MARKETING STUDY
ON THE DISTRIBUTION
OF IMPROVED WOOD STOVES
A CASE STUDY IN PAKISTAN

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GTZ July 1991

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EXECUTIVE SUMMARY

The MP stove should not be considered as the final and only improved cook stove that can satisfy all cooking needs of women in the project's target area. Convenience during usage, operation with different fuel types and adaptability to private needs are weak points of the product. The project should look into the possibility to modify the MP further and to design different stove models for different segments of the market.

The long term acceptability of the MP is uncertain. Monitoring surveys show a high user rate of the MP, but other signs indicate a low adoption rate in the longer run. A study on actual replacement of the stove when the first generation stoves is worn out is required.

A realistic time frame for a commercial marketing approach for improved stoves to sustain is 8 - 10 years.

Production, distribution and transportation of the MP can be taken over by the private sector. The MP would become 10 - 20% more expensive for end users. Promotion, research and development, training of producers and distributors, monitoring and evaluation will remain the responsibilities of the project. Quality control should be handed over gradually to the private sector.

The marketing of the MP should follow the existing patterns and channels for stoves. If the informal sector stove production is selected, different strategies for different districts are required. Stove production would be located in Peshawar, Mardan and to a lesser extent in Swat. Kohat District would purchase its stoves in Peshawar.

If mechanized stove production is selected through a kerosene or aluminium cooking pots factory, stove manufacturing would take place in Peshawar only. Opting for informal sector production would implicate opting for a segment of the target market which consists of poor and middle income groups. Selecting centralized production would mean aiming at higher income groups first.

Whatever production or distribution strategy is selected, in all cases the MP should be introduced through well established manufacturers and distributors as an additional product line.

FECT should first of all seek the interest and co-operation of wholesale dealers rather than stove producers, as wholesalers are the determining party in the total marketing process.

A total potential demand for new stove purchases of 190,000 is estimated. As the demand is expected to grow gradually over a period of five years, large scale centralized production is initially not advisable.

Advertisement through mass media is only recommended if the project has sufficient funds to advertise repeatedly over a period of 2 - 3 years.

Street vendors are popular among women for aluminium and plastic kitchen utensils. Distributing the MPs through streetsellers will be advantageous, but would require financial investments by the project.

No entrepreneur is prepared to invest in MP production or distribution without project support. The risk involved can not be born by private persons. The project should invest extensively in creating a market and gaining the co-operation of producers and distributors.

FECT is presently not in the position to start implementing a commercial dissemination strategy. The project organization needs to be modified and additional staff with marketing skills is required. Organizing a strict supervision of field activities must have priority. The proper co-ordination of different activities into an integrated marketing strategy will be of major importance. Production, distribution, pricing and promotion are all interrelated and should be carefully tuned to each other. The strategies must be implemented consistently even if successes initially are suspended.
ACKNOWLEDGEMENT

The fieldwork in the different bazaars for this study has been conducted by Mr. Shezad Raza and Mr. M. Maqsood. I would like to express my gratitude for their perseverance and dedication during the endless interviewing.

The interviews in households have been conducted by Mrs. Naseema Zahid and Miss Naheed Aziz. I am very thankful for their co-operation to travel to even remote areas in the mountains.
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<th>Description</th>
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<tbody>
<tr>
<td>CER</td>
<td>Ceramic stove</td>
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<tr>
<td>DESP</td>
<td>Domestic Energy Saving Project</td>
</tr>
<tr>
<td>EE</td>
<td>Energy Education</td>
</tr>
<tr>
<td>FECT</td>
<td>Fuel Efficient Cooking Technologies Project</td>
</tr>
<tr>
<td>IFRR</td>
<td>Internal Financial Rate of Return</td>
</tr>
<tr>
<td>KER</td>
<td>Kerosine stove</td>
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<tr>
<td>MHS</td>
<td>Metal horse shoe stove</td>
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<td>MP</td>
<td>Multipot Stove</td>
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<tr>
<td>NWFP</td>
<td>North West Frontier Province</td>
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<tr>
<td>PBP</td>
<td>Payback period</td>
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<tr>
<td>PHU</td>
<td>Percentage Heat Utilized</td>
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<td>SD</td>
<td>Sawdust stove</td>
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<td>SEBCON</td>
<td>Socio–Economic Business Consultants</td>
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<tr>
<td>TCS</td>
<td>Traditional clay stove</td>
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<tr>
<td>TRI</td>
<td>Triangular stove or tripod</td>
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INTRODUCTION

Since the seventies several stove projects have been launched in many developing countries. Initially these projects were meant to be an answer to the threatening energy crisis in general and the ongoing deforestation in particular. The relevance of improved stoves in this problem field has been questioned by many critics since then. Is fuelwood use in the domestic sphere the real cause of the vanishing forests? The realization that land clearance for agriculture may have a far greater negative impact, brought about modifications in the objectives of stove projects. Improved stoves were to improve women's health conditions, kitchen environment, decrease the time spent on preparing meals and enhance the life of women in general.

Whatever the objectives of stove projects may be, it has become clear that the number of stove users required if a programme is to make any significant fuel saving or social impact is far too great for any external agency to be responsible for the construction and supply of every stove. It has been estimated that by the year 2000 about 100 million customers for improved stoves will exist. Self-sustaining dissemination must therefore be the ultimate goal towards which programme strategies are directed.

The results to date of the diverse stove projects in the world are not very impressive. Several strategies have been tried. From low-cost self-built mud stoves via artisan constructed ceramic inserts to industrially produced metal stoves. The organizational set-up and financial support by the projects varied widely. In the more recent years more and more stove projects are designing strategies for a commercial dissemination approach. Devices which are able to enter and survive in the free market will have the best chance for real sustainability. Moreover a commercial marketing approach will encourage stove designers to make better stoves that work under real life conditions.

Any successful delivery system must be self-financing and self supporting at each stage of the product cycle. It must pay someone to make the product. It must pay someone to sell it. It must pay someone to maintain it. It must be worth someone's while to buy and use it.

