BARRIERS TO FINANCING RENEWABLE ENERGY TECHNOLOGIES (RETS) IN KENYA

Information Asymmetry

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Abstract

For renewable energy technology (RET) to achieve strong market potential, policy frameworks and financial instruments that give finance institutions the necessary assurance and incentives to shift investment interest away from conventional energy options to renewable energy are necessary. To solve finance related barriers, all actors in non-conventional energy industry require full information disclosure and transparency. This research has grouped these actors into financiers (banks and cooperatives), cook stove production SMEs (manufacturers and sellers), end-users (individual households and institutions) and promoters (NGOs and research institutions). Information asymmetries among these players make the industry unattractive to financiers. NGOs and research institutions play an important role in RET industry by bridging the information gap that exists among financiers, SMEs and end-users.

This research investigated how information asymmetries in the SME sector affect financing of renewable technologies in Kenya. Interviews were carried out in Kenya with focus on the target groups of actors. Research findings reveal that cook stove production SMEs have not disclosed enough information to financiers to enable them see cookstove business as a viable option. Poor business practices have also contributed to this gap. Promoters of improved cook stove technologies (NGOs and researchers) have played a role of counteracting institutions. They have acted as mediators between financiers and producers and users of improved cookstoves.

Recommendations and conclusion have been drawn from literature reviews as well as analysis of data collected through field interviews. These are expected to inform all players in the industry and provide a baseline for further studies on how to break the barriers.

Key words: Information asymmetry, renewable energy technology

List of acronyms

ACTS	African Centre for Technology Studies
AFC	Agricultural Finance Corporation
BMZ	German Federal Ministry for Economic Cooperation and Development
DEEP	Developing Energy Enterprises Programme
GEF	Global Energy Facility
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GOWE	Growth Oriented Women Entrepreneurs
GVEP	Global Village Energy Partnership
KCB	Kenya Commercial Bank
KCJ	Kenya Ceramic Jiko
KUSCCO	Kenya Union of Savings and Credit Cooperative
KWFT	Kenya Women Finance Trust
MFIs	Microfinance Institutions
NGOs	Non-Governmental Organizations
PA-EA	Practical Action East Africa
PESD	Programme on Energy and Sustainable Development
PSDA	Private Sector Development in Agriculture
RE-SMEs	Renewable Energy Small and Medium-Sized Enterprises
REEP	Renewable Energy and Energy Efficiency Partnership
RETAP	Rural Energy Technology Assistance Programme
RETs	Renewable Energy Technologies
SACCO	Savings and Credit Co-operative
SMEs	Small and Medium Enterprises
UNECA	United Nations Economic Commission for Africa
USAID	United States Agency for International Development

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1. Introduction

Many governments are coming up with regulations and policies in favor of renewable energy technologies. The market is still not favorable for these energy options since in most cases they have to compete with conventional energy options that are fully developed (Sonntag and Usher, 2004). Financing Renewable Energy Technologies (RETs) is still a new venture that most finance institutions are yet to embrace. This is coupled with the fact that developers of these technologies have not been able to demonstrate visibly their experience and value of such technologies to financial institutions because they perceive this process to be expensive (Martinot, 1999).

To operate effectively, all market players (financiers, manufacturers, sellers, and end-users) require reliable, timely, and appropriate information. Information about available finance options is also required by the developers of these technologies as well as the end-users. Such information will enable correct assessment and evaluation of a given technology thus ascertaining their financial worthiness as well as its financial value (REEP, 2008). The challenges faced in financing RETs vary depending on the size of the technology as well as the economic situation of the region or country. Each RET requires specific financial needs and financiers have to develop specific rules and guidance for financing each of them. This brings difficulties as development of guidelines is an expenditure that financiers avoid. If it was possible to replicate the existing rules and guidance then it would be cheap for financiers (REEP, 2008).

This research aims to investigate how information flow and business models impact financing of improved biomass cookstoves in Kenya by assessing the existing information gaps within the industry as well as their business models.

Hierarchy of Financial Problems in RET Industry

Causes: Poor information flow among actors results into lack of awareness. This coupled with bad business models, give a wrong signal to financiers making them untrustworthy to financiers.

