It is important that the whole mindset of the MFI needs to be changed into accepting the fact that saving or reduced expenditures are also income. Pakistan has imported MF knowledge and practice from Bangladesh; it may well be the case that it models biogas credit financing on the Nepalese system.

Financing Models for Biogas Credit with different interest rates and loan term

Size (m3)	**4**	**6**	**8**	**10**	**15**
Total Cost of the Plant (PKR)	32,870	36,245	39,737	43,933	60,000
Quality Ensuring Discount (PKR)	7,500	7,500	7,500	7,500	7,500
Cost after discount (PKR)	25,370	28,745	32,237	36,433	52,500
Expected equity from the farmer (25% of the cost after discount)	6,343	7,186	8,059	9,108	13,125
Amount of loan needed (PKR)	19,028	21,559	24,178	27,325	39,375
Loan amount at round figures (PKR)	19,000	21,500	24,000	27,000	39,500
Case 1					
Interest rate(Declining balance)	18%				
Loan Period	24				
Monthly Installment	**949**	**1,073**	**1,198**	**1,348**	**1,972**
Case 2					
Interest rate(Declining balance)	20%				
Loan Period	24				
Monthly Installment	967	1094	1221	1374	2010
Case 3					
Interest rate(Declining balance)	24%				
Loan Period	24				
Monthly Installment	**1005**	**1137**	**1269**	**1428**	**2088**
Case 4					
Interest rate(Declining balance)	18%				
Loan Period	36				
Monthly Installment	**687**	777	**868**	**976**	**1428**
Case 5					
Interest rate(Declining balance)	20%				
Loan Period	36				
Monthly Installment	**706**	**799**	**892**	**1003**	**1468**
Case 6					
Interest rate(Declining balance)	24%				
Loan Period	36				
Monthly Installment	**745**	**844**	**942**	**1059**	**1550**

Based on the source of fund and their cost of doing business, MFIs can work out the appropriate interest rate and loan terms. The main point is if MFI offer the loan for 2-3 years of time, the monthly instalments can be paid by the savings from the reduced fuel expenses. As PDBP provides PKR7,500 as Quality Ensuring Discount and households are ready to provide 25% equity, the credit exposure to MFIs is around 60% of the total cost of the plant.

Recommendation for promoting Biogas financing

Overall, both men and women expressed strong interest in and willingness to opt for bio-gas technology. Households that have at least 2 adult animals, living in close vicinity of the cattle shed and with some source of cash income can be considered as potential biogas users.

One of the elements that speed up adoption of biogas plant is availability of credit for biogas plant installation. 89% of potential users responded favourably and viewed biogas credit as a facilitative factor that would enable them to benefit from the biogas technology.

The average cost of the biogas plant ranges from PKR 33,000 to PKR 59,000(depending upon the size of the plant), out of which PDBP provides Quality Ensuring Discount (QED) of PKR 7,500 so the actual cost to the farmer would be around PKR 25,500 - 51,500. Households are ready to provide around 25% of the cost after QED as equity either as unskilled labor or cash for the installation of the plant. Hence the need of credit for the installation of domestic biogas plant is of PKR 19,000 to PKR40,000 depending upon the size of the plant. A biogas credit product can meet this latent need.

In order to complement PDBP's sector development initiatives, biogas credit mechanism needs to be developed to meet the latent need for biogas plants. Potential users do not have ready capital to make up-front investment; they have a liquidity gap. If they could access biogas credit to meet this gap then they will be able to benefit from biogas technology. With the development of a suitable biogas credit product, relatively poorer segments of the rural households can also benefit from the biogas technology.

Given the nature of technological adoption both in terms of biogas and biogas credit, we propose a model that simultaneously addresses issues at multiple levels.

-1-	-2-	-3-	-4-	-5-
Demand generation and creating awareness	Biogas credit product development	Biogas credit facility	Influencing policy and regulatory environment	Capacity building

1. Demand Generation and Creating Awareness

Creating Awareness of Biogas Plant Technology

Due to failure of the previous approaches and technologies in the past, potential users still want to see the working plants before they make the investment decisions. Seeing is believing. Live demos help in generating demand in many ways:

- Convince potential users
- Persuade biogas credit suppliers
- Serve as capacity building site
- Serve as lobbying tool
- Serve as branding tactic
- Convince MFIs and MFBs to market biogas technology among their existing clients

About 450 plants have been installed by PBDP and these plants can act as Demo plants. However, this fact needs to be communicated well to decision makers in MFIs, policy makers of the government and potential consumers. Awareness programmes can be organized near such plants.

Current users are the ones who did not need to be convinced by someone else. They welcomed the opportunity and took a risk in owning a biogas plant and financed 100% from their own resources. As said earlier, they can be categorized as "innovators or early adopter". While majority are unaware or vaguely aware, these early enthusiasts are already reaping benefits of adopting biogas as their primary source of domestic fuel. Their experience is a great source of advocacy to potential users, who have a similar profile and life style. The advocacy message coming from someone they can identify with is more believable for the potential users and can quicken their purchase decisions. So possibility is to hire current users (men and women) as sales promoters in the area.

In order to develop a sustainable clientele for biogas credit, more effective awareness and demand creation activities need to be undertaken.

2. Biogas Credit Product Development

Adoption of innovative technology such as biogas, and saving-based loan products for that matter, critically hinges on timely and proper education of relevant actors on demand, supply and policy sides. RSPN has launched a media campaign to create awareness of biogas. This will surely influence demand for biogas plants. However, those with low affordability are also in search of biogas loan information. A separate campaign may be

initiated to inform them of loan availability, once institutional arrangements have been put in place. Partner institutions are also well-advised to reach out to target beneficiaries through their own loan mobilizers and networks.

Phased Product Development

MFI need to work on specific biogas loan product, already chart is given on earlier section of this report where different combination of desired interest rate with different monthly instalment and loan requirement is given. They need to work closely with PBDP and design a suitable product which is specifically for biogas sector.

Initially biogas loans can be packaged with an existing income-generating product of financing institutions. It has been suggested that biogas credit can be co-packaged with loans for livestock (particularly buffalos/cows) and fertilizer or other agricultural inputs. As biogas credit gains acceptance and MFI staff gets trained on true saving-based product, biogas credit can then be offered as stand-alone product in its own right.

Transition from first to the second phase hinges on removing mental block among MFIs' staff; they need to realize that a loan product can also be paid back through cash flows generated from savings. Examples from countries like Nepal, Bangladesh would be very useful in broadening the scope of loan products. It may be of importance to point out that saving-based loan product will be a major innovation undertaken by financing institutions. It is therefore likely to follow the same adoption lifecycle. The key is to identify MF partners who are willing to be early innovators.

Other possible options for product design are:

Joint Credit with BCCs

Some BCC, as they grow big, can offer sales of biogas plants on credit. There is a possibility of promoting vendor financing model. However, this approach does not look feasible or realistic with current BCC profile because they are very small operators and cannot afford to give loan to someone at their own. In case of any default, BCCs might face a huge loss. In future, when market grows, then some good stable BCCs, who become large stable organizations, can play such kind of credit intervention role.

3. Biogas Credit Facility

The existing funding supply for microfinance providers and microfinance wholesale investment vehicles (e.g. PPAF) is inadequate. Even the MFIs interested in financing biogas, lack the funds for financing biogas. At the same time the awareness and confidence for

financing biogas is limited. Study shows that the interest rate MFIs charging for the income generating loans is relatively high and it is hard to justify the similar rate for biogas lending. One of the reasons for the high rate is their source of fund is expensive. PPAF is relatively soft fund for MFIs. Cost of doing business is relatively high for MFIs as they have to deal with large number of small loans. Some of the micro finance banks also borrow from other Commercial banks. Generally Banks use Karachi Interbank Offered Rate (KIBOR), which ranges from 12% -14%, as the benchmark rate for all corporate lending. So the cost of fund is high for MFIs resulting into higher rates to the end users.

If the biogas lending programme be promoted with the existing supply of funds, it may take longer time to create the significant impact in the biogas sector.

So for the start up of this initiative, establishment of a whole credit fund for biogas financing could be a good option. Just like a credit line introduced by PPAF with support of the World Bank, different donors interested in energy and environment related initiatives can be contacted for setting up of such Facility. Many of the donors have energy security as their priority area for support. Government of Pakistan has a high priority for promoting alternative source of energy due to the current energy crisis. Government can also contribute for the Biogas Credit Facility.