The projects which designed their strategies into this direction have not yet reached the stage of complete commercialization. That is to say, some kind of subsidy is involved in any of the programmes. Sometimes direct subsidies are given to producers or to users, sometimes only the distribution of the stoves is subsidized. In all cases both research and development and the promotional activities are being paid for by the donating agencies. I did not come across any stove project that was successful in phasing out this type of financial support.

Why is it that a simple device such as a wood stove, cannot be spread without the help of projects? And why is it that many other products of which the potential benefit to the consumer is doubtful are marketed successfully, even in remote areas?

A review of literature on stoves provides a long list of reasons why the dissemination of wood stoves is not an easy task.

1. The design of an appropriate improved woodstove is an extremely difficult assignment as the efficient combustion of wood is a very complicated chemical process. Furthermore, the stove often needs to accommodate not only wood, but also other low grade fuels which makes the development of an improved stove even more difficult. To date adequate design data for optimal stove design are still absent.

2. An improved woodstove is not a type of innovation that fulfills a completely new function within a household such as a watch or a radio. A new stove just improves upon an existing function. That is why the chance of rejection is greater as the adopter can always fall back on his original device if the going gets tough.
3. In capitalist countries innovations spread rapidly, largely attributed to the fact that the economies are organized around the pursuit of profits. Competition in business forces companies to innovate continuously in order to survive. Thus the process of innovation is continued. In the developing world the process of innovation and dissemination proceeds far more slowly. Survival and risk aversion are guiding criteria rather than profit maximization. And where it is survival rather than profit, which provides the central imperative to action, then the scope for innovations necessarily is limited. The drive and opportunities to adopt innovations are largely missing. Cash is not freely available and loans are difficult to obtain. Even if cash is at hand, it is often not considered sensible to use it when no monetary return can be anticipated. This is the case for households which collect their fuel freely. 3)

4. Stove use may be in every one’s long term interest, but it will be difficult to persuade individuals to incur costs in the shorter run if they do not believe that others will act in the same way. 3)

5. Usually men control the household’s budget, but they are not the ones affected by fuel scarcity or better stoves. It is not easy for women to convince their husbands to invest in an appliance that is for their own convenience only. 4)

6. Some research reveals that about half of the people in the world depending on fuelwood for cooking does not at present suffer from fuel shortage. Of the other half many do not perceive fuel shortage to be a serious problem since they have other basic priorities, notably food supply, to contend with. 4)

7. In several countries women have stated clearly that their main interest altogether is in having better fuel, not better stoves. 4)

8. Most projects offer only one improved stove type as an alternative to the traditional open fire. However the new stove often can not accommodate the wide range of cooking pots used and successfully carry out the different cooking, baking and heating tasks that the stove is supposed to do. Actually, different types of new stoves are needed for different households tasks which were formerly all carried out on the versatile open hearth or 3-stone fire. 4)

9. A stove by its own can not save fuel. It is the stove operator who can economize. Reduction in wood consumption by introducing stoves does not necessarily follow. It is the potential performance rather than efficiency of equipment which should be taken as a measure of its usefulness. 4)

10. The privately owned productive sector of the economy seeks to increase its profits continuously. This is a strong drive to creativity and innovations well adapted to the customers and manufacturers. This drive is absent in highly subsidized stove projects. If a project fails to reconcile the perspectives of producers and consumers they often take the option of subsidizing because of the pressure to achieve goals and because subsidy is cheaper in the short term than redesigning the stove model. 5)

11. Stove projects are seldom employing marketing representatives who can professionally carry out demonstrations and market infiltration techniques as is being done by companies that market successful even doubtful products.

If one reads through the long list of constraints it is well understandable that not many entrepreneurs will easily take the risk of investing into this business. The combined prevalence of several of the aforementioned constraints may be the reason why so few wood stoves have entered the market through private entrepreneurship, not only in Pakistan, but all over the world.
A stove project that plans to distribute stoves on a commercial basis must be well aware of all this. A carefully conducted feasibility study should precede any activity. But even then, international experience shows that not even a single stoves project in the world has been able to reach the stage of phasing out subsidization completely. In successful countries such as Sri Lanka and Kenya, the government or a NGO has committed itself to long term financial support in one or more of the following fields: promotion, monitoring, research and development, training.

The Fuel Efficient Cooking Technologies Project in Peshawar, Pakistan is presently preparing itself for a commercial distribution of its metal stoves and clay ovens. Although a commercial dissemination strategy is the only viable option for long term success, especially in a country as Pakistan where hardly any support from the side of the government may be expected, the chances for success of such a strategy are at present not very high. This study tries to indicate the many problem fields and constraints that are existent. To some extent recommendations are given how to tackle the problems, but mostly not more could be done than identifying the weaknesses and advising to work on it.

It is hoped that on the basis of the findings presented in this report the project will be assisted to make a sensible and responsible choice for any future strategy.

1) source: Improved cooking stoves in developing countries.
2) source: Prasad, K., "Towards mass production of woodburning stoves."
3) source: "The international workshop on woodstove dissemination Wolfheze", ITDG.
4) source: Evans, M., "Stoves programmes in the framework of improved cooking practices: Latin America."
5) source: Caceres, R., "Stoves for people".
BACKGROUND

The Domestic Energy Saving Project (DESP) started the dissemination of fuel efficient wood stoves in 1984 as part of a larger energy saving programme for Afghan refugees. The stove in these early days of the project was a one pot metallic model with a cooking pot inserted into the stove body. The fuel saving capacity of the so-called Handle Stove showed promising results in the laboratory. Although DESP distributed large numbers of this stove the project realized that it was not a successful activity at all. Monitoring studies revealed that almost all stoves were abandoned soon after the first trials. The combustion chamber of the stove was too small, baking of nans (flat breads) was too complicated and the limitation of one size cooking pot only was disliked. In 1987 DESP designed a new stove model, the Multi Pot Stove. This is again a one pot metallic stove, but the conic shape of the upper-stove body allows for all sizes of cooking utensils. In the years to follow the project continued to make modifications upon the first design as the women asked for several improvements. The combustion chamber was enlarged, handles to carry the stove were added and extra pot holders to accommodate small cooking pots were fixed inside. The stove was initially distributed on subsidized prices to Afghan refugees only. The project gradually increased the price to arrive at a selling price that covered the production costs of the stove and left a reasonable profit for the producer also. The production which had taken place in the project’s own workshop was shifted to private metal workers.

