PRES

(Peri-urban and Rural Energy Services)

in Ethiopia, Kenya and Uganda

Phase 1
Project Report

January 2002

The Shell Foundation
Sustainable Energy Programme (SEP)
An "Increasing Access" Project

Sustainable*Alliance*

Executive summary

The PRES (Peri-urban and Rural Energy Services) project is funded by the Shell Foundation's "Increasing Access" programme and is being implemented by The Sustainable Alliance of the United Kingdom in Ethiopia, Kenya and Uganda.

The overall aim of the PRES project is to define the demand in rural and peri-urban areas of Eastern Africa for 'modern', high quality, high value energy services and goods, and if demand is high enough, to develop robust business plans for the provision of energy services and products to peri-urban and rural areas in Eastern and Southern Africa based on the existing commercial distribution infrastructure (petrol stations, supermarkets, etc).

The project team has found that Kenya's rural commercial household high value goods and services sector is well-developed, with strong working linkages between urban suppliers and rural outlets. Considerable scope exists in Kenya for expanding the product and service range to include high value energy products and services, and to link up existing energy goods and service operations with other, more well-developed (and financed) goods and services outlets.

Uganda does not have as well-developed an infrastructure, despite the presence of a growing number of small players selling PV goods, kerosene stoves and other products. In Ethiopia, the existing market for sustainable energy products is extremely small, and commercial linkages between the urban and rural markets are poorly developed at present, despite excellent market opportunities.

The project undertook considerable company and market research, which aimed to establish whether there were commercial opportunities for the increasing access to modern energy services in peri-urban and rural areas using existing distribution. This report shows that, indeed, there are considerable commercial opportunities for increasing access to modern energy goods and services in rural areas. It presents the original vision of the project team and the rationale behind the project. It provides detailed information on the perceived information needs and the corresponding design of the project survey work. The report also documents the implementation of the survey work and provides an outline of the survey findings – for each country.

In conclusion, the report describes the business models that the project team have developed based on the understanding of the market and the potential players developed from the survey work.

Major Findings

The PRES team began their field work assuming that the primary rural 'outlets' for improved rural energy services and goods would be the petroleum stations operated throughout Ethiopia, Kenya and Uganda. However, the team designed their field work, including urban home office interviews, with an open mind, and with a survey methodology intended to capture other wholesale and retail outlets, or means for service and goods delivery, if they existed.

The findings were significantly different in each of the three countries. By far, Kenya has the most diversified rural product and service networks in East Africa. In addition to an extensive network of petroleum station outlets in rural areas, there are a number of other types of outlets. The hire-purchase outlet market is amazingly well-developed in Kenya. Moreover, there is an extensive network of solar suppliers, and, in particular, a very sophisticated network that is ready to begin marketing using catalogues. The depth of these markets was not anticipated prior to the work, and there is considerable scope for pursuing various models using these outlets in Kenya.

However, no such infrastructure currently exists in Ethiopia or Uganda. Not surprisingly, after years of civil war, and, in the case of Ethiopia, after years of central market control, rural product markets remain fairly undeveloped. There are no 'chains', no hire-purchase operations, and rural shops tend to purchase the bulk of their goods in Addis Ababa from either large wholesales, or from other retailers. A similar situation exists in Uganda, although new urban supermarkets are beginning to branch out from Kampala to other large municipal areas. There are, as yet, no small or medium town outlets comparable to those found in Kenya, Zimbabwe and South Africa, for example, and these do not currently offer much scope for marketing high value energy products and services in either Ethiopia or Uganda.

The team anticipated a much more extensive network of 'service' stations in Ethiopia and Uganda than was found. While there is good coverage of rural areas by petroleum stations in these two countries, there is virtually no interest either at a headquarters level or amongst owner-operators, to expand their petroleum and automotive product line to other, e.g., energy, product and service areas. Only in Kenya, and only amongst two companies, was there any real interest shown in this regard.

Hire-Purchase

The most impressive outlets relevant to the PRES work are those categorised as 'hire purchase' in Eastern and Southern Africa. These are generally durable consumer goods stores that stock goods ranging from televisions and radio cassette players, to refrigerators, lpg stoves, a range of light fixtures, lamps and fittings, as well as furniture, kitchen appliances, and other products.

In 1990, these hire purchase stores were found in seven urban areas of Kenya. Today, hire purchase outlets can be found in some 33 cities and towns in Kenya, offering relatively easy access (within 30 km) to a wide range of products to more than three quarters of Kenya's population, including the majority of its rural population. There is considerable scope for tapping into these hire-purchase outlets for high value energy goods and services. These outlets operate their own consumer finance schemes, namely for salaried rural employees (e.g., teachers, civil servants, employees of rural companies) or those able to put up the collateral. This scale of these operations and the scope of existing rural finance through these hire-purchase outlets was unknown prior to the work, and could offer significant potential to expand access in rural areas, particularly if combined with energy supply companies.

Potential for Rural Petrol Stations

The team began work on PRES with the conception that rural petrol stations could offer significant scope for increasing access to high value energy products and services in rural and peri-urban areas. However, interviews at both a national headquarters level and at the rural petrol stations themselves showed that only in Kenya is this currently an interesting and viable option.

The scope for using rural petroleum stations for marketing high value products and services was disappointingly limited. Prior to the PRES work, the team knew that petroleum product margins were 'fixed' by government in Ethiopia, thereby fixing the returns on sale of traditional petroleum products. The team anticipated that petrol station companies and outlets might be interested in diversifying their product line, in order to realise higher, non-fixed, returns on sales. However, almost no interest was expressed either at a headquarters or at an outlet level to engage in such sales. Thus, currently, there is little scope for using these petrol station outlets for expanding sales of high value energy products and services in Ethiopia.

This finding was further reinforced by the fact that, although the bulk of rural petrol stations are owner-operated, there is little interest in diversifying products from petroleum and automotive products (limited range) to energy products (or any other products). There is no tradition for purchasing other products (e.g., food, other household light supplies) at rural petrol stations, and no interviewees expressed interest in expanding their offerings to new products. Neither was any interest expressed at the head offices of the petroleum companies interviewed in Ethiopia. There might be scope on an individual basis, but no company or chain is currently interested in this option.

The same holds true in many respects in Uganda. While there is a growing market for non-petroleum and automotive products in Ugandan rural petroleum stations, there is still little interest and little supply infrastructure to support development of a product and service offering from these stations. As in Ethiopia, most are owner-operated, although many are licensed by the operators from the petroleum companies. While services such as food stalls, drinks and other small products are increasingly offered from these outlets, there is currently no demonstrated interest in expanding these to more durable consumer items, such as energy products (e.g., solar panels, CFLs, high performance batteries, etc.).

Only in Kenya is there any interest amongst owner-operators of rural petrol stations in the opportunity to expand their service and product range to include new energy products and services. Two major companies have shown interest in this, and one, in particular, is interested in exploring options of pairing up with hire-purchase outlets, and possibly with specific product companies (e.g., solar, battery, etc.).

This is perhaps one of the most interesting and exciting findings of the work. Given the depth of the rural high value product sales network (through hire-purchase outlets), and the extensive petroleum service station network, combined with an extensive and growing rural solar PV and high value battery sales network, good scope exists for developing a model that combines and builds upon these chains. There is definite scope for this model to develop in Kenya, and this could, in turn, provide a good model for other, more highly developed rural markets in other parts of the world (e.g., Southern Africa, Latin America, South Asia, South East Asia).

Contents

1 Introduction

1.1 Purpose of this report

This the final report for the PRES (Peri-urban and Rural Energy Services) project, which has been funded by the Shell Foundation's "Increasing Access" programme (http://www.shellfoundation.org/sep/sep_main.html). The project was implemented by the UK-based organisation "The Sustainable Alliance" in Ethiopia, Kenya and Uganda.

The purpose of this report is to present the project starting premise, to summarise the design and implementation of all the survey work and to describe its outcomes and to make recommendations on possible ways forward.

The report outlines the aims of the PRES project and provides specific details on the aims of the fieldwork. The general methodology for the survey work is presented. For each country, the report goes on to present a brief summary of the implementation of the survey work and to set out the findings.

The report concludes by presenting the opportunities for energy service/product delivery using existing networks. These opportunities are described in a practical way in terms of the most promising business models for the delivery of energy products and services in rural and peri-urban areas.

1.2 Aim of the PRES project

The overall aim of the PRES project was to develop business models for the provision of energy services and products to peri-urban and rural areas in Eastern and Southern Africa based on the existing commercial distribution infrastructure (petrol stations, supermarkets, etc).

By achieving improved access to affordable energy services, it is expected that PRES will contribute to reduce poverty and increase welfare and standards of living in peri-urban and rural areas in East Africa

The PRES project was based on the observation that in order to improve access to energy in underserved areas, local entrepreneurs are developing and manufacturing a wide variety of renewable energy equipment, including improved stoves, biomass geysers and solar water heaters, solar PV lamps, batteries and charge regulators, solar cookers and even wind generators. As well, biomass wastes such as coffee husks and charcoal dust are being converted to briquette fuels, which sell at competitive prices.

Such market developments offer many benefits for the rural population. Amongst others:

- Use of indigenous renewable energy resources
- Use of modern fuels helps limit deforestation – a greater concern for sustainable development than greenhouse gas emissions in many African countries
- Use of modern fuels has beneficial health impacts

PRES asked the questions:

1. If such developments are occurring spontaneously in a piecemeal way, could a supportive infrastructure improve the market development and be a major business opportunity? And

2. Can the wide variety of products being locally made and imported be more effectively marketed to the wide base of rural and peri-urban consumers that need and can afford them?