A soft loan can be given to MFIs to pilot a biogas credit. The pilot can be streamlined with regular credit line after a successful completion. In the short to medium-term, to jump start the biogas credit, a dedicated Biogas Credit Facility can be created within RSPN. MFIs will access this facility to provide biogas credit to potential users. Such fund should be exclusively for financing biogas plants. Over the long term, as the biogas sector takes root and grows then it can be streamlined with some financial institutions. In order to keep biogas interest rates at a reasonable level, it is recommended that the Biogas Credit Facility should provide wholesale loan to MFIs at relatively lower rate that is sufficient for covering the operational cost of the facility. Initial estimate suggests that the rate for the wholesale lending can be around 5% per annum, and that MFIs in turn provide biogas credit at 18-20% per annum to biogas clients.

4. Influencing Policy and Regulatory Environment

MFIs, both wholesale and retail, did not identify any policy barrier in promoting biogas credit. This is perhaps due to total lack of a regulatory framework for the biogas sector per se. Having no regulations does not bode well for the sector. Government typically lays low and waits until a fledgling sector gathers critical mass. It then wakes up to the challenge of regulating it and often imposes hard-to-meet conditions for the actors in an industry. A

case in point is CNG industry of Pakistan. Initial no or low regulations led to mushroom growth of CNG stations. Government then stepped in to with regulations that are considered punitive in nature.

Growth in biogas sector is imminent and inevitable. RSPN needs to work on enabling regulatory environment in tandem with sector's organic development. Means and mechanism of policy advocacy are well-known and well-established.

5. Multifarious Capacity Building

Knowledge and skills are two crucial aspects of capacity building, which impact technology adoption immeasurably. Capacity building needs were identified by various stakeholders:

Decision makers in MFIs and MFBs for understanding the concept of energy loaning that leads to funds allocation to biogas credit as viable business. MFIs also need to have entrepreneurial mindset to develop the new products like biogas credit. PDBP can be a change agent in this aspect.

Staff in MFIs and MFBs for understanding saving-based product; for designing and managing such products and their portfolio

Regulators and public policy makers for understanding and supporting the concept; for creating enabling environment and being able to effectively regulate the sector


Annexure

BACKGROUND OF GEOGRAPHICAL AREA

The two areas that were covered for the study were:

Jaranwala:

Geography of Jaranwala- Jaranwala is a city in the Faisalabad District of Punjab, Pakistan. It is located at 31°20'0N 73°26'0E with an altitude of 184 metres (606 feet). The city serves as the headquarters of Jaranwala Tehsil, an administrative subdivision of the district. Jaranwala Tehsil is located on the north bank of the Ravi. Jaranwala is between two canals; Gogira Branch (GB) and Rakh Branch (RB).

It is at 35KM distance from Faisalabad on South-West and 25KM from Nankana Sahib on West. This city is connected to Lahore and Shorkot with railroad. It is a major link between Shorkot Airbase & Lahore. There are 300 villages in Jaranwala, covering an area of 437,386 acres (1,770.04 km2), with a population of 1.3million.

History of Jaranwala

Jaranwala is about 400 years old city. There was a well with big roots hanging in it of an old willow tree. In Punjabi language roots are called "Jaraan" and place is called "Wala". So, these both words combined and formed the shape of a name "Jaranwala". By the passage of time, the place called Jaranwala and later on this name became famous and the city was also called Jaranwala.

Existing city was founded by British government in 1908. Mr. Michael Ferrar deputy commissioner of Faisalabad has inaugurated this town in 1909.

Rai Ahmad Khral and Bhagat Singh two famous freedom fighters were sons of historic city of Jaranwala. Mian Abdul Bari a freedom fighter and President of All India Muslim League District Paghwara and Then Lyallpur district was settled in Jaranwala after partition. Jaranwala is an agriculture based city. Major crops in this area are sugarcane, wheat, corn and rice.

Jaranwala hosts the 3rd largest jute mill in the world (it is closed now-a-days). The city of Jaranwala shares in growth of Pakistan with sugar, chemical, textile, wheat and rice industry. Surroundings of Jaranwala are also famous for its dairy products.

Khushab

Khushab is a town in Khushab District in the Pakistani province of Punjab. This is a historical city of province Punjab. Geographically this is quite unique district of Pakistan which has mountains, deserts, lush green harvesting land, lakes and river. SOON valley is one of the most beautiful hill stations of Pakistan. This district is quite rich in natural resources (salt & coal) etc. People are very hard-working and most of them are associated with farming and agriculture. Khushab is also known for its delicious sweets specially DHODA and PATEESA. Name of this city "Khushab" was given by King Sher Shah Surry on arrival in area. Khushab means "Metha Pani" or Sweet Water.

There is a 50 MWT heavy water reactor in Khushab. The facility is located around 105 km NW from

Faisalabad and around 45 km West from Sargodha Air Force Base. This reactor shows no visible output of electricity generation. This facility is said to produce enough plutonium for 1-4 nuclear weapons each year. It has around 8 cooling towers located 50-70 metres due east of the main reactor building.

The facility has a heavy water plant on site located around 3 km south of the main reactor building. The heavy water plant is located at 31°59'; 72°11'. The facility is heavily guarded, with both reactor building complex and heavy water plant having two individual security cordons each over and above the main facility cordon.

PROCEEDING OF BIOGAS SEMINAR

(Consensus building event with potential biogas stakeholders)

Having a seminar (with all potential stakeholders) at one of the potential location was a tangible of the research study. It was suggested that after having all fieldwork done, a seminar will be an ideal event, where all the stakeholders who participated in the research process should be invited.

The event was held on the 6thMay, 2010 and representatives from RSPN's PDBP team from Islamabad and Faisalabad, FCG (both Karachi and Lahore), Microfinance Institutions (from Faisalabad, Khushab, Lahore and Nankana Sahib), BCCs, Biogas users and potential users attended the event.

The event was designed to give an overview of biogas and how credit can play a key role in promoting the alternate energy agenda in Pakistan.

All participants were first requested to visit a nearby Bio-gas plant and than their views and concerns were discussed in an interactive session.

The following were participant's comments regarding: (Annex)

Awareness

1. People don't know about the biogas project an awareness campaign should be launched – potential user
2. Plant sharing option should be explored; two, three or all houses in mohalla can share a plant, even a big one.
3. Biogas message can be mainstreamed with other sector campaigns.
4. It's not a poverty reduction but gender sensitization Programme.
5. A policy level discussion seminar should be conducted where all sector donors should be invited – MFIs.

Credit

1. The credit line for bio-gas is available but there is no demand arise – PRSP
2. MFIs are willing to give credit but what about the subsidy – MFIs.
3. We already doing it, but not structured. If a system or support provided this can be introduced as regular credit line - RCDS
4. The credit line is mainly for the poor and vulnerable. The lowest denominator of bio-gas is, who has at least two cattle's, which is not under our target group - PRSP
5. We will design a product exclusively for bio-gas users – Assasah
6. Who will ensure the payback – MFIs

Linkage Building

- ✓ RSPN should link the Programme with health, hygiene and other project who can take the load of subsidy.
- ✓ Programme should be linked with Milk Value project in Vehari, it has a direct link with livestock

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3	Dhakal, Nara, September 2008, Financing Domestic Biogas Plants in Nepal, The Netherlands Development Organization (SNV)
4	Hilman, Subedi, Gilman et al, November 2007, Using Microfinance to Expand Access to Energy Services, Experience in Asia, Latin America and Caribbean, USAID and Citi Foundation
5	Report on Using Microfinance to Expand Access to Energy Services: November 2007 by The SEEP Network
6	Report on Bringing Finance to Pakistani's Poor (Access to finance for small enterprises and the underserved) by the World Bank
7	Cattle Census Survey 2006, Ministry of Food and Livestock, Pakistan

FGDs

#	Tool	Expected Outcome
01	BIO GAS Consumers & Users	✓ Farmers perspective and benefits and constraints of using Biogas ✓ Feasibility and process of Biogas Installation and size of plant preference. ✓ Finance management and possible finance solutions for Biogas plants.
02	BIO GAS Potential Users	✓ Community awareness regarding Biogas and its benefits ✓ Constraints and limitation in installation of biogas plan at home with special emphasis on finances related issues.

BIO GAS CONSUMERS & USERS

(Time: 70-90 min)

1

WARM UP:

Introduction of the company (4CG)

Assalamualikum! My name is ..... . Firstly, many thanks for giving us time for the discussion. Let me start by introducing my company. I work for 4CG. It is a research company. We work for almost all types of clients FMCG, Financial or Social Sector etc. Today we are here for a research purpose to take your opinion and views. Please relax yourself, as there is no right or wrong answer, instead we will talk about your views, opinions and experience over all. Let me start with my introduction. My name is ....., I work for 4CG. I am married with a family. I have.....kids etc. Now please go on with your introduction.