In 1988-89 DESP went through an extensive reorganization which resulted in two separate projects. The first one (DESP) worked on an energy saving programme for Afghan refugees and Afghan residents in Afghanistan. The second project named itself Fuel Efficient Cooking Technologies Project (FECT) and worked on energy saving activities for the Pakistani population in five districts in North-West Frontier Province. An expansion to the other provinces of Pakistan was envisaged within three years.

From the onset FECT planned to organize the dissemination of stoves in such a way that a self-sustaining distribution system would be established by the end of the project. The most feasible and viable system was rightly thought to be a commercial system. Hence the production of the multipot stoves was taken to private workshops and the stoves were mostly sold through retailers and salesmen. Yet, FECT failed to introduce the stove into the commercial market without heavy project involvement. Producers only manufacture stoves with a purchase guarantee from the side of FECT, retailers only sell stoves on commission basis, the salesmen only promote stoves with a project salary and FECT takes care of almost all storage and transportation arrangements. Therefore in 1991 FECT decided to conduct a marketing study to assess the potential of the woodsaving multipot stove to enter the open market.

This study is divided into two parts. Part I gives a description and analysis of FECT’s activities in 1990 and the first quarter of 1991, narrowly focussed on the potential for a commercial dissemination strategy for the multipot stove.

Chapter 1 analyzes the multipot stove as a new product and compares it with the competing stoves in the target area of the project.

Chapter 2, 3 and 4 describe respectively the present production, distribution and promotion strategies of FECT and evaluate the strategies from a commercial angle. The outcome of such an evaluation tends to be highly negative as the strategies were originally not designed as commercial policies. Therefore the criticism on the performance of the project may be unfairly strong. However, in order to discover the strengths and the weaknesses of the project that are of relevance in a commercial strategy, an evaluation exercise as carried out here will be useful.

Chapter 5 gives conclusions and recommendations.

Part II describes the market research as was carried out by the survey team. Chapter 1 gives the potential demand and a sales forecast for the multipot stove in the five districts.
Chapter 2 looks into consumer preferences for stove features and buying habits.

Chapter 3 describes the marketing strategies for metal biomass stoves which prevail in the market and tries to find out how the multipot stove could make use of the existing channels.

Chapter 4 looks into the production and distribution strategy for kerosene stoves to discover the potential for a centralized production strategy for the multipot stove.

Chapter 5 has the same objective as chapter 4. In this chapter we have analyzed the potential for multipot production and distribution in an aluminium cooking pots factory.

Chapter 6 deals briefly with scope and limitations of advertising through mass media and its alternative which is sales promotion.

In chapter 7 and 8 finally the conclusions and recommendations are summarized.
PART I
EVALUATION OF
FECT
CHAPTER 1
PRODUCT ANALYSIS

INTRODUCTION

In each and every house in the villages of NWFP women are cooking their food on a clay stove. This stove is built by the women themselves from a strong, long lasting clay mix. The basic design of the stove is generally the same: the fire box takes the shape of a horseshoe with potsupports to accommodate different sizes of cooking pots. Women are constructing their stoves in different sizes according to their family size and available fuel type. Most women have built two or more stoves in their homes, some outside in the yard, some inside in the kitchen. The traditional clay stove shows a PHU of 24% in the laboratory.

In addition to the traditional clay stove a number of other stove models are found, but these are less common. Even if a household owns one or more of the other stove types, the clay stove is always present in the house as well.

Other bio-mass stoves which are found in villages:
- three stone fire made from clay bricks,
- metal tri-pod or triangular stove which is actually an open fire,
- metal sawdust stove,
- metal horseshoe stove,
- metal heating stoves in several models,
- ceramic portable horse shoe stove.

Nowadays non-biomass stove are more common in villages as supplementary stoves to the clay stove:
- electric stove,
- kerosene stove,
- bottled gas stove.

A housewife who is faced with the decision to purchase a stove as replacement of or in addition to her clay stove has several options. All stoves listed above are competing for her money to spend. Therefore a product analysis has been made for all stove models in order to understand the attractiveness and competitiveness of the multipot stove in comparison with the other stoves. A product and marketing analysis will give an idea of the present position of the different stoves in the target market.

1.1. MULTIPOT STOVE (MP)

1.1.1. Product

The multi pot stove which is introduced by the project is basically a wood burning stove and is designed to replace the clay horseshoe stove. Fuel consumption studies in the field have shown that the multipot stove actually saves 32% over the clay stove in case only wood is used as fuel. In reality however, most households are using a mixture of different fuel types like dung, bushes, branches, sugarcane and other agricultural residues. These low grade fuels are not very suitable for the MP. The potential fuel savings of the stove are achieved only by those women who have learned to use the stove properly.
Apart from the fuelsaving capacity, other benefits of the stove are appreciated by housewives. Women like the stove because it looks good, cooks fast, it is portable and bakes tasty bread.

As disadvantages women perceive the small combustion chamber which makes it unsuitable for low grade fuels and large families. Cutting the wood for optimal stove operation is considered too cumbersome and labour intensive. And the MP also needs more attention during cooking than the clay stove. These disadvantages are responsible for the fact that the MP is a popular stove mostly for short cooking tasks only.

The first version of the MP was a simple model made from flattened drums. Over the years the project tested modifications of the stove by using new metal sheets, adding handles and extra potholders and enlarging the combustion chamber. Each modification increased the price of the stove. The changes were each time immediately accepted as improvements and the women were easily prepared to pay more for a better stove. The more simple and cheaper models were not sold any more as soon as the improved model appeared, simply because the demand for those dropped to zero.