Problem: No sufficient finance within RET industry (Small and Medium Enterprises (SMEs) + End-users).

Consequences: Lack of RETs supply, low demand level for efficient cook stoves due to lack of awareness, limited funding and unpredictable collapse of SMEs . Figure 1 below shows a problem tree demonstrating the three aspects mentioned above.

Figure 1: Problem Tree - causes, problem, and consequences (GIZ 1997)

The players in RET industry include manufacturers, end-users, policy makers, business developers, financiers, researchers, NGOs, insurance companies, among others. Since this research narrows down to financial barriers only, four groups of actors will be studied. Actors chosen in this case of biomass cook stoves in Kenya include:

1. Financiers (banks and cooperatives)
2. SMEs (Manufacturers and sellers)
3. End-users (individual households and institutions)
4. Promoters (NGOs and research institutions)

The illustration below shows how information should flow among the actors. It shows an ideal situation if symmetry of information among actors is to be achieved. It illustrates that equal information disclosure is required from all sides.

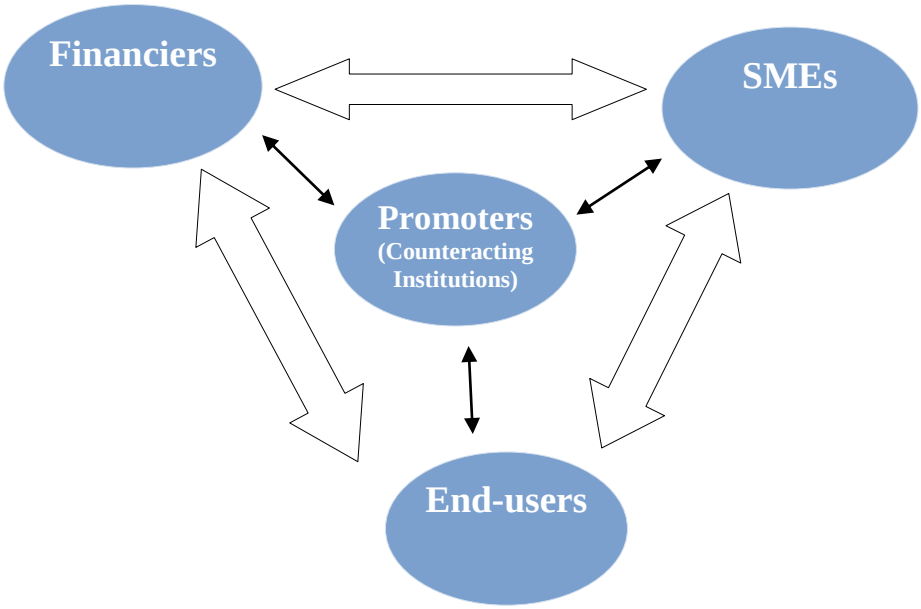

Figure 2: Information sharing among RET stakeholders. (Source: Literature and data)

For this study, financiers include institutions such as banks and cooperative saving societies whose role is capital provision and advise to borrowers (who are in this case cookstove producers). It is understood that other sources of finance for large corporations include sale of shares. This does not apply to improved biomass cookstove industry since it is still an unknown venture to many and in most cases done in a very traditional manner.

Promoters have been used in this study to mean organizations who are advocating for production and use of such improved biomass cookstoves. They therefore help producers to develop the industry by provision of technical training, marketing and advise them on financial options. Promoters also advise governments on importance of policies that can promote the use of efficient energy appliances including improved biomass cookstoves. Promoters play a "mediation" role by letting the financiers know what RETs' industry is all about and at the same time advises SMEs and end-users on available financial options. Promotional role played by these organizations are different from those played by producers themselves in that the latter have limited scope and reach. Producers do promotion for their individual marketing and to their individual customers while NGOs and research institutions attempt to reach a wider network as well as achieve broader objectives.

2. Information Asymmetry theory

The concept of asymmetric information was first introduced George Akerlof in the year 1970. Its significance was established well before the year 2001 when the original authors of the theory, George Akerlof, Michael Spence and Joseph Stiglitz received the Nobel Prize in Economic Sciences. In the paper, Akerlof develops asymmetric information with the case example of automobile market. Information asymmetry occurs when one party in a transaction has more or better information than the other. This creates an imbalance in the transaction and leads to the well informed party taking advantage of the other party in the transaction. The concept of information asymmetry has been able to explain many common phenomena that could not have otherwise been explained since its first introduction. For this research, it is being applied to explain possible barriers to financing of RETs, related to insufficient information flow among the actors.