Round robin Introduction of the consumers

Consent of audio recording

(A rapport building stage just to ease the participants and enhance the discussion

1. What do you know about Biogas _____
2. When and how did you know about Biogas _____

If I ask you to describe Biogas plant how you would explain it to me. Do you know the process of installing Biogas at home, what is that?

3. What is the purpose of having a Bio gas plant? Do you know any reasons behind .....?(moderator to probe reasons to understand consumers rationale / mind set regarding plant)

   _____

   _____

4. What were the key considerations kept in mind while thinking of having bio gas plant
   a) Probe for hygiene factor _____
   b) Time consumption _____
   c) Hassle _____
   d) Diseases_____
5. Do you feel the need of having Biogas plant at home?
   a) "Yes" Why _____
   b) "No" Why Not_____

6. What is the sources of income in an average family:

   1._____ 2._____ 3._____

7. Have you been provided training of how to use and and maintain a biogas plant?

   _____

8. On a scale of 0-10, how happy/satisfied are you with Bio Gas plant

   _____

   a) If you were to give suggestions to improve Bio Gas plant, what those could be

      _____

Micro Credit Institutions and Biogas

9. Is there a loan facility available for income generation activities? If Yes,

Sr.	Institution/Bank	Loan for (category)	Address
1			
2			
3			
4			
5			

10. What are the general terms and conditions of such loans?

Sr.	Institution/Bank	Terms and Conditions	Min-Max size of loan	Tenure (Min-Max Instalments)	Collateral	Processing Time
1						
2						
3						
4						
5						

11. What are the general processes to get these loans?
12. Do you need to be a member of community organization? Yes / No
13. How long does it take to be eligible for borrowing once you become member?_____Days/ _____Months
14. Is there a saving policy in your agreement? Yes/ No What is that _____

    Who is the borrower Male / Female / Both

15. Is the policy is same for both Male and Female, Yes, No (Explain) _____
16. What type of loan do they offer eg. SME, income generating activities, household consumption loan, etc? _____
17. Do they provide loans for biogas installation as well?Yes /No Why _____

18. oIF you need financing or credit for Biogas where will you go (local individual money lenders or relatives or friends) _____
19. What are the general terms and conditions of such loans? _____
20. How much amount you can get from them Rs _____to Rs _____
21. Do you have to pay interst on such loand? Yes/ No How _____
22. What is time period to pay back this loan _____Months
23. Do you have to deposit somethingfor collateral, Yes / No What _____
24. How many of you have borrowed from any financial institution?
    _____Borrowed _____ not Borrowed

25. In case you have taken loan.

Name of the person	From	Amount	Interest Rate	Instalments	Collateral	# of Instalments paid	Remarks

26. Have you installed Biogas plant at home?

Name of the person	Size of the plant	Total cost	Quality Ensuring discount	Labour contribution	Actual cash needed for the plant	Owners Equity	Loan taken (if any)

27. Did you consult with local microfinance providers (e.g. PRSP, Khushhali Bank) for loan Biogas
    Yes / No

28. What was the response _____
    If a bank or MFI or someone was providing credit for biogas plants, would you have been interested in borrowing for biogas plant installation? Yes / No

Instalments

29. If yes, what amount would you have borrowed PKR
30. What monthly installment would you have agreed to pay if biogas credit was available to you?

    _____

31. Over what period would you have paid back _____ Months _____ Installments
32. Ideally, over how many months should biogas credit is repaid?

    _____

Interest Rate

33. What interest rate these banks would have /MFIs have charged you? _____
34. Would you be happy with this interest rate? Yes / No
35. In your view, what should be the annual interest rate on biogas plants? Rs.
36. Imagine a man, Kamran…he has installed Bio gas plant. Can you describe Kamran…what does he look like…how old is he…what does he do…how much land he has …….how much livestock he has…..his poverty status: very poor, poor, average, above average, non-poor……..what are his interests…what is his daily routine…social circle, expectations , aims and ambitions in life

    _____

37. Let's imagine another man, Saleem …he is just not keen on having Bio Gas plant…what do you think his reasons are…what does he look like…how old is he…what does he do…what are his interests…what is his daily routine…social circle, expectations, aims and ambitions in life (his condition must be same as Kamran but he has no biogas plant: why?) _____

If you get a chance to meet one person as discussed above, which would you like to meet – Kamran / Saleem. Why _____

38. What type of fuel you use for:

    Cooking _____ Heating_____ Other Purpose _____

Suggestion for improvements:

39. what suggestions of improvements you give it you meet a person from Pakistan Domestic Biogas Programme

THANK RESPONDENTS AND END INTERVIEW

BIO GAS POTENTIAL USERS

(Time: 70-90 min)

WARM UP:

1. Introduction of the company (4CG)

   Assalamualikum! My name is ..... . Firstly, many thanks for giving us time for the discussion. Let me start by introducing my company. I work for 4CG. It is a research company. We work for almost all types of clients FMCG, Financial or Social Sector etc. Today we are here for a research purpose to take your opinion and views. Please relax yourself, as there is no right or wrong answer, instead we will talk about your views, opinions and experience over all. Let me start with my introduction. My name is ....., I work for 4CG. I am married with a family. I have.....kids etc. Now please go on with your introduction.

40. Round robin Introduction of respondents

    _____

41. Consent of audio recording

    _____

(A rapport building stage just to ease the participants and enhance the discussion)

Understanding Bio-Gas:

The interviewer informs that today we will be discussing about something (Bio gas) which is very important for us.

42. Do you know about Biogas? Yes / No
43. What do you understand by bio gas, what is it all about _____
44. Hwo did you know about Biogas{neighborhood farmer / PDBP any other etc} _____
45. Did any farmer, just like you advise you to have Biogas plant installation? _____
    a) If yes, who was it _____
    b) What was your response _____
    c) Did you take any step further? _____
    d) Why what was in your mind_____
46. Have you ever seen/visitedany Biogas plant nearby you? Yes/ No
    a) Where _____ what was the size of the plant (if he is able to mention)
47. What is at is the reason of not installing Biogas plant at your premises? _____
48. What are the key barriers in your mind? _____
49. Why do you evaluate things from these angles? _____

Reasons

- ✓ Lack of awareness of Biogas Plant installation Benefits
- ✓ High upfront cost of the plants
- ✓ Lack of biogas companies in local area
- ✓ Lack of credit facilities available to them
- ✓ Not clean and healthy
- ✓ Extra working
- ✓ Others

50. Do you feel the need of having such a plant?

    Yes Why _____

    No Why Not _____

51. Do you know how much amount you will be requiring to install a Biogas plant at your home?

    _____

52. Howdid you get to know about the amount? _____

    You mentioned that you have never used Biogas plant...but you have heard of Bio Gas plant...

53. What do you know about Bio Gas? Yes / No
54. IS there any company or contractor available to install Biogas plants? Yes / No
55. Who those are _____(Contact detail)
56. Did you ever consult Biogas Construction Company for the installation at your house?

    Yes What they told you _____

    No Why _____

Let us now speak about the funds and financing of the Bio Gas Plant

Micro Credit Institutions

Is there a loan facility available for income generation activities? If Yes,

Sr.	Institution/Bank	Loan for (category)	Address
1			
2			
3			
4			
5			

57. What are the general terms and conditions of such loans?

Sr.	Institution/Bank	Terms and Conditions	Min-Max size of loan	Tenure (Min-Max Instalments)	Collateral	Processing Time
1						

2						
3						
4						
5						

58. What are the general processes to get these loans?
59. Do you need to be a member of community organization? Yes / No
60. How long does it take to be eligible for borrowing once you become member? _____ Days/Months
61. Is there a saving policy in your agreement Yes / No What is that _____
    a) Who is the borrowere Male Female Both
62. Is the policy is same for both Male and Female, Yes, No (Explain) _____
63. What type of loan do they offer eg. SME, income generating activities, household consumption loan, etc?_____

Now let us suppose:

64. If a bank or MFI or someone was providing credit for biogas plants, would you have been interested in borrowing for biogas plant from them? Yes / No
    If yes, what amount would you have borrowed PKR _____
65. Over what period would you have paid back, _____ Months
66. How many installments, and what interest rate would these banks /MFIs have charged you?
    _____ Rs/ or %
67. Would you be happy with this interest rate? Yes / No
68. In your view, what should be the annual interest rate on biogas plants? _____ PKR Or %age
69. Ideally, over how many months should biogas credit is repaid?
    _____
70. What monthly installment would you have agreed to pay if biogas credit was available to you?
    _____Rs _____Months
71. Did you know what PDBP (Pakistan Domestic Biogas Program.) Yes / No
    If yes, what do you think their role would be? why _____
72. Imagine a man, Kamran…he has installed Bio gas plant. Can you describe Kamran…what does he look like…how old is he…what does he do…how much land he has …….how much livestock he has…..his poverty status: very poor, poor, average, above average, non-poor……..what are his interests…what is his daily routine…social circle, expectations , aims and ambitions in life
    _____
    _____
73. Let's imagine another man, Saleem …he is just not keen on having Bio Gas plant…what do you think his reasons are…what does he look like…how old is he…what does he do…what are his

interests…what is his daily routine…social circle, expectations, aims and ambitions in life (his condition must be same as Kamran but he has no biogas plant: why?)