PHU of MP is 30%. 2)

1.1.2. Price

The final stove model which was disseminated in 1990 and 1991 is made out of new metal sheet and has been priced Rs. 60/= which is its production price including a profit for the manufacturer. A family will save almost 3 kg. of wood per day if they would replace the traditional claystove by the multipot for all their cooking tasks. This would save them Rs.3/= daily on expenditure for wood. Hence the pay-back period on the initial investment for the multipot stove is three weeks only. 3)

Even if a household is purchasing just 25% of their fuel requirements, the pay-back period of the stove is less than three months, which is acceptable considering the life time of the stove. Field research revealed a life time of the multipot stove of 1.5 to 2 years.

1.1.3. Distribution and market share

Although a number of disadvantages of the multipot stove can be listed, the user rate is relatively high. User rates are normally in the range of 70 to 80% depending on the socio-economical and fuel situation in the area. It has to be noted that this figure does not indicate the percentage of women who now fully rely on the multipot stove for cooking. The multipot stove is regularly used by these 70-80% as just one of their stoves. This is comparable to the kerosene and gas stoves which have seldom replaced the traditional clay stove completely. To date 12,902 MPs have been distributed by the project in Pakistani villages. The total number of rural households in the project area is 650,714, which means a coverage of almost 2%. 4)

The MP is offered for sale in general stores in villages. Salesmen employed by the project sell the stove door to door and sometimes private persons sell the MP on commission. Demonstrations and exhibitions are organized to promote and explain the operation of the stove. For details see Chapter 3.

1.1.4. Promotion

The introduction of the MP is accompanied by several promotional activities like posters, hand-outs, demonstrations, exhibitions and salesmen going from door to door.
1.2. TRADITIONAL CLAY STOVE - HORSE SHOE MODEL (TCS)

1.2.1. Product

The traditional clay stove is built by housewives themselves and specifically adapted to their own private needs like the size of cooking utensils, fuel types and family size. One, two or three pot stoves are constructed, each pothole having its own separate combustion chamber. The stove is fixed in the kitchen or outside in the compound. The clay stove is durable although it needs regular repair and maintenance, especially for the stoves which are constructed in the open air.

A major advantage of the traditional clay stove is that it is suitable for all types of fuel. Dung and agricultural residues burn well in the stove and the size of the combustion chamber allows a mixture of wet and dry fuel, in case not enough dry fuel is available during the rainy season. Initial lighting of the stove may take some time but hereafter operating the stove does not require much attention since the fire burns easily.

As the stove is made of massive clay, the heating up phase is quite long, which is a disadvantage for shorter cooking tasks. At the same time this massiveness is responsible for good storage of heat, which makes it advantageous for longer cooking tasks. It has to be noted here, that the daily food in villages consists of curry, bread and tea, which requires very short cooking times. Moreover, bread is usually baked in a separate clay oven, the stove is only partly used for baking.

If a household only uses purchased fire wood in their stove, they would pay Rs. 7/= per day on fuel. (For comparison: daily labour wages are Rs. 30/= in rural areas, Rs. 40-50/= in urban areas).

The PHU of the traditional clay stove is about 17%.

1.2.2. Price

The construction materials (clay, straw, water) for the traditional stove are free of cost and readily available.

Women in NWFP are observing 'purdah' due to Islamic rules. Purdah (seclusion) means that women are living behind the walls of their compound and only go out if that is absolutely necessary. A housewife is normally at home for the full day together with her mother and sisters-in-law. Therefore the opportunity costs for constructing a clay stove are low. For poor women, who have to work outdoors, the situation is somewhat different. For them time is more scarce.

1.2.3. Distribution and market share

The coverage of the traditional clay stove in rural areas of NWFP is close to 100%. Even if a household owns other stove models as well, there is always at least one horse shoe model present in the house.

1.2.4. Promotion

The clay stove is a traditional design which is used by the women since many years. It is fully incorporated into the culture and needs no promotion at all. Daughters learn the technique automatically from their mothers.
1.3. TRADITIONAL CLAY STOVE - 3 STONES

1.3.1. Product

The 3 stone fire is mostly found in the hilly areas and constructed inside kitchens or rooms. It is used as a cooking cum heating stove in winter and the family members sit around the stove to warm themselves.

The features as described above for the horse shoe stove equally apply to the 3-stone fire. An extra advantage of the 3 stone fire is the potential to use the stove with big logs of wood. That makes the stove very suitable for the hilly areas of Kohat and Swat.

PHU for such an open fire is 17%.

1.3.2. Price

Cf. the clay horse shoe stove.

1.3.3. Distribution and market share

The 3 stone fire is not common in the project area. Swat and Kohat have relatively more stoves of this type, but even there the coverage is not large. Furthermore the 3 stone fire is always a secondary stove in terms of frequency of usage.

1.3.4. Promotion

Cf. the clay horse shoe stove.

1.4. SAW DUST STOVE (SD)

1.4.1 Product

The saw dust stove is a cylindrical metal stove made from scrap metal. The quality of the stove is often very poor as the manufacturing is badly done. The sawdust stoves as they are presented for sale in the market look as if they are years old already. The stove need to be loaded with sawdust only once a day and once that is done operating the stove is not difficult. Sawdust is a cheap fuel, cheaper than wood, but not everywhere available. The producers of the stove claim that it can be fired also with crushed sugarcane residues and the waste of rice and cotton crops. The field staff of FECT however has never seen this practise in villages. The sawdust stove is not very suitable for large cooking pots.

PHU of sawdust stoves is 15%.
1.4.2. Price

The common saw dust stove is sold in the bazaar for Rs. 35 - 60/= with a maximum price found of Rs. 110/= for a larger model of higher quality.

1.4.3. Distribution and market share

The saw dust stove is a stove for poor people. The fuel is cheap and the stove is useful for small pots. More well-to-do families prefer to cook on wood as they feel that loading a wood stove is easier and the food tastes better. A woodstove also allows large cooking pots, which is necessary since they have frequently guests in their homes.