Three aspects of asymmetric information are discussed below;

a. Adverse selection

This is a situation where bad results occur because the parties in a transaction have asymmetric information. A bad product or customer is selected or a suitable or good product or customer is rejected. To reduce the impact of adverse selection, two theories have been explained by M. Spence and J. Stiglitz, namely *signaling and screening*.

i. Signaling

Michael Spence continued with the ideas of George A. Akerlof in his paper *Job Market Signaling* in 1973. Spence concentrated on a scenario where the players in the market are too many and changes frequently. In such a case, there is little or no knowledge of the players and certain signals need to be interpreted in order to gain some knowledge about them. He uses job market as an example in the paper. The employer is not sure of the productive capabilities of an individual before hiring him/her. The processes of job interviews as well as inquiry into education level of job applicants are meant to help employers have some knowledge of the applicants, by making them send signals of their capabilities during interviews (Michael, 1973).

ii. Screening

In his paper *The Theory of "Screening," Education, and the Distribution of Income*, Joseph E. Stiglitz(1975) explains that one of the most important information of a factor or a commodity is quality. Screening is the identification of these qualities by a partner who is less informed than the other party in a transaction. In the case of financing, banks often screen people interested in borrowing money in order to find out their ability to repay. Potential borrowers might be asked to explain their financial history, job security, and reason for borrowing, assets, education, and experience, among others (Stiglitz, 1975).

b. Moral Hazard

Moral hazard occurs when the actions taken by your trading partners are less favorable for you than the actions of the average trading partners. For example moral hazard occurs when a party who has been covered against a risk behaves in a way that is not likely to reduce chances of that risk occurring to him/her. Thus, this makes the other party (who is covering the risk) to incur much responsibilities. It involves the risk that one party has not entered into a contract with the other party in good faith and the contract acts as an incentive for him or her to act carelessly. In this case, the party that is insured against a risk has more information regarding his/her intention and actions than the party insuring him/her. Unlike adverse selection where information is hidden, moral hazard has much to do with hidden actions.

Where moral hazard is a problem, the market participant without information tries to monitor performance of the participant with information, and to make this performance part of the terms of the contract. This is normally an expensive exercise and also imperfect (Lauri, 2003).

c. Counteracting Institutions

The asymmetric information in a transaction can be reduced by use of intermediary market institutions called *counteracting institutions*. Such institutions act as mediators and ensure that all parties have sufficient information. In a case of buying and selling of a product, counteracting institutions allow the buyer time to gain more information about the products. Guarantors are good examples of such institutions. Use of brand-names, chains of stores and franchising also guarantee the buyer that what he is about to buy has some sort of quality (Lauri, 2003).

In this research, promoters (NGOs and research institutions) are seen to be playing the role of counteracting institutions between the financiers, SMEs and end-users.

Problem of Asymmetric Information in Finance

A debt contract is a legally binding document for both the borrower and the lender. The borrower agrees to repay the entire amount together with the specified interest within a certain time limit. It is only the borrower who knows the absolute truth of his ability to repay and the nature of the business he intends to operate with the borrowed fund. After receiving the borrowed funds, he/she may decide to use it for something else other than what was mentioned in the agreement (Ricardo, 2003).

There is asymmetric information when the lender and the borrower do not have the same information regarding their contract or one of them ignores, and it becomes even worse whenever one party uses the information at the expense of the other. To be safe from the effect of asymmetric information, banks are forced to charge a higher interest rate on borrowed funds, making financing more expensive for businesses (borrowers).

Most RETs including improved biomass cookstoves are still new in the market and face common financial problems experienced in propagation of any new technology. According to Xiao H.(2008), explains that proprietors of such technologies have more information than financiers with regard to production and commercial viability of the technology. He also explained the possibility of proprietors obtaining funds from financiers and later engaging in some activities other than the agreed. Information asymmetry exists in three main ways.