_____

_____

If you get a chance to meet one person as discussed above, who would you like to meet – Kamran / Saleem. Why _____

Let us discuss a little on the fuel consumption

74. What are the common cooking fuel being used in this area?_____
75. Are these fuels sufficiently available in the area? _____

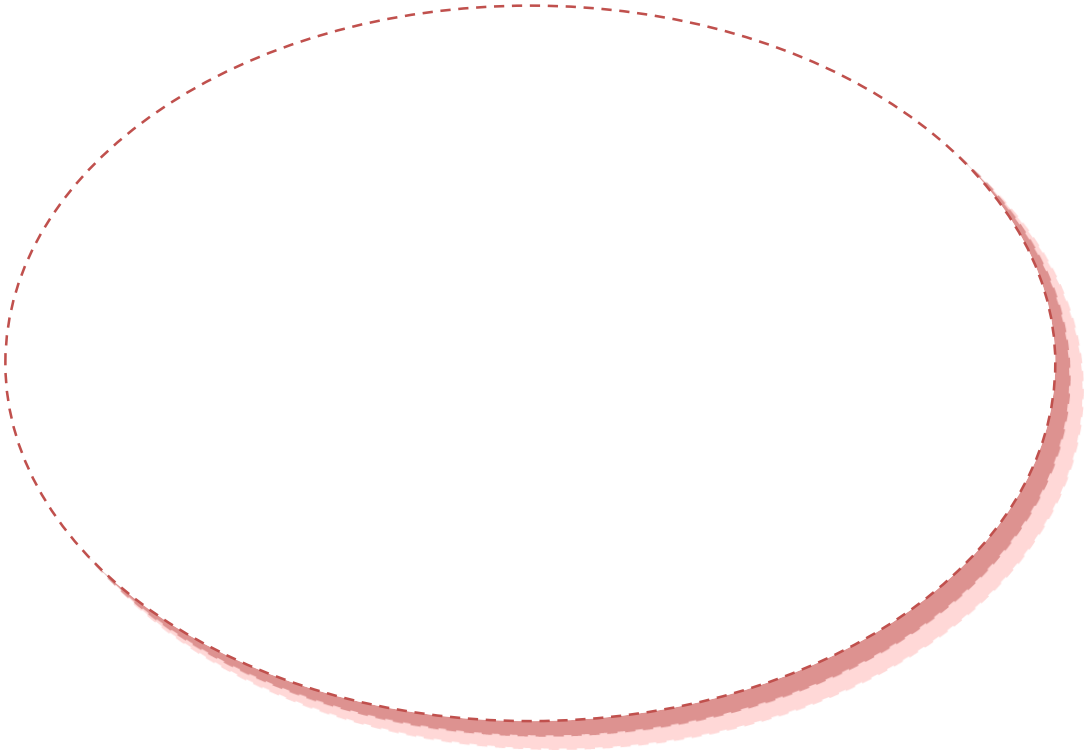
Suggestion for improvements:

76. What suggestions of improvements you give it you meet a person from Pakistan Domestic Biogas Programme

_____

THANK RESPONDENTS AND END INTERVIEW

IDIs



#	Tools	Expected Outcomes
01	Biogas Users & potential-Users	✓ Benefits and limitation of using Biogas ✓ The process of Biogas Installation and preference in choosing right or desired size of plant ✓ Finances management for Biogas plant related issues
01a	Biogas users SECTION Only	✓ Community Awareness regarding Biogas and its benefits ✓ Constraints and limitation in installation of biogas plan at home and finance related issues
01b	Biogas Potential-users Only	✓ Benefits and limitation of using Biogas ✓ Constraints and limitation in installation of biogas plan at home with special issues faced regarding installation and finances.
02	Microfinance Institutions (MFIs)	✓ Categories and type of credit facilities offered. ✓ Policies and standard for introducing new policies ✓ Policy level support if Biogas credit line introduced, constraints and limitations
03	Credit Wholesaler	✓ Know the existing status of credit lines ✓ Standard and procedures for introducing new credit lines ✓ Constraints and limitations in introduction new credit line for Biogas
04	BIOGAS construction company (BCC)	✓ Registration and establishment of BCC ✓ Process of installation of Biogas plants ✓ Financial constraints and possible solutions for financing plants in partnership with MFIs.
05	Discussion Guide for Policy Making Institutions	✓ Mainstreaming Biogas credit line in microfinance sector as promotion tool of alternate energy medium

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BIOGAS USERS & POTENTIAL-USERS

Name of respondents:_____ Father Name:_____

Phone no:_____ Mobile:_____ Date:_____, Day:_____, Time: _____

1

Name interviewer:_____ Sign: _____ Name interviewer:_____ Sign: _____

Assalamualikum my name is_____ and I am representation of listener. Listener is an organization who conducts survey/research for other organization on product and services so that company can bring good and effective changes in their product and services which is suitable for market. Hopefully you will give us some time. Thanks

City: Faisalabad – 1, Khushab - 2

Accompanied		Back-Checked		Edited	
1	Supervisor	**1**	Supervisor	**1**	Supervisor
2	Field Executive	**2**	Field Executive	**2**	Field Executive
3	Field Manager	**3**	Field Manager	**3**	Field Manager
4	Verifier	**4**	Verifier	**4**	
5	PM Researcher	**5**	PM Researcher	**5**	PM Researcher

Male [1], Female [2]

1. Number of members in household? Male [1], Female [2]
2. Respondent age_____

Age Brackets	Codes	Instruction
Less than 14	1	Terminate
14-20	2	Terminate
21-26	3	
More than 26	4	

3. Respondent education_____
   a) Respondent occupation_____
4. Who is head of your household?
   Myself 1 (Skip S5 and S6 and fill the grid on the basis of S3a and S3b)
   Someone else_____ 2
5. Education level of head of household?_____
6. Occupation of head of household_____
7. (Fill the SEC Grid on the basis of S5 and S6)

S #		Education of Chief Wage earner						
	Occupation of Chief Wage earner	Illiterate	Less than primary	Class 5-9	Matric	Intermediate	Graduate	Master or more
1	Unskilled worker	E2	E2	E1	E1	D	D	C
2	Petty trader	E2	E2	E1	E1	D	C	C
3	Skilled worker	E2	E2	E1	D	D	C	C
4	Non-executive staff	E2	E2	D	D	D	C	C
5	Supervisor level	D	D	C	C	B	B	B
6	Small businessman	D	D	C	C	B	B	A2
7	Lower/middle officer	D	C	C	C	B	B	A2
8	Professional	B	B	A2	A2	A2	A1	A1
9	Medium businessman	B	A2	A2	A2	A2	A1	A1
10	Senior executive/officer	B	A2	A2	A2	A1	A1	A1
11	Large businessman	A2	A2	A2	A1	A1	A1	A1

SEC = A1-1 A2-2 B-3 C-4 D-5 E1-6 E2-7

8. Household Cash Flow analysis

Sr.	Sources of Income	Amount		Total
		This Month	Previous Month	
1	Job			
2	Farm			
3	Home based worker			
5	Other receipts (explain)			
	Total			
	Monthly Expenditures			
	Balance (Total – Expenditures)			

(Ask all)

9. Are you using Biogas? Yes-1 (Check quota for users) No-2 (Check quota for potential-users)
10. Time till Biogas plant installed in your home? (SC)_____months
11. Who decided to Biogas plant installation in your home?