The project team hypothesised that the existing petrol station or other distribution infrastructure presents significant opportunities for the development of a new kind of Energy Service business (“Energy Store”) which would dramatically improve rural access to high value, high quality energy services and goods. The PRES project aimed to understand the reality of this hypothesis.

2 Survey planning and survey instrument development

The PRES project began with a partners' kick-off meeting in Nairobi. At the meeting, the project partners began the process of defining the aims of the research and the information needs for the project and the methodology for gathering the information.

2.1 Aims of research and information needs

It was agreed at the meeting that the aims of the research were to:

Produce focussed information, including:

- Location of outlets
- Estimated population served by each
- Company and ownership details
- Products and services on offer
- Sales volumes

And examine, in selected areas:

- Population
- Energy supply and demand
- Incomes and major economic activities

Specific information needs were defined at several levels:

At the **company** level it was important to:

- Identify interested companies
- Assess these companies for appropriateness as potential partners
- Understand their existing operations and their current performance in terms of:
    - Sales
    - Growth
    - Products
    - Methods

At the **outlet** level, the team wanted access to the dealers, managers and licensees of the companies with distribution chains so that existing licensing/franchising/ownership arrangements could be clearly understood along with, amongst other things, the business climate, market activity and potential local demand. Specifically, the team wanted to collect information on:

- How outlets actually operate;
- The reality of doing business in the field;
- Ownership arrangements at the distribution chain outlets;
- Whether the outlets had access to finance;
- How well deliveries and service support from the company worked;
- The level of interest in and understanding of energy services and equipment

Market level research was essential in order to gather data upon which to build a business case. In selected areas (based on the findings from company interviews), specific surveys of customers visiting the outlets and catchment surveys in the areas around the service stations/distribution outlets were carried out.

The surveys were designed to understand current energy use and also to enable some future gazing to be carried out.

The tally surveys and catchment surveys were designed to build a picture of:
- What people are buying
- What they use energy for
- What they would like to use energy for
- What improved services they would need
- What equipment would they want and be able to buy
- What they would not buy and why

2.2 Approach adopted for getting this information

Having defined the aims of the research and the information needs, the project team set about designing survey instruments to facilitate the collection of relevant information and defining the processes by which the data would be collected.

The initial design ideas and outline were established at the meeting but individual project team members were assigned specific elements to work on and the project team commented and helped revise the survey instruments. The project team decided on the use of 4 types of "questionnaire" or focussed interview.

Company:

Head or national offices of companies or organisations were approached in each country. Each country team prepared a list of companies and tried to secure meetings with the appropriate, senior personnel. The **company** questionnaire was used to guide the discussions in the meetings or was sent to companies in the case where meetings could not be arranged.

The project team entered into a confidentiality agreement with companies interviewed. The agreement:
- Explained the background to the project;
- Guaranteed that commercially sensitive information would not be specifically reported or attributed;
- Indicated that information provided could be reported in general terms, without commercial confidentiality being broken; and
- Required the project team to provide all public domain reports to the participating companies

As well as getting appropriate information, the project team requested permission and letters of support and introduction in order to facilitate access to the rural and peri-urban outlets of the company in question.

Information provided by the companies combined with the market and field understanding of the project teams facilitated the process of selecting the areas in which the rural and peri-urban work was to take place.

Outlet:

In the target areas selected by the project teams, the outlets identified during the company interviews (plus any other outlets found in the area unexpectedly) were approached. The **outlet** questionnaire guided discussions with the managers/owners of the outlets. Information gathered in these interviews provided a useful cross-check with the Head Office interviews and provided access to the on-ground reality of the operation of distribution and outlets.

Market:

In order to gather detailed market information, two customer questionnaires were developed. One was a short **tally** sheet, which was used with customers entering the targeted outlets. The second was a more detailed **catchment** questionnaire.

The project teams engaged enumerators in order to undertake the tally and catchment work. The enumerators spent several days in the field in each of the targeted areas and, with the

catchment questionnaire, visited houses within the defined catchment to establish the current energy profile and energy aspirations of the potential market around the outlets.

The selection of the catchment area had a number of related elements that had to be considered. These include the distance that people are willing to travel to "shop", the density of population around the stations, the attitude towards shopping – in terms of frequency of visits to shop, etc.

Table 2.1 summarises the number of surveys undertaken in each country.

Table 2.1: Number of catchment surveys carried out by country and region

Country	Region	Number of surveys
Ethiopia	Alaba-Alem-Gebeya	255
	Jimma	261
	Aleta Wondo	114
Kenya	Mt. Kenya	~100
	Western	~100
	Northern Rift	~100
Uganda	Luwero	176
	Mpigi	121
	Kayunga	185

The definition of the catchment area was different in each country. In Ethiopia, for example, intermediaries play a very key role in getting kerosene into the "deeper" rural areas from the service stations, which are only situated on major highways. It would have been difficult for the project to survey the market served by the intermediaries. Understanding the intermediaries (by interviewing them at major service stations or other outlets), however, enabled the project team to target the development of a business at existing service stations, which the intermediaries can use to bring benefit to their own businesses and the population in the rural areas. In Kenya and Uganda, there are more clearly established commercial centres in rural areas and these were used as the focus for the catchment survey work.

3 Ethiopia Country Report

3.1 Survey targets

In the Ethiopian context, the survey targets were classified into two: a) existing commercial market infrastructure with its network and; b) pilot geographic areas with perceived higher potential for certain types of high value energy products and services. Accordingly, companies (suppliers, dealers, distributors) and commercial outlets with existing market infrastructure and or network; and that deal with petroleum products, consumer electronics and general consumer goods were identified and selected for interviews. These include three petroleum products distribution companies and their commercial outlets, four electronics companies and a number of others, which are engaged in the marketing and distribution of consumer goods.

Where there are no commercial networks or when the major companies were not keen on new business opportunities, local companies dealing with electronics, hardware and general merchandise were also included.

For consumer (market demand) side of information, based on previous (indigenous) knowledge and information obtained from company level interviews, three pilot areas were selected for catchment (household consumer) surveys. These are:

- Alaba-Alem Gebeya Corridor (Southern Ethiopia),
- Jimma and (South-west Ethiopia),
- Aleta Wondo (Southern Ethiopia).

The criteria adopted for selection of pilot areas included, amongst other things, better disposable income levels, cash crop production, monetisation of the local economy, rural commerce and trading centres, higher expenditure on energy for entertainment (dry cell and car battery for radio and TV), previous experience in alternative energy such as PV solar home systems, accessibility and resource requirement for the fieldwork.

3.2 Fieldwork Planning and Logistics:

With introductory letters explaining aims and objectives of the PRES project, Company (High Level) interviews in Addis Ababa began in early February 2001. This was followed up by personal visits by MGP staff to complete the replies.

After detailed arrangements were agreed with local authorities, fieldwork commenced in late March in the three pilot areas. To overcome potential cultural and or communication barriers interviews were administered by locally recruited and trained enumerators with two experienced supervisors and one fieldwork coordinator from MGP. Although it was envisaged that the fieldwork would be completed in May 2001, fieldwork in the third site was delayed due to administrative problems. It was finally completed at the end of July 2001.

In each of the pilot areas where the fieldwork was completed a sample of over 250 rural and peri-urban households within a radius of up to 40 kms were covered by the survey. Based on income levels, proximity and accessibility, specific survey sites within the pilot areas were selected with the help of local authorities in each site.

Both quantitative and qualitative approaches and survey instruments were adopted to gather data and information that help to determine availability of market, its size, characteristics and infrastructure for delivery of high value energy goods and services to peri-urban and rural consumers in the areas studied.

3.2.1 Quantitative Surveys:
Various quantitative methods and survey instruments that go along with them were utilised to collect quantitative data from various sources. These include the following:

High Level (Company) Interviews: the purpose of this survey was to identify potential suitable partners for the PRES project. Three international petroleum products distribution companies (Shell Ethiopia Ltd., Mobil East Africa Ltd. and Total Ethiopia S.C) and over 20 other local companies engaged in supply, dealership, distribution and trading of general merchandise were identified as potential partners for the PRES project. Fifteen companies were selected and invited to participate in the project of which only six companies showed interest in and responded fully to the survey forms.

Commercial Outlet Interviews: conducted to determine existing business models, supply modalities, range of products on offer, existing market size and characteristics for those products, and interest in new and or high value energy goods and services. The interview included both petrol stations and other non-petroleum commercial outlets.

Service Station Visitors Tally and Interviews: this tally and interview was made to obtain information on number of visitors per day, modes of transport used, and type of purchase made. Moreover, a sample of consumers were interviewed at the point of purchase to capture some first hand information that would guide the larger catchment survey.

Catchment (household Consumers) Survey: a sample of over 250 households residing in peri-urban and rural areas of 5 to 40 kms were interviewed primarily to determine whether or not demand for higher value energy goods and services exists. This survey instrument was designed to collect data on types of existing appliances and devices for cooking, lighting and entertainment, sources of energy used, prices paid for various sources of energy, awareness and availability; and ability and willingness of consumers to pay for higher vale energy products and services.