Sawdust stoves are rarely found in Swat and Kohat. In these mountainous areas sawdust stoves are only common near the forests where illegal cutting of trees takes place. The presence of sawmachines provides sufficient sawdust.

In the household survey carried out for this study only 3% of the respondents had a sawdust stove at home. Although the saw dust stove is the most important commercially distributed cooking stove, its coverage is not large. The main production centre of saw dust stoves for NWFP are Peshawar and Mardan city. The total yearly production seems not to exceed 63,000 while the total number of households in NWFP is 2,236,827 including the agencies where the stove is distributed also. 5) This implicates a market share of less than 3%.

The sawdust stove is available in the bazaars of the cities and larger towns and often in the shops of larger villages too. In Peshawar the stove is offered for sale in hardware shops, i.e. metal shops which are selling agricultural tools, buckets, chains and the like. These are unattractive filthy and noisy shops, but everybody knows that this is the place in Peshawar to go to biomass stoves. In Kohat city the sawdust stove is not for sale in the hardware shops but in metal shops which repair watercoolers, fans etc.

1.4.4. Promotion

Producers and retailers are not undertaking any promotional activities for the saw dust stove. Yet it is the most frequently sold cooking stove in the bazaar.
1.5. METAL HORSESHOE STOVE (MHS)

Picture:
Sawdust stoves and metal horseshoe stoves in the bazaar.

1.5.1. Product

The metal horseshoe stove is a copy of the traditional clay stove made from either old drum sheets or new metal sheet. The quality is usually better than the sawdust stove as better metal is used and since the manufacturing of the stove is more easy. The main advantage of the metal horseshoe stove is its portability; it can be used wherever the cook prefers. For this purpose the stove is equipped with two wooden handles. Furthermore cooking is cleaner than with the traditional clay stove because the metal horseshoe has a large bottom plate which catches the ashes and spilled fuel pieces. Since it is a metal stove, it heats up quickly but also cools down quickly. The stove has no grate, which makes starting of the fire difficult compared to the multipot stove. Also low grade fuels are more difficult to burn without grate. The absence of a grate at the same time explains the longer glowing time of charcoal.

PHU of the metal horseshoe is 20%.

1.5.2. Price

The metal horseshoe stove is sold in the market for Rs. 35 - 60/=.
1.5.3. Distribution and market share

The metal horseshoe stove is not frequently sold in the market. The stove is available in the cities and larger towns, but within households seldom found. Our household survey discovered no MIIS in Peshawar, Kohat and Swabi. Only in two villages in Swat this type of stove was found. The metal horseshoe is sold in the same bazaars and shops as the sawdust stove.

1.5.4. Promotion

No promotion activities are being carried out.

1.6. TRIANGULAR STOVE OR TRIPOD (TRI)

1.6.1. Product

The triangular stove is a tripod made from iron bars. When used for cooking it is basically an open fire. The stove is portable and is used to heat up the rooms in winter. In summer it is used outdoors in shady places. Main attractions of the stove are the possibility to use it with big wood logs, to cook large amounts of food at a time and its portability.

The fuel consumption is obviously very high, PHU is 11%.

1.6.2. Price

The triangular stove is sold for Rs. 25 - 40/=.

1.6.3. Distribution and market share

The triangular stove is common in the hilly areas of Kohat and Swat. No data are available on the coverage of this stove type. The field staff of FECT suggests that the stove is not as important as the traditional clay horseshoe but more common than the 3 stone fire. It is always an additional stove.

In Peshawar city the triangular stove is produced and sold in the same bazaar and shops as the sawdust and horseshoe stove, i.e. hardware shops. In Kohat the triangular stove is not available in the same bazaar. While the sawdust and horseshoe are sold in the metal repair shops, the triangular is sold in hardware shops.

1.6.4. Promotion

No promotion activities are being done.
1.7. CERAMIC PORTABLE HORSE SHOE STOVE (CER)

1.7.1. Product

The ceramic horse shoe is like the metal horse shoe a copy of the traditional clay stove. It is produced by potters in different sizes. The major difference with the clay stove is that it can be moved around and that the stove is not massive.

PHU of the ceramic stove is 15%.

1.7.2. Price

The ceramic stove is sold by potters for Rs. 3 - 6/=.

1.7.3. Distribution and market share

The survey team faced difficulties in finding potters who still were producing this stove type. Most of them have stopped production since the last three years as the demand for this stove has fallen completely. The producers who still have the stove among their products claim to sell only a few pieces per month. Potters are selling their products in the open air on the road side.

The field staff of FECT seldomly observes ceramic stoves in households.

1.7.4. Promotion

No promotion is carried out.

1.8. METAL HEATING STOVES

The multi pot stove is a cooking stove, not a heating stove. FECT has developed other stove models to improve the existing heating stoves in the market. Therefore the metal heating stoves are not a competing product for the multi pot stove and will not be taken into consideration for this marketing analysis.
1.9. KEROSENE STOVE (KER)

1.9.1 Product

The kerosene stove is becoming more and more popular in urban and rural areas. A broad range of models are available in the bazaar of different qualities, different sizes and with a different number of burners. Most of the stoves are produced in unregistered workshops or factories and do not meet the quality standards set by the Pakistani government. In the Punjab cases of stove blasts which injure or kill women are so frequent that the government has recently banned the production of kerosene stoves in unregistered industries. (see annex 1.) Women organizations claim that men deliberately kill their women by giving them sub standard stoves. Producers support this point of view as far as the intention of men is concerned, but reject the blame on the stove quality. Whatever the truth may be, this story shows that the kerosene stove is somehow a controversial product.

Women usually operate their kerosene stove in addition to their clay stove as they cannot always afford to buy kerosene oil. Still there are also women who claim that cooking on kerosine is not as expensive as cooking on purchased wood. This statement needs to be investigated further.

The supply of kerosene oil is often difficult and not reliable.

1.9.2 Price

Kerosene stoves are available in the market in a variety of models and qualities with comparable price ranges. The price may vary from Rs. 50 to Rs. 200/=, while Rs. 50 - 60/= is common for a household stove.