    Myself 1 (Continue)

    Someone else_____ 2 (Ask them to call the decision maker for interview)

12. How many cows/buffaloes you have in your home?

4 cubic meter (2 cows/buffaloes)	1
6 Cubic meter (3-4 cows/buffaloes)	2
8 Cubic meter (6-8 cows/buffaloes)	3

10 Cubic meter (10 plus cows/buffaloes)	4
Other_____	
Don't have cows/buffaloes	9

13. Do you believe that in next five years, you will be given the Sui Gas connection at your home?
    Yes-1 (Terminate), **No-2** (Continue)

14. How much acres land you have?
    _____Acres

(The above section is common for both Users and potential-users and it will help us in identifying the profile of users and potential-users, and it will be further cross matched with the findings of qualitative (FGDs) portion and below given separate portion for users and potential-users, in the separate section, details of usage, operating and other related to biogas will be explored in detail)

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BIOGAS USERS SECTION ONLY

0 1 a

1. What is the capacity of plant installed at your home?

4 cubic meter (2 cows)	1
6 Cubic meter (3-4 cows)	2
8 Cubic meter (6-8 cows)	3
10 Cubic meter (10 plus cows)	4
Other_____	

2. What is the reason of selecting the size mentioned in A1_____?

---

a) Approximately how much you usually spent on Fuel at your home before installing the plant? (By Fuel I mean, Gas Cylinder, woods, oil, and any other expense, please provide your answer in detail for each head)

Gas Cylinder	1	_____spending in a month
Wood	2	_____spending in a month
Kerosene	3	_____spending in a month
Other_____		_____spending in a month
Others2_____		_____spending in a month

b) Now how much you usually spent on Fuel at your home after installing the plant? (By Fuel I mean, Gas Cylinder, woods, oil, and any other expense, please provide your answer in detail for each head)

Gas Cylinder	1	_____spending in a month
Wood	2	_____spending in a month
Kerosene	3	_____spending in a month
Other_____		_____spending in a month
Others2_____		_____spending in a month
None	9	

c) What is the difference between Biogas Plant facility and Fuel facility you were using before installing a plant in term of effectiveness of heating arrangements?

Biogas plant is better	1	why_____
Fuel facility was better	2	why_____

d) What amount you have paid for Biogas plant installation? _____PKR

3. How did you arrange the amount of Biogas plant installation?

Myself arranged all the money	1	Source_____(sold an animal/saving/property selling)	
I paid some amount rest paid by anyone else	2	Amount Paid by you_____	Who paid _____ Amount_____ Int___%
Full paid by some one	3	Amount paid_____int_____%	Who paid_____ Why paid_____

a) Why you have installed the Biogas plant at your home? (Answer in details) _____

b) Approximately what is an average maintenance expense came in a month ob Biogas plant?

_____ PKR in a month (Cash)

_____ in a month (Kind)

(Ask those who coded 2 in A3b)

4. Is anyone from your family is a member of and MFI or community organizations?
   If yes which?
   a) Have you ever borrowed loan from any institutions?
   b) If yes how much, at what terms and conditions
   c) Amount of loan borrowed
   d) Interest rate?
   e) Loan period, installment?
   f) How much have you repaid already?
5. Have you ever borrowed loan from local money lenders, relative or friends?
6. If yes at what terms?
7. If you were aware that some organization is offering loan for biogas, would you be interested to borrow?

Micro Credit Institutions and Biogas

Is there a loan facility available for income generation activities? If Yes,

Sr.	Institution/Bank	Loan for (category)	Address
1			
2			
3			
4			
5			

What are the general terms and conditions of such loans?

Sr.	Institution/Bank	Terms and Conditions	Min-Max size of loan	Tenure (Min-Max Instalments)	Collateral	Processing Time

8. What are the general processes to get these loans?
9. Do you need to be a member of community organization? Yes / No
10. How long does it take to be eligible for borrowing once you become member? _____ Days/Months
11. Is there a Saving policy in your agreement Yes/No What is that _____

Who is the borrower Male/Female /Both

12. Is the policy is same for both Male and Female, Yes No (Explain) _____
13. What type of loan do they offer eg.SME, income generating activities, household consumption loan, etc?
14. Do they provide loans for biogas installation as well? Yes/No, Why _____
15. If you need financing or credit for Biogas where will you go (local individual money lenders or relatives or friends) _____
16. Do people borrow load from individual money lender, friends and relatives
17. What are the general terms and conditions of such loans? _____
18. How much amount you can get from them PKR_____ to PKR _____
19. Do you have to pay interest on such loan? Yes / No How _____
20. What is time period to pay back this loan _____Months
21. Do you have to deposit something for collateral, No/Yes What _____
22. How many of your family members borrowed from any financial institution? _____ Borrowed, _____ not Borrowed

23. In case you have taken loan.

Name of the person	From	Amount	Interest Rate	Instalments	Collateral	# of Instalments paid	Remarks

Now let us suppose:

If a bank or MFI was providing credit for biogas plants, would you have been interested in borrowing for biogas plant installation? Yes/No

Instalment

24. If yes, what amount would you have borrowed PKR _____

25. What monthly instalment would you have agreed to payback R. _____ Per month

26. Over what period would you have paid back, _____ Months/Instalments?

27. Ideally, over how many months should biogas credit is repaid? _____ (it may be same as upper one)

Interest Rate

24. What interest rates these banks /MFIs would have charged you? _____
25. Would you be happy with this interest rate? Yes/No
26. In your view, what should be the annual interest rate on biogas plants? _____PKR

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BIOGAS POTENTIAL-USERS ONLY

0

1

b

1. Do you know about Biogas?

   Yes [1] No [2]

2. Did anyone consult you about Biogas plant installation?

   Yes [1] (Go to B4) Who consulted you_____

   No [2] (Go to B3)

3. Did any farmer, just like you advise you to have Biogas plant installation?

   Yes [1] Who advice you_____

   No [2]

4. Have you ever noticed any Biogas plant nearby you?

   Yes [1] Details about your interest_____

   Detail about your lack of interest_____

   No [2]

5. Do you know how much amount you will be requiring to install a Biogas plant at your home?

   Yes [1] amount required_____

   No [2]

   a) if you will be interested in installing a Biogas plant, what is your target plant capacity?

4 cubic meter (2 cows)	1	Why_____
6 Cubic meter (3-4 cows)	2	Why_____
8 Cubic meter (6-8 cows)	3	Why_____
10 Cubic meter (10 plus cows)	4	Why_____
Other_____		Why_____

   b) Approximately how much you usually spent on Fuel at your home? (By Fuel I mean, Gas Cylinder, woods, kerosene, and any other expense, please provide your answer in detail for each head)

Gas Cylinder	1	_____spending in a month
Wood	2	_____spending in a month
Oil	3	_____spending in a month
Other_____		_____spending in a month
Others2_____		_____spending in a month

6. What is the reason of not installing Biogas plant at your premises?

Finances	1	How much you can arrange_____ How much loans you will be requiring_____ How much interest they can pay easily_____% What time period of returning it_____ Months
Lack of awareness	3	Lack of awareness of Biogas Plant installation Benefits_____ Lack of awareness of credit facilities available to them_____ Afraid of spending too much amount in Biogas and it won't works_____
Don't seek any Benefits from it	4	Financial benefit_____ Effectiveness of Biogas_____
Bad for Health	5	_____
Extra working Required	6	_____
Others		_____

(Concept Testing)

(In the end brief the Biogas in detail, its benefit and financial analysis and cost break up, loan with interest charges and then ask few questions)

7. (What is Biogas, brief in detail; and ask respondents to provide answer as much as you know about Biogas even after getting info about biogas form us)

   _____

   _____

   _____

8. Are you still interested in installing a Biogas plant at your home?

   Yes [1] (Go to B8)

   No [2] (Go to B10)

9. What benefits you can seek from installing a Biogas plant at your home?

---

10. How can you arrange the amount required for Biogas Plant installation?
11. The amount paid by you Amount_____in PKR How will you manage it_____

12. The amount to be taken from Loan Amount required_____ Will you will able to return the amount with that much of interest_____% and how much time required for returning it_____ Months (how will you manage it_____)

Maintenance Expense 2 _____Monthly maintenance expense in a month

Lack of awareness 3 Lack of awareness of Biogas Plant installation Benefits_____

Lack of awareness of credit facilities available to them_____

Afraid of spending too much amount in Biogas and it won't works_____

Don't seek any

Benefits from it 4 Financial benefit_____

Effectiveness of Biogas_____

Bad for Health 5 _____

Extra working

Required 6 _____

Others_____

13. What would you say that Biogas plant facility is better than Fuel facility in term of effectiveness of heating arrangements?

Biogas plant is better 1 why_____

Fuel facility was better 2 why_____

Micro Credit Institutions and Biogas

14. Is there a loan facility available for income generation activities? If Yes,

Sr.	Institution/Bank	Loan for (category)	Address
1			
2			
3			
4			
5			

15. What are the general terms and conditions of such loans?

Sr.	Institution/ Bank	Terms and Conditions	Min-Max size of loan	Tenure (Min-Max Instalments)	Collateral	Processing Time

16. What are the general processes to get these loans?
17. Do you need to be a member of community organization? Yes / No
18. How long does it take to be eligible for borrowing once you become member? _____ Days/Months
19. Is there a Saving policy in your agreement Yes/No What is that _____

    Who is the borrower Male/Female /Both

20. Is the policy is same for both Male and Female, Yes, No (Explain) _____
21. What type of loan do they offer eg.SME, income generating activities, household consumption loan, etc?
22. Do they provide loans for biogas installation as well? Yes/No, Why _____
23. If you need financing or credit for Biogas where will you go (local individual money lenders or relatives or friends) _____
24. Do people borrow loan from individual money lender, friends and relatives
25. What are the general terms and conditions of such loans? _____
26. How much amount you can get from them PKR_____ to PKR _____
27. Do you have to pay interest on such loan? No/Yes, How
28. What is time period to pay back this loan _____Months
29. Do you have to deposit something for collateral, No/Yes What _____
30. How many of your family members borrowed from any financial institution?

