

FINANCING FRAMEWORK FOR BIOGAS USERS - FINAL REPORT

SNV/FMO

Farook Chowdhury and Luong Dinh Lan have prepared this report. Luong Dinh Lan carried out household survey and contributed to preparing Section 3 of this report. We wish to thank SNV, BPO, Ninh Binh Provincial Women Union, Sacombank, VBARD and CCF for their kind support and cooperation. **The views and opinions presented in this report are those of the consultants and do not represent that of the SNV/FMO or any other organizations.**

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Abbreviations

ADB	Asian Development Bank
BPO	Biogas Program Office
CCF	Central Credit Fund
ILO	International Labor Organization
MARD	Ministry of Agriculture and Rural Deveopment
MFI	Microfinance Institution
MFO	Microfinance Organization
NGO	Non Governmental Organization
PBPO	Provincial Biogas Program Office
PCF	People Credit Fund
RRA	Rapid Rural Appraisal
SME	Small and medium Enterprise
TA	Technical Assistance
TOR	Terms of Reference
VBARD	Vietnam bank for Agriculture and Rural Development
VBP	Vietnam Bank for Poor
VBSP	Vietnam Bank for Social Policy
VND	Vietnam Currency Dong
VPSC	Vietnam Postal Savings and Services Company
VWU	Vietnam Women Union
WU	Women Union
WSP	Water and Sanitation Program

CHAPTER 1 Executive Summary

The aim of the assignment is to explore the possibility for establishing a sustainable financing scheme for the biogas program. The framework for financing would establish a Biogas Fund, possibly within an existing financial institution, that could then be retailed as loans to either the biogas plant constructors and/or the households, who are the consumers of biogas. The Consultants were asked to study the prospect of microfinance providers loaning to biogas constructors. However, it became clear to the Consultants that loaning to the biogas constructors is not feasible, mainly because the team of constructors located at the commune level are individual persons and do not qualify for institutional loans. It also became clear that personal loans at individual household level could be a feasible option, if appropriate structure for loaning to households is developed. The scope of the study was therefore broadened to assess the framework for biogas financing by linking wholesale financial institutions with microfinance providers, with the ultimate aim of loaning to rural households for the construction of biogas plants.

THE NATIONAL BIOGAS PROGRAM

SNV has been supporting the national biogas program of Vietnam since 2003. With support from the Dutch Government and technical assistance from SNV, a biogas dissemination project has extended to 12 provinces in Vietnam and after constructing 12,000 biogas plants by July 2005 is now aiming to complete construction of 18,000 plants at around the end of 2006. The success of this program and the potential demand for biogas plants in Vietnam provides opportunities for expansion. It is estimated that out of the technical potential of 2 million installations, an active demand of 1 million domestic biogas plants seems a realistic figure.¹

The environmental, social and economic benefit of a biogas plant to the livestock farmer is well documented. These benefits are significant factors in household decision-making process for investment. It is estimated that energy cost savings alone stands at around 4,000 to 24,000 VND per month depending on households purchasing different fuel sources in the retail markets within different provinces of Vietnam.²

Buoyed by above estimates and prospects, the Ministry of Agriculture and Rural Development (MARD) and SNV are now embarking on a second phase of the biogas program. The expanded program aims to cover 58 provinces targeting construction of 140,000 biogas plants over the period 2007-2010.

¹ BIOMASS – Asia hits the gas. Wim J Van Ness, Renewable Energy World, January-February 2006.

² Vietnam Biogas Program - a presentation by SNV, 2006.

The viability of the national program, however, is linked with a sustainable development of the program. The second phase program must, therefore, seek to ignite a lasting market and consumer demand for domestic biogas plants and create a commercially viable sector. Of course, the expanded program has the opportunity to build on past successes and lessons. On the other hand, the first phase of the program had limited scope in that it focused on promoting a quality technology by training mason teams in the 12 provinces. In order to achieve sustainable market for the biogas sector SNV must ensure that (i) the sector is commercially operated, (ii) financial institutions participate in providing investment funds, (iii) plants are constructed in compliance with standard practices, and (iv) institutions are build and developed to strengthen market access and access to finance.

HOUSEHOLD SURVEY: RESULTS AND ANALYSIS

The Consultants carried out a focused survey of 90 households, 30 each from Ninh Binh, Thai Nguyen and Dac Lac provinces. The purpose of this survey is to (i) learn the profile of households within a specific location, (ii) understand household access to financial institutions and preferences, (iii) understand the level of demand for finance, and (iv) assess household expectation of terms and conditions of borrowings, including the role of subsidy and how that could be targeted. A survey instrument was prepared which formed the basis to carry out structured interviews with the head of households.

The survey areas were selected based on several criteria, recommendations from local officials and review of key indicators on livestock and household activities. The three provinces represents flat, mountainous and central region of Vietnam. Two communes from two districts of each of the provinces were targeted. A list of household was obtained at the commune level, which included only households owning equal to and more than 5 pigs, ensuring their potential participation in the biogas program. The households to be interviewed were then randomly selected from that list.

The average size of household is between 4.5 to 5.6 persons. Average pigs owned by households are around 10, slightly lower in Dac Lak (8 pigs per household). As expected the number of pigs owned by richer households are higher compared to other relatively poorer households. There are variations within the provinces and they reflect opportunity cost of raising livestock with farming. The sample households raise very little cattle.

All households earn their living from farming and animal husbandry, with additional sources of income derived from secondary commercial activities, such as commercial service, masonry, winery, tofu processing, etc. The average annual household income is around 34 million VND, much higher compared to the national average of 23 million VND. Only some 9 percent of the households have annual income less than 20 million and higher than 15 million VND. Savings increases with rising income levels and average annual savings stands at around 7 million VND.

Households with higher income are relatively more eager to build biogas plants. Only half of the relatively poorer households would take a decision to build biodigester. According to the survey result, three quarter of all households have existing credit from a bank: VBARD (50%), VBSP (34%) and WU (16%). The

survey also shows that the percentage of overdue loan of households was low, with only 3% of households defaulting. As expected, average amount borrowed increases with income size. In response to our question on the amount of loan households expects to borrow, it is observed that the size of loan is higher for “non-rich” households (annual income less than 30 million VND), standing at around 4 to 4.5 million VND, while richer households would borrow around 3.8 million VND.

About 78 percent of households responded that they would like to build biogas plant. From the three provinces Ninh Binh appears to have the highest demand, some 83 percent. Households that do not wish to build biodigester are relatively poorer, own 5 to 6 pigs and lack knowledge of biogas utilization. Some three quarter of those households wishing to build biogas plant want finances to meet the cost of construction. A quarter of the households save less than 5 million VND and they prefer to borrow 100 percent of the cost of biodigester. Households prefer long-term loan with 24 to 36 months repayment period and to obtain lump sum subsidy, if commercial interest rate is charged. Half of the households wanting credit would be willing to repay interest monthly and principal in equal quarterly installments. Over two third of the respondents indicated their preference to bank with the WU, because it is a local organization, operates with simple lending procedure and has better access.

The Consultants carried out an estimation of the demand for finance within the area of the three provinces. The results of the estimation show that only in six communes some 2,500 households would demand microcredit, which is 22 percent of total households in the area and 60 percent of households owning more or equal to five pigs.

BIOGAS PLANT AND CONSTRUCTION PROCESS

The Biogas program has trained some 350 biogas masons at the commune level. These masons have acquired the technical knowledge and skills to construct biogas plants. The SNV technical assistance team trains the technicians from the biogas program office of the MARD and they in turn impute knowledge and skills to the masons at the local level. The mason team, usually consisting of several members (2 to 5), has been set up at different provinces as informal individual groups. These groups cannot act as intermediary for microfinance, or give loans to households, or provide any kind of credit programs for the construction of biodigester. There are very few companies involved in constructing biodigester and the Consultants have been able to contact only one, Nghia Hung Biogas Technology Company.

There are several benefits derived from company set up that are not available when individual groups operate in the sector. These relates to (i) economies of scale, (ii) undertaking research and development and improvement of technology, (iii) better quality assurances, (iv) after-care service and maintenance and (v) provision of credit programs.

MICROFINANCE INSTITUTIONS

There are no significant private formal microfinance institutions in Vietnam. Decree 28 on the Organization and Operation of Microfinance Institutions, introduced on March 9, 2005, provides opportunities for the creation of legal framework for this

sector. However, implementation of the decree has been slow and it would be a while before rapid movements towards the establishment of private formal MFIs could occur. On the other hand, microcredit programs is a fast growing activity and various formal and semi-formal institutions have been operating significant microcredit programs, both at the national and local levels.

The Vietnam Bank for Agriculture and Rural Development (VBARD), the Vietnam Bank for Social Policy (VBSP) and the People's Credit Fund (PCF) are the three formal institutions operating microcredit programs. The administered credit programs operated by VBSP are targeted to the poor and disadvantaged regions focusing on poverty reduction. Credit is provided at a subsidized rate usually carrying a charge of some 0.5 to 0.6 percent per month. CCF is a cooperative credit institution and its commercial banking operations include different banking products and services targeted to their members. CCF, including the 905 PCF network, and VBARD operates commercially and mostly do not provide subsidized credit.

Semi-formal microfinance providers consist of programs sponsored by NGOs, mostly international, and those established by socio-political organizations. Among the latter microfinance organizations the Vietnam Women Union (VWU) has the most extensive network to reach the rural poor. The Women Union has been operating savings & loan programs very successfully and also has been important partner of the credit projects run by VBARD, VBSP, international organizations and national programs. Recently, bilateral and multilateral donors have been using provincial Women Unions to run and operate microcredit projects, similar in nature to the biogas projects. Although the Women Union has wide reach in the rural areas and strong experience in microcredit programs there is a lack of institutional capacity in terms of in-house system for financial management and accounting, and sound management system for monitoring and tracking activities. There are also shortages of well-qualified staff. These weaknesses coupled with the lack of experience in operating commercially run credit operations will require development of institutional capacity, if their participation is sought in the financing of biogas programs.

FINANCING BIOGAS INVESTMENTS

Although data relating to the financing of biogas plant construction is not available, several observations conclude that very few of the 18,000 plants constructed during the four years have been financed by loans from financial institutions.³ Several reasons are believed to discourage households from seeking credit for the construction of biogas plants. They are,

- difficult for rural households to access finance from financial institutions, particularly VBARD;
- investment in biogas do not bring direct benefit in terms of cash income;
- rural households do not wish to be indebted and rely on own funds for such investments;
- investments in biogas plants are high compared to earnings and savings by rural households

³ Biogas User Survey 2005 and other informal discussions with banks, MFIs and biogas program partners.

The above observations may well be true. In designing a credit scheme for biogas users, it is necessary to address the above issues and take measures to ensure that active demand for finance remain at a steady level.

ASSESSMENT OF A FRAMEWORK FOR FINANCING BIOGAS USERS

In order to design a framework for financing meet the objectives defined above the financing framework must meet several criteria.

- The cost of funds needs to be such that they are attractive to both the financial institution (Fund Manager) and also to the microfinance providers.
- The interest charges to the households should not be subsidized and loans must be made at market rates, which currently stand at around 1.2 percent per month.
- In order to maintain a steady demand for finances promotion will play a key role.
- Microfinance providers must operate a viable biogas credit program.
- It is understood that SNV and MARD would be providing subsidy to the households. This may act as a catalyst to attract demand for finances by the households, as our calculations indicate that a one million VND of subsidy on a four million investment will bring down the effective interest charge from 1.2 percent a month to 0.9 percent a month. The subsidy could also act as a promotion tool, particularly to poorer livestock households.
- It will make good sense to provide the loans to households on a long-term basis. A medium term credit (3 years) with a grace period would be attractive to biogas users.

The management and operation of a biogas fund involves several options. They are set out below.

Option One: A financial institution will set up the fund by taking a loan from the FMO. The fund will be managed and operated by the financial institution by providing sub-loans to microfinance providers and the latter making biogas loans to rural households.

Option Two: An independent biogas facility is set up by the FMO. A Fund Manager will manage and operate the Facility by providing loans to microfinance providers and the latter making biogas loans to rural households.

Option Three: A financial institution will not only set up the Fund by taking a loan from FMO, but will also retail credit to the rural households without the participation of the microfinance providers.

The option of FMO providing direct funding to or holding equity in microfinance institutions has not been considered. This is because, as mentioned above, there are no significant private microfinance providers in Vietnam. Several of the socio-

political organizations, such as women union, do not have a clear and well-defined policy to transform their organizations in the future.

CONCLUSIONS

A summary of conclusions drawn from our review and assessment is outlined below.