3.2.2 Qualitative Assessments:
Although some commercial outlets such as petrol stations were able to provide most of the information needed, many local companies and rural merchants found it very difficult to provide quantitative information about their businesses. This was mainly due to poor record keeping that prevented them from reporting volume of sales and performance of their businesses in previous years.

Therefore, using the commercial outlet interview forms (with additional questions as necessary) as a checklist to guide the discussion, a case study approach was adopted to get the picture of existing business arrangements, determine level of interest in new products, identify market barriers, and examine existing partnership opportunities. As regards petrol station interviews, a hybrid of quantitative and qualitative approach was used, whereby qualitative information was collected where and whenever respondents were unable to provide quantitative data as required in the survey forms.

Finally, extensive literature reviews were made both to bridge possible gaps and obtain relevant information from secondary sources.

3.2.3 Key Issues: Difficulties Encountered, Measures Taken and Existing Information Gaps
During implementation of the PRES fieldwork unforeseen difficulties were experienced. The first difficult that was experienced was the extended delay in getting replies for “High Level” (Company) interviews. Perhaps due to an unsettled political environment that coincided with these interviews companies were very reluctant to make quick decisions and explore more business opportunities as they were thought to be initially. Surprisingly, this was particularly true of service stations, which were thought to be looking for broader business opportunities owing to the fixed retail margins on petroleum products (excluding lubes) in Ethiopia. In

order to overcome this difficulty, the country PRES team made frequent personal visits to most of the companies to encourage them to complete the questionnaire.

At this stage (August 2001), there are still a few potentially suitable companies that have not completed the questionnaire. During development of the business plan(s), the PRES team will approach companies again, if it is thought that these companies could add value to the model being developed.

The second problem was lack of proper documentation at commercial outlets making it difficult for them to provide information on historical performance of their business. As indicated earlier, a qualitative approach was used as needed to bridge the gap. Case studies and key informant interviews were also conducted to obtain information on rural traders and local economic activities in each of the survey areas. Moreover, given the apparent lack of interest by service stations to explore new business opportunities despite their strategically advantageous position, other local companies that deal with electronics and general consumer goods were included in the survey to broaden the chances of identifying suitable partners.

Finally, although it was envisaged to complete the fieldwork as early as May 2001, there were delays due to some administrative difficulties. The third and last survey site (Aleta Wondo) was completed in the last week of July 2001.

3.3 Survey findings

3.3.1 High-level

There are four international oil companies engaged in distribution of petroleum products in Ethiopia. No domestic companies are involved in the petroleum industry. As of year 2000, all four oil companies have 520 service stations throughout the nation. Spatially, Oromia followed by Addis Ababa, Amahara and Southern Ethiopia have the highest concentration of petroleum products marketing outlets.

According to information from key people in the industry, outlets tend to cluster around the Djibouti-Addis Ababa corridor and areas with high economic potential (coffee and other cash crops). Areas such as Jimma, Dire Dawa and Sidamo are towns where most successful retail stations are found.

Only one oil company showed interest in the project at a national level

Eleven other big non-petroleum companies (domestic) were also approached to participate in this study. Results were disappointing. Only three companies showed interest and participated in the study.

Prior to the 1974 revolution, there were several international and domestic companies that were involved in the extensive supply, distribution and marketing of goods in Ethiopia. The previous political regime, which became involved in almost every aspect of the economy, has, in many ways, wiped out not only the physical industry and the infrastructure but also the industrious/entrepreneurial abilities and interest to market rural goods and services on a scale matched pre-1974. As a result, such companies have only been trying to make a ‘come-back’ since the mid 1990s, and, thus far, excluding the petroleum companies, there are no chains, not market groups, operating outside Addis Ababa, much less in rural catchment areas.

3.3.2 Outlet

Commercial outlets including petroleum retail stations, general consumer goods and electronics shops were interviewed in all the three places where the survey was conducted.

With regard to the petrol stations, it was found that the retailers’ margin on petroleum products, excluding lubricants, is fixed. Except for a very few cases where the national

(international) companies own the outlets, the majority of the outlets are owned by private individuals (businessmen), who operate under certain exclusive agreements with respective companies. Diesel followed by kerosene and gasoline are the major products sold by all oil companies. For instance, with its leading market share, one company sold close 300 million litres of diesel in year 2000.

Surprisingly, in spite of the limited margins on fuel the petroleum outlets did not have much enthusiasm for extending their product range with non-petroleum products. Although, the majority of service stations have a shop, which is either empty, used as an office or lubricants are displayed for sale. The tradition of selling non-petroleum products in service stations does not exist in Ethiopia. In the mid 1990s, some oil companies and or outlets tried to introduce a "Food Shops" concept in Addis through leasing and franchising their facilities. From what one can see today in those shops, there has been little success and the majority of the shops are closing down.

The non-petrol outlets had very poor record keeping. It was difficult to secure any quantitative information. As mentioned above, a more qualitative (case study) approach was adopted. However, there are clear indications of increased sale of appliances such as TV sets, small gen-sets, and radio/tape recorders in recent years. Shipment of such goods takes different forms such as from central warehouses to regional stores, branches, market outlets and then to small wholesalers, retailers and even consumers. Some companies have sole distribution agents in regional towns. The other model takes the form of an intermediary who obtains supplies directly from supplier in Addis, transport it to towns where he acts like a small wholesaler. From this point, rural merchants buy the goods in smaller quantities and transport them deeper in to rural areas to sell them.

Credit is very informal and based on acquaintance, previous repayment performance; and is only granted for very short period of time. There are a few cases of hire purchase arrangements and these are exclusively in major urban areas. Products sold through hire purchase arrangements include TV sets, furniture and cookers.

3.3.3 Tally

Around 1060 tally surveys were completed. Eight service stations were targeted for the surveys and the surveys were conducted for one day at each location.

The most common forms of transport used to travel to service stations were motorised vehicles and foot. It was also learnt that nearly all of those customers who arrived to the stations are those who came there to buy kerosene for household use.

Despite the presence of shops at services stations, customers do not usually enter. Because, in the first place, there is not much to see and buy in the shops. Secondly, since the pumps are outside and majority of the customers are those who come there to refill their vehicles, there is no need to go to the shop even to pay money for their purchases. As a result, out of over 1060 customers who visited eight stations in one day in three locations surveyed, only 7% were observed entering shops. Out of the eight service stations surveyed it was only one shop that had had a few non-petroleum products in its shelves. Nearly the entire purchase made at the stations are petroleum products (see below).

The majority of customers come from within the localities. Passing-by customers who were served at the stations were not more than 30% of the total. Close to 70% of the customers reported that they visit a service station five times and more per week. First timers were only 8% of the total. A quarter of customers claimed to have spent over Etb 150 on the date the interview was made. Those who have spent below Etb 10 up to Etb 150 are pretty much evenly distributed between 11% and 16%. About 10% of the visitors did not purchase anything.

Kerosene closely followed by diesel/petrol are the most frequently purchased items in the stations. Non-petroleum purchases constituted only about 12% of the total.

As a land-locked country, imports of kerosene come through the port of Djibouti. Prices vary depending upon distance of destinations from the supply depots located in Djibouti, Dire Dawa and Addis Ababa. Generally, petroleum product prices are lower for towns and rural areas located in Djibouti-Addis corridor. Higher prices are in the northern, western and southern parts of the country, which are up to 1000 km away from supply sources. Although much is not known yet, an agreement was reached recently between the governments of Sudan and Ethiopia to import petroleum from the Sudan and supply the northern region. This may affect local prices in the future.

In some remote rural areas, the kerosene price is estimated to be as high as Etb 4.00 ($0.48) per litre, where retailers and rural merchants transport kerosene and other goods by vehicles, donkeys and humanloads to points of sale. There are no formal credit arrangements for fuel purchases but as part of their strategy to win competition, pump owners provide some very short-term credit (ranging from a day to a few weeks) to their regular customers.

3.3.4 Catchment

Peri-urban areas in Ethiopia are very limited. Going out from the urban centres, the households quickly become "rural" – lifestyle, income, fuel-use. Peri-urban is defined as those dwellings which are situated within the urban boundary but which have poor connection to the grid, poor access to urban services and tend to have lower incomes.

The Ethiopian surveys captured peri-urban and rural dwellings in the same catchment groups. The work started from the peri-urban areas in towns and moved out into the rural areas.

A total of 630 households were interviewed in the three survey sites. About 60% of the surveyed households were peri-urban and the rest were rural residing between 5 to 30 kms from the surveyed urban areas. The table presents the breakdown of surveys conducted.

Table: Breakdown of catchment surveys carried out in Ethiopia

Survey Site	**Urban**	**Rural**	**Total**
Alaba	143	112	255
Jimma	154	107	261
Aleta Wondo	67	47	114
Total	**364**	**266**	**630**
Per Cent	**58%**	**42%**	**100%**

One important aspect that the surveys revealed is that the markets in Ethiopia are highly seasonal particularly for products such as household appliances and electronics. The peak of market activity occurs between the months of October and January. This is due to a number of factors including income from cash crops and holiday season.

3.3.5 Observations/comments of country teams

A general observation coming out of the survey work is that the petrol stations are the best located to provide improved energy services but in fact are the least interested in extending their product range. Petrol stations appear to be doing relatively well, and require proof that additional products will bring any real benefit to their businesses. This is an area that will be explored in more detail during Phase II. A phenomenon that requires more attention is the fact that in certain highly monetised areas, rural petrol stations effectively act as wholesalers, where itinerant rural entrepreneurs come with pick ups or lorries, with empty barrels, and fill up with diesel and kerosene, which they then distribute and sell over a wide catchment area. The potential for determining these business people's interest in marketing high value energy products needs to be further explored. If they showed strong interest, then it is likely

that key petrol stations would be more interested in exploring the high value energy product and services option.