In March 1991 the production of kerosene stoves has been largely banned which will have an effect on the market. At the time of compiling this report the shops are still selling their stocks, but as soon as these are run out, the illegal sales will start with a subsequent price increase.

1.9.3 Distribution and market share

The household survey for this market study identified 9% of the surveyed households who posses a kerosene stove.

Kerosene stoves are for sale in every city, town and village. In Peshawar and Kohat both they are for sale in kitchen utensils or crockery shops. Kitchen utensils shops are well-organized clean shops with an attractive display of their products.

1.9.4 Promotion

Promotional activities aimed at customers are occasionally seen for the kerosene stove. This is in the form of wall-chalking and newspaper ads. The producers of the stove also employ promotional activities aimed at the retailers and wholesalers. They send salesmen to promote the stove and sell it on credit.
1.10 ELECTRIC STOVE

1.10.1. Product

Different types of electric stoves are for sale in the market. The models used by village women are the cheaper, low quality electric stoves. No survey has been undertaken into this stove model, but from the author’s own experience it is known that the life time of these stoves is very short, after a few months only repairing has to be done already.

The electric stove is not very suitable for cooking in villages because powercuts of 8 to 12 hours in summer are common. Therefore women use the stove only as an additional device for quick cooking tasks.

The fuel price for the electric stove is of little relevance. Villagers are in the habit of manipulating their electric meter and thus monthly expenditure on electricity is negligible.

1.10.2. Price

The type of electric stove used in villages costs approximately Rs. 40/= A small model of Rs. 25/= only is also for sale.

1.10.3. Distribution and market share

Electric stoves are not popular among villagers. The household survey shows a 4% of households owning an electric stove.

Electric stoves are for sale in shops that are selling other electric appliances like electric heaters, lamps, fans etc. Only cities, towns and very large villages are selling these.

1.10.4. Promotion

No promotion activities are being done.

1.11. GAS STOVE

1.11.1. Product

Different stove models in the bazaar can be operated with bottled gas as a fuel. These stoves are of a relatively good quality and easy to operate. Bottled gas however is expensive and can only be afforded by more affluent families. Moreover, the gas is only available in towns and very large villages. Even there the dealer is often out of stock. Transportation of the gas bottles to far off located villages is difficult.

1.11.2. Price

The price of the most simple gas stove is Rs. 130/=.
1.11.3. Distribution and market share

Gas stoves have become very popular. The household survey shows a percentage of 30% of households owning a gas stove.

A gas stove is the best option for a housewife as soon as she can afford the fuel. Gas stoves are only for sale in cities, towns and very large villages in hardware shops.

1.11.4. Promotion

Some promotion for gas stoves exists in two different forms. The larger stove producing companies make use of sign boards at the road side and in front of retail outlets. Furthermore, the gas supplying agencies have well organized shops with eye catching sign boards.

In addition, the gas stove producers also make use of sales men who visit retailers to promote the sale of the device.
1.12. CONCLUSIONS

Table 1. Product analysis matrix for cooking stoves

<table>
<thead>
<tr>
<th>Features</th>
<th>Multi pot stove</th>
<th>Trad. clay stove</th>
<th>3-Stone fire</th>
<th>Saw dust stove</th>
<th>Metal horse shoe</th>
<th>Tripod</th>
<th>Ceram. stove</th>
<th>Kerosene stove</th>
<th>Elect. stove</th>
<th>Gas stove</th>
</tr>
</thead>
<tbody>
<tr>
<td>fuel consumption</td>
<td>++</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>++</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>++</td>
</tr>
<tr>
<td>ease of operation</td>
<td>-</td>
<td>++</td>
<td>++</td>
<td>-</td>
<td>++</td>
<td>+</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>adaptability to</td>
<td>-</td>
<td>++</td>
<td>++</td>
<td>-</td>
<td>-</td>
<td>++</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>private needs/</td>
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<tr>
<td>diff. sizes avail.</td>
<td>++</td>
<td>++</td>
<td></td>
<td></td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>availability of</td>
<td>++</td>
<td>++</td>
<td></td>
<td></td>
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<td>+</td>
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<td>+</td>
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<tr>
<td>fuel</td>
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<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>fuel variety</td>
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<tr>
<td>price</td>
<td>++</td>
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<tr>
<td>price-quality</td>
<td>++</td>
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<td>+</td>
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<tr>
<td>distribution/</td>
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<td>++</td>
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<td>+</td>
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<tr>
<td>availability</td>
<td></td>
<td>++</td>
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<td>++</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>promotion</td>
<td>+</td>
<td>n.a.</td>
<td></td>
<td></td>
<td>n.a.</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
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</tbody>
</table>

The product analysis for the MP and the other cooking stoves which are available in FECT's project area shows that the MP is not an unambiguously improved appliance. The MP does ameliorate the negative attributes of its traditional clay competitors, i.e. traditional horseshoe stove and 3-stone fire. The fuel consumption, cooking speed and portability which are negative for the TCS and the 3-stone fire are positive for the MP. But on the other hand, the most important advantages of the TCS are absent in case of the MP (ease of operation, operational with a variety of fuels, adaptability to private needs, availability of product). This explains why the TCS only in very few households is replaced completely by the MP. It cannot be expected that this will change in future, even with intensified promotional activities since cooking convenience, adaptability and fuel variety are extremely important features for women. It is even doubtful if a cook stove which is less convenient to operate than all other competing stoves has a real future.

Comparing the MP to the tripod shows that the triangular stove also is portable, hence the MP does not have that as an additional advantage over the tripod. The fuel saving capacity of the MP however compensates this sufficiently as the fuel consumption of the tripod is extremely high.

The sawdust stove overall score is more or less comparable to the MP score. This makes it a real competitor to the MP, which is reflected by its sales in the market. However, the sawdust stove aims at a different segment of the market, i.e. sawdust users, not wood users.