- i. Although biogas users, participating in BPI, obtained a flat subsidy of one million VND to cover costs of construction, very insignificant number of households borrowed from financial institutions to carry out expenses.
- ii. Knowledge of biodigester and its benefits are well acknowledged by households, as indicated in our survey of households who currently do not own a biodigester.
- iii. The survey indicates that some 78 percent of households with five or more pigs would build a biodigester. The survey also indicated that demand for biodigester is greater among the households earning annual income over 30 million VND compared to households earning less.⁴ This observation has a number of significance, among them (i) that marketing biodigester will remain a key activity area, (ii) that it will be essential to incorporate a marketing program for the financial product by the financial institution and also the microfinance providers, and (iii) that during the pilot phase of the credit scheme considerations should be given to target the higher income groups.
- iv. In the specific areas where survey was implemented potential demand by households for credit is reasonably high.⁵ Even with a 20 to 30 percent lower actual demand provision of credit could play a major role in establishing a financing scheme for the biogas sector.
- v. The terms and conditions of loans to the biogas users will impact the actual demand. The survey results indicate that operating a microcredit scheme with commercial rates without a lump sum subsidy may considerably decrease actual demand.⁶
- vi. An assessment of the expected credit conditions by the households indicate that those who intend to partly use own funds would borrow 50 to 80 percent to finance remaining expenses for the biodigester. It could be concluded that an average of 60/40 borrowed and owned funds would be utilized towards financing the cost of biodigester. Majority of the surveyed households expects a credit term of 24 to 36 months. Access to finance in the surveyed areas is high with VBARD, VBSP, WU, FU and PCF operating credit programs. VBARD lends at 1.0 to 1.15 percent per month, while both VBSP and WU with their targeted credit charges 0.5 percent per month.

⁴ From the surveyed households, 96% of households with annual income more than 30 million have indicated interest in building biodigester, while only 60% of households with less income have demand for biodigester.

⁵ From among the households most likely to build a digester some three quarters of the households indicated their interests to borrow from financial institutions

⁶ From among the households most likely to demand credit only 11% indicated they would borrow with a commercial interest rate of 1.2% per month. In Dac Lak province, where VBSP presence is high and farmers have been supported with directed credit programs, only 6% of households indicated they would borrow at commercial rates.

vii. It would be realistic and possible to introduce a commercial rate of 1.15 to 1.25 percent per month to attract potential biogas users, particularly when subsidy is available and the credit repayment would be within 2 to 3 years and perhaps with a grace period.⁷

viii. A large number of mason teams consisting of 2 to 5 members operate informally at the local level. There are very few known companies involved in the construction of biodigester. Because the mason teams are individual and informal groups it is not possible to channel credit through them to the biogas users. No credit structure could be set up for the sub-loan from the financial institutions. Discussions with a company in Dac Lak concluded that companies would not take on the role of intermediary for the provisioning of microfinance.

ix. A number of formal and informal microfinance institutions operate in Vietnam, mostly dominated by VBARD and VBSP, two state owned financial institutions. Among informal microfinance organizations WU operates several savings and loan programs, has a strong network at commune level and also is experienced in implementing donor programs. It is expected that VBARD, PCF, provincial WU and a number of smaller microfinance institutions (TYM, CEP) would participate in providing microfinance under the biogas credit scheme, if terms and conditions are found attractive. The willingness of VBARD, PCF and WU has been assessed and has been found to be positive towards their involvement in loaning to the households and also to take commercial funds from a financial institution as long as the cost of funds is less or equal to the existing domestic cost of funds.

x. In order to assess which banks would be willing to provide commercial funds to MFIs, we approached Sacombank, VBARD and also discussed with CCF. All three indicated their preliminary willingness. A more firm discussion was held with Sacombank, as it is the preferred partner of FMO. Sacombank did not indicate its overhead costs and under what terms and conditions it would loan to MFIs. Currently, these discussions are ongoing. Failure to reach an agreement with Sacombank should lead to a roll out of strategic discussions with VBARD.

xi. Maximum interest to be charged by FMO cannot be determined at this stage. Since the administrative cost of operating the credit by Sacombank would be less than their normal operations it is expected that a spread of some 0.15 to 0.2 percent per month would be a reasonable estimate. In that case it could be expected that the maximum interest rate that could be charged by FMO would stand at around 0.55 to 0.60 percent. It should be noted that these estimates shows what would be an expected condition from the different actors and that final results will differ depending on greater analysis and results of negotiations reached between FMO, banks and MFIs.

xii. The framework for setting up the credit scheme will not involve creating any new structures or institutions. The MFIs have their procedures and structures to extend credit to rural households, particularly VBARD's mobile banking and group lending programs and that of the WU, which has strong rural network and operates group savings and loan programs. However, much as the participation of the WU is

⁷ Although survey results indicate a large number of households obtaining 0.5% interest per month, it is understood from VBARD and PCF that they operate with commercial rates of 1.2 to 1.25 percent per month. This is an encouraging sign.

desired and they would be willing to participate in a program operated more commercially, without supporting capacity development within the selected provincial WU sustainability of the credit scheme may remain questionable. VBARD has also shown interest in providing training programs to the MFIs.

RECOMMENDATIONS

We recommend that option 1 should be considered to establish the biogas-financing scheme. This will not entail setting up new structures and the fund could be a special window of a bank and loaning to biogas users could be done through the existing structures of MFIs. The details of the structure are provided below.

Organizational Framework

- i. FMO should attempt to set up the biogas fund in Sacombank
- ii. Sacombank will set up a Special Window called “Sacom Biogas Fund” appoint a Fund Manager in order to manage and administer the Fund
- iii. The Fund manager will seek participation of a number of formal and semi-formal microfinance providers to whom sub-loans will be provided for ultimate loaning to the rural livestock households.

Terms of loans and sub-loans

- iv. The lending and re-lending rates will be determined based on biogas loans being provided to households at market interest rates, currently at 1.2 percent per month
- v. In determining the lending and re-lending rates consideration should then be given to the minimum spread of individual microfinance providers keeping in mind that the cost of fund to the microfinance providers do not exceed the average domestic cost of funds. VBARD indicated that their spread would have to be somewhere around 0.5 percent a month⁸, our calculations indicate that provincial WU would need a spread of around 0.35 to 0.40 percent for a sustainable sub-loan operation.
- vi. Accounts to be managed by Sacombank may run up to 10 to 12 depending on how many provincial WU participate in the credit program. This should have little overhead burden on Sacombank and a spread of 0.2 to .25 could be a reasonable estimate.
- vii. Maximum charge of FMO loan to Sacombank would need to take account of the cost of funds for sub-loans plus the overhead of Sacombank. The loan by FMO should be long-term; 7 to 10 years with grace periods and denominated in Vietnam Dong.
- viii. The sub-loans to the microfinance providers should be long-term: 4 to 5 years with a grace period.
- ix. The sub-borrowings by the microfinance providers will be for medium term (three years) with a grace period.

⁸ We understand that this is a requirement by the World Bank on VBARD

Piloting the scheme

- x. The scheme should be piloted in selected provinces and with a facility of some US \$5 million.
- xi. The pilot phase should ensure coverage of at least 35 to 40 percent of planned target by SNV biogas program phase II in order for the facility to operate with US \$5 million. This would ensure that the facility operates with US \$5 million.

General administrative procedure

- xii. Eligibility of participating semi-formal microfinance providers will be based on an evaluation of a comprehensive business plan for biogas sub-loan, professional strength and organizational capacity.
- xiii. Eligibility of formal financial institutions, such as VBARD, CCF (PCF) will be based on their willingness to participate in the program provided by a completed application and formalized by a written contract of agreement for sub-loan.
- xiv. Fund allocation to microfinance providers should be based on utilization of sub-loans and appropriate criteria for such allocation will be developed.
- xv. The microfinance providers will submit monthly quarterly report on the utilization of the sub-loan to the Fund Manager.
- xvi. The Fund Manager will prepare annual report on the Biogas Fund for submission to FMO and others.
- xvii. The Fund Manager will carry out periodic benefit monitoring of the Biogas Fund

Strengthening Bank and MFI Institutional Capacity

- xviii. Sacombank should be provided technical support to develop and strengthen management and administrative capacity to operate the Biogas Fund. The technical support should be provided over a period of one year by experts with international experience in operating Fund/Facility of similar nature.
- xix. Technical assistance should be also provided to microfinance providers, particularly semi-formal organizations participating in the sub-loans. The technical assistance should be organized for a minimum of two years and experts should be working within the microfinance organizations to develop and strengthen their organizational systems, financial management and staff capacity.

Formalizing Biodigester Construction Teams

- xx. BPO should consider formalizing the biodigester mason teams by promoting existing companies and encouraging establishment of new companies by (a) setting up appropriate enabling environment and (b) incorporating participation of existing companies to construct biodigester.
- xxi. BPO should not consider biogas constructors as intermediary for microfinance and for the provision of loans to households.

CHAPTER 2 Introduction

2.1 STUDY OBJECTIVES AND TERMS OF REFERENCE

The objective of this study is to assess the opportunity of providing finances to biogas users by linking banks with biogas constructors or microfinance institutions. During an initial period of the assessment, the Consultants observed that in Vietnam individual technicians, who are grouped with other junior members to form a team, carry out biogas construction. This informal and personalized structure do not provide any scope for biogas constructors to act as intermediary for channeling credit to households.

Under the circumstances, primary focus was paid to research questions relating to the biogas users and to microfinance providers. Specifically they are,

- **An estimate of the demand for finance from households.** We respond to this question from the analysis of the survey that was carried out. The survey focused on a limited area. However, attempts were made to make the sample as representative as possible to obtain a satisfactory estimate.
- **Financial institutions interested to participate and terms of financing/loans.** This has formed the bulk of our activity. However, assessment of linking financial institutions to microfinance providers led us to widen the scope of the initial TOR to also cover tasks assigned in Lot 2 of the SNV project: Assessment of linking wholesale financial institutions with local micro finance providers in Vietnam.

2.2 STUDY METHODOLOGY AND APPROACH

The study has been carried out in two missions of two weeks each in June and July 2006. Additionally, during this period approximately three weeks were spent in carrying out a field survey of some 90 households in three provinces. The survey focused in three provinces: Ninh Binh, Thai Nguyen and Dac Luc and within a limited locality covering six communes. Details of the survey methodology are presented in Section 3.1.

In order to reach the objective of the study, the Consultants assessed the following actors:

- Microfinance institutions and financial institutions;
- Various related donor programs;

- Stakeholder within the BPO and PBPO

A list of people met during the assignment is shown in Annex 5. The Consultants also reviewed various documents related to the biogas program and background discussions on different financial institutions, including microfinance organizations. The approach to the various chapters is described in brief below.

Section 3 describes the survey methodology, presents the results obtained from interviews of households and carries out analysis of household profile, their access to finance, the level of demand for finance and their expectations of terms and conditions of borrowings. The survey also highlights differences between regions and income groups.

Section 4 discusses the national biogas program, particularly the SNV supported project: Vietnam Biogas Program Phase I and II. The expanded program of Phase II will need to take account of wider issues, such as financing, biogas constructors, to focus much more on institution building. These elements are assessed and outlined in this section.

Sustainability of the biogas program will require encouraging the biogas construction teams to consolidate operations within a legal entity and formal business structure. A brief discussion on the need for such formalization and how that may be attempted is provided in Section 5.

Section 6 is the core part of this report and assesses the framework required to establish a biogas fund/credit. The Consultants had extensive discussions with various financial institutions (Sacombank, VBARD, CCF) and also microfinance providers (Women Union), which assisted in developing a suggested framework. Details of the framework have been provided with respect of what we understood to be a viable process for sustainable financing of the biogas sector by outlining several options, for consideration.

Section 7 we outline our findings and conclusions and draw up a realistic set of recommendations for the implementation of the credit scheme, including required next steps for completing its design. Because of the limited time it has not been possible to provide details on several aspects of the framework, such as the pilot program, procedures and guidelines for managing and administering the funds and technical assistance requirements. Additionally, not until the last days of the second field mission the Consultants could hold discussions with Sacombank officials to learn about their willingness and interest in participating in the credit program. This left little time for further investigations and to discuss operational details with Sacombank in order to reach agreement on critical issues.

CHAPTER 3 Household Survey

During June 26–July 9 and July 23–28 a household survey has been undertaken. It is a limited survey and involved the participation of one of the consultant. Only some 90 households could be surveyed within the limited time and that too within limited locations. Every effort was made to obtain a representative sample that could, with some accuracy, detail the situation prevailing in the larger population of the areas selected for the survey. A survey instrument was prepared and tested in Ninh Binh. The final version of the survey instrument, attached in Annex 2, has been used to complete the fieldwork.