There is an attitude of needing to see success before buying into something. This needs to be overcome to successfully initiate a new business in Ethiopia. To do this, somebody needs to take risks. Companies in Ethiopia are now fairly risk averse. However, not all business people fit that category, and if sufficient demand for new products or new services can be demonstrated, risk takers are to be found.

The PRES project and other relevant information has revealed that there is a market in Ethiopia but how to tap it is a difficult issue. There is very little awareness and availability of modern energy products.

4. Kenya Country Report

In Kenya, all 8 of the companies surveyed had impressive distribution networks, which could be used for supply of modern energy to households. The largest petrol dealer has a total of 220 outlets spread all over the country. The battery dealer interviewed has 8 outlets in major towns and 350 distributors spread all over the country. The hire purchase company interviewed (one of three major hire purchase companies) has 33 outlets spread across the country. The electric goods manufacturer/distributor has 12 franchise-type outlets and works with about 100 distributors.

Thus, there are several rural networks that could be used to expand access to high value energy products and services. Moreover, there is good potential to deliver such products and services through a combination of two or more of these networks. This could have a significant effect in quickly stimulating and accelerating access to these products and services in rural Kenya.

4.1 Survey targets

4.1.1 List of companies/organisations for high-level surveys

Initially the surveys targeted more than ten companies viz:

- 5 major oil companies,
- A supermarket chain,
- A battery manufacturer and dealer,
- Hire Purchase Company,
- A major motor company with spares distribution and outlets,
- A solar PV distributor, and
- A marketing research organisation.

The motor company and supermarket declined to participate in the surveys and the marketing company proved to be too busy and, hence, was not interviewed.

Therefore discussions were held between managing directors or their representatives of eight companies.

4.2 Fieldwork planning

4.2.1 Areas targeted

Three regions were pre-selected for field survey. These were the Mt. Kenya region, North Rift Valley and Western Kenya. Company chief executives recommended these regions since they show high sales volumes for petroleum and other products. The areas are thus well-served with commercial outlets right into the rural interior. In addition the regions contrast variously in the sense that Mt. Kenya is dominated by very enterprising small-scale cash crop farmers, Western region by smallholder subsistence farmers and North Rift by small to large-scale cereal farmers.

Mt. Kenya region is home to over five million people and is one of the most densely populated rural areas in the world (over 600 people per square kilometre in some districts). The study concentrated in Meru districts between Chuka and Maua towns. These two towns lie about 100 km apart, Chuka to the South and Maua to the North, and are dominated by cash crop farmers, chiefly coffee and tea farmers respectively. The uptake of renewable energy services and products (solar electricity) in this region is relatively high and is demand driven rather than NGO and donor led.

The Western surveys concentrated on Kisumu and Kakamega towns. These two towns lie about 50 kilometres apart. Kisumu is the third largest town in Kenya and serves a large catchment area. Kakamega on the other hand is the provincial headquarters of Western province and serves largely sugarcane farmers in Kenya's second most densely populated rural area. Along the Kisumu – Kakamega road are a number of service stations, which serve mostly smallholder subsistence farmers. These service stations and their catchment were targeted for surveys.

Rift Valley Region is also referred as the breadbasket of Kenya. Over 70% of the maize and wheat grown in Kenya are produced in this region. The towns targeted for surveys were Eldoret and Kitale. These towns are about 65 kilometres apart. Eldoret is the fifth largest town and is one of the fastest growing, Kitale on the other hand boasts of harbouring huge tracts of land of maize for absentee landlords.

4.2.2 Logistics - plans, practicalities, and difficulties encountered, how they were overcome.
Surveys were planned in such a way that a field supervisor made an advance visit to the region to identify and select suitable enumerators. Once identified enumerators were trained. Training involved a half days discussion on the purpose of the interview, familiarising with the questionnaires and an afternoon practical study, where trainees went to the field and tested the questionnaires. In the evening the supervisors went through the completed questionnaires and made necessary corrections with the enumerators.

The difficulties encountered were:

- The household questionnaire was a difficult one to administer. Both respondents and enumerators did not like the type and flow of the questions. It was considered to be too long and repetitive.
- Whilst the commercial outlet questionnaire was easy to administer, very few managers were willing to disclose sales volumes. Only a handful showed some sales volumes over the years.
- Suspicion posed by respondents, generally these suspicions were of political and religious kind. The exercise, coming as it did at a time when the country is highly politicised due to political succession issues, did not help, especially in the Rift Valley region. To convince some respondents was difficult.
- Household interviews were carried out mostly during weekdays. These coincided with farmers work schedules and convincing a farmer to leave work in order to be interviewed was a bit of a problem. In a situation where the would-be respondent flatly refused to be interviewed it meant that the enumerator had to go on to find another respondent.
- There were other difficulties such as rains, impassable roads and walking long distances, which made the interviews, drag on for a longer period than anticipated.

4.3 Preliminary survey findings

4.3.1 High-level
The eight company executives interviewed all expressed interest in the project but had different expectations. Of the eight companies five were internationally and three locally owned. All had impressive distribution networks in the peri-urban and rural areas of Kenya. The total number of outlets of the eight companies is 645. One oil company has the highest number, with 220 outlets. Of all high-level interviews, three companies (one oil company, the battery manufacturer and the hire purchase company) were the most enthusiastic about the PRES work, and assigned persons at the headquarters to assist in contacting their outlets to inform them of the project and the impending surveys. Although other companies expressed interest they were unwilling to commit themselves further to inform their outlets of the team's interviews.

Company experience with household energy and renewable products. All of the companies interviewed were actively engaged in marketing and selling at least one type of household energy product. The most active existing markets are for

- kerosene (383,700 tonnes in 2000, valued at almost US$ 200 million on a retail basis) and kerosene appliances,
- LPG gas (33,400 tonnes in 2000 is worth over US$30 million on a retail trade basis) and cylinders (700,000 bottles on market in 2000),
- solar PV and batteries for household lighting and TV (greater than US$8 million per year)
- 12VDC and 240VAC electric appliances such as black and white TVs, lamps, and cassette players.

Kerosene appliances, including hurricane lamps, hurricane lamps, pressure lamps, pressure stoves and wick stoves are found universally in every household and more or less every urban and peri-urban centre in Kenya. In every town visited, however remote, there was a shop selling these items. In most cases main dealers deliver them using their own delivery vehicles to a nearby local depot/wholesale/retail shop. One of these stocks entertainment equipment and appliances, but only delivers energy products on demand as this not a core activity.

Shop-keepers in more remote areas ferry products from the depot on their bicycles or hire pick-up vehicles. Kerosene prices at the wholesaler are roughly Ksh 45 ($0.60) per litre. The shopkeeper will purchase 20 litre drums at this price. This will be sold in small quantities (down to 0.1 litre) in any kind of container. The mark up per unit volume can be as much as 100%.

All of the petrol companies have entered the LPG market and are actively selling kerosene as a fuel to rural people. LPG sales have been growing steadily in Kenya and all of the companies are seeking to capitalise on the growing market (although some have been more successful than others). The trend is towards smaller and smaller sized gas bottles (3 kg is the smallest available now) and also towards bundling an appliance (cooker/light) into the purchase price of the equipment. The three non-petrol trading companies studied are all actively involved in sales of PV and PV system components. One of them (the hire-purchase dealer) sells appliances and household amenities as well as PV. At least one oil company had previously marketed solar products (PV and solar water heaters in the early 1990s), but the market had been difficult for them to serve, so they sold off the business.

There is a trend towards smaller, lower cost products in PV sector as with LPG.

Improved charcoal and wood stoves and institutional stoves did not figure prominently in this study as they are less available through the “formal” trading sector. They tend to move in the informal sector at lower costs and prices. However, this is changing. The Kenya Ceramic Jiko (KCJ improved charcoal stove with metal cladding and fired ceramic liner) is available in supermarkets and shops as a value added retail product.

Marketing programmes and priorities. Reaching rural markets is a priority of all companies surveyed. Kenyan companies have sophisticated marketing programmes which use organised launches, newspaper, radio, point of sale demo.

To reach outside of Nairobi, many companies advertise on KBC (the national radio station and the only one which reaches deep into rural areas) or others such as Kameme --- which reaches into specific rural areas.

Successful LPG promoters said that demonstrations and road shows enabled them to move quickly into the market with smaller cylinders and cookers --- and to allay consumer fear of the technology. This tactic has also been successful with the “Super Money Maker”, a micro-irrigation pump marketed by ApproTEC (a local NGO).

Solar PV promoters said that newspaper advertising, radio and demonstration (i.e. in shops and in agricultural fairs) were the most efficient marketing tools.

The hire-purchase company uses radio, TV, ads/posters and radio (KBC) to reach the rural people. Additionally, the company uses door-to-door sales people who work on commission basis to reach their market.