The metal horse shoe stove aims at the same market as the MP. Both stoves are basically meant to be fired with wood and both stoves are intended to be improved alternatives to the TCS. The comparison between the MHS and the MP shows a positive outcome for the MP with regard to fuel consumption and cooking speed. It is not fully clear if the MHS is much easier to operate than the MP. If both stoves are comparable at that point, the MP has the potential to drive the MHS out of the market.
The analysis of the 'commercially fueled stoves' which are the kerosene, gas and electric stoves clearly shows that these are the stoves of the future. The overall scores for these three stove types are positive. The only impediments to a wide use of these stoves are the non-availability of the fuels and its cost prices. Both drawbacks are realities that gradually will disappear in the course of development. Therefore a wood stove will not be able to compete with these stoves in the long run. This is not desirable either.

The project should investigate if the statement, made by several villagers, that cooking on kerosene oil is cheaper than cooking on purchased wood, is correct. In that case promoting kerosene stoves and promoting the availability of kerosene oil may be the most beneficial option for the environment and for households.

Gas stoves are the most popular stoves nowadays. That is easily understandable as also the matrix shows only a minus at price and availability of fuel. As Pakistan seems to have large gas resources, a project working at the distribution of affordable gas stoves and gas fuel should not be neglected.

However, in the short term improved wood stoves will be needed. If the MP wants to achieve a significant share of the market, some more work must be done on product design. As for all the other stove models in the market, different stove sizes and different qualities should be available, to meet the needs of different consumers. It is highly optimistic to assume that one stove model in one size, one quality and one price will satisfy the needs of the total target group.

Furthermore, it should be investigated if the operation convenience of the MP can be increased without decreasing the fuel efficiency.

For other biomass fuels like crop residues and dung a different stove model must be designed.

1) For the purpose of this report gas, kerosene oil and electricity are called non-biomass fuels or commercial fuels.

2) PHU (percentage heat utilized) or efficiency of all stoves are laboratory values, based on water boiling tests with woodfuel.

3) The pay-back period is calculated under the assumption that a household is using only wood as cooking fuel and purchasing all. In reality however most households are using more fuel types than wood only and they usually meet their fuel requirements partly by collection too. For an average household the pay-back period for the stove will therefore be longer.


CHAPTER 2  
PRODUCTION ANALYSIS

INTRODUCTION

The production strategy of FECT is the only part of the project's marketing strategy for which real attempts have been made towards commercialization. The manufacturing of the MPs is presently done in private metal workshops which earn a decent profit from MP production.

This chapter looks into the achievements so far and identifies the impediments to a real independent private production as part of a commercial marketing strategy of the multipot stove.

2.1. Stove producing workshops

In the beginning of the year 1990 FECT closed its production centre in Kacha Gahri and organized the manufacturing of the MP in private metal workshops. Two employees of FECT's production centre were assisted to open their own workshop and to start MP manufacturing for the project. One well-established metal workshop in Peshawar city also started to produce MP-stoves on orders from FECT. An employee of this workshop then opened his own business and is producing for the project independently from his previous employer. These first 4 workshops were given a six-months contract in which FECT guaranteed them to purchase a minimum number of 200 stoves per month. Two of the workshops were granted a credit in cash and in the form of tools which had to be paid back in monthly installments. After six months the contracts were not renewed. FECT verbally promised the producers to purchase monthly the same number of stoves from them. The producers, who are all located in Peshawar District, deliver the stoves at FECT's office and the project distributes the stoves to the different districts and retail outlets after checking the quality of the products.

During 1990 and 1991 FECT made attempts to have stove production not limited to Peshawar District only, but to expand it to all the other target areas. In total 12 metal workers were trained to produce MPs in the districts Peshawar, Kohat and Swat. The training period varied from a few days to 2 weeks. It was intended that only those metal workers were selected for training who already possessed an operational workshop and a profitable business. The MP should be an additional product for them. These criteria were not adhered to.

As a result of the training activities only 1 other metal worker in addition to the metal workers mentioned above, started a limited production of stoves. This metal worker has his shop in Swat. In all cases the project purchases the total production from the manufacturers and takes care of the storage and distribution. Direct sales from the producers to consumers or retailers are negligible.

At least two autonomous initiatives are known by the project. The first one concerns two Afghan metal workers in Kohat who were found producing poor quality MP-stoves under a tree in a refugee camp. The project then trained them to manufacture stoves to the required standards. Yet, they continue to make the MPs from low quality metal and unaccurate dimensions. They also have modified the MP on their own initiative by fixing a door in front of the opening for loading the stove with wood. According to them this is needed because the door will leave the charcoal longer to glow. They themselves sell their produce mostly in the refugee camp for Rs. 35/= only. About their output and sales, they give different statements varying from 15 to 50 stoves per month.

The second initiative concerns a metal worker in Swat. This producer has a well established stove production workshop already. He claims that the MPs which are presently being made by private
producers and which are accepted by FECT's quality control procedures, are below the quality standards as given in the project's production guidelines. Initially, he manufactured MPs of a higher quality and of a higher retail price. Competition with the cheaper MPs from the project made it difficult for him to sell his products. Then he found it more profitable and easier to sell MPs for the project on commission.

This brings the total number of producing workshops at seven.

2.2. Production workshop - Case study

On the request of the author SEBCON consultants Islamabad has made a detailed financial analysis of one of the MP producing workshops. As a case study the workshop of Khal Mohammed has been selected.

Khal Mohammed is one of the previous employees of DESP, who has been assisted to start his own business. He operates a workshop with a total of four workers on a rented plot in a refugee camp several kilometers out of Peshawar city. The MP is his single product line. Khal Mohammed receives orders from FECT and DESP which vary from 400 to 1,200 pieces per month with an average of 800. He sells the MP to the projects for Rs. 60/= each, a price fixed by the projects.

His cost of production per piece is 52/= leaving a profit of Rs. 8/= per stove which also includes his labour cost. Approximately 9,600 stoves were reported to be sold by him during the last year. The total sales turnover amounted to Rs. 576,000 of which the net profit was about Rs. 77,000.