3.1 PURPOSE AND METHODOLOGY OF SURVEY

3.1.1 Purpose

The purpose of this survey is to (i) learn the profile of households within a specific location, (ii) understand household access to financial institutions and preferences, (iii) understand the level of demand for finance, and (iv) assess household expectations regarding terms and conditions of borrowings, including the role of subsidy.

3.1.2 Methodology

SELECTION OF LOCATION AND HOUSEHOLD

Province selection: According to BPO recommendations three provinces were selected for the survey. They are:

- Thai Nguyen representing the Northern Mountainous Region;
- Ninh Binh representing the Red River Delta Region; and
- Dac Lac representing the Central Highland Region.

District selection: Selection of districts was limited to two per province because of limited time and resources.⁹ The Consultants also cooperated closely with the Provincial Biogas Project Offices (PBPO) to select the

⁹ Mr Luong Dinh Lan carried out the full survey, data processing and carried out substantial part of the analysis.

suitable districts. The criteria used for district selection are that district should have a socio-economic condition as well as animal husbandry sector, especially pig, on average level comparable to other districts in the province. Six districts have been selected in the three provinces.

Commune selection: One commune per district has been selected. The criteria used to select commune is similar with district. The Consultants have discussed with district staff to select the appropriate commune. Total selected commune is six (two communes per province).

Household selection: This survey targeted a total of 90 households (30 household per province). About 15 households have been selected for each commune. The main criteria used for household selection are that a household are currently raising more or equal to 5 pigs¹⁰ and do not own a biogas plant. The Consultants cooperated with commune leaders and village heads in order to obtain a list of these households, from which a random selection of households was made.

List of Selected Provinces, Districts and Communes

Province	District	Commune	No. of HH interviewed
Total	6 districts	6 communes	90 Households
1. Thai Nguyen	Dong Hy	Hoa Trung	15
	Phu Binh	Tan Duc	15
2. Ninh Binh	Gia Vien	Gia Hung	15
	Yen Mo	Khanh Thuong	15
3. Dac Lac	Krong Buk	Binh Thuan	15
	Cu M'ga	Ea Bok	15

ESTIMATESION OF DEMAND FOR FINANCE

Based on the survey results and secondary data, the Consultant estimates the number of households, at the commune level, who demand microcredit to construct a biogas plant. Following steps have been used:

- i. Collect data and information about total household rearing more or equal to five pigs at every village in the commune to obtain the number of households for the commune. Data and information from commune authority and village Head records were consulted and collected.
- ii. Estimates of the households who would be likely to construct the biogas plant.
- iii. Estimates for the households constructing biogas plant would be most likely to demand credit.

¹⁰ According to Biogas User Survey Report, most biogas user households have utilized pig's dung for biodigester instead of dung from other livestock. Thus, Consultants focused on the household keeping \geq 5 pigs.

3.2 SURVEY RESULTS

3.2.1 Household Profile

Most household heads could read and write; some of them finished high school and had undertaken vocational training. The average size of household differs from 4.5 to 5.6 persons per household. Correlatively, the average number of household's labor also differs from 2.2 to 2.7 labors per household.

Table 1. Household Education, Size and Labor

Indicator	Unit	Thai Nguyen	Ninh Binh	Dac Lac
Education of household's head				
Illiteracy	%			3.3
Literacy	%	100	100	96.7
Household size	Person	4.7	4.5	5.6
Number of household's labors	Person	2.5	2.2	2.7
Average number of Livestock				
Pigs		9.2	10.6	7.6
Poultry		62.0	39.3	28.7

The survey singled out households raising livestock and the average number of pigs and poultry per household is indicated in Table 1. The sampled households raise very little cattle. The average number of livestock (pigs) is smaller than those observed from the biogas user survey and the BPO database, which is because of the peculiarities of the sample and perhaps location. There are variations within the three provinces and they reflect opportunity costs of raising livestock with farming.

3.2.2 Household Income and Savings

All sample households earn their living from farming and livestock husbandry. Some 52 percent earn income from secondary sources, such as commercial service, masonry, carpentry, processing of tofu, winery, etc. Percentage of households involved in secondary occupation varies in three provinces; 30% in Dac Lac, 46.7 % in Thai Nguyen and 80% in Ninh Binh. Raising pig is a significant activity of household animal husbandry. In farm cultivation, food crops (e.g. rice, maize, cassava) are still considered as the most important crop but they are mainly used for household consumption as well as to feed the livestock. For the upland provinces, Thai Nguyen and Dac Lac, most households produce commercial crops such as coffee, tea or fruit trees. Ninh Binh, located in the Red Rival Delta where farmland is quite narrow, has little advantages in cultivation. On the other hand, in Ninh Binh animal husbandry and other commercial agricultural activities have grown rapidly assisting households to attain an average income higher than in Thai Nguyen and Dac Lac.

Table 2. Household Average Income, Expenses and Savings, 2005 (in VND)

	Thai Nguyen	Ninh Binh	Dac Lac	Average
Cash income	29,785,000	39,851,000	31,647,000	33,761,000
Of which: Income from livestock (%)	80.1	84.7	70.3	78.0
Cash expenditure	23,014,000	32,192,000	25,169,000	26,875,333
Saving	6,771,000	7,659,000	6,477,000	6,885,667

Table 2 presents the average income, expenses and savings of households by province and as an average over the entire sample population. As mentioned farming is mainly for consumption and cash income is earned through animal husbandry and commercial agricultural activities.

Methodology for deriving income and expenses

Cash income is calculated as cash inflow of households received by selling products to the market. It excludes the value of products (e.g. rice, maize, vegetables, fruit, egg, chicken etc.), which households kept for their family consumption.

Cash expenditure is calculated as cash outflow that households spent for their consumption (e.g. school tuition, health care, food and foodstuff, clothes, electricity etc.) and production inputs (fertilizer, animal feeds, piglets, calf, etc.), and other household expenses. It does not include the value of inputs that households used for their family consumption.

Savings = Cash income – Cash expenditure.

The following conclusions are drawn from Tables 2 and 3:

- Earnings from livestock husbandry form a large proportion of cash income in all sample households. It is 84.7 % of total cash income of households in Ninh Binh, 80.1 % in Thai Nguyen and 70.3% in Dac Lac.
- Household expenses in Thai Nguyen and Dac Lac are less than the households in Ninh Binh. The main reasons are the households of these upland provinces could mostly self-sufficient food and foodstuff for their own consumption as well as a part for livestock feeding. Also, many of them could save money for fuel expense by using firewood, while Ninh Binh households could not have this advantage.
- All households indicated a savings from earnings after spending cash for their own consumption and purchase of production inputs. The average annual savings of all households was about 6.9 million VND per household. The households have often used savings to reinvest in production. Table 3 shows the differences of saving levels within each province. 41 percent of households have savings of 5 to 10 million VND per year and more than 60 percent have annual savings more than 5 million VND.

**Table 3: Levels of Household Annual Savings by Province, 2005
(Percentage)**

Level of savings (VND)	Thai Nguyen	Ninh Binh	Dac Lac	Average
Total	100.0	100.0	100.0	100.0
1 - 5 million	43.3	26.7	46.7	38.9
> 5 <10 million	36.7	50.0	36.7	41.1
≥ 10 million	20.0	23.3	16.6	20.0

3.2.3

Analysis of Households by Income Category

In section 3.2.2 we reviewed the survey results based on average annual income for the three provinces. It is also illuminating to differentiate the households in terms of their income and analyze behavior patterns. It should be noted that the income figures are notionally cash and may not be comparable to other income figures derived by the national statistics. However, this should not impact analyses of behavior patterns. For the sample household data indicates that income ranges from 12 million to 100 million VND and that the average income is around 29 million VND. We have classified households in terms of three income categories reflecting relatively poorer households, those falling below the sample average and those above it.

Table 4 Household Profiles by Income Category

Average Annual Household income (million VND)	Households	Average savings ('000)	Average livestock		
			Pigs	Cattle	Poultry
Thai Nguyen					
12 - 19.99	9	3,712	6.8	0.8	89.2
20 - 29.99	10	4,839	9.3	2.9	29.2
> 30	11	11,030	11.0	1.5	69.5
Ninh Binh					
12 - 19.99	0	0	0.0	0.0	0.0
20 - 29.99	9	4,580	6.3	0.7	31.1
> 30	21	8,980	12.4	0.4	42.8
Dac Lak					
12 - 19.99	1	2,200	5.0	0.0	54.0
20 - 29.99	16	5,223	6.7	0.5	21.9
> 30	13	9,996	8.9	0.4	35.2

Only some 9 percent of the sample households have annual income less than 20 million VND. On the other hand, over half of the households have income more than the national average of 23 million VND per year per household. In Ninh Binh none of the observed households have annual income less than 20 million.¹¹

¹¹ As mentioned our method of collecting data on income and expenses was to focus on cash inflow and outflow. This appeared to be the best way to obtain an idea of household CASH savings and ability to take loans

As would be the case, average savings increase with increases in income. Similarly, income and number of pigs owned by households are positively correlated. One interesting observation is that poorer households in the sample tend to own more poultry compared to other household groups in Thai Nguyen and Dac Lak.

Table 5 Households decisions to build biogas plant and finance costs

Average Annual Household income (million VND)	Like to build Biogas Plant	% of households	Will self finance full cost	Will borrow full cost	Will borrow part of cost
Thai Nguyen					
12 - 19.99	5	0.56	1	2	2
20 - 29.99	8	0.80	1	1	6
> 30	10	0.91	5	0	5
Ninh Binh					
12 - 19.99	0	0.00	0	0	0
20 - 29.99	4	0.44	0	1	3
> 30	21	1.00	6	3	12
Dac Lak					
12 - 19.99	0	0.00	0	0	0
20 - 29.99	10	0.63	0	5	5
> 30	12	0.92	4	0	8

Table 5 indicates that richer households would take a decision to build biogas plant. Only half of the relatively poorer households in Thai Nguyen would take a decision to build biogas plant. It should be noted that these are not actual demand for the construction of plant as several externalities may sway household decisions to demand the construction of biogas plants. However, the significance of this observation should be noted. It is also the case that richer households indicated that they would self finance the cost of constructions.

3.2.4

Household Access to Financial Services

According to the survey result, VBARD and VBSP are two main banks that provide micro credit for the individual household in rural area. Beside, many households know the WU as a social organization, which also participates strongly in credit activities.

Current VBARD policy allows farmer household to borrow less than 10 million VND without asset collateral. However, in order to reduce the risks VBARD has issued some hard lending conditions such as guarantee by land certificate, approval/confirmation by the commune authority, submission of business plan, etc. At least in one case this stringent requirement by VBARD has refrained a household from borrowing a micro credit (< 5 million VND). Households unable to obtain a land certificate cannot borrow VBARD credit. The land certificate is not used as a collateral, but as a validation of land use and ownership, and to deter borrowers seeking loans from other sources.

The main target groups of VBSP are the poor and households targeted under a social policy agenda. VBSP has also been responsible for some government programs (e.g. Water and Sanitation Program, Livelihood and Vocational Training Program, etc). The influence of VBSP is quite strong in the mountainous and remote provinces, where the Government has been operating many subsidy programs, compared to the provinces that have favorable socio-economic conditions.

WU has a wide network at all administration levels. It also has close relationship with VBARD and VBSP, as well as implementing some donor projects to provide financial services to rural households. WU cooperates with banks (VBARD) as a credit guarantor.

Table 6 indicates some 76 percent of total visited households informing they have taken credits from banks or MFIs¹². Most borrowings are used for livestock activities. Table 6 also indicates VBSP having strong influence in upland provinces, where the Government prioritized support policy is implemented. Dac Lac is one of those provinces; therefore many households (56.5%) in this province borrow at a favorable condition from VBSP. Contrarily, 62.5 percent of households in Ninh Binh borrowed from VBARD, while only 16.7% of households borrowed from VBSP.

Table 6: Household Access to Micro Finance (Percentage)

	Thai Nguyen	Ninh Binh	Dac Lac	Average
1. Household got loans	70.0	80.0	76.7	75.6
2. Loan size	100	100	100	100
< 5 millions	35.0	20.8	26.1	27.3
≥ 5 millions	65.0	79.2	73.9	72.7
2. MFIs transacted	100	100	100	100
- VBARD	55.0	62.5	30.4	49.3
- VBSP	30.0	16.7	56.5	34.4
- WU	15.0	20.8	13.1	16.3

Most households have taken credits for production purpose, especially for livestock husbandry. Among 90 households visited, only 3 households in Dac Lac took a soft- loan for improving household sanitation from the Water and Sanitation Program (WSP).