Limiting factor for business growth: Finance was listed as major limit by all of the players concerned. To overcome this, most of companies interviewed were engaged in some type of hire purchase or credit activity to increase their sales. For example, 3 petroleum companies were selling LPG cooker-cylinders through targeted SACCOs (Savings and Credit Co-operatives)[1] or company debit systems (i.e. large companies such as Coca Cola, Kenya Bus Service, Bamburi Cement, tea societies, etc.). The battery distributor has entered into credit arrangements with a major Kenyan bank to provide financed PV systems and also deals with a hire-purchase company on an exclusive basis.

Awareness of products was also cited as a constraint to growth of the market. For example, one barrier to the expansion of the LPG gas market is consumer fear that their canisters are "unsafe". With PV, the distributors mentioned that some areas of the country have a better knowledge of the technology than others.

4.3.2 Commercial outlet questionnaires

A total of 23 commercial outlets were interviewed, seven in western Kenya, nine in Mt. Kenya and seven in Rift Valley regions. Permission was sought from the "head office" of each of the outlets before. Most of the companies were quite interested in co-operating with the survey team, and were interested in seeing the outcome of the project.

Interest in diversifying into more energy products. All the outlets interviewed were interested in diversifying their business to include more modern energy equipment and services. An issue was the type of arrangement or business model that should be put in place. The commercial outlet questionnaires determined that 29 percent of respondents favoured a licence agreement (individual ownership), 24 percent a franchise, 47 percent sole distributorship and 29 percent other arrangement (this include those who referred us to their head office). Those managers who had a franchise agreement with petrol companies but owned the land where the business was operating mostly favoured sole distributorship.

4.3.3 Tally

Simple tally-type questionnaires were administered randomly in petrol stations to get an idea of the needs and characteristics of people who visit these stations. A total of 170 tally questionnaires were filled in Rift Valley, Western and Mt. Kenya Region. Amongst the findings, it was noted that visitors to the stations were primarily drivers/clerks, business people, professionals and farmers:

- 61% of the visitors came on personal business
- Bicycle (24.4%), foot (18.7%), and personal cars (18.7%) were the most common methods of getting to the station.
- About half (48.8%) of the customers came from less than 5 km away, and another 22.7% came from within 10km.
- 77% of the customers said they visit the station at least 2 times a week.
- 42.7% said they spent less than Kshs 100 (slightly more than US$1) on each trip. 30% spent more than Kshs 500 (approximately US$7).
- All (100%) of the customers came for some type of automotive or fuel need, with automotive fuel (56%) and household kerosene (37%) making up the majority of transactions.

[1] Kenya has one of Africa's, indeed the developing world's, most developed rural savings and credit systems. Millions of rural Kenyans belong to SACCOs, and utilise their savings and credit co-operatives to fund everything from land purchase to education. Suppliers like to market to customers through SACCOs as the SACCO offers the kind of guarantees that most rural people individually cannot offer suppliers.

- 21**%** visited the forecourt shop (i.e. a shop selling drinks, food, other non-petroleum products).

4.3.4 Catchment - House-Hold Surveys

Catchment surveys were conducted at 100 households in each catchment (around 300 in total) to get a more detailed picture of household energy demand than the tally survey. They were conducted *in situ* at rural households. The surveys were aimed at active consumers (i.e. the top 20-50% of the population) who would be interested in purchasing energy products. These surveys aimed to find out:

- What technologies households were using
- What technologies they were aware of
- What technologies are currently available to them
- And what they would be willing and able to purchase

To identify households for interview, three methods were employed. These methods were deliberately biased towards middle class households. These data is therefore not representative of all households in Kenya but represents the class of households that would buy modern energy products. The method employed was:

- Tally survey at petrol stations and other outlets – respondents were asked specific questions and whether they could be interviewed at home
- Visual appraisal of houses – homesteads next to the road had high priority and
- Reference by local leaders and other people.

The study did not ask people questions about their income, as this would make them suspicious. The questionnaire thus used occupation and type of house as a basic indicator of income.

4.3.5 Observations/comments of country teams

Market size, willingness and ability to pay and financing options

Outlet managers interviewed had impressive knowledge of the wide variety of modern energy products and services available (i.e. solar electricity, liquified petroleum gas, efficient lighting and cooking equipment and biomass based products). They were, however, doubtful of one thing – rural households' ability to purchase some of these products. With their limited means, they could only provide credit to institutions and approved customers. They said that, for modern energy equipment and service to move, better financing options should be put in place. In addition to this, outlet managers stressed the need for education and creation of awareness on the functioning and maintenance of some energy technologies --- especially solar electricity, LPG stoves and improved institutional stoves --- if these products were to sell.

The catchment and tally surveys documented a sizeable market for modern energy. Moreover most of the households were willing to learn more about modern energy and concurred on the fact that accessibility and availability besides finance are some of the hindering factors. Many respondents commented on the lack of access to credit facilities and the lack of awareness about modern energy choices.

On the ability and willingness to pay, the survey showed that 33 percent of households had the ability to pay for modern energy if they were well informed and had access. On the other hand 77 percent were willing but did not have the ability to pay.

There are three common ways that most rural households finance their energy items:
1) Hire purchase – mostly for salaried employees, - the repayment rate is above 90% according to Amedo.
2) Cash - in most cases the money is from sale of farm produce, is borrowed from a local SACCO or through a “merry go round” (this is where group of colleagues pay into a fund

each month. The whole fund is allocated to one member of the group each month on a rotating basis.
3) Shop owners' arrangements with trusted customers - the customer pays periodically for the product and will only collect on completion of payment. The payment period is six months to one year.

Both those with the ability and willingness to pay thought modern energy expensive and some form of credit facilities should be put in place. Buying on higher purchase or using a soft loan ranked high as favoured options.

Information gaps – risk, concerns, new ideas that need exploring

There is very high demand for modern energy among rural people. The survey has identified several needs of the market.

Finance for Consumers. First and foremost is innovative finance for end-users. Many people are willing to invest in new technologies, but are unable to raise the high up front costs. As much as there are many financial providers in the market, access to them is still a problem. Most households would respond to innovative financial assistance that is sensitive to their income and their needs. Though modern energy is important, basic education for children has a higher priority and many consumers already had loans for school fees.

Credit facilities come with risks and more responsibilities for the energy provider. There is definitely need for more research in this area in order to factor in poverty alleviation aspects, etc.

Intelligent Marketing: The second area that needs attention is the market is improvement of delivery and information channels in the market. Many people are still unaware of the alternatives they have. The heavy-handed selling approach of most of the companies does not promote intelligent consumer choice. Consumers are beginning to have a "choice" but they are not well enough informed to make the choice. For example, many consumers still fear that their LPG canister will explode. Others are not aware of the limitations of their battery and solar PV systems.

Smaller Product Size. Both LPG and solar PV are moving towards smaller and smaller product size. Innovative commercial players are breaking technologies into smaller pieces that can be bought incrementally (canister/cooker, battery/PV module), thus avoiding the need for finance. There is still a good deal of work to do in this area.

Appliance choice. Appliances are driving sales of kerosene, LPG and PV/batteries. Most of the work in development has been done on the energy technology, but not enough has been done to make/sell/locate appropriate low-cost appliances. For example, the PV consumer has an extremely limited choice of TV's and lamps --- a DC colour TV or a range of useful lamps and appliances would stimulate increased use of the PV technology. The same is true for LPG and LPG cooker/lamps. Lower cost and higher quality appliances will drive the market for the technology.

5 Uganda Country Report

5.1 Survey targets

The Ugandan rural energy market is relatively immature. In rural areas, there is little involvement of international companies. It is the oil companies that have greatest presence in those areas, and they limit their products to traditional petroleum goods and automotive products.

Other organisations, such as supermarkets and hardware stores are only a recent phenomenon in Uganda and, as yet, they are present primarily in Kampala

Interviews were sought with:

- Oil companies
- Agro-processing companies
- Beverages and brewing
- Kikuubo, Kiyembe and Mbarara study
- Electrical products distributors
- Financiers, equipment suppliers, entrepreneurs

From this list only two oil companies took any real interest in the work. It was difficult, therefore for the project team to gather any real information to assist with targeting the survey work.

5.2 Fieldwork planning

5.2.1 Areas selected

Because of the lack of interest from companies to be involved in the survey work, the project team was left to select the target areas for the survey without input or confirmation from the companies.

Three areas were selected – Mpigi, Luwero, Kayunga. All these are around 100 to 120 km from Kampala. These towns are "rural". They are relatively small and dwellings and lifestyle quickly return to be rural immediately outside the town.

5.2.3 Logistics – plans, practicalities, difficulties encountered, how they were overcome

The three selected areas were visited over a 3 weeks period by a team of 7 experienced researchers and two research supervisors. At the outset of the fieldwork, the study team met the sub-county chief who assisted with organising the study.

The PRES project survey questionnaire was adapted slightly to better suit the Ugandan situation.

A complete list of all the households, business establishments and intuitions was obtained for the area. Discussions with the Sub-/county chiefs of the various areas provided basic socio-economic information on the area. .

A cluster sampling method was used for the sample selection. The main clusters formed were the trading centres, areas around trading centres and areas along the routes leading in and out of the trading centres, whilst a randomised sampling of households was applied. The general shops were visited based on a simple random sampling selection.

A team of well-qualified (University graduates) and experienced researchers was used in the data collection exercise. These were trained for one day in Kampala. The training was conducted in two phases. The first phase comprised an introduction to the objectives of the

study and a review of the survey instruments. The second phase consisted the field-testing of the enumerators and correction of mistakes. REDC's consultant (Statistician) from Kampala conducted the training. The actual fieldwork commenced the following day in the first study area. REDC staff handled field supervision.