- Producers of such technologies lacking the will and capability of information disclosure to financiers. This is due to the fact that they fear to expose their financial situations to external parties.
- The information capacity being restricted by producers themselves and some objective conditions and the fact that the information they posses has not been formalized.
- When it becomes costly for producers of new technologies to exercise full information disclosure.

Adverse selection

The lender gets into an adverse selection when he/she is not able to tell which project or business is able to repay the loan and which one is not. Lenders prefer low-risk businesses while borrowers with high-risk prefer to hide information from the lenders, therefore exploiting the lender's lack of sufficient information (Ricardo, 2003). Availability of loans also act as incentives for borrowers to engage in riskier projects since they can easily obtain funds.

Moral Hazard

This occurs when the borrower uses the funds in other activities not agreed upon in the debt contract, taking advantage of the lenders lack of information and lack of control over him. Financiers try to reduce moral hazard in financing by monitoring the activities of the borrowers (Xiao, 2008). This habit applies to all borrowers including RET SMEs.

Justification of Asymmetric Information Theory to this Study

Asymmetric information theory can be applied over multiple disciplines and has been used to explain several phenomena that were unexplained by economists previously. Asymmetric information theory tells us that it may be impossible to distinguish good and bad quality in the absence of counteracting market institutions. It gives justification of the need for quality control policies in a market. It is simple and easy to understand theory with complexities coming in only depending on the models one may choose to apply (Lauri, 2003).

3. Information Quality

Information quality is important if message has to be passed effectively to target audience and if the message is to be trusted by the audience. Improved cookstove actors should maintain quality information based, but not limited to the following properties (Ivanov K. 1972):

Authority

The person giving out information about finance availability and terms or business viability should have the necessary authority to do so. This will enhance trust and acceptance of such information.

Scope of coverage

Financiers should provide information covering all that is required by the borrowers. They should exhaust all the available loan options that might be needed by the borrowers. The same applies to cook stove producers borrowing loan. They should provide full information of the operations so as to inform the lender for decision making.

Organization

Information passed among actors should be coherent and well organized. Disorganized information may not attract the target audience hence not serving the purpose.

Integrity

All actors should adhere to ethical principles and soundness of moral character while passing their messages.

Validity

Trustworthiness that the information carries is important in enhancing information symmetry among actors. Financiers and cookstove producers should tell the truth about their business terms and performance. Promoters who assist producers to obtain funding should pass true information to potential funders.

Timeliness

Timeliness refers to information that is current at the time of publication. Financiers should provide information regarding available funding options to their customers as soon as such options can be accessed. Cookstove producers should on the other hand display the current performance of their business to the lenders.

4. Financing Small and Medium Enterprises (SMEs)

A big bottleneck in the SME sector is the lack of credit as opposed to lack of technical expertise. SMEsproprietors are in most cases too poor or otherwise disadvantaged to obtain formal employment, or to farm their own land because they might be having none. Many entrepreneurs need credit with limited conditions attached. Studies have shown that minimal intervention through capital provision coupled with supervision can achieve remarkable results in the SME industry. If appropriate technical assistance is not well matched among SMEs, it becomes useless especially when not well marketed. Governments and financial institutions in many countries have employed consultants, counselors, advisors and extension staff to provide business advice to

owners of SMEs on available technologies as well as ways of obtaining funds for their businesses. These officers have mostly been employed by small scale lenders, who lend to SMEs and can provide such additional training as bookkeeping (Harper, 1989)

Policy makers, economists, and business experts all understand that Small and Medium Enterprises (SMEs) are drivers of economic growth in every country. They do so by creating employment opportunities, promoting innovation, as well as increasing production levels in the markets (USAID, 2007)

The performance of SMEs can be influenced by many factors, some internal to the enterprise while others belong to the external environment in which they operate. Though some of these factors are specific to the SMEs sector, a common challenge for all of them has been access to funding (UNECA, 2001).