The survey also showed that the percentage of overdue loan was quite low, only 3% of total households.

Analysis of exiting loans of households in terms of the various income categories indicates that richer households tend to borrow from VBARD. Average amount borrowed increases with income size, as expected. In response to our question on the amount a household would borrow, the

¹² The Consultants only calculated the transaction between household and MFIs, not with relatives or neighbors.

size of loan is higher for non-rich households, standing at around 4 to 4.5 million VND.

Table 7 Existing Loan Positions of Households

Average Annual Household income (million VND)	Existing Loan Positions (Amount in million VND)				Average period (month)	Average amount if borrowed
	From VBRAD	From VBSP	From WU	Average Amount		
Thai Nguyen						
12 - 19.99	2	3	2	3.93	26.0	4.00
20 - 29.99	4	2	0	5.50	28.0	4.57
> 30	5	2	1	6.63	22.5	3.40
Ninh Binh						
12 - 19.99	0	0	0	0.00	0.00	0.00
20 - 29.99	3	2	3	5.56	31.5	4.27
> 30	12	2	1	9.00	33.6	4.00
Dac Lak						
12 - 19.99	0	1	0	5.00	24.0	0.00
20 - 29.99	2	9	2	4.65	23.5	4.20
> 30	5	3	1	5.78	20.0	3.88

The proportion of households accessing bank credit is still low, while demand for credit remains high. The main reasons are: (i) VBARD lending condition is not really favorable for borrower; (ii) The VBSP' loan is very limited and focusing only in their target groups, not for every household.

3.2.5

Estimation of Demand For Finance by Households

Several parameters affect the demand for finance, such as terms of borrowing, access to finance, access to institutions, savings, credit needs for other priority activities, etc. An appropriate modeling for the estimation of demand for finance by households would have to take all these factors into account. We have ignored this modeling approach because of the limited time available to collect appropriate data. This section estimates the number of households that could demand credit in two simple steps by obtaining a "yes/no" response from the surveyed households. Questions asked were:

- i. Would you wish to build a biogas plant?
- ii. Would you need a loan/credit for the construction of the plant?

Demand for biogas plant construction, About 78 percent of households responded that they want to build a biogas plant. This demand stems from household's expectation to reduce environmental pollution (smell) and to save fuel expenses. From the three provinces, Ninh Binh appears to have the highest demand, some 83 percent.

Households that do not want to build biogas plant have some characteristics and they are: (i) households are relatively poorer, (ii) they have about 5 to 6 pigs, (iii) lack knowledge on biogas utilization. In addition,

some households in Dac Lac have thought that they would lose the manure if they used the animal waste to run a biogas plant.

Table 8: Demand for Micro Financial to Construct a Biogas Plant (Percentage)

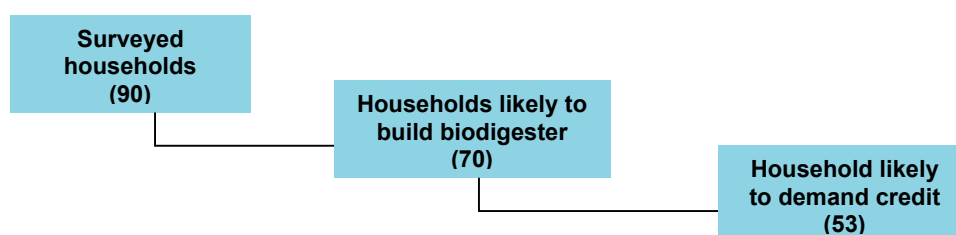
	Thai Nguyen	Ninh Binh	Dac Lac	Average
1. Demand for biogas plant	76.7 (23/30)	83.3 (25/30)	73.3 (22/30)	77.8 (70/90)
2. Demand for finance				
Comparison 1 *	53.3 (16/30)	63.3 (19/30)	60.0 (18/30)	58.9 (53/90)
Comparison 2*	69.6 (16/23)	76.0 (19/25)	81.8 (18/22)	75.8 (53/70)

Note: Comparison 1: Percentage of total household interviewed.

Comparison 2: Percentage of those households likely to construct a biogas plant

Potential Demand for credit among households likely to construct a biogas plant. Some 76 percent of those households who will construct a biogas plant want to borrow microcredit to meet the cost of investment. It means that 24 percent are able to finance the biogas plant construction cost by their own money and without accessing financial institutions. The demand for finance varies between the provinces: 70 percent in Thai Nguyen, 76 percent in Ninh Binh and 82 percent in Dac Lac.

Figure 1. Potential market for credit among surveyed households



3.2.6

Demand for Finance by Households in Specific Area

In order to obtain an estimate of the demand for microfinance we would need to focus on the six communes from the three provinces. The following methodology was used in our estimation procedure:

- i. Total number of households in the six provinces were calculated;
- ii. From the above total households involved in animal husbandry and possessing more or equal to five pigs were estimated. This formed the total likely candidate for constructing biogas plant and wanting to borrow from microfinance institutions;

- iii. Survey results provided the weights (coefficient) for each commune indicating the likely proportion of households that would construct biogas plants and would borrow from the financial institutions.

In terms of the data and information we relied on the following:

- Primary data and information collected from household survey.
- Secondary data on socio-economic situation, livestock husbandry of all villages in the commune. These data collected from commune staffs and village head.
- Information gathered from the discussions between Consultants and local experts.

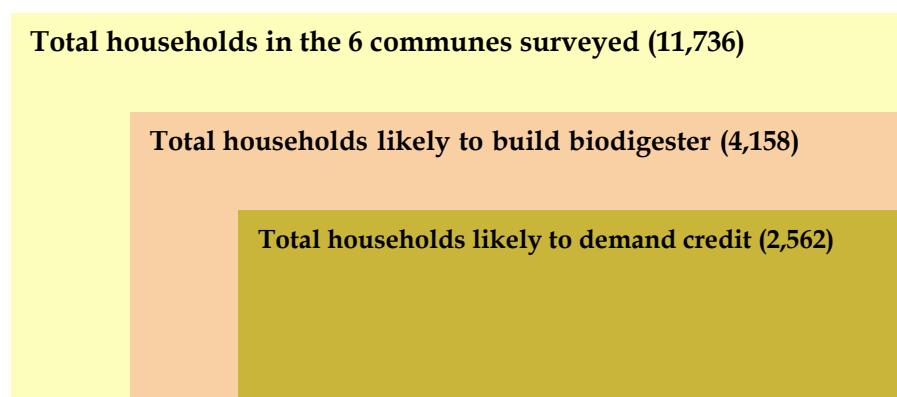
The result of the estimation is presented in Table 9. Household demand for microcredit to construct biogas plant is large. In only six communes some 2,526 households are estimated to demand microcredit, while the total communes of three provinces are 490: some 180 communes in Thai Nguyen, 145 communes in Ninh Binh, and 165 communes in Dac Lac.

Table 9: Estimation of Household Demand for Finance at Commune Level

Province	Commune	Total HHs	Number of HHs raising ≥ 5 pigs*	Coefficients	Number of HHs demand for loan
Thai Nguyen	Hoa Trung	1,100	308	0.467	144
	Tan Duc	1,816	982	0.600	589
Ninh Binh	Gia Hung	1,654	796	0.667	531
	Khanh Thuong	1,905	675	0.600	405
Dac Lac	Binh Thuan	2,561	556	0.533	297
	Ea Bok	2,700	841	0.667	561
Total	6 communes	11,736	4,158		2,526

Note: * These HHs are potential biogas plant users. They are not yet using biogas plant.

Figure 2. Potential market for credit in the communes surveyed



3.2.7 Household Expectations on Loan Conditions

The following conclusions relating to the household expectation on loan conditions are drawn:

- Some 23 percent of those households wishing to construct biogas plant would like to obtain 100 percent financing. Most of these households belong to the group of household saving less than 5 million VND per year per household. Remaining households (about 77.4%) would borrow a part of construction cost, some two-third of full cost.
- About 78 percent of households wanting credit would be in a better position with a loan period of 36 months.

Table 10: Household Expectation in Biogas Loan (Percentage)

	Thai Nguyen	Ninh Binh	Dac Lac	Average
Loan amount demanded	100	100	100	100
- Full construction cost	18.8	21.1	27.8	22.6
- A part of construction cost	81.2	78.9	72.2	77.4
Term of loan	100	100	100	100
24 months	12.5	25.8	38.9	22.4
36 months	87.5	84.2	61.1	77.6
Interest condition	100	100	100	100
- Commercial interest rate without subsidy*	12.5	15.8	5.6	11.3
- Commercial interest rate plus subsidy.	87.5	84.2	94.4	88.7
Interest and principal payment	100	100	100	100
- Interest and principal paid monthly	18.8	21.1	0.0	13.3
- Interest monthly & principal paid lump sum	31.2	26.3	55.6	37.7
- Interest monthly and principal paid quarterly	50.0	52.6	44.4	49.0
MFIs preferred	100	100	100	100
- VBARD	6.3	5.3	0.0	3.9
- VPSP	6.3	5.3	16.7	9.4
- WU	68.7	68.4	55.5	64.2
- FU (Farmer Union)	18.8	21.0	27.8	22.5

Note: * Commercial rate is considered as VBARD's lending interest rate. Currently, commercial rate is equal to 1.2%/month. Current subsidy of one million VND was used in seeking responses.

- Interest rate is an important issue relating to the decision of both lender and borrower. In fact, this is a sensitive question because most borrowers want to have loan with as low interest as possible. Therefore, the Consultants decided to raise two questions regarding this issue. The first question: "Would the household like to have a loan for biogas plant with commercial interest rate?" If the response is "no", a second question was asked: "Would the household like to have a loan for biogas plant with commercial interest rate plus a lump sum of subsidy?"

Table 10 presents responses by the households. Some 89 percent of the households wanting credit did not wish to borrow finances for biogas with commercial interest rate, as the interest rate is perceived to be too high. In Dac Lac province, as mentioned earlier, farmer households are very familiar with subsidy and targeted government support, especially the Water and Sanitation Program has also been providing loans to household to construct biogas plant with very low interest rate, only 0.5% per month. Therefore, it could be difficult to provide loans with commercial interest rate for biogas without a subsidy.

- About a half of households wanting credit would repay interest monthly and principal quarterly.
- Households also expressed their preferences about banks and MFIs that they want to deal with. Some 64 percent of households wanting credit prefer to have loan from WU. The reason for households to select local social organizations is that the lending procedure of these organizations is quite simple. In addition, the local organization is also located in the village, so it is easy for the household to carry out transactions.

CHAPTER 4 The Biogas Program

4.1

COMPONENTS OF THE BIOGAS PROGRAM PHASE II

SNV has been supporting the national biogas program of Vietnam since 2003. With support from the Dutch Government and technical assistance from SNV, a biogas dissemination project has extended to 12 provinces in Vietnam and after constructing 12,000 biogas plants by July 2005 is now aiming to complete construction of 18,000 plants at around the end of 2006. The achievements of biogas project Phase I is as follows:



- Construction of 18,000 plants in 12 provinces;
- Design of biogas plants standardized;
- Training and extension programs developed by training 18,000 farmers, 150 technicians and 350 biogas mason teams;
- Management capacity in provinces and at national level strengthened;
- Quality control system set up;

The benefits of biogas are well documented. There are environmental, social and economical benefits, some of which are outlined below.¹³

Environmental benefits

- Improvement in sanitation of farm and HH
- Prevent water pollution from farming
- Reduction in indoor air pollution
- Provision of potent organic fertiliser, improve soils
- Reduction in use of fossil fuel
- Reduces need for biomass: forest protection
- Green house gas emission reduction

Social benefits

- Creation of jobs in rural areas
- Eases hard work for women and children
- Reduction cooking/cleaning time: 4day/month
- Reduction time on fuel collection: 1day/month



¹³ These benefits have been identified by SNV and outlined in a Power Point presentation by the organization.

- More gender diversity in the kitchen
- Health: prevention of eye and lung diseases

Economical benefits

- Business development, job creation, income generation
- Energy costs savings: 4,000 to 24,000 VND/Day
- Saves expenses on chemical fertilizer
- Reduction in GHG emissions 2.5-5.0 kT equivalent CO₂ per plant/year
- CDM revenues 6-12 US \$ per kT CO₂ equivalent.