Qualitative Data coding was done by a team of 3 persons each trained on how to fill the questionnaires. The activity took about 7 days. Data was captured into the computer using an EPINFO package (So far it is the best package for data entry) by a team of four experienced data entrants (all graduates). Each data entrant was required to do data cleaning of all the records he/she entered before his/her data could be accepted. The consultant then did the final data cleaning before commencing data analysis.

Quantitative Data analysis was done in SPSS/PC+ package by REDC staff. This took about 10 days. Further data manipulation was done in MS-EXCEL and this is where the charts were plotted. Occasionally other packages like Stats Direct were applied.

Documents and relevant literature on similar studies carried out in other areas were studied to give a background perspective to the final findings. The consultants compiled a summary of the findings in a preliminary report. The main results are documented in this report and presented in different sections below.

5.3 Survey findings

5.3.1 High-level

For the PRES project nine (9) oil companies were approached but only two took any real interest. There was definitely concern that this work was being carried out for the Shell Foundation, and by association, for Shell International (a competitor). In addition, there is a lack of understanding of modern energy equipment and service in general and whether the product supply and support in this sector represents a business opportunity.

The supermarkets and hardware stores, which have only a recent taken up business in Uganda and are, as yet, only present in Kampala do offer credit facilities.

Three other non-petrol companies with distribution networks were examined. These are involved in the brewing industry and in the agro-processing sector.

The research work also examined a number of centres for distribution (Kikuubo). The Kikuubo are central points for distribution up-country, dealing mainly in general merchandise. These are found mainly in Kampala (with specific ones for different areas of the country), although Mbarara has kikuubo.

In Kampala, the Kiyembe kikuubo deals mainly in electronics and domestic appliances. Namirembe Road has 13 big "shops" housing dealers in domestic electrical appliances and clothing.

At Mbarara, the kikuubo covers the Western region and deals mainly in electrical appliances and lubes.

5.3.2 Outlet

In the survey areas selected, as well as around Kampala petrol station outlets were visited. Some of the urban petrol stations have very extensive and sophisticated food outlets. In rural areas, however, the stations are in general, not involved in the sale of non-petroleum or auto products. However, specific products, such as soft drinks and mobile phone airtime cards are sold through service stations. Also, space at petrol station premises in rural areas are also used by other businesses (e.g., restaurants, repair shops, etc.).

5.3.3 Tally

Three hundred and seventy three tallies were carried out, mainly at the rural stations. Most people go to fuel stations using motorised transport. It was pointed out that most taxis only buy fuel when they have a fare so they make many visits to petrol stations.

As well as the rural stations, an additional study was conducted in and around Kampala, in order to establish whether a potential market existed among the urban dwellers that originate from districts outside Kampala and return to their rural homes on weekends. The argument that emanated from the fuel station tally and the catchment surveys suggest that many of the products being promoted constituted luxuries. Therefore for these the best market is the urban population. A very large proportion of this group travel frequently or regularly to their families up-country.

As with Kenya, urban migrants, regardless their income status, maintain extremely strong links with their rural origins. Not only do they seek to improve the standard of living for their families in rural areas, but they also improve their own standards in rural areas where they spend considerable time, and where many hope to return to work, or at least to retire. ,

Even the poorest urban workers generally have far more disposable income than their rural counterparts. It is a feature throughout Uganda, Kenya (and much of the rest of Anglophone Africa) that urban migrants return home with goods and appliances, everything from televisions to radios, from tin roofing to cassette players. Therefore, the PRES Uganda team feels that an important strategy to pursue to get at the provision of improved rural energy services and products is through urban sales channels and outlets. That is, if urban migrants can purchase easily the kind of high value energy products and supplies useful for rural areas, then perhaps certain urban outlets might be the best means to develop this market.

5.3.4 Catchment

A total of 482 catchment surveys were carried out across the three survey sites - 121 Mpigi, 176 Luwero and 185 Kayunga.

Only 1.5% of the visited households use electricity to cook. Most use firewood and charcoal to cook. While 30 % of the households use paraffin on an occasional basis. There aren't any households that rely on LPG stoves and solar heaters. 75.1% of the households depend on the three-stone fire for cooking. The improved wood stove is still rare. About 34% of the households use of paraffin wick stove.

The bulk of electricity consumed is used on lighting rather than for any other purpose. However, paraffin is the major source of lighting energy among the households. Dry cells are used in hand torches by about 33% of households. The dependence on lead-acid batteries to supply lighting in the households, features only among 2.5% of the population.

The most common energy source for household entertainment is dry cell batteries. Much of this energy is used to power radios and radio-cassettes. Lead-acid batteries are used in one out of every ten households primarily for televisions. The high proportion of lead acid (car batteries) in use, and the high penetration of televisions in rural areas clearly demonstrates that if the marketing is done right, there is major unmet demand for high value energy services and products in rural Uganda.

The most common type entertainment found in the households are radio cassette recorders which are found in 64.3% of the households, transistor radios found in 40.2% of the households and TV sets found in 18% of the households. None of the households possessed computers and photocopiers.

Households use about 12 head loads of per month of firewood, with the highest level of use in Kayunga. For those that use charcoal, about 1.5 sacks of charcoal are used per month. The quantity of paraffin used is about 3.5 litres, and they use about 9 sticks of candles per

month. Households that own car batteries have on average one while those that use dry cells buy and use about 2.5 pairs per month.

Most households need light for 4 hours to 5 hours each night then few (19%) go beyond 6 hours a night. Most households require lighting for reading and homework for students and pupils.

The people surveyed had little familiarity with most modern rural energy products such as "charge regulators", "inverters", PV modules, solar heaters, gas cylinders and paraffin, gas and solar refrigerators. These items are not readily available in and around the study areas.

A significant number of the households wanted to own TVs, Radios, Electric cookers, Electric irons and electric fans.

5.3.5 Observations/comments of country teams

The perception from the survey work is that there is large unmet demand for high value, high quality energy services and products in rural and peri-urban Uganda. Many of the people interviewed said they wanted improved energy services and most said that money was available in the family (often earned by children in town or overseas).

It is not really clear whether there exists the infrastructure to deliver products to rural areas. There are very few examples of organisations reaching out successfully from Kampala. MTN (mobile phones) use trailers to take their products around country.

6 Summary of proposed businesses

With field information gathered and analysed in each of the target countries, Sustainable Alliance and its partner organisations in Ethiopia, Kenya and Uganda were able to outline several business models for the supply, distribution and sale of modern energy products and services in rural and peri-urban areas. These are presented in an abbreviated form below.

Preliminary discussions have been held with the key stakeholders indicated below, although detailed market surveys, business plans, franchising options, and other key elements necessary to finance or 'bank' these projects have yet to be carried out. Moreover, given the phasing of PRES, no 'deals' have been struck with these players, as the results from Phase I needed to be presented and discussed with the Shell Foundation, prior to proceeding. The PRES team have confidence that these models can be developed into 'bankable' projects, but further work is necessary, and serious business discussions need to take place with the players in order for this to occur.

Each of the country partners produced the outline of one or more business models for satisfying the market and making best use of the interest of existing commercial operations in the three countries and the region.

Three promising business models are outlined here.

6.1 Ethiopia - Birhan Energy Service Company (BESCO)

The **mission of BESCO Ltd** proposes to become the premier provider of high value, quality energy products and services to the Ethiopian market. BESCO is dedicated to building long-term relationships with customers through quality product, reliable supply and customer support, and wants to be recognised as the leading energy service company in the East African region. The company's goal is to grow steadily, becoming profitable by the second year of operations.

There are a number of reasons why BESCO will be successful. The following are key success factors, among a host of others:

- Explicit unmet demand for higher value energy goods and services (e.g., PV products, generating sets, high performance batteries, pressure lamps, etc.),
- Poor organisation, distribution and marketing system of existing companies,
- Rapidly growing rural economy with growing household disposable income,
- Economic and social benefits that the business will bring to its customers,
- Superiority of products and services offered by BESCO,
- Innovative marketing approaches that bring products and services closer to consumers,
- Strategic locations of marketing outlets at areas with the highest market potential,
- Wealth of market information that is almost exclusively at BESCO's disposal,
- Dedicated energy stores (one-stop-shop) where consumers can get wide range of products and services (e.g., PV products, generating sets, high performance batteries, pressure lamps, etc.) under one roof,
- Competitive prices as a result of scale economies,
- Highly experienced and motivated team,
- Reliable and speedy delivery of products to outlets and other dealers.