These challenges include access to credit facilities especially in their early stages. In order to operate efficiently, SMEs require easy access to short- and long-term capital. Financiers perceive SMEs to be of high risk as compared to larger business entities and therefore avoid extending credit products to them. This situation is made worse by information asymmetry between SMEs and lenders in terms of a lack of clear and detailed financial history on the part of SMEs, as well as lack of capacity to draw attractive long term business plan. Since lenders regard SMEs as high risk borrowers, they demand high security and guarantees and impose high interest rates on them, making borrowing an expensive option of financing to them (USAID, 2007). Main financial support for SMEs in developing countries includes but not limited to subsidies, credits and soft loan guarantee schemes. NGOs have come up with finance facilities for SMEs in the recent years in order to fill the gap left by commercial banks (UNECA, 2001).

5. Renewable Energy Small and Medium-Sized Enterprises (RE-SMEs)

Imperfect information hinders diffusion and adoption of a technology by the society (Adam B. J. et al, 2004). Developers of RETs are more informed than prospective financiers, a factor which makes the financiers reluctant in committing their financial support to the technology. For the case of improved cookstoves production, uncertainty in return onto investments has marred their financing by financial institutions.

SMEs are key players in the deployment of renewable energy technology. They have direct link to customers, financiers as well as promoters of RETs. RE-SMEs have a wide

range of commercial activities like energy related consultancy services, small-scale energy appliance assembly and manufacturing, wholesaling, retailing, distribution, installation and after-sales services. They have a wide reach and able to disseminate RETs products to variety of end-users ranging from individual households to institutions. Most of these SMEs are situated in local towns and rural areas and can serve as effective channels when a new technology is to be introduced to the community. Common RETs for such small scale enterprises include biomass cookstoves, solar appliances, charcoal kilns, wind pumps, construction of biogas digesters and related appliances, among others (UNEP, 2005).

Government-supported enterprise development and business support programs currently exist in most countries but little effort is put to address the critical financing gaps faced by SMEs. This is coupled with the fact that most financial institutions are not familiar with the operation of cookstove SMEs as well as the perceived risks. As such they have not come up with suitable loan products. Finance related information of RET enterprises are not obtainable, thus making it difficult for finance institutions to evaluate their solvency and credit worthiness, hence not willing to provide financial aid (Ellen et al, 2007).

Financial institutions recognize these SMEs to be of high risk and high cost, and they tend to be reluctant in extending financial services to them. Factors which make financing of RET difficult include, but not limited to the following:

- Small sizes of many RETs which cannot attract commercial loans
- High transaction cost as a result of small business sizes, technologies which are still new and some could be in pilot stages, as well as little experience from developers
- Low returns with positive cash flows coming first in the long run makes RETs not a good venture since they normally fail to repay the principal together with the required interests.

Renewable energy technology requires high initial capital that most financing institution cannot provide. This has forced the market to rely heavily on subsidies which are not sustainable. Long lead-time of businesses to reach profitability especially for new businesses makes this industry unattractive to lenders. This is as a result of many issues like training personnel, having not acquired sufficient market etc. (UNEP, 2005).

6. Renewable Energy Finance in Kenya

In Kenya, Faulu Kenya, Kenya Women Finance Trust and Kenya Union of Savings and Credit Cooperative Ltd (KUSCCO) initiated energy-lending programs a few years ago. KUSCCO has an office put in place specifically for research in energy service, and whose duty is to advise its members regarding loan provision for modern energy technologies. KUSCCO and Faulu Kenya offer loans for Liquefied Petroleum Gas (LPG) stoves and solar systems, with plans for biogas loans being underway. Lessons learnt so far from these initiatives is that commitment of both energy technology developers and finance institutions is very important for the success of financing RETs. This incorporates their willingness to collaborate towards achieving financial sustainability in improved cookstove industry, by way of availing affordable and accessible funding, creation of awareness and marketing as well as technical and entrepreneurial capacity building to developers (Ellen[1] M et al, 2007).

Majority of Microfinance Institutions (MFIs) are reluctant when making decisions to finance cookstove SMEs and other emerging RETs. This is mainly because MFIs are comfortable with their existing lending patterns that mostly target conventional businesses and women groups whose information about their credit worthiness as well as business appraisal can be obtained easily. Since many cookstove producers run their businesses in non- conventional manner, they end up being turned down by MFIs (GVEP, 2009).