The success of this program has led to an interest and willingness by different stakeholders to expand the program throughout Vietnam to cover some 58 provinces by constructing 140,000 plants over a period of 2007-2010.

The market potential for biogas is growing with the growth in the livestock sector in Vietnam. SNV has indicated that livestock growth in 2003 shows a technical demand for some one to two millions biogas plants. The coverage of the Phase II therefore covers only some 15 percent of the technical demand.

The key components of the second phase include the establishment of an innovative financing mechanism, focus on the biogas constructors and improved quality assurance, including among others. More importantly, the second phase aims to establish a sustainable biogas sector in Vietnam. This aim requires that the second phase creates a commercially viable operation and develops the institutional structures necessary for a sustained implementation of the national biogas program.

Figure 3. Four parties in the biogas sector

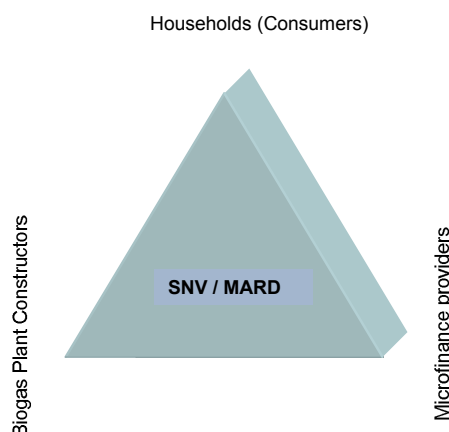


Figure 3 shows the parties involved in the biogas sector. Sustainability of the sector will involve bringing these four partners, MARD, Biogas users i.e. households, biodigester constructors and microfinance institutions under a

transactional relationship, benefiting all and maintaining the developmental objective of the program.

4.2

THE NEED FOR INTEGRATION OF DIFFERENT COMPONENTS

The SNV biogas program during the first phase limited its scope to promoting biogas plant construction by introducing quality technology and subsidizing investment costs. Training of the Biogas Program Office technicians formed a key element of the technical assistance. These support need to be continued in the second phase. Additionally, as described above, the goal set for the expanded program is wider in scope and without integrating the various components during implementation of the program there are risks of only limited achievement.

With the introduction of the financing mechanism for the sector there is a need to incorporate the operation of the microfinance providers with the promotional activities. As is explained in Section 5, microfinance providers would need to develop and strengthen their institutional capacity to become successful and viable operators in the rural areas. There is a need to incorporate such support within the overall implementation of the biogas program. Technical assistance (TA) for microfinance providers could be standalone and independently organized, and funded. Finally, there are three areas of project implementation where microfinance operators will play crucial role in sustainable development of the biogas sector.

- Promoting construction and raising demand for biogas plants, as noted above;
- Identifying poorer households within the livestock households, if a targeted subsidy is provided within the second phase; and
- Delivery of subsidy could also be made through the microfinance operators, as that would have an impact on the demand for finance and increase the number of loan accounts resulting in faster disbursement of the Biogas Fund.

The Second Phase intends to put more focus on the biogas constructors. SNV should appropriately assess whether promoting individual mason team building is the most effective approach to develop the biogas construction industry. If a decision is taken by SNV to formalize the construction and engineering process of biogas plants by developing structures and businesses it must ensure that support is provided through the second phase.

4.3

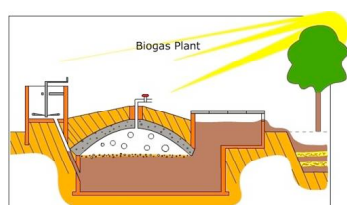
SUPPORT FOR THE VARIOUS COMPONENTS

There is a need to provide technical assistance in support of building institutional capacity for the finance components and biogas plant construction components. For the finance component support should be

provided for Fund management and administration. Sacombank has already indicated the need for technical support in managing and administering the Fund as they lack experience in wholesaling and in such programs involving relatively large accounts in the rural areas. Microfinance providers, such as the Women Union would also need technical support for developing organizational set up and human resources. The need for technical support has been indicated to the Consultants by both Sacombank and by the microfinance providers.

In terms of development of biogas industry there should be support for a biogas enterprise development program. This support could be standalone or integrated with SME and market access programs currently being implemented by ILO, ADB and SNV.

CHAPTER 5 Biogas Constructors



The Biogas plant comes in different size and make. The average cost of 8 to 12 m³ diameter plant is some VND 4.5 to 5 million. During Phase I larger biogas plants of diameter 20 m³ has been also constructed. In many cases the construction of the biogas plant require kitchen improvement and other reconstruction work that is estimated to cost some 120 percent of the plant costs.¹⁴ The average full investment cost could be within the range of VND 8 to 10 million.

The Biogas program has trained some 350 biogas masons at the commune level. These masons have acquired the technical knowledge and skills to construct biogas plants. The SNV technical assistance team trains the technicians from the biogas program office of the MARD and they in turn impute knowledge and skills to the masons at the local level. The mason team, usually consisting of several members (2 to 5), has been set up at different provinces as informal individual groups.

It has been stated by SNV that the interest to set up formal businesses by mason teams is low, primarily because of tax reasons. Our discussions with mason teams provided several other reasons and they are:

- demand is volatile and not sufficient to operate a formal company;
- technicians cannot be engaged full time with low demand for plant construction;
- do not have the ability to find skilled and reliable staff;
- mostly familiar with the individual assignment.

The above indicates several barriers for formalizing biogas construction and engineering process. The Enterprise Law 2005 has attempted to reduce the entry barriers for new business. However, they still remain substantial and it cannot be expected that without a supportive structure new enterprises in the biogas sector will be operating in the near future. This appears to be the case as the Consultants learnt from discussions with a large team of masons operating in Dac Lak and also several smaller teams in Ninh Binh. This team leader in Dac Lak, Mr. Dinh, is wary of paying taxes and to keep permanent workers in the pay roll because of costs involving social insurance and also uncertainty of regular work.

¹⁴ Biogas User Survey 2005

In Dac Lak, a biogas construction company, Nghia Hung Biogas Technology Company, has been operating since 1999. The company has built about 6,000 plants so far. Detail operational performances and financial position of this company is not available. Contracts are made directly with the households and construction is carried out with payment in cash. It is not known whether there are other companies operating in the biogas market in Vietnam.

Is Nghia Hung Biogas Technology Company interested in being an intermediary to provide credit to biogas users? The company management does not want to be an intermediary for the provision of microfinance. Collecting loans and monitoring repayments are an issue and it involves substantial risks. They do not have the staff and the capacity to collect payments involving large number of households in different locations.

Table 11: Construction cost of Biodigester

Particular	Construction cost of Biogas plant	
	Price at July 2006	
	Dac Lac	Ninh Binh
	10 m ³	10 m ³
Pipes and Fittings	370,000	450,000
Appliance cost	496,000	350,000
Construction materials		
Bricks	1,350,000	1,600,000
Stone	100,000	
Sand	230,000	50,000
Gravel		20,000
iron	30,000	30,000
Rod		
Cement	1,030,000	1,054,000
Others	120,000	
Labor cost	2,320,000	1,950,000
Construction Charge		
Total Cost	6,046,000	5,504,000
Subsidy (paid to households)	1,000,000	1,000,000
Labor contribution (by households)*	570,000	750,000
If farmer collects stone, sand and gravel **		
Loan amount needed		

Note: * Many households did not contribute labor

** It is rare that households are able to collect stone, sand and gravel. Materials are purchased

Source: Mason Teams in Ninh Binh and Dac Lak

We have attempted to obtain operational costs of a biodigester (of size 10m³), including profit margins that would accrue in this line of business. Unfortunately, it is not clear what profit margins are earned, as data specifically related to it could not be obtained. Profit may be incorporated in the labor charge, as shown in Table 11. Without detail operational records and analysis it is not possible to understand whether operating in the biogas sector is a viable undertaking. If it is, then several reasons justify

encouraging creation of companies instead of operating the biogas sector with numerous individual mason teams. They are:

- Companies dedicated to the construction of biodigester could provide economies of scale and bring costs down;
- Larger companies could undertake Research & Development and provide better technology developed through improvements;
- Companies could assure quality by obtaining a standards certificate and validating certification over time;
- Companies could provide better after-construction service and warranties which otherwise may not be possible to obtain from individual mason teams;¹⁵
- Companies could promote biogas technology, as part of the company promotion and marketing campaign;
- Companies could possibly fill in gaps on finances from household, either by offering credit and varying payment structure.

Can biogas constructors become intermediary for microfinance and loan to households? At least two minimum sets of conditions have to be fulfilled if constructors could become agents for channelling funds. Firstly, the company must be viable with positive net worth and cash flows over a period. Secondly, it must possess tangible assets to secure loans from banks. Even under these circumstances, it is best that loans taken by a company are repaid by it, as channelling the loans to the households appears redundant.

The benefits of biodigester being built by companies and the sector operated through private biodigester construction companies, as described above, is significant. They justify an active encouragement for creating an enabling environment under which enterprises could operate.

- Introduction of simple procedure to obtain business license. The Enterprise Law Enforcement Task Force, as Advisory Body, is responsible for streamlining the business licensing procedures. After being active over the period 2000-2003, its activities have slowed down considerably. Meanwhile, widespread use of unnecessary business licenses and conditions remain a major barrier to doing business, increasing entry and operational costs.¹⁶
- Introduction of a fiscal and tax incentive for a period in order to encourage entry and ensure sustainable operation of companies.
- Introduction of a standards certification system that operates under simple administrative and transparent procedures.
- Introduction of training and technical assistance programs to acquire knowledge and skills of staff.

¹⁵ We understand that mason teams are already providing post construction service, but no warranties are provided.

¹⁶ Streamlining Business Licensing, Business Issues Bulletin, Vietnam Number 14 (17) June 2006.

CHAPTER 6

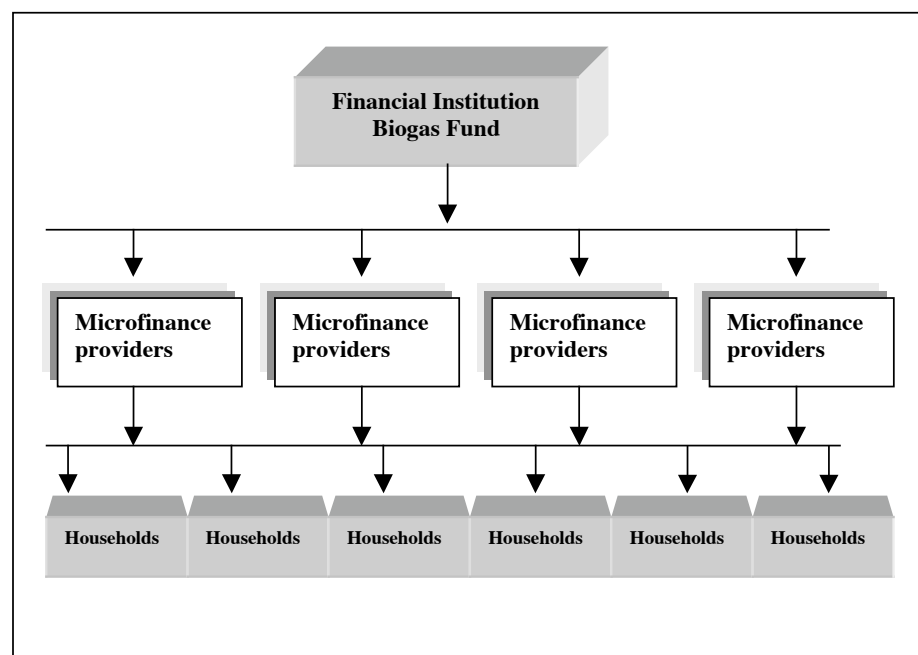
A Framework For Financing Biogas Users

The rationale for setting up a financing scheme is clearly to enable an increased access to finance by rural households for the biogas plant construction. Additionally, the financing scheme should assist in the development of viable microfinance providers operating under commercial terms and conditions.

6.1 THE BIOGAS FUND

A financing scheme for biogas users could be set up as a special scheme, a Fund (window) within a financial institution, or as a separate Biogas Fund. Figure 4 shows the linkage with financial institutions, microfinance providers and ultimate borrowers. This simple framework establishes the different options that could be available for setting up the Fund.

