

Case 1: Microfinance and Environment: Financing clean Energy in Rwanda A case of developing a Biogas loan product for small farmers

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Summary

This case shows the steps to the development of a successful adequate financial product so that biogas plants become accessible to small farmers. SNV has been able to support this through fund brokering, organisational strengthening, technical assistance, institutional strengthening and marketing.

The challenge

SNV Rwanda activities related to NDBP include close support to the programme with regards to its set up and the development of various tools needed for strengthening the programme activities. Access to finance plays a vital role in the development of the programme in order for small farmers to have easy access to sufficient initial capital to acquire a biogas plant. So, one of the focus areas within our support has been the development of adequate financial products.

Financing a domestic biogas plant

Currently we find biogas plants of 6 and 8 m³ in Rwanda. The size best suited for Rwandan rural farmers and promoted by the NDBP-Rwanda is that of 6 m³ for technical and economical reasons (best relation cost – responding to needs of families). The 6 m³ plant costs an average of 630.000 Rwf (1,155 USD¹) and farmers can finance this investment as follows:

Description	Amount (RwF)	Amount (USD)
a) Farmer's minimum contribution in materials (sand, stones, unskilled labor, etc.)	150,000	275
(2) Government subsidy \$350	200,000	367
(3) Remaining balance for farmer to pay in cash or through credit	280,000	513
Total construction costs	630,000	1,155

Financing of a biogas plant is subdivided into 3 main components (1) In kind (cash) contribution given by the farmer that may vary depending on his location; (2) A flat subsidy donated by NDBP; (3) Cash amount given by the farmer. He can finance this component by using his own cash or go for a loan.

The focus in our case study is to show and explain steps taken to develop a loan product for farmers.

Developing the product

Purpose of the loan: The loan is intended to fill the gap between the farmers' investment (in kind or in cash) plus the subsidy and the expected cost as shown in the table above.

Several criteria were identified in order to develop a product that will enable a viable installation and allow an investment paying back itself. These were:

- minimum of two cows² (technical requirement);
- a stable feeding (zero-grazing policy is enforced in Rwanda) enabling the farmer to have maximum dung collection;
- and milk production \geq 8,5 liters/day.

¹ 1 USD=545 Rwandan Francs

² In Rwanda farmers mainly keep dairy cows

Using these criteria summary of the status of the farmer is shown in the table below:

Item	Value	Unit	Total amount (in RwF)	Total amount (in USD)
a) Asset value of 1 cow	400,000	RwF		
b) Economic life cycle	8	Yrs		
c) Milk production	8.5	Liters ³	2,040	3.75
d) Direct cost of feeding cows (32%)	330	RwF	660	1.21
e) Indirect expenses (43%)	440	RwF	880	1.61
f) Total daily expenses (75%) (d+e)	770	RwF	1540	2.82
Net daily income (c-f)			500	0.93

From the summary above, a monthly cash flow of the farmer was estimated and the outlines of the loan product were drawn thereby taking into consideration limits imposed by existing financial products within Banque Populaire du Rwanda (BPR) which are:

1. Maximum duration: 36 months (3 years)
2. Minimum interest rate: 13% per annum

It was then possible to have all technical terms for the biogas loan product.

The cash flow estimation per household is as follows:

Description	Amount (in RwF)	Amount (in USD)
a) Net daily income	500	0.92
b) Monthly cash flow	15,000	27.52
c) Annual Free Cash Flow	180,000	330.28
d) Estimated minimum annual CF (67% of c)	120,000	220.18
e) Estimated minimum cash for 3 years (d*3)	360,000	660.55

The final terms of the financial product are therefore:

- 34 instalments in 36 months due to a 2 months grace period enabling the farmer to start reimbursement when gas is produced. The grace period is an incentive for farmers who have doubts on the full function of a biogas plant as a source of energy;
- A 13% interest rate, which is the minimum rate BPR can charge. The interest is a parameter to consider when developing a loan product as costs have to be as low as possible to attract and be accessible to rural households;
- Based on cash available to farmers and the parameters above, it has been concluded that the maximum amount that a small farmer can afford to repay is 280,000 RwF (515 USD). Therefore the loan amount has been fixed to a maximum of 515 USD. Calculations have been made on digesters of 6m³. For those who want to construct bigger digesters (8 and 10 m³), their minimum contribution will be higher taking in fact that their assets are bigger (i.e. cows as per technical requirements).
- A monthly instalment of 10.000 RwF (18 USD). This instalment is fixed to make it simple to understand and is less than the amount spent by a typical household buying fuel wood, charcoal and/or kerosene.