Cookstove SMEs in Kenya obtains funding from either of the following sources. Some of the institutions have already been mentioned in this study.

i. Bank Loans
ii. Cooperative Loans
iii. Personal Saving
iv. Self-help Groups
v. Microfinance
vi. Credit agreements between sellers and buyers of cookstoves

[1] **Ellen Morris** is the founder of Sustainable Energy Solutions firm engaged in international development, policy analysis, and research on energy issues. She has been a senior consultant for the United Nations Development Programme in the sustainable energy program for more than ten years. Most recently, she has done pioneering work on consumer lending and microfinance to expand access to energy services by engaging with the private sector and microfinance institutions in developing countries. She is also an adjunct professor at Columbia University's School of International and Public Affairs, where she teaches energy and development courses.

7. End-User financing and Motivation

Financing consumers of renewable energy technologies has been overlooked for quite some time, yet they are the ones responsible for technology uptake and provision of market. Meeting their financial demands often involve engagement of micro-finance institutions, NGO funding as well as cooperatives. There are new approaches being introduced such as retailer funding, where a retailer allows a customer to use a product with installment payment (UNEP, 2005).

In a fee-for-service finance model, the customers pay for an energy service after or before using. This minimizes the long-term risks that the customer would have had to bear in the process of owning the technology. Trust is needed between the service provider and the customer to ensure that both parties honor the service contract. The challenge is full disclosure of customer information regarding conduct and honor of the agreement (UNEP, 2005).

Some financial institutions have attempted to develop consumer credit models to finance the uptake of RETs. Such loans are made by local banks or entities that specialize in originating small-scale loans for renewable energy systems, either at the household or institutional level. The banks require a lot of information regarding the customer's ability to repay the loan as per the agreement. In some cases, banks may demand that the customer provides a guarantee or some sort of security. Like the previous finance model, the challenge here has been lack of sufficient information regarding their ability to pay, real and/or perceived risk of customer's default as well as their experience in business development. On the other hand, RETs loan options available from banks may not be known to the relevant customers, who are the RET developers as well as end-users (Ellen et al, 2007).

Research on cookstove business models by the Programme on Energy and Sustainable Development (PESD), Stanford University explains three dimensions that should be taken if improved cookstoves are to be adopted by end-users. These are motivation, affordability, and the level of engagement. Buyers need to see clear benefits of using the stove over the other kind of stoves. These will motivate them to purchase and use the stoves. Stoves should be made affordable so that end-users with low income in the community can adopt. Finally the level of engagement required from users may come in different forms, depending on regions and countries, and importantly concerted action through partnerships (GVEP, 2009).

8. Risk Mitigation

Increased risks and perceptions of risk related to RET have caused financial institutions to run away from long-term financial services and move towards short-term financial services. Risks facing financing renewable energy technologies, and feared by financial institutions include credit and performance risks. This is because financiers lack technical expertise in RETs thus making it difficult for them to appraise such businesses. To overcome these, financial institutions and development banks have created guarantee products to guarantee a portion of loan losses incurred. These are meant to encourage local banks providing long-term financial aid to upcoming renewable energy projects. Financiers regard the cost and long-term performance risks of RETs as being higher than with conventional systems – a perception which often results from lack of timely and accurate information about RETs (Sonntag and Usher, 2004).

Insurers' services are required to cover uncertainties faced by financiers of RETs.

9. Research Findings

The following section attempts to answer the three research questions in this study, which collectively should answer the main question. This is based on results of data collection and analysis. In addition to answering the research questions, a section on gender aspects of financing improved biomass cookstove has been included.

a) How does information asymmetry affect the financing of RETs in Kenya?

As explained earlier, information asymmetry occurs when one party in a transaction has more or better information than the other. Results of this study reveal that awareness creation and marketing of cookstoves is poor. This has led to poor sales and consequently poor cash flows in the improved cookstove business. This is because many potential customers are not aware of the stoves, their benefits, and financial value. The same applies to potential financiers. Most financiers are not aware of what the cookstove manufacturers do, neither are they able to appraise the cookstove SMEs. Thus, have not come up with specific loan products for such SMEs nor cookstoves end-users like they have done for other household assets like water tanks.