Figure 4. Financing Framework

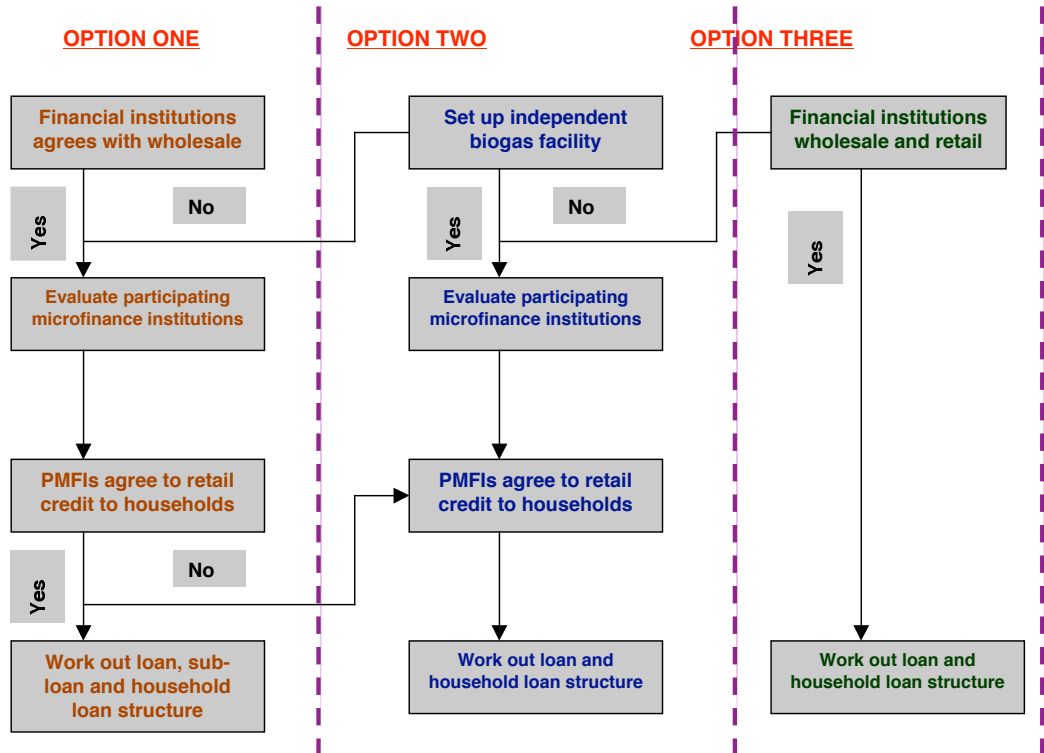


In order to meet the objectives defined above the framework must meet several criteria.

- The cost of funds need to be such that they are attractive to both the financial institution managing and administering the Fund and also the microfinance providers who will provide biogas loans to the households.
- The interest charges to the households should not be subsidized and loans must be made at market rates, which currently stand at around 1.2 percent per month. Several opinions argue that a high interest rate will deter access to finance by the households. It is true that a subsidized culture exists in the rural areas of Vietnam. However, many microfinance providers operates commercial transactions and from their experiences it is understood that provided appropriate measures are taken access to finance should not be an issue. The question would still remain that the program must make finances attractive to the beneficiaries, particularly since investment for biogas plant is not the top most priority in household decisions.
- In order to maintain a steady demand for finances promotion of the financial product will play a key role. The microfinance providers, the biogas constructors and the Fund Manager could carry out promotion. However, they need to be coordinated and supported by the SNV second phase program. In this respect, construction of 140,000 biogas plants should be tied with the financing of investments. Additionally, microfinance providers could expand their operations beyond the SNV programs to finance other private or national initiatives.
- Microfinance providers must operate a viable biogas credit program. Viability can only be ensured when earnings from operating a biogas credit program meets all expenses and risks of retailing loans to rural households, as well as retains profit.
- It is understood that SNV and MARD would be providing subsidy to the households. A current assessment is ongoing to learn the amount of subsidy required and also on how to target the subsidy to the poorer livestock households. It is important for the financing framework to learn that a flat rate subsidy will be provided. This may act as a catalyst to attract demand for finances by the households, as our calculations indicate that a one million VND of subsidy on a four million investment will bring down the effective interest charge from 1.2 percent a month to 0.9 percent a month. The subsidy could also act as a promotion tool, particularly to poorer livestock households, and to fulfil pro-poor objectives of the program.
- It will make good sense to provide the loans to households as a medium term credit (3 years) with a grace period. Microfinance providers could then ensure repayments by operating a savings & loan program, particularly with poorer livestock households, similar in nature to the rural drinking water and sanitation program of the World Bank implemented in four red delta provinces.

Consideration has been given to several options for managing and administering the Fund. Figure 5 graphically shows the three main options of structuring the Fund.

Figure 5. Options for Fund Management and Administration



The above options leave out the possibility for FMO to participate in equity financing in a microfinance institution. The main reason for it is that presently in Vietnam there is no significant private microfinance operator. It also appears that transformation into private operators for some of the more effective socio-political microfinance providers will take time and cannot be predicted with any certainty at this stage.

The second option of an independent facility is set out and assessed in case financial institutions are not willing to partner with FMO to set up the Biogas Fund. The main drawback of this option is that it does not provide opportunity for institutional development in fund management for biogas program. It also involves creating new structures and institutions, which may not be desired at this stage. If FMO would be willing to set up a facility without partnering with local financial institutions, the independent facility could manage and administer it through the participation of microfinance providers.

VBARD, CCF and Sacom all three financial institutions showed interest in setting up the Fund in their own organization and also retail to rural

livestock households. This option has the limitation that it allows little scope for one of the program objective, i.e. development of the microfinance institutions. Although there are possibilities for other microfinance providers to participate within this option, in addition to the Fund Manager retailing to the households, there would be conflict of interests, which would need to be addressed.

The advantages and disadvantages of the three options are set out below in Table 12.

Table 12. Advantages and disadvantages of different options

Options	Advantages	Disadvantages
Option 1: Financial institutions wholesale and microfinance providers retail	<ul style="list-style-type: none"> ▪ Opportunities for development of rural financial market ▪ Opportunities for institutional development of both wholesaling and microfinance providers ▪ Opportunities for several microfinance providers to participate ▪ Greater reach and increased access to finance by livestock households 	<ul style="list-style-type: none"> ▪ Attracting financial institutions and microfinance providers may become difficult, if cost of funds is not reasonable.
Option 2: Independent facility operates Biogas Fund and microfinance providers retail	<ul style="list-style-type: none"> ▪ Opportunities for institutional development of microfinance providers ▪ Opportunities for financing of biogas programs, even when financial institutions are not willing to enter into an agreement ▪ Opportunities in the future to introduce wholesaling operations 	<ul style="list-style-type: none"> ▪ FMO may not find this a suitable mechanism as partnering with a formal financial institution is not possible ▪ Do not provide opportunities for institutional development of wholesaling funds ▪ The Facility would need to engage professional experts under a technical assistance program throughout the duration of the Facility.
Option 3: Financial institutions wholesale and also take the function of retail operation	<ul style="list-style-type: none"> ▪ Opportunities for cost of funds being low ▪ Opportunities to focus on one institution and strengthen its capacity for financing biogas programs ▪ Only VBARD has the scope to undertake both operations and its experience in the rural financial market may provide an advantage 	<ul style="list-style-type: none"> ▪ Do not provide opportunities for institutional development of retail operations, unless this option also encourages participation of a number of MFIs ▪ There may be conflict of interest with the fund manager and microfinance providers in allocation of sub-loans that would need to be managed ▪ Reach to rural households may be limited

6.2

MANAGEMENT OF THE FUND

The Consultants held discussions with Sacombank, VBARD and CCF to assess their willingness and interest to manage and administer the Biogas Fund. All three financial institutions have indicated their interest in the Biogas Fund. The Fund will be a simple loan from FMO to the financial

institution, which will then be on-lend to MFIs for the provision of credit to rural households. However, since Sacombank is the preferred partner of FMO further details have been worked out with Sacom. It is our understanding that Sacombank's final decision to participate will depend on management assessment and decision. In order to assess and reach a decision, Sacombank will in the coming weeks seek to clarify further details of the fund and its operational principles.

Several issues have been discussed and it is appropriate to outline those in order to reach a fuller understanding at a later date. They are:

- The interest rates to the ultimate beneficiaries, i.e. rural households could be within the maximum range of 1.1 to 1.2 percent per month. Higher rates would become infeasible in that demand for finance could become too low to sustain the Fund.
- The participating microfinance providers should be provided a reasonable spread to cover their administrative cost of retailing the fund, risks and profit margin. The cost of funds to the participating microfinance institutions should stay lower or at least within the current domestic cost of funds, if VBARD, People's Credit Fund and other microfinance providers should participate in the sub-loans from Sacombank.
- Sacombank will consider estimating its own cost of fund by taking account of the costs involved in wholesaling the Fund, which would not involve the expenses of retailing operations, as is the case for all its other funds.
- FMO needs to consider that this is not a normal commercial financing program, but is governed by developmental objectives, such as environmental improvement, establishing an improved rural financial market, particularly microcredit operation. Those considerations then should guide the principle based on which funds are loaned by FMO.

6.3

PARTICIPATING MICROFINANCE PROVIDERS

Microcredit environment in Vietnam, in substantial measures, operates informally. The formal sector is dominated by VBARD and VBSP serving some 2.5 million beneficiaries. The two other institutions involved are People's Credit Fund (PCF) and Vietnam Postal Savings Service Company (VPSC). The latter is only a savings institution.

VBSP was created in 2003 to take over the small-scale policy and directed lending programs previously administered by the State Owned Commercial Banks, including VBARD, and other government entities, such as the VBSP. These administered credit programs are targeted to the poor and disadvantaged regions focusing on poverty reduction. Credit is provided at a subsidized rate usually carrying a charge of some 0.5 to 0.6 percent per month. The PCF is a network of voluntary rural credit unions established in March 1993 under the Decision No. 390/Ttg of the Prime Minister. The

Central Credit Fund (CCF) with 24 branches throughout Vietnam is an apex body of the PCF network with organizational and operating principles similar to PCFs. CCF is a cooperative credit institutions and its commercial banking operations includes, fund mobilization, lending to member PCFs and other direct lending, investments, payments, discounting papers and bills and provision of other banking products and services. CCF, including the 905 PCF network, and VBARD operates commercially and mostly do not provide subsidized credit.

A myriad of semi formal actors are involved in Microcredit operations, including international NGOs operating in Vietnam.¹⁷ All together they serve less than half a million clients throughout Vietnam, mainly in the more remote areas and implementing specific poverty reduction programs. Semi-formal microfinance providers consist of programs sponsored by NGOs, mostly international, and those established by socio-political organizations. Among the latter microfinance organizations the Vietnam WU has the most extensive network to reach the rural poor. The VWU is a socio-political organization, but is involved in credit programs as a part of their objective of promotion of women development and assistance to poor households. The operation of the VWU is decentralized and each provincial women union is engaged in various forms of savings & loan program. The Women Union has been operating savings & loan programs very successfully and also has been important partner of the credit projects run by VBARD, VBSP, international organizations and national programs. Recently, bilateral and multilateral donors have been using provincial Women's Unions to run and operate microcredit projects, similar in nature to the biogas projects. Those programs and projects targeting the very poor have subsidized credit to the rural poor and also own capacity building programs of the WU.¹⁸ Although the WU has wide reach in the rural areas and strong experience in microcredit programs there is a lack of institutional capacity in terms of in-house system for financial management and accounting, and sound management system for monitoring and tracking activities. There are also shortages of well-qualified staff. These weaknesses coupled with the lack of experience in operating commercially run credit operations will require development of institutional capacity, if their participation is sought in the financing of biogas programs.

With the exception of VBARD and PCF, most microcredit operations subsidize loan interest and also provide other subsidies. While the market monthly rate varies from 1 to 1.2 percent, the subsidized credit provides funds at 0.5 to 0.65 percent. Several international NGOs, however, operate their programs at a market rate, for example Plan International.

¹⁷ ILO assessment refers to these groups as semi-formal differentiating them from more informal groups such as moneylenders, traditional system of savings and credit, etc.

¹⁸ The recently approved World bank financed Rural Drinking Water and Sanitation program in four red delta provinces provides credit to the rural poor below the market rate of 1.2 percent per month and also allows the provincial Women Union to finance own capacity building programs with 5% of the loan funds.

The program should expect a number of formal and semi-formal microfinance providers to participate in the Biogas Fund sub-loans. Our assessments indicate that VBARD, PCF, several provincial women union and other smaller microfinance providers would participate in the subloans, if the terms and conditions were attractive.