    _____ Borrowed, _____ not Borrowed

31. In case you have taken loan.

Name of the person	From	Amount	Interest Rate	Instalments	Collateral	# of Instalments paid	Remarks

Now let suppose:

32. If a bank or MFI or someone is providing credit for biogas plants, would you be interested in borrowing from them? Yes/No

<u>Instalment</u>

33. If yes, what amount you can contribute as equity and what is the amount of loan required?

    PKR _____

34. What monthly instalment you will be agreed to pay if biogas credit is available?

    PKR _____

35. Over what period would you can pay it back, _____ Months/Instalments
36. Ideally, over how many months should biogas credit is repaid?

Interest Rate

37. What interest rates these banks /MFIs will charge you? _____
38. Would you be happy with this interest rate? Yes/No
39. In your view, what should be the annual interest rate on biogas plants? _____PKR

IDIs

MICROFINANCE INSTITUTIONS (MFIS)

(Time: 30-40 min)

WARM UP:

1. Introduction of the company

   Assalamualikum! My name is ..... . Firstly, many thanks for giving us time for the discussion. Let me start by introducing my company. I work for 4CG. It is a research company. We work for almost all types of clients FMCG, Financial or Social Sector etc. Today we are here for a research purpose to take your opinion and views. Please relax yourself, as there is no right or wrong answer, instead we will talk about your views, opinions and experience over all. Let me start with my introduction. My name is ....., I work for 4CG. I am married with a family. I have.....kids etc. Now please go on with your introduction.

2. Consent of recording
3. Introduction of respondent

- ✓ Name of respondent _____
- ✓ Institution Name: _____
- ✓ Union Council: _____
- ✓ City: _____
- ✓ Whole Sale Provider _____
- ✓ Current Position: _____
- ✓ Phone no: _____
- ✓ Mobile: _____
- ✓ Date:_____ Day: _____ Time: _____
- ✓ Name interviewer:_____ Sign: _____
- ✓ General Information about the MFI

Name of MFI:	
Type:	1 NGO 2 Micro finance Bank
Address:	
Wholesaler	
Number of clients	No. of Male Clients: No. of Female clients:
105Date of Establishment:	
106 Date of Registration	
107 Registered office:	

108 Geographical Working Area:	After 1yr. of establishment: Now:
109 Functional working area:	
110 Contact Persons:	1. 2.

4. Could you please give us a quick summary of the credit interventions and if any preferences for credit line for live stock / agriculture, enterprise etc., sector. (moderator to probe for details)
5. when the sector-focused credit line was introduced, who introduced, when introduced. What were the key considerations? What was the outcome in mind at the time of designing such interventions?
6. Please provide some information on the loan products your MFI is offering.

SN	Loan Product	Loan size (loan amount)	Loan period	Interest rate	Instalment	Remarks

7. Any intervention in Biogas, or do they see any opportunity for Biogas Credit as a product for MF Sector. If Yes what if No, constraints attached (moderator to probe in detail Please discuss about various constraints like policy related, capacity of the MFI, constraints related to the procedure, constrains related to the clients.)..... Have you or your management ever discussed, any chance of discussion, even after this meeting.
8. If Yes what if No, constraints attached– will you encourage this sector, on which terms and conditions.
9. What are the potential risks in providing biogas loans?
10. How these risks can be mitigated?
11. If your Institution decides to introduce Biogas loan product, do you have sufficient loan fund to provide such loans?
12. If source of fund is one of the major constraints would your institution be interested to borrow from international banks like FMO or Triodos?
13. Are there any wholesalers that in their view can be interested in Biogas Credit line...?
14. Who is that? _____
15. Why he be interested in given credit line for Biogas? _____
16. Do you know, any previous example, if a new credit line was introduced? No/Yes
    a) What was the sector _____
    b) Who initiated and what was the interest in opening new sector_____
    c) How is it going? _____
    d) What is the community response?_____

e) What are the issues faced by the Institution_____

17. What sort of support will be required from stakeholders (wholesalers, regulatory bodies, PDBP, other associations, etc.,) to facilitate your institution to venture in Biogas Credit?
    a) Policy Level Support
    b) Disbursement Level Support
18. What are the prerequisites in Product Development? In special case of Biogas what that could be?
19. If they have specific committee or department to make decisions on new interventions? In case such decisions any by-laws involved, how can these by-laws be changed? Who is authorized make changes, any approval required by any committee or wholesaler.
20. Are you offering credit facilities in rural areas? Can you specify the coverage? If yes- what credit facilities you offer and how. Kind of credit facilities available with you (Details) (Ask for more and more options)
    a) IF No – ask for the constraint
21. If particularly ask for credit facility for local/small farmers/enterprise working in rural area?
    a) IF yes- What type of credit facilities or schemes available for community members (ask for Details) (Ask for more and more options)
22. Do you have separate schemes for male and females?
    a) IF Yes - please specify what those are? (Categories and sector e.g. health, education, enterprise, etc.)
    b) IF No- Why don't you offer for such category _____
23. Any other information that they would consider appropriate to share for this intervention e.g. probe how do they feel that Biogas product is provided by grants, should this sort of subsidy be encouraged?
24. What is the minimum and maximum size of loan available with you for category mentioned above? _____ Maximum loan in PKR _____ Minimum loan in PKR
25. What are the interest rate and its distribution (flat interest rate as per policy, service charge, etc)? _____ Maximum loan in PKR _____ Minimum loan in PKR
26. What is the selection and approval criteria of credit/loan (e.g. loan on only provided to community organizations in rural)? You do the same or provide to individuals also.
    a) If yes, how you define individual, family, male, female, youth, etc. (Explain in detail)
27. Do you think that Biogas can be leased like, sewing machine, motor cycle or CNG kits, etc. if yes then please suggest how it is possible and if not why? (Please provide your answer in detail about possible outcome and other detail)
28. What is your consideration of giving micro credit/loan to farmers, will s/he be able to pay back? (Based on perception or real case)
    a) IF Yes / NO (ask for details)
29. What could be the possible collateral required, if loan/credit is given for Biogas? Such as(something pledged as security for repayment of a loan, to be forfeited in the event of a default i.e. property document, gold, land etc)

30. In your organization/institution, who is the decision maker of introducing new micro-credit product and sets the instalment/design the policy/what to launch/strategy/target group or beneficiaries, etc?

    Me 1 Designation_____

    Someone else 2 Name of person_____ Designation_____

31. How many products does your institution design in a year, is there any limit or products?
32. Before introducing any new micro-credit product, what needs to/should be considered? (Explain in detail)
33. For designing a micro-credit product, how you design the instalment plan, what are the key components should be kept in mind and incorporated in the plan? (Explain in detail)
34. While making any product, who/how identify the target market/beneficiaries. What to launch/where to Launch/ultimate benefit of product and what message to communicate? (Please explain in your own words and provide details separately for all mentioned below)
    a) What to Launch_____
    b) Where to Launch_____
    c) Who will be get the ultimate benefit from it_____
    d) What message and initial strategy for the launching_____
35. What are the key considerations for making a new micro-credit policy? What aspect you (or someone else) usually see before making a policy for new product e.g. Govt. issues/ profitability/health concerns/environmental issues/Social issues, national commitments i.e. MDGs, CEDAW, etc? (Please explain details and even if more than one concern, please explain in detail).
    a) List the name of the wholesale lending institutions from which your institution has received credit line? _____
    b) List of wholesalers for all credit products or if there is specific credit line to encourage specific sector by wholesaler. Any good example, even not in your institutions _____
    c) What are the general constraints, conditions or limitations from wholesalers that you come across? (Share detail if possible) _____

THANK RESPONDENT AND END INTERVIEW

IDIs

CREDIT WHOLESALER

(Time: 30-40 min)

WARM UP:

1. Introduction of the company

   Assalamualikum! My name is ..... . Firstly, many thanks for giving us time for the discussion. Let me start by introducing my company. I work for 4CG. It is a research company. We work for almost all types of clients FMCG, Financial or Social Sector etc. Today we are here for a research purpose to take your opinion and views. Please relax yourself, as there is no right or wrong answer, instead we will talk about your views, opinions and experience over all. Let me start with my introduction. My name is ....., I work for 4CG. I am married with a family. I have.....kids etc. Now please go on with your introduction.