Biomass technologies including improved cookstoves are perceived by financiers to be capital intensive. Monitoring and evaluation of biomass cookstove projects is also perceived to be costly and neither the financiers nor the customer is willing to meet the

cost. These lead to high interest rates to cover the cost. Improved cookstove SMEs have not been able to attest such wrong perceptions.

There is lack of information pertaining financing improved cookstove. This is because very little studies have been carried out regarding financing improved cookstove and the challenges faced. Producers have limited information about loans and how to borrow. This is worsened with negative perception of loans based on other peoples' bad experiences. Most of improved cookstove producers are located in rural set ups where the distance between them and financiers is enormous, thus missing out on financial information.

Financial institutions have resorted to obtaining detailed information about the cookstove SMEs through their own field officers who visit the clients in their business premises. They also organize follow-ups to find out if funds were used as indicated during borrowing or if they were diverted to other uses. Most finance institutions admit that it is difficult to find out if the funds were used as promised by the SMEs. It is an expensive exercise for the financiers as well. The following aspects of information asymmetry have been identified as barriers to financing improved cookstove development in Kenya.

1. Adverse Selection in financing improved cookstoves

Financiers have had to fund cookstove projects amidst uncertainties about the rate of return on to investment. This has been due to the influence of NGOs and proposals from the manufacturers. The study reveals that financiers lack the expertise to evaluate RET technologies and improved cookstove SMEs. Retailers of improved cookstove deal with small quantities which cannot attract bank loan. They are therefore tempted to borrow large amount of loan which they are not able to manage.

This study reveals that some improved cookstoves end-users have purchased stoves that do not present expected results in terms of durability, efficiency as well as usability from manufacturers.

2. Moral Hazard in improved cookstoves finance

Once they obtain funding, some improved cookstove SMEs are reported to have changed their operation location because of various reasons which may include intention not to service the loan. There has been diversion of funds to other uses which may not be profit oriented leading to defaulting loan repayment.

3. Counteracting Institutions

Counteracting institutions have helped reduce the symmetry of information between financier, producers, and end-users of improved cookstoves. Most of the finance institutions involved in funding cookstoves were introduced to it by NGOs, who in this case are the counteracting institutions. Importance of such NGOs in reducing information asymmetry is discussed below. Other such counteracting institutions employed by financiers of improved cookstoves SMEs are securities and guarantors. Challenges faced by SMEs include lack of securities/ guarantees especially for women, thus reducing their chances of getting funds.

b) How does existing business models in RE enterprises in Kenya affect their cash flow?

Screening and signaling in improved cookstoves SMEs

To reduce information asymmetry to understand properly the operations of improved cookstove SMEs, and be able to extend financial assistance, financiers normally carry out screening exercises aimed at signaling the credit worthiness of the SMEs. This has mostly been by way of examining the business models employed by the improved cookstove SMEs, specifically their business records. Financiers visit cookstove manufacturers' workshops in order to assess their credit worthiness. Stock, sales and purchase receipts, invoices and business registration are key items that financiers want to look at before making their decision on whether to provide financial assistance or not. Poor record keeping and entrepreneurship skills among the improved cookstove producers send negative message to financiers that they are not running viable businesses.

c) What are the roles of RETs promoters in reducing financial information gap?

Promoters of improved cookstoves play crucial role in reducing information asymmetry in financing improved cookstove SMEs as well as end-users. They bridge trust between financiers and the producers. Importance of working with the NGOs in funding cookstove projects includes the fact that:

- NGOs provide technical expertise on cookstoves, something that the financiers lack
- They facilitate financiers to get in touch with the cookstove producers
- They train cookstove producers on good entrepreneurship as well as cookstove technical skills

- They have good records and statistics of cookstove production levels as well as their extent of use. Financiers use these to assess the worthiness of funding cookstoves
- They have personal details of improved cookstove producers, making it safe for financiers to lend money to such clients
- Creation of awareness and demonstration to financiers that biomass cookstove SMEs are viable.
- Sensitizing various stakeholders on the importance and benefits of improved biomass cookstoves

These show that NGOs and research institutions are counteracting institutions whose roles are to reduce information asymmetry between financiers and producers of improved biomass cookstoves, therefore enhance financing of producers by financial institutions. NGOs are trusted by financiers since they are more formal and possess sufficient information regarding cookstove industry and producers.

d) Gender variation in cookstove financing

Women who have engaged in improved cookstove production have limited access to loans since they have no security or collaterals registered in their names. Women in rural areas who depend on their husbands for financial provision have to seek permission from the husbands before purchasing the stoves. This is not the case with employed women. Women who are producers of improved cookstoves have limited time to market their products. This is because most of the time they are pre-occupied with household activities, which their husbands are reluctant to assist.