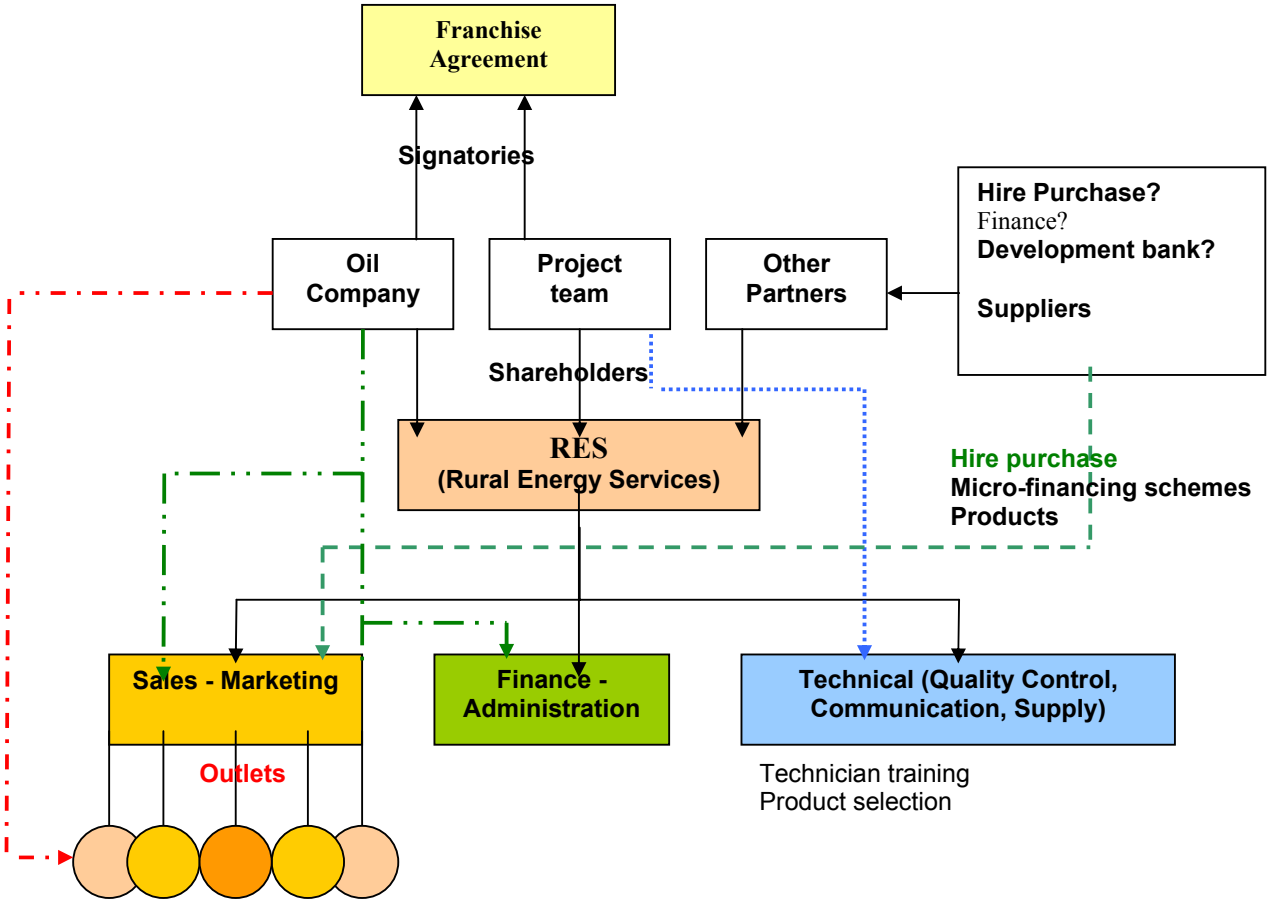
6.2 Kenya - Rural Energy Stores

Rural Energy Stores (RES) proposes to retail high value, high quality energy products and services to the peri-urban and rural population in Kenya. RES proposes to use an existing oil company's outlets in areas where recent surveys have shown that there is demand and ample willingness and ability to pay for the energy products and services. The aim of RES is to provide cost-effective and diversified option for the current energy demand of households (lighting, cooking, leisure etc).

RES will start by targeting an area with a catchment market of some two million people in two densely populated regions in Kenya: the Mount Kenya region and Western Kenya. Teachers, small business holders and farmers will be the preferred clients of RES. Integrating petrol outlets with at least one very active hire purchase company is a major task for RES start-up. Developing a system of consumer credit, building upon the hire purchase company's experience will also be a key activity.

Figure 6.1 provides a schematic of the proposed operation.

Figure 6.1: Schematic of the organisational arrangement of Rural Energy Stores.



4 outlets in pilot phase:

- 2 Western Kenya
- 2 Mt Kenya Region

4 product lines:

- Photovoltaic and SHS
- LPG
- Kerosene & improved biomass
- Batteries & accessories

6.3 Kenya - Rural Life Catalogue

Kenya has a very well-established rural cash economy. This has generated numerous industries (metal working workshops, saw mills, building services), on the one hand, and a high degree of social services (boarding schools, rural clinics) that employ large numbers of rural dwellers in the cash economy.

There is high interest among rural consumers in a number of products already, and key "sustainable living products" already on the market are:

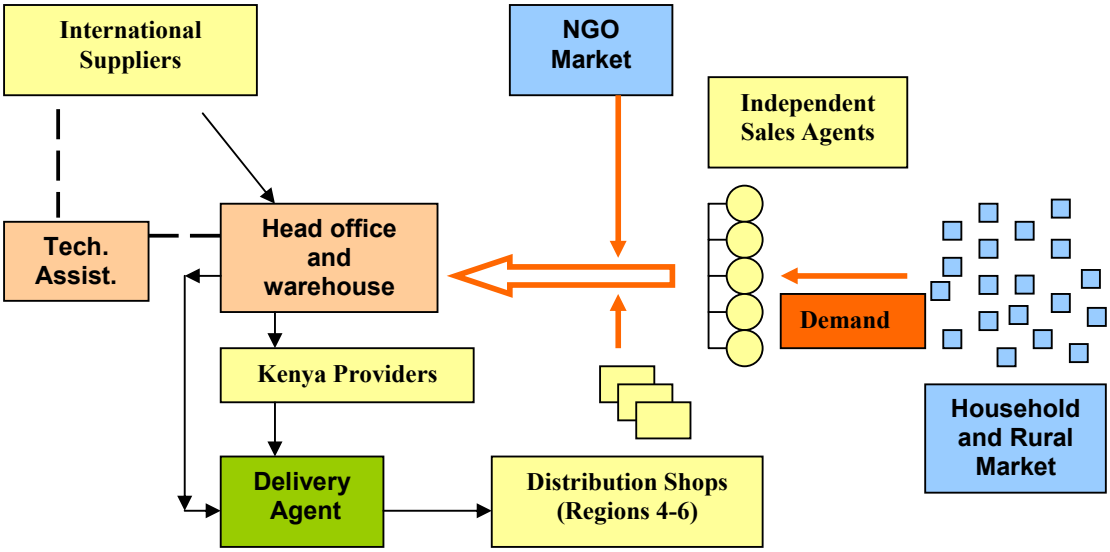
- PV and lead acid batteries (market is $6-8 million per year)
- Modern stoves (wood, kerosene and LPG)
- Agriculture/Irrigation (generator/pedal pumps, drip systems)
- Consumer HH appliances (TVs, radios, etc)
- Tools (sewing machines, drills, etc.)

The Rural Life Catalogue will market, supply and deliver sustainable appropriate technology products and services to rural households, businesses and organisations through a locally organised catalogue mail-out system. The catalogue will contain products that serve basic rural needs in energy, water supply, communication, health, small enterprise, focusing initially on energy. Products included in the catalogue will enable rural dwellers to improve their lives in a sustainable manner. The catalogue will be written to educate readers about the products, as well as to convince them to purchase. The catalogue will offer a mix of products, information and installation services.

Products will be sourced locally through existing networks and internationally. In the long term, the company will attempt to export local products for sale in American and European "sustainable living" catalogues.

Figure 6.2 illustrates the structure of the business and partnerships involved.