2. Consent of recording _____
3. Introduction of respondent _____
4. Name of respondent _____
5. Institution Name: _____
6. City: _____
7. Name of partner supplier with specific focus on MF rural partners)_____
8. Current Position: _____
9. Phone no: _____
10. Mobile: _____
11. Date:_____ Day: _____ Time: _____
12. Name interviewer: _____ Sign: _____

Let us start

13. Could you please give us a quick summary of the credit interventions and if any preference for credit line for live stock sector. (moderator to probe for details)
14. Are you offering any type of credit facilities to retailers who operate in rural areas? Can you specify the coverage? If yes- what credit facilities you offer and how. Kind of credit facilities available with you (Details) (Ask for more and more options)
15. If particularly ask for credit facility for local/small farmers/enterprise working in rural area?
    a. If yes- What type of credit facilities or schemes available for community members (ask for Details) (Ask for more and more options)
16. Do you have separate schemes for male and females?
    a) If Yes - please specify what those are?
    b) (Categories and sector e.g. health, education, enterprise, etc.)
    c) If No- Why don't you offer for such category?

What are the terms and conditions to get credit line from your institution?

SN	Loan Amount	Loan Term	Interest Rate	Collateral	Instalment	Other Conditions

17. Have you ever provided any wholesale loan to any MFI for financing biogas plants?
    a. If yes, Please provide the details _____
18. If a MFI is interested to design a biogas credit scheme would your institution be ready to offer wholesale loan to them Yes/No (Specify in both situation) _____
19. In your view what are the major constraints for promoting biogas credit?
    a) Policy related
    b) MFIs related
    c) Clients related
    d) Technology related
20. How these constraints can be resolved?
21. What sort of modality will be appropriate to promote biogas credit?
22. If any of your partners is involved in any Biogas intervention is there any support provided by your institution. If yes what. _____
23. moderator to probe for all the options available, here I mean policy aspect not from choice of partner organization
24. Room for such innovative interventions if no constraint if yes all the options available,
    a) soft loans,
    b) package deals
    c) others etc.,
25. Who do you think are the strong partners, in yours view for such interventions? Why. what makes you say so……if I say what should be criteria of strong partner from institutions' point of view…?
26. If they have specific committee or department to make decisions on new interventions? What is the composition of the committee? In case such decisions are in by-laws, how can these by-laws be changed? Or who is authorized to change, any recent example, what why how.
27. What sort of support will be required from stakeholders (wholesalers, regulatory bodies, PDBP, other associations, etc.,) to facilitate PPAF to venture in Biogas Credit? In terms of policy, subsidized credit line.
28. Any other information that PPAF would consider appropriate to share for this intervention, e.g. probe how do they feel that Biogas product is provided by grants, should this sort of subsidy be encouraged? What could be the possible dimension, thru livestock interventions, thru environment intervention, under gender agenda?

29. What are the interest rate and its distribution (flat interest rate as per policy, service charge, etc)?
30. _____ Maximum loan in %._____ Minimum loan in %.
31. Does any of your partner organization provides loan for Biogas
32. what is their consideration of giving credit line to an existing or new partner for Biogas Credit
33. Do you think that Biogas can be leased like, sewing machine, motor cycle or CNG kits, etc. if yes then please suggest how it is possible and if not why? (Please provide your answer in detail about possible outcome and other detail)
34. Before introducing any new micro-credit product, what needs to/should be considered? (Explain in detail)
35. What are the conditions on which credit line is extended to a partner Organization
36. What could be the salient features of the bio-gas credit facility?
37. While making any product, who/how identify the target market/beneficiaries. What to launch/where to Launch/ultimate benefit of product and what message to communicate? (Please explain in your own words and provide details separately for all mentioned below)
    a) What to Launch_____
    b) Where to Launch_____
    c) Who will be get the ultimate benefit from it_____
       What message and initial strategy for the launching_____
38. What are the key considerations for making a new micro-credit policy? What aspect you (or someone else) usually see before making a policy for new product e.g. Govt. issues/ profitability/health concerns/environmental issues/Social issues, national commitments i.e. MDGs, CEDAW, etc? (Please explain details and even if more than one concern, please explain in detail).

THANK RESPONDENT AND END INTERVIEW

BIOGAS CONSTRUCTION COMPANY (BCC)

(Time: 30-40 min)

4

WARM UP:

1. Introduction of the company

   Assalamualikum! My name is ..... . Firstly, many thanks for giving us time for the discussion. Let me start by introducing my company. I work for 4CG. It is a research company. We work for almost all types of clients FMCG, Financial or Social Sector etc. Today we are here for a research purpose to take your opinion and views. Please relax yourself, as there is no right or wrong answer, instead we will talk about your views, opinions and experience over all. Let me start with my introduction. My name is ....., I work for 4CG. I am married with a family. I have.....kids etc. Now please go on with your introduction.

2. Consent of recording _____
3. Introduction of respondent _____
4. Name of respondent _____
5. Institution Name: _____
6. City: _____
7. Name of company/supplier of plant installation _____
8. Current Position: _____
9. Phone no _____
10. Mobile _____
11. Date:_____ Day: _____ Time: _____
12. Name interviewer:_____ Sign: _____

Let us start

About BCC

13. What do you know about Biogas? _____
14. Where did you hear or learnt these? _____
15. How you see Biogas plant construction, is this a feasible or profitable business in Pakistan.....?
16. If you will be at policy maker level, how would you make the chain which is profitable and sustainable at the same time for the growth of biogas industry in Pakistan
17. Is your company is registered (under which legal conditions) _____
18. What is the structure of your company _____(members, staff, etc)
19. What type of services you provide in your company? _____ (List)

20. Does everybody do everything or you have specialized person for specific jobs

    _____

21. If we assume the following are the key steps of Who is involved in Biogas plant construction
    a. Construction / Installation _____
    b. Quality Control _____
    c. Design and _____
    d. Material
    e. _____
    f. _____
22. Moderator has to probe for all relevant departments and stake holders in biogas i.e. MFIs, Farmers, Plants installation team (Themselves), wholesaler like PPAF, UBL, etc.
23. How many plants have you installed to date _____number

    4cb 6cb 8cb 10cb

24. What is the average cost of the plant

    4cb 6cb 8cb 10cb

25. In farmers point of view, why one should or should investing in Biogas plant at their home

Constraints	DOs	DONTs
Financial		
Social		
Status		
Health		
Awareness		
Management		

26. Who finance the plant _____
27. What is your stake of profit _____
28. Did farmer easily manage the finance

    No. (why)_____

    Yes (How) _____

29. Could you please give us a quick summary of the credit interventions (Please simplify) made by MFIs and if any preference for credit line for live stock sector. (moderator to probe for details)
30. Is there a special facility for small farmers or home based workers or small entrepreneurs?

    _____

    IF yes- What type of credit facilities or schemes available for community members (ask for Details) (Ask for more and more options)

31. Are they offering any type of credit facilities to farmers who operate in rural areas? Can you specify the coverage? If yes- what credit facilities they offer and how. Kind of credit facilities available with them (Details) (Ask for more and more options)
32. What would you say about the interest rate charged at returning the amount…?
33. What are the interest rate and its distribution (flat interest rate as per policy, service charge, etc)?
34. _____ Maximum loan in %._____ Minimum loan in %.
35. What would you say about the time period of giving back the loan with interest…..?
36. How can these MFIs see the situation from farmer's point of view and your point of view…? (Probe for details in term of making any policy…introducing any new product…what are their key concerns for investing and giving loan to farmers…
37. Will Farmer be able to return the amount of loan in specific time period, if yes how can they _____
38. if no why don't they….probe for details like they can return by saving, selling an animal/property but first of all do they get any financial benefit from it or they feel the previous method was good enough instead of investing an amount upfront which is a problem for them….
39. Do you think credit for Biogas should also be available _____
40. Do you think farmer will be pay back the credit amount as per terms and agreement _____
41. What is the minimum amount should be available for Biogas plant credit _____PKR
42. Any specific terms and conditions you suggest for this kind of credit? _____

For Biogas Construction Company

43. Have you ever finance a whole plant at your own (All expenses from your pocket and got reimburses) Yes/No

    Yes _____

    No _____

44. Can you start a practice of providing Biogas plant on instalments, I mean all financed by you and farmer can pay you back in instalments. Yes/No
45. What support you would be required for that

    Finance

    Security

    Standard and Documentation

46. Would you be interested if such system is introduced or you are linked with MFIs or banks to provide total solution plants (with construction and finance) and you become their vendor or contractor for such services Yes/No
47. What terms and conditions you would suggest for that _____
48. What are the possible issues or constraints you forese. _____