UNDERSTANDING THE REQUIRED SPREAD BY WU

We have undertaken an income and expenditure analysis for one of the provincial women unions in order to understand thoroughly the required spread under which WU could viably operate a microfinance operation at commercial rates and without any subsidy for administrative expenses. The result of our analysis is shown in Table 13a and Table 13b overleaf. The assumptions for the analysis are as follows:

Income

Annual income is derived from 600 loans at an average size of 3 million VND for a total loan of VND 1,800 million as tranche 1. There are five tranches equaling the same number and amount of loans, which gives a total of 3,000 plants financed at the end of five years and a loan amount of VND 40 billion (equivalent of US \$566,000)

Household Loan terms: Interest charge is 1.2% per month. Repayment is in equal installment and paid within 3 years, including a grace period of 6 months.

Expenditures

Allowances

Village Groups: 30 villages/groups consisting of 20 households equals 150 villages in 5 years. There is 2 staff per group/village equaling to 60 staff that are paid @ VND 50,000 per staff per month

Commune staff: 10 communes consisting of 3 villages equal to 3 staff per commune with a total of 30 staff that are paid 2 VND 50,000 per staff per month

District staff: 3 district per 10 commune equal to one staff per district with a total of 3 staff that are paid @ VND 100,000 per staff per month

Provincial staff: 5 staff with one lead staff that are paid 50% of monthly salary averaging 1.3 million per staff per month.

Daily Subsistence Allowance

Commune staff: VND 50000 per staff per visit to village equal to 50000 x 3 staff x 30 villages

District staff: VND 50000 per staff per visit to the commune/village equal to 50000 x 1 staff x 3 districts

Provincial staff: VND 50000 per staff per visit to commune/village equal to 50000 x 30 Commune

Transport

Average cost is VND 20,000 per month on fuel per staff at commune, district and provincial levels

Sub-loan repayment terms

Interest is 0.9% per month. Loan will be repaid in equal installment within 4 years, which includes a one-year grace period.

The results indicate that provincial women union could very well profitably manage a biogas credit operation, if loans are provided at commercial rates. A spread of some 0.35 to 0.4 percent provides a handsome opportunity for expansion and business development.¹⁹

Table 13a. Cash flow analysis of Provincial Women Union sub-loan operation**Cash Flow analysis**

	Year 1											
	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Cash Income												
Income per loan	36,000	36,000	36,000	36,000	36,000	36,000	134,800	133,600	132,400	131,200	130,000	128,800
Annual income	21,600,000	21,600,000	21,600,000	21,600,000	21,600,000	21,600,000	80,880,000	80,160,000	79,440,000	78,720,000	78,000,000	77,280,000
Expenses												
Allowance												
Village groups	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
Commune staff	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
District staff	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000
Provincial staff	6,500,000	6,500,000	6,500,000	6,500,000	6,500,000	6,500,000	6,500,000	6,500,000	6,500,000	6,500,000	6,500,000	6,500,000
DSA												
Commune staff	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000
District staff	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000
Provincial staff	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Transport												
Commune staff	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000
District staff	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
Provincial staff	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000
Loan servicing												
Repayment of interest	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000	16,200,000
Net cash/Income	(10,990,000)	(10,990,000)	(10,990,000)	(10,990,000)	(10,990,000)	(10,990,000)	48,290,000	47,570,000	46,850,000	46,130,000	45,410,000	44,690,000
Accumulated cash/Income	(10,990,000)	(21,980,000)	(32,970,000)	(43,960,000)	(54,950,000)	(65,940,000)	(17,650,000)	29,920,000	76,770,000	122,900,000	168,310,000	213,000,000

The participating provincial women unions would be required to prepare a business plan and cash flow analysis, similar but more comprehensive to the example shown above. This cash flow analysis and guarantees from the provincial authorities could provide the conditions for participation in the sub-loan program. For formal financial institutions meeting eligibility criteria would be sufficient for participation. There is a need to set out the eligibility criteria, which would be prepared when further details on the FMO loan is available.

¹⁹ It should be noted that the data and analysis are by no means comprehensive. But, it indeed provides a good measure of retail operation by provincial women union with their extensive reach in rural areas and limited overhead costs.

Table 13b. Cash flow analysis of Provincial Women Union sub-loan operation

Year 2											
Month 13	Month 14	Month 15	Month 16	Month 17	Month 18	Month 19	Month 20	Month 21	Month 22	Month 23	month 24
127,600	126,400	125,200	124,000	122,800	121,600	120,400	119,200	118,000	116,800	115,600	114,400
76,560,000	75,840,000	75,120,000	74,400,000	73,680,000	72,960,000	72,240,000	71,520,000	70,800,000	70,080,000	69,360,000	68,640,000
36,000	36,000	36,000	36,000	36,000	36,000	36,000	134,800	133,600	132,400	131,200	130,000
21,600,000	21,600,000	21,600,000	21,600,000	21,600,000	21,600,000	21,600,000	80,880,000	80,160,000	79,440,000	78,720,000	78,000,000
98,160,000	97,440,000	96,720,000	96,000,000	95,280,000	94,560,000	153,120,000	151,680,000	150,240,000	148,800,000	147,360,000	145,920,000
3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000
6,500,000	6,500,000	6,500,000	6,500,000	6,500,000	6,500,000	6,500,000	6,500,000	6,500,000	6,500,000	6,500,000	6,500,000
3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000
2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000
150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000
1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000	2,700,000
150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000
1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000
60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000
600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000
60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000
65,750,000	65,300,000	64,850,000	64,400,000	63,950,000	63,500,000	63,050,000	62,600,000	62,150,000	61,700,000	61,250,000	60,800,000
71,880,000	71,160,000	70,440,000	69,720,000	69,000,000	68,280,000	126,840,000	125,400,000	123,960,000	122,520,000	121,080,000	119,640,000
71,880,000	143,040,000	213,480,000	283,200,000	352,200,000	420,480,000	547,320,000	672,720,000	796,680,000	919,200,000	1,040,280,000	1,159,920,000

6.4

PILOTING THE CREDIT SCHEME

It appears to us that the demand for finance would perhaps be less than the full cost of the biogas plant and other animal house, kitchen and toilet improvements. The average total cost is some 10 million VND²⁰ and if financing is structured on a 60:40 debt ratio and some 40 percent of the 150,000 planned households use credit the total demand for finance under the SNV program would stand at some US \$15 million. However, there is strong justification for starting the biogas-financing scheme within a limited location and scope and they are that,

- i. the rural households need to be aware of the benefits of constructing the biogas plant and the advantage of accessing finance through a financial institution;

²⁰ The average cost of biogas plant is 4,500,000 VND and investments on improvements are 120 percent of the biogas plant cost. These figures have been provided by the biogas user survey.

- ii. the microfinance providers need to gradually develop and strengthen institutional capacity and financial management systems;
- iii. management and administrative system and procedures for wholesale operations need to be gradually developed and put in place;
- iv. the transformation from a subsidy-environment to a commercial-environment will take time and in the beginning may have unexpected pitfalls.

In view of the above, piloting the financing scheme would make better sense. There would then be a need to select a few provinces in which the financing scheme would be introduced. Detail criteria should be established based on which the provinces will be selected. These selection criteria could include the following:

- i. A large number of livestock households exists;
- ii. Households have a history of accessing finance from financial institutions;
- iii. Microfinance providers in the area, particularly women union, have strong reach to rural households and are professionally managed;
- iv. Microfinance providers in the area operates successful credit programs;
- v. Financial institution managing the Fund has a presence in the area;
- vi. SNV biogas program II will put a strong focus on the area with promotion and construction activities;
- vii. Mason teams have solid network with households and are technically strong.

It is not possible to define all the locations in which the credit program should be implemented without additional assessment and investigations, since data and information has not been available to the Consultants. For the surveyed areas, it appears to us that the three provinces, Ninh Binh, Thai Nguyen and Dac Lak should be included in the pilot phase. They meet almost all the selection criteria outlined above. Our survey indicates that from the surveyed six communes only potential market for biodigester would be derived from 4,100 households and a potential market for credit from 2,500 households.

The number of provinces participating in the financing scheme program should be such that at least it covers 35 to 40 percent of the planned target for biogas plant construction in the Second Phase. That would provide a market for some US \$5 million. With several microfinance institutions participating in the program and operation of a two-tier credit structure, an amount of about US \$5 million should be considered as the minimum loan to be extended by FMO to Sacombank. This number would then ensure the viability and a successful implementation of the pilot program.

6.5

SUBSIDY MANAGEMENT

SNV and MARD will provide subsidy to rural livestock households. The subsidy needs to be targeted and managed. A separate study is assessing the criteria for targeting the subsidy and also to determine the amount. It appears that a two-tier subsidy system will be introduced. From the point of view of biogas-financing scheme it is important how the subsidy is operated and managed. A few remarks are made to that respect.

- It is suggested that the microfinance providers carry out the actual identification and selection of the poorer livestock households. Targeting by administrative officials mostly is inefficiently and poorly administered. Microfinance providers would need to get a loan application completed, which should profile household income and repayment capabilities. That profile should form the basis for evaluating the poorer households. Any other generalized pre-determined criterion has ample opportunity to miss the target and to be abused. It is also suggested that microfinance providers recommend applicants eligible for subsidy, which then could be approved by a steering committee, or simply by the biogas office.
- It is suggested that the Fund Manager administers the financing of the subsidy. The Fund Manager through the accounts of the microfinance providers could finance all approved subsidy applications periodically.
- Identifying target beneficiary for subsidy and administering it through the financial institutions has the merit of not only effectively operating the subsidy; it also provides a link to promoting the biogas fund and increasing demand for finance.

CHAPTER 7

Conclusions and Recommendations

In order to fulfil the objective of setting up a financing scheme for the biogas users by linking financial institutions with microfinance providers the Consultants assessed and researched various components of the biogas sector, focusing on financial institutions. The research covered the following:

- Review and assessment of the Biogas Program implemented during 2003-2006;
- Review of the BPII that is planned for implementation during 2007-2010;
- Review and assessment of the microfinance sector and providers;
- Review of projects and programs similar in nature to the biogas program and where credit schemes are operating;
- Review and assessment of legal and regulatory environment for microfinance and biogas constructors to lend credit to households.
- Assessment of households engaged in animal husbandry in specific areas to draw some reasonable conclusions on demand for credit and expectations on their borrowings;
- Assessment of the mason teams and technicians engaged in the construction of biodigester;
- Review willingness and interests of MFIs to participate in the credit scheme;
- Review willingness and interest of banks to provide commercial funds to MFIs; and
- Review of the terms and conditions of loan from FMO, sub-loans to the microfinance providers and credit to the biogas users.

7.1

FINDINGS AND CONCLUSIONS

Section 3 to 6 detailed our review, assessments and findings. Several conclusions were also drawn in those sections and it is useful to summarize our findings and conclusions.

i. The biogas program operated by MARD/SNV is aiming to complete construction of 18,000 biodigester over the four years period, 2003-2006. Although biogas users obtained a flat subsidy of one million VND to cover costs of construction, very insignificant number of households borrowed from financial institutions to carry out expenses. The reasons are (a) unavailability of a financial product to the rural households, (b) a lack of a pro-active effort on the part of the financial institutions to enter the market, (c) a lack of an appropriate environment in which microfinance providers could operate commercial credit programs, and (d) a lack of household access to credit due to perceived administrative procedures to borrow.

ii. Knowledge of biodigester and its benefits are well acknowledged by households, as indicated in our survey of households who currently do not own a biodigester. The positive impact of BPI in surveyed areas contributed to such knowledge and understanding, as well as farmer's keen interest to learn from neighbours and mass media. The latter is encouraged by the growth of livestock in recent years. The survey indicates that some 78 percent of households would build a biodigester. The survey also indicated that demand for biodigester is greater among the households earning annual income over 30 million VND compared to households earning less.²¹ The low potential demand among the latter income groups is due to a lack of knowledge of biogas utilization and also because they keep smaller number of livestock, some 5 to 6 pigs. This observation has a number of significance, among them (a) that marketing biodigester will remain a key activity area, (b) that it will be essential to incorporate a marketing program for the financial product by the financial institution and also the microfinance providers, and (c) that during the pilot phase of the credit scheme considerations should be given to target the higher income groups.

iii. In the specific areas where survey was implemented potential demand by households for credit is reasonably high.²² Even with a 20 to 30 percent lower actual demand the credit scheme could play a major role in establishing a financing scheme for the biogas sector. The terms and conditions of loans to the biogas users will impact the actual demand. The survey results indicate that operating a credit scheme with commercial rates without a lump sum subsidy may considerably decrease actual demand.²³ The reasons for this are several, mainly that rural households are used to subsidized programs operated by state owned financial institutions, as well as the perceived risks of borrowings by rural households. However, provision of a flat subsidy rate and operation of the credit scheme with commercial rates ensures a large interest for credit and willingness to borrow.

iv. An assessment of the expected credit conditions by the households indicate that those who intend to partly use own funds would borrow 50 to 80 percent to finance remaining expenses for the biodigester. It could be concluded that an

²¹ From the surveyed households, 96% of households with annual income more than 30 million have indicated interest in building biodigester, while only 60% of households with less income have demand for biodigester.