10.Recommendations

From the study, the following recommendations can be drawn, aimed at improving understanding among cookstove actors. The benefit of such understanding will improve chances of getting funding, thus ensuring sustainability of improved cookstove industry in Kenya.

1. *Awareness creation among cookstove stakeholders*

There is need to promote information symmetry among improved cookstove stakeholders by way of awareness creation and advocacy. Manufacturers of such stoves need to market their products within and outside their areas of operation, targeting wider and diverse audience. They should market their products to end-users as well as potential financiers. Producers should also use opportunities provided to them by supporting agencies like NGOs and government institutions to carry out promotional forums. Financial institutions should pass information on their financial opportunities to a wider range of potential business proprietors including manufacturers of improved cookstoves. Financiers should target rural areas where there is huge potential for manufacture of such stoves due to the readily available raw material as well as market for the stoves.

2. *Business models and entrepreneurship skills*

Business models are used by financiers to judge the potential of an enterprise in loan repayment. Good business practice signals positive performance of a business and therefore reduces information asymmetry between them and lenders. For small improved cookstove enterprises, proper record keeping of daily operation as well as clear accounting is necessary. Upcoming as well as continuing cookstove entrepreneurs should be trained on how to keep proper business records as well as financial management. Cookstove business value chain is still unclear. Mechanisms are needed that will transform this industry into fully professionalized ventures with all actors in the value chain including insurance, quality regulation and standardization among others.

3. *Provision of low interest loans and innovative repayment schedules*

There is need for provision of low interest loans for the purpose of developing improved cookstove SMEs. This can be achieved if the government accepts to cushion financiers who provide such loans. Since sale of cookstove is not regular, cash flow among improved cookstove SMEs is not regular as well. Financiers should allow such SMEs to repay their loan irregularly, but with strict timely targets.

4. *Sensitizing the society to embrace improved cookstove technologies.*

The community at large should be sensitized to use improved cookstoves rather than the traditional ones. Environmental and economic benefits should be made clear to them so as to embrace such technologies. By so doing, market would have been created for improved cookstoves. Financiers will also understand the importance of such technologies.

5. *Gender issues in financing improved cookstove SMEs*

Women are encouraged to participate in self-help groups because such groups are most recognized by financiers and their chances of getting funding are high. Financiers should also come up with loan products specifically designed for women, with less restrictions and securities. Producers and promoters of improved cookstove should consider including both men and women during community sensitization. These will enable men understand the benefits of using improved cookstove over the traditional ones.

11.Conclusions

The study has shown that indeed some of the barriers to financing RETs and specifically improved cookstoves in Kenya are lack of mutual understanding among the players in the cookstove industry. Financiers have managed to provide as much information as possible to cookstove production SMEs regarding availability of funding, legibility requirements as well as terms and regulation of borrowing, but the information has not reached most of producers especially in rural areas.

Good business practices are used by lenders to evaluate businesses if they are viable and worth financing. Most cookstove producing SMEs lack good entrepreneurial capacity hence get disqualified when they attempt to borrow. Cookstove producers have not disclosed sufficient information to end-users. This has made them hesitant in accepting such appliances in their kitchen coupled with the fact that they are not sure if they are appropriately marked.

Promoters play important role in bringing such understanding and hence improving availability of finance for the cookstove industry in Kenya. Women who engage in cookstove SMEs face a lot of challenges obtaining funds for their businesses. They also face challenges in the process of marketing since they do not have sufficient time outside their family duties. Women end-users, especially the unemployed ones in the

rural, have to seek permission and funding from their husbands before purchasing the cookstove. This has hindered the uptake of improved cookstoves in many rural households since in most cases the husbands do not see the need or rather the difference with the traditional costless ones.

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