Figure 6.2: Schematic of the organisational arrangement of Rural Life Catalogue

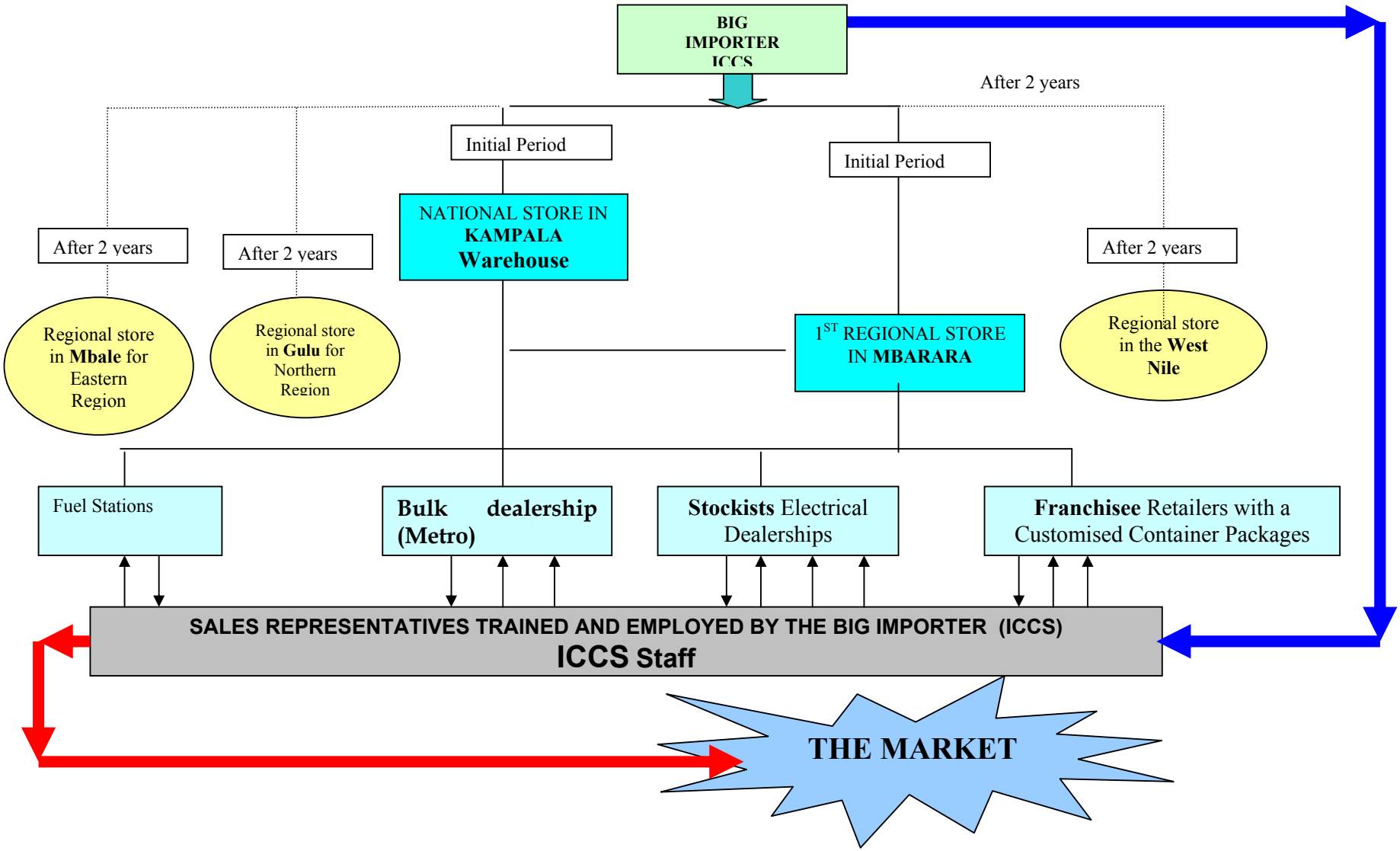


6.4 Uganda

In Uganda, one option is to use urban petrol stations that serve travellers returning from town to rural areas (migrant labour). Many urban dwellers retain strong links with their rural homes and return to rural areas from town regularly. More important than the fact that the distribution infrastructure is weak, targeting the migrant labour is imperative given the nature of societal cash flows. Significant rural investment stems from the migrant workers. The said migrant workers range from top civil servants, politicians and military officers to casual labourers. The underlying principle being the need and availability of high value energy products when and where they are required. Because of the latter argument and the disparity between rural vs. urban purchasing power the Ugandan team recommends that the migrant labour force constitutes the primary market.

This approach does not fully respond to the original project concept but may be the most effective way of achieving the project aim of improving energy services to rural consumers. This is from a purely business point of view as opposed to a rural development donor patronised approach.

Below is a schematic of proposed Uganda business approach:


BIG IMPORTER ICCS
After 2 years
Initial Period
Initial Period
NATIONAL STORE IN KAMPALA Warehouse
After 2 years
After 2 years
After 2 years
Regional store in Mbale for Eastern Region
Regional store in Gulu for Northern Region
1ST REGIONAL STORE IN MBARARA
Regional store in the West Nile
Fuel Stations
Bulk dealership (Metro)
Stockists Electrical Dealerships
Franchisee Retailers with a Customised Container Packages
SALES REPRESENTATIVES TRAINED AND EMPLOYED BY THE BIG IMPORTER (ICCS)
ICCS Staff
THE MARKET

Uganda - Institutional and Commercial Cooking Systems Ltd (ICCS)

The business model subscribed by the Uganda team comprises the cooperation of a series of companies working on terms to be agreed. The consortium is to be led by an institutional stove supplier. This is a joint-venture company that was incorporated early this year in 2001. The original mission is to effect dealership in wood and gas based cooking equipment and utensils. The company is the first Energy Service Company (ESCO) in the country and is currently operational. It is seriously engaged in mass production and market development for their steel products.

The primary market comprises the rural and urban schools, hospitals, the armed forces, the hotel and catering establishments and the domestic sectors. Its competitive edge rests on the fact that it deals in expensive though desirable specialised products. Furthermore, the national privatisation drive has led to the proliferation of private institutions and a fledgling investment environment.

Mode of Operation

The stove supplier shall be the prime mover of the consortium doubling up as the mass importer or producer of the merchandise. Allowance needs to be given to develop the necessary systems required to operationalise the import/export arm of the venture. The business shall also undertake to train the sales agents who shall be used to link the chain to the customers. The mechanism for sale shall be by personal selling. The agents shall be young career orientated sales and marketing graduates who shall have an orientation in the field energy management. These agents shall move from office to office, business to business persuading and soliciting customers for the merchandise. A number of companies exist in the country that uses personal selling as their means of entry to the market.

For the first two years, the company shall concentrate in the city of Kampala and in Mbarara, a town that has registered the fastest growth rate over the past 10 years. Mbarara also serves as a regional hub into the whole Western region of Uganda. In both these towns the business shall maintain a bonded warehouse from where stock management shall be practiced. In the subsequent years regional centres of bulk supply shall be placed in Mbale for the Eastern region, Gulu for the Northern region and Arua for the West Nile, Southern Sudan and the Congolese market. The basic retail outlets shall include the fuel stations, the bulk dealerships and their franchises chains e.g. Metro and the lucky 7 chains, Electrical dealerships and business franchisees who shall operate from customised units (Fibreglass containers).

The marketing strategy shall lean heavily on a well-designed promotional campaign that aims at informing and persuading the broader market.
The main products to be marketed initially include:

- Biomass base cookers, baking ovens, water heaters, kitchen appliances, institutional systems
- PV systems inclusive of Solar Home Systems (SHS), lanterns etc.
- Battery charging systems (rechargeable dry cells and deep cycle batteries etc)

There should also be instituted suitable pre-financing mechanisms given the large capital outlay needed to acquire the products.

7 Energy franchise company for delivery of business models

7.1 Energy franchise opportunity

The project team (headed by Sustainable Alliance) recognised, in the business models proposed for the three target countries, several common features such as market information, the need for specialist training, product knowledge, quality control and service support, financial assistance, off-shore procurement, and just-in-time supplies that were specific to modern energy service provision. The team realised, therefore, that one possible approach to developing these features could be by setting-up a specialist energy company that enters into a franchise agreement to meet these needs, on the one hand, whilst ensuring quality standards, reliability and longer term training and product improvement, on the other.

Such a company would need to aggregate a range of services, finance, technical assistance and product provision in order to support the strategic partnerships. This aggregation function would be performed by the franchise and provide the single point of contact with other organisations bringing complimentary qualities such as a delivery network, sales and marketing expertise, stock control and inventory management and finance for the franchisees (the local energy services and goods companies identified). The company's mission statement could be to bring modern energy equipment and services to rural and peri-urban areas at reasonable cost on a commercial basis.

7.2 Energy franchise services

An energy franchise company, aiming to support the kind of business operations identified in section 6, would need to embody a number of specialist services. Some of these are indicated in this section.

Market information

This information would be used to ensure that franchisees are stocking the most appropriate energy equipment and providing the right energy services to ensure on-going sales and profitability.

Product knowledge

Detailed understanding of the energy products available locally and internationally would be essential for three reasons:

- In order to satisfy market need with the most appropriate, cost-effective products;
- So that the company can provide appropriate product training to the franchisee outlet staff; and
- To understand trends in technology development and supplier company activity, thus informing the company business strategy.

Links with suppliers/Supplier agreements

The company would need to establish supplier agreement s with a range of local and international equipment manufacturers, suppliers and wholesalers.

Training

All franchisees entering into agreement with a franchise company require training for their staff. The company would need to provide training consisting of a number of elements, including:

- Management systems – making the franchise agreement work for the parties involved;
- Customer finance – where finance is on offer to customers;
- Product training – outlet staff would need to develop a clear understanding of rural and peri-urban energy issues and the products and services provided;
- Service training – supporting the products to maximise customer satisfaction;

Service support

The company would provide on-going support to the franchised outlets. This support would be at two levels. On the one hand, delivering refresher training and training for new recruits.

Of particular importance is the need for continually updating product knowledge as new products are added. On the other, certain equipment, for example bespoke systems, may require specialist skills to maintain or repair. In these cases, the company could chose to engage specialist staff centrally to support staff at the outlets.

Branding
An important element of the franchise arrangement would be the establishment as an energy service company providing quality products and excellent service support and delivering these services into rural and peri-urban areas whilst achieving affordability for customers. Franchisees entering into agreement with the franchise company would be able to adopt the company branding.

Flexibility and replicability
A franchise operation would have great scope for replicability. The service offering proposed by the company should be sufficiently flexible - elements can be selected and tailored as necessary – to enable an excellent match with the on-ground situation in any target country/market. The experience built up through working in different markets will mean that the company will be well equipped to tackle setting-up further operations. The companies principle of working with local organisations and companies ensures that partnerships bring local knowledge and understanding to the package.

Risk reduction
A franchise operation reduces the risk associated with delivering modern energy products and services into rural and peri-urban areas in a number of ways.

The company would base its decision making on sound, local market and product knowledge.

The franchise company can play to its strengths and form strategic partnership (franchise agreements) with organisations with appropriate and complimentary skills.

7.3 Recommendation

On first view, a franchise operation presents one opportunity for accessing the markets in rural and peri-urban east Africa for modern energy products and services.

Further research is needed in order to establish the details of setting-up and operating such a company.

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