²² From among the households most likely to build a digester some three quarters of the households indicated their interests to borrow from financial institutions

²³ From among the households most likely to demand credit only 11% indicated they would borrow with a commercial interest rate of 1.2% per month. In Dac Lak province, where VBSP presence is high and farmers have been supported with directed credit programs, only 6% of households indicated they would borrow at commercial rates.

average of 60/40 borrowed and owned funds would be utilized towards financing the cost of biodigester. Majority of the surveyed households expects a credit term of 24 to 36 months. Access to finance in the surveyed areas is high with VBARD, VBSP, WU, FU and PCF operating credit programs. VBARD lends at 1.0 to 1.5 percent per month, while both VBSP and WU with their targeted credit charges 0.5 percent per month. However, as explained above in point (iv), it would be realistic and possible to introduce a commercial rate of 1.15 to 1.25 percent per month to attract potential biogas users, particularly when subsidy is available and the credit repayment would be within 2 to 3 years and perhaps with a grace period.²⁴

v. A large number of mason teams consisting of 2 to 5 members operate informally at the local level. There are very few known companies involved in the construction of biodigester. Because the mason teams are individual and informal groups it is not possible to channel credit through them to the biogas users. No credit structure could be set up for the sub-loan from the financial institutions. Discussions with a company in Dac Lak concluded that companies would not take on the role of intermediary for the provisioning of microfinance.

vi. A number of formal and informal microfinance institutions operate in Vietnam, mostly dominated by VBARD and VBSP, two state owned financial institutions. Among informal microfinance organizations WU operates several savings and loan programs, has a strong network at commune level and also is experienced in implementing donor programs. It is expected that VBARD, PCF, provincial WU and a number of smaller microfinance institutions (TYM, CEP) would participate in providing microfinance under the biogas credit scheme, if terms and conditions are found attractive. The willingness of VBARD, PCF and WU has been assessed and has been found to be positive towards their involvement in loaning to the households and also to take commercial funds from a financial institution. But, they also indicated that as long as the cost of funds is less or equal to the existing domestic cost of funds they would be interested to participate in the provision of microcredit. The current cost of funds is around 0.65 to 0.67 percent per month. The overhead cost of VBARD is around 0.5 percent, which would allow loaning to ultimate borrowers at the indicated rate of around 1.2 percent per month. The overhead expenses of Ninh Binh provincial WU was determined to be around 0.35 to 0.4 percent per month.

vii. In order to assess which banks would be willing to provide commercial funds to MFIs, we approached Sacombank, VBARD and also discussed with CCF. All three indicated their preliminary willingness. However, a number of details need to be worked out and understood before a final commitment from anyone can be expected. A more firm discussion was held with Sacombank, as it is the preferred partner of FMO. Sacombank did not indicate its overhead costs and under what terms and conditions it would loan to MFIs. Currently, these discussions are ongoing. Failure to reach an agreement with Sacombank should lead to a roll out of strategic discussions with VBARD.

viii. Maximum interest to be charged by FMO cannot be determined at this stage. However, since the administrative cost of operating the credit by Sacombank would

²⁴ Although survey results indicate a large number of households obtaining 0.5% interest per month, it is understood from VBARD and PCF that they operate with commercial rates of 1.2 to 1.25 percent per month. This is an encouraging sign.

be less than their normal operations it is expected that a spread of some 0.15 to 0.2 percent per month would be a reasonable estimate. In that case it could be expected that the maximum interest rate that could be charged by FMO would stand at around 0.55 to 0.60 percent. It should be noted that these estimates shows what would be an expected condition from the different actors and that final results will differ depending on greater analysis and results of negotiations reached between FMO, banks and MFIs.

ix. The framework for setting up the credit scheme will not involve creating any new structures or institutions. The MFIs have their procedures and structures to extend credit to rural households, particularly VBARD's mobile banking and group lending programs and that of the WU, which has strong rural network and operates group savings and loan programs. However, much as the participation of the WU is desired and they would be willing to participate in a program operated more commercially, without supporting capacity development within the selected provincial WU sustainability of the credit scheme may remain questionable. VBARD has also shown interest in providing training programs to the MFIs.

7.2 RECOMMENDATIONS

7.2.1 Structure of Credit Scheme

Three options have been identified in Section 6.1 as potential framework for financing the biogas program. The discussions outlined in Sections 6.1 to 6.5 and the pros and cons of each options described in Table 11 provides us an understanding of the framework that would best suit the prospect for setting up the credit scheme. This section outlines our recommended framework for setting out the biogas-financing scheme.

We are recommending that Option 1 should be implemented. This option could include Sacombank, VBARD or CCF as the Fund Manager and different microfinance providers, including VBARD, CCF (PCF), Women Union at the provincial level participating in sub-loans. However, as indicated to us by FMO their first choice, as partner, would be Sacombank, we have assessed this opportunity during the field mission and discussed with Sacombank their interest and willingness to participate in the credit program. Sacombank had indicated their willingness. Because of lack of time further detailed discussions could not be carried out, which leaves the working out of the final agreement between FMO and Sacombank, together with the preparation of documentations, for the very near future.

Organizational Framework

- i. FMO should attempt to set up the biogas fund in Sacombank
- ii. Sacombank will set up a Special Window called "Sacom Biogas Fund" appoint a Fund Manager in order to manage and administer the Fund

iii. The Fund manager will seek participation of a number of formal and semi-formal microfinance providers to whom sub-loans will be provided for ultimate loaning to the rural livestock households. The expected participants are VBARD, PCF, and several provincial WU.

Terms of loans and sub-loans

iv. The lending and re-lending rates will be determined based on biogas loans being provided to households at market interest rates, currently at 1.2 percent per month.

v. The participating microfinance providers should be provided a reasonable spread to cover their administrative cost of retailing the fund, risks and profit margin. In determining the lending and re-lending rates consideration should then be given to the minimum spread of individual microfinance providers keeping in mind that the cost of fund to the microfinance providers do not exceed the average domestic cost of funds. VBARD indicated that their spread would have to be somewhere around 0.5 percent a month²⁵, our calculations indicate that provincial WU would need a spread of around 0.35 to 0.40 percent for a sustainable sub-loan operation.

vi. Sacombank will consider estimating its own cost of fund by taking account of the costs involved in wholesaling the Biogas Fund, which would not involve the expenses of retailing operations. Accounts to be managed by Sacombank may run up to 10 to 12 depending on how many provincial WU participate in the credit program. This should have little overhead burden on Sacombank and a spread of 0.2 to .25 could be a reasonable estimate.

vii. Current cost of funds to financial institutions is around .65 to .68 percent per month in Vietnam. FMO needs to consider that this is not a normal commercial financing program, but is governed by developmental objectives, such as environmental improvement and establishing an improved rural financial market, particularly microcredit operation. Those considerations then should guide the principle based on which funds are loaned by FMO. Maximum charge of FMO loan to Sacombank would need to take account of the cost of funds for sub-loans plus the overhead of Sacombank. The loan by FMO should be long-term; 7 to 10 years with grace periods and denominated in Vietnam Dong.

viii. The sub-loans to the microfinance providers should be long-term: 4 to 5 years with a grace period.

ix. The sub-borrowings by the microfinance providers will be for medium term (three years) with a grace period.

General administrative procedure

x. Eligibility of participating semi-formal microfinance providers will be based on an evaluation of a comprehensive business plan for biogas sub-loan, professional strength and organizational capacity. The Fund Manager will evaluate the application and approve participation by formalizing a contract of agreement for sub-loan.

borrow even with ²⁵ We understand that this is a requirement by the World Bank on VBARD

- xi. Eligibility of formal financial institutions, such as VBARD, CCF (PCF) will be based on their willingness to participate in the program provided by a completed application and formalized by a written contract of agreement for sub-loan.
- xii. Fund allocation to microfinance providers should be based on utilization of sub-loans and appropriate criteria for such allocation will be developed.
- xiii. The microfinance providers will submit monthly quarterly report on the utilization of the sub-loan to the Fund Manager.
- xiv. The Fund Manager will prepare annual report on the Biogas Fund for submission to FMO and others.
- xv. The Fund Manager will carry out periodic benefit monitoring of the Biogas Fund

7.2.2 Piloting the Credit Scheme

- xvi. The scheme should be piloted in selected provinces and with a facility of some US \$5 million. The areas (provinces) are to be selected based on the criteria set out in this report in Section 6.4, among others. It is recommended to include the three surveyed provinces of Ninh Binh, Thai Nguyen and Dac Lak. Other provinces should be assessed and selected.
- xvii. The pilot phase should ensure coverage of at least 35 to 40 percent of planned target by SNV biogas program phase II in order for the facility to operate with US \$5 million. This would ensure that the facility operates with US \$5 million.

7.2.3 Strengthening Bank and MFI Institutional Capacity

Technical support is recommended for Sacombank and MFIs, particularly provincial WU. This support should focus on strengthening operational and administrative procedures and systems by increasing professional capacity and developing appropriate structures for loaning and monitoring of sub-loans.

- xviii. Sacombank should be provided technical support to develop and strengthen management and administrative capacity to operate the Biogas Fund. Experts with international experience in operating Fund/Facility of similar nature should provide technical support over a period of at least one year.
- xix. Technical assistance should be also provided to microfinance providers, particularly semi-formal organizations participating in the sub-loans. The technical assistance should be organized for a minimum of two years and experts should be working within the microfinance organizations to develop and strengthen their organizational systems, financial management and staff capacity.

7.2.4 Formalizing Biodigester Mason Team

xx. BPO should consider formalizing the biodigester mason teams by promoting existing companies and encouraging establishment of new companies by (a) setting up appropriate enabling environment and (b) incorporating participation of existing companies to construct biodigester.

xxi. BPO should not consider biogas constructors as intermediary for microfinance and for the provision of loans to households.

7.3 ACTION STEPS FOR IMPLEMENTATION OF THE FRAMEWORK

As described in the report several details are to be prepared. These details should be prepared following an agreement in principle with FMO and Sacom on implementation of the “Sacom Biogas Fund”. They are outlined below in order to assist SNV and FMO to establish the Biogas Fund.

1. The Fund structure need to be detailed and specifics provided in terms of management principles, sub-loan agreements and procedures, selection of areas in which the Fund will operate, organizational arrangements and reporting procedures, benefit monitoring systems and MIS, and Fund allocation and utilization.
2. The administration and management of subsidy need to be developed, if the suggested arrangements and procedures are accepted.
3. Terms of references for two technical assistance programs should be developed. Firstly, relating to the technical support required to Sacombank in managing and administering the Biogas Fund. Secondly, to support the semi-formal microfinance providers with institution building, focusing on financial management and human resources development.
4. If SNV is willing to incorporate an enterprise development component in the second phase then a study should be undertaken to design a program based on which biogas technicians would be formalized into legal entities and supported with business and entrepreneurship development objectives. That study should provide the implementation arrangements for participation of existing enterprises and establishment of other entities.

Following the recommendations and discussions above concrete steps to be followed are outlined below.

1. Continue discussions with Sacombank to finalize agreement of Sacombank participation. Specifics of loan terms from FMO, overhead costs and loan terms to MFIs need to be finalized and agreed.
2. If discussions with Sacombank at this stage do not lead to a full agreement and Sacombank wishes not to participate then discussions should be started with VBARD, following on our earlier agreement with VABRD.

3. If Sacombank participates in the program preparatory documentation for setting up the Fund could be started. Documents required are (i) loan agreements between FMO and Sacombank, (ii) loan agreements between Sacombank and participating MFIs, (iii) loan allocations and withdrawal, (iv) loan application by MFIs
4. If piloting the program is accepted then provinces where credit scheme will operate should be selected in accordance with the criteria set out in this report. Another six to seven provinces, in addition to the three recommended provinces, should be selected by holding discussions with Women's Unions, biogas project offices and bank branches.
5. If the provision of technical assistance to Sacombank and Women's Union is accepted then ToR for the TA should be prepared and funding organized.
6. A full implementation arrangement for the Biogas Fund/Credit could be detailed at this stage, particularly how it will tie in with BP11 and integrate various components with those of BP11.