³ A litre of milk is sold at an average price of 120 RwF (0.20 USD)

SNV's intervention

1. **Fund Brokering:** negotiating funds for refinancing the biogas portfolio at affordable terms (FMO⁴)
2. **Organizational Strengthening:** assistance in identification & negotiations with local bank (BPR);
3. **Technical Assistance:** funds circuit and financial Product development tailored to customer capacity and need;
4. **Institutional strengthening:** Defining specific responsibilities of each party involved in the business;
5. **Promotion:** in addition to promotion of biogas in general, marketing of financial product has been done with coordination of BPR marketing.

Next steps

1. Product launch and close monitoring for possible adaptations
2. Training in marketing for bank officers to ensure proper transfer of ownership of product to bank for further management of the product;
3. Product follow up and (if necessary) re-alignment by the bank with the help of the programme

Lessons Learnt

- Small farmers are eager to take loans and invest in biogas: for a 20 year investment, a middle term loan seems to be adequate
- If monthly payment is equal or less to money used to buy wood, farmer is less reluctant to invest in biogas;
- Standardized loan in the beginning is easy to administrate and understand;
- Market research and external support is important for a good loan product mainly when there is a weak understanding about biogas and customers specific needs;
- Convincing the bank to invest in a low – end product is a long process
- Defining terms of credit can take much time and much of the process is internal to the bank;
- Education to farmers in loan management and culture is crucial to the success of the product;
- A clear differentiation between subsidy and loan has to be drawn and clearly explained to farmers to avoid complications in getting back loaned money;

Challenges and Opportunities

The **first challenge** is creating sufficient demand to make the product sustainable and justifiable for the bank. Farmers are willing to invest in biogas but we need to carefully monitor the trends and react accordingly in adapting and updating the product.

The second challenge is real capacity: biogas is not the only investment the farmer wants to make and the basic consideration of this financial product is that the potential farmer has got no other loan to repay. In reality the farmer wants to invest in biogas but also use the loan for seeds, consumption, investment in other sectors, etc. Further changes might be needed to allow the farmer having flexibility in taking a biogas loan, e.g. longer loan period.

Another challenge is to have professionals and clients performing well: bank loans normally have to be assessed and farmers need much more assistance from NDBP to master the

⁴ FMO : Entrepreneurial Development Bank of the Netherlands

management of financial facilities made available to them within the respective programme. This might include support to bank management in educating people about financial culture and planning. In Rwandan microfinance sector, the default rate is high at 11% for banks⁵, and this poses a risk for the biogas financial product. In addition, combining a subsidy and a loan could lead to confusion and problems in loan repayment as some farmers could perceive the loan as being simply part of the subsidy. Therefore much quality information is needed to sensitize people on the difference between the 2 products.

*"It has changed their lives noticeably, and they do not present as much risk as I have thought" **Bank** executive after visiting a family with biogas plant*

"We know how to manage loans and we are used to them, all we need is better conditions from the bank" Farmer wanting to invest in biogas

The financial supply side (BPR) also needs attention from the programme to stimulate to invest and own the product. This includes training of bank officers in biogas technology. It is also crucial for the bank to look for other means of refinancing and not only relying on the Programme and its partners, to avail financial resources for the biogas sector. Though the refinancing is secured, the process between BPR and FMO has been taking too much time; therefore it is crucial for those who are developing such a product, to ensure that refinancing process be speeded up as much as possible and to close the deal in time.

Some additional innovative tools could allow refinancing, such as partnerships with big private companies ready to finance a specific number of biogas plants under new concepts like corporate social responsibility.

Finally, the carbon credit market is a promising source of finance for refinancing the subsidy part of the programme and it is a promising market for NDBP and Rwanda in general.

Tailored microfinance product means evolving with client's demand and needs. The future of biogas product is to be flexible, to be able to adapt to them while keeping the bank's conditions fulfilled.

2010 update: *The financial agreement was signed in May 2009 and a pilot phase conducted in 2 branches to test the product. After some changes to fit the market, the product was launched in all BPR branches in January 2010. Up to now, more than 100 loans have been granted by the bank and to speed up the number of farmers investing in biogas, further adaptation will be made to take into account the high cost of digester in Rwanda, while making sure that risk involved is minimized for parties involved.*

Next step will also include the development of a product for private companies involved in biodigesters construction to allow wider private sector support.

⁵ National Bank of Rwanda figures