49. What interest rate you would suggest to be charged by the institutions/banks?
50. What are the interest rate and its distribution (flat interest rate as per policy, service charge, etc)?
    _____ Maximum loan in %. _____ Minimum loan in %.
51. What would you say about the time period of giving back the loan with interest…..?
52. If let say you have to make a chain of credit…how you would do it like…how much interest you charge and why…and to whom these MFIs give credit and how it will be return….
53. What would you say that bring any other organization who can fill the gap between MFIs and farmers in term of trust of returning the amount and who it would be….
54. How can you be making profit out of it……probe for details, ask for their quality checks and getting payments from RSPN…..?
55. If let say after some year RSPN support will finish then how will you be making profit out of it…..how will you do it…either you charge MFIs, wholesalers or farmers…..or combination of anything…..
56. From your point of view, why you think that people promoting biogas and why…..do you have any suggestion for its improvement…..ask for details….at policy level with win win strategy at each level…….
57. Do you think that Biogas can be leased like, sewing machine, motor cycle or CNG kits, etc. if yes then please suggest how it is possible and if not why? (Please provide your answer in detail about possible outcome and other detail)
58. Which plant size is more profitable from your point of view and what from farmer's point of view……?
59. What is your point of view from liquidity gap of biogas and how it can be filled…?
60. What are they key quality checks that should be maintained during the installation of plant at home….what are the dangers attached to it….what are the benefits attached to it
61. What are the risk involved to the investment of biogas plant…probe in detail like government policies, rate of return, interest, development of region (Sui gas will be available later on)
62. In the end please suggest us how it should be marketed and what strategy can make that every stake holder will get the benefit and at the same time, biogas industry flourish and sustain at its own…although you already had explained and given us suggestion but still we want more from your side…..explain from all stake holders point of view….i.e. farmers concerns and likes, MFI concerns and likes/opportunities…your concerns and profitability…government involvements and their concerns…..whole seller benefits in between….

THANK RESPONDENT AND END INTERVIEW

DISCUSSION GUIDE FOR POLICY MAKING INSTITUTIONS

Potential Interviews with:

- Alternate Energy Development Board (AEDB)
- ENERCON (If time permits)
- State Bank (If time permits)

1. What are the energy development agenda in your organization?
2. What are the key initiatives your organization has taken for energy development?
3. What type of research has been done for energy development?
4. Is Energy conservation is also your agenda Yes / No.

   If Yes, what has been done in this respect

   If No, why _____
5. Has your organization ever considered Biogas as an alternate energy source, especially in those areas where suigas is not available?

   If Yes, what has been done in this respect

   If No, why _____
6. What if the need is identified and recognize by the community, are you or your origination at a stage to introduce this sector

   If Yes, how _____

   If No, why _____

THANK RESPONDENT AND END INTERVIEW

Terms of Reference for the Study on Constraints and Opportunities in Promoting micro credit for biogas plants installation

under

Pakistan Domestic Biogas Programme (PDBP)

TOR Requirement

This term of reference is developed to seek the services of a consultant/firm to conduct the study on Constraints and Opportunities in Promoting micro credit for biogas plants installation under the Pakistan Domestic Biogas Programme.

Introduction of the Pakistan Domestic Biogas Programme (PDBP)

Pakistan Domestic Biogas Programme (PDBP) is a 4 year programme which aims at installing 14,000 domestic biogas plants across central Punjab in its first phase with the financial support of the Embassy of the Kingdom of the Netherlands.

This program envisions the creation of a commercially viable biogas sector in Pakistan in next 10 years. During the period, the vision is to set up 300,000 domestic biogas plants across Pakistan. To ensure that the vision materializes, partnerships and agreements with various stakeholders such as Rural Support Programs (RSPs), Government Organizations, Micro Finance Institutions, NGO's etc will be formulated. Strong, dynamic and profitable biogas construction companies will constitute significant component of the new and viable biogas sector in the country. To that end, the main actors at the supply side of the sector are private Biogas Construction Companies (BCCs), providing biogas construction and after sales services to households. On the demand side, Rural Support Programmes organized under the RSPN will be the main executing partners, as well as NGOs, farmers' organisations and dairy organisations.

RSPN has already signed a memorandum of understanding (MoU) on August 6, 2009 with the Ministry of Environment that establishes that the Ministry of Environment will be the "patron" of the Programme and will facilitate coordination among government institutions for the successful implementation of the programme to meet the energy needs of rural people. Operations have begun in Central Punjab and will subsequently expand to other districts of Punjab, Sindh, NWFP, and Baluchistan provinces. In order to be able to provide adequate support,

provincial biogas offices will be established in the provinces and Quality Control Centres will be established to support their activities.

Need for the credit in biogas installation

The average cost of the biogas plant ranges from Pk Rs 33,000 to 44,000 (depending upon the size of the plant), out of which programme provides Quality Ensuring Discount of Pk Rs 7,500 so the actual cost to the farmer would be around Rs. 25,500 - 36,500. Around 10-15% of this cost can be covered by the unskilled labour, which the household can supply. Even with the QED, labour contribution and equity from the households, there is a need of credit of Rs. 20,000 to 30,000. So far, all users have funded the biogas plant by using their own financial resources.

Recent survey shows that around 57% of the women respondents were interested to have a biogas plant in their house[13]. However the high upfront cost of the plant is major hurdle to install a plant. Households that can afford to pay the upfront cost can install the biogas plant. However, those households, who cannot pay the cost upfront of the biogas plant would be deprived from the benefits of the biogas plant and cannot enjoy the discount given by the programme for biogas installation, as well hindering the overall objective of fostering the development the biogas sector in the country.

Objectives of the Study

The overall objective of this study is to identify the constraints and opportunities to promote the micro credit for the installation of biogas plants in the program area of PDBP. The specific objectives are;

- To assess the relevant stakeholders in promoting biogas credit in terms of their interest, capacity and position.
- To anlaysis the need of the credit for the biogas installation in the program area
- To identify the constraints and opportunities in micro financing of biogas plants in the program area.
- To recommend the appropriate models and mechanisms for promote the micro financing of biogas plants.

Scope of the Work

[13] Source: Baseline report, SEBCON

The scope of work shall be;

A) To assess the existing situation
   - Overview of biogas and micro finance sector in Pakistan.
   - Assessment of micro credit need for biogas installation
   - Assessment of modalities and practices in financing biogas plants and other similar products like solar home systems and others in Pakistan and in the region

B) To analyze the policy framework and the concerned stakeholders
   - Map the the financial institutions offering the micro credit in Punjab Province, particularly in the rural areas
   - Analysis of legal frame work concerning biogas credit through MFIs.
   - Assessment of institutional capacity of MFIs in reference to providing micro finance access to biogas plant users
   - Position and interest of the local micro finance institutions

C) To analyze the opportunities and constraints
   - Analysis of opportunities to increase the micro finance access for biogas installation
   - Analysis of policy and operational barriers
   - Analysis of the sources of credit for biogas financing
   - Analysis of risk mitigation measures

D) To develop appropriate financing models
   - Assessment of the need of establishing the biogas wholesale credit fund
   - Institutional framework
   - Defined roles of various stakeholders
   - Procedures for wholesale lending to MFIs and on-lending to the farmers
   - Necessary interventions required; policy lobbying, capacity building, linkage facilitation
   - Preparation of action plan for implementation

Methodology

The methodology should include;

- Review of literature
- Interview and interactions with the concerned/relevant players, major implementing actors, Users, Biogas Plant constructors, Financial institutions including local MFIs, micro finance wholesale loan providers.

(A questionnaire will be developed to guide the semi structured interview with various stakeholders.)

- Focus group discussions with biogas users and non users.
  (A check list will be prepared.)

- Capacity assessment of MFIs working in central Punjab in terms of biogas financing.
- Explore similar experiences in other countries through literature review
- Stakeholders' workshop to collect comments and suggestions on preliminary findings and recommendations
- Preparation of the final report

Structure of the report

The report should be structured as follows:

- Situational assessment
- Stakeholders' analysis
- Barriers and opportunities
- Potential risks and mitigating measures
- Appropriate financing model(s)
- Biogas wholesale credit fund and its operating procedures
- Recommendations for increasing financial accessibility of poorer households for biogas installation
- Action Plan for the implementation

Deliverables and Time frame

The duration of the study will be 50 days starting from January 1, 2010. The consultant will submit the following deliverables.

Name of the Report	Time	Remarks
Inception report	January 31, 2009	Soft copy
Draft report for comments	March 15, 2009	Soft Copy
Final report	March 31, 2009	A soft copy and 2 hard copies of the report