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Average production per month</th>
<th>Other items no. produced</th>
<th>Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mohd. Azam</td>
<td>Afg. refugee camp, Pesh.</td>
<td>200</td>
<td>nil</td>
<td>2</td>
</tr>
<tr>
<td>2. Khal Mohd.</td>
<td>Afg. refugee camp, Pesh.</td>
<td>200 - 400</td>
<td>nil</td>
<td>4</td>
</tr>
<tr>
<td>3. Abdul Wadood</td>
<td>Behary Col., Kababian, Pesh.</td>
<td>200</td>
<td>nil</td>
<td>3</td>
</tr>
<tr>
<td>4. Mohm. Iltaf</td>
<td>Retti metal bazaar, Pesh.</td>
<td>100 - 150</td>
<td>buckets, doors</td>
<td>3</td>
</tr>
<tr>
<td>5. Abdul Mutalib</td>
<td>Main bazaar, Madyan, Swat</td>
<td>50, only once ordered</td>
<td>heating stoves</td>
<td>2</td>
</tr>
</tbody>
</table>

* Stove production for FECT only. Most of these producers are manufacturing MPs for the Afghan stove project (DESP) also.

Detailed income statement 1)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td></td>
</tr>
<tr>
<td>Average monthly sales (no. of mps)</td>
<td>800</td>
</tr>
<tr>
<td>Annual sales (no. of mps)</td>
<td>9,600</td>
</tr>
<tr>
<td>Selling price per stove</td>
<td>Rs. 60</td>
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<tr>
<td>SALES VALUE</td>
<td>Rs. 576,000</td>
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</tbody>
</table>

26
<table>
<thead>
<tr>
<th>Production cost for</th>
<th>Rs. 600 MPa</th>
<th>52.03 MP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal sheet (excl. wastage)</td>
<td>303,015</td>
<td>35.73</td>
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<td>Flat bar</td>
<td>20,160</td>
<td>2.10</td>
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<tr>
<td>Rivets</td>
<td>7,200</td>
<td>0.75</td>
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<tr>
<td>Nails</td>
<td>9,600</td>
<td>1.00</td>
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<tr>
<td>Wooden handles</td>
<td>9,600</td>
<td>1.00</td>
</tr>
<tr>
<td>Labour cost*</td>
<td>96,000</td>
<td>10.00</td>
</tr>
<tr>
<td>Depreciation</td>
<td>3,440</td>
<td>0.36</td>
</tr>
<tr>
<td>Rent</td>
<td>2,400</td>
<td>0.25</td>
</tr>
<tr>
<td>Mobil oil</td>
<td>4,080</td>
<td>0.43</td>
</tr>
<tr>
<td>Other expenses</td>
<td>3,960</td>
<td>0.41</td>
</tr>
<tr>
<td><strong>TOTAL PRODUCTION COST</strong></td>
<td><strong>499,461</strong></td>
<td><strong>52.03</strong></td>
</tr>
<tr>
<td>Net profit</td>
<td>76,539</td>
<td>7.97</td>
</tr>
<tr>
<td>Selling price per unit</td>
<td>60.00</td>
<td></td>
</tr>
<tr>
<td>Production cost per unit</td>
<td>52.03</td>
<td></td>
</tr>
<tr>
<td><strong>Net profit per unit</strong></td>
<td><strong>7.97</strong></td>
<td></td>
</tr>
</tbody>
</table>

*As reported by Khal Mohammed.

The total workshop cost is estimated to be Rs. 59,000 with a fixed cost component of Rs. 17,000. Variable cost which mainly includes cost of raw material and labour cost accounted for more than 70% of the total project cost. Since the fixed cost component is substantially lower than the variable cost, the project can be feasible to start at a low production level with low investments.

The workshop has an internal financial rate of return (IFRR) of 135% and a pay back period of about 9 months. The high IFRR value is primarily due to the low investments required for the fixed cost component.
A minimum investment of Rs. 66,000 is required for setting up a unit for producing multipot stoves. This includes fixed costs of Rs. 14,000 and a working capital of Rs. 52,000.

<table>
<thead>
<tr>
<th>Minimum Investment required for producing multipot stoves</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Equipment cost</strong></td>
</tr>
<tr>
<td><strong>Working capital</strong></td>
</tr>
<tr>
<td><strong>Total minimum investment required</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Qty.</th>
<th>Unit cost</th>
<th>Total cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. bending machine</td>
<td>1</td>
<td>3,500</td>
<td>3,500</td>
</tr>
<tr>
<td>2. rolling machine</td>
<td>1</td>
<td>2,500</td>
<td>2,500</td>
</tr>
<tr>
<td>3. cutter (big)</td>
<td>1</td>
<td>1,200</td>
<td>1,200</td>
</tr>
<tr>
<td>4. cutters (small)</td>
<td>5</td>
<td>-</td>
<td>400</td>
</tr>
<tr>
<td>5. vice grip</td>
<td>2</td>
<td>700</td>
<td>1,400</td>
</tr>
<tr>
<td>6. drilling machine</td>
<td>1</td>
<td>2,600</td>
<td>2,600</td>
</tr>
<tr>
<td>7. hammers iron</td>
<td>14</td>
<td>-</td>
<td>350</td>
</tr>
<tr>
<td>8. wooden hammer</td>
<td>2</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>9. saw</td>
<td>1</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>10. files</td>
<td>3</td>
<td>-</td>
<td>90</td>
</tr>
<tr>
<td>11. vice grips (small)</td>
<td>2</td>
<td>-</td>
<td>110</td>
</tr>
<tr>
<td>12. compass</td>
<td>1</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>13. railway track</td>
<td>2</td>
<td>-</td>
<td>900</td>
</tr>
<tr>
<td>14. grip machine</td>
<td>1</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>15. iron puts</td>
<td>1</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>16. other</td>
<td></td>
<td>230</td>
<td></td>
</tr>
<tr>
<td><strong>Total machinery cost</strong></td>
<td><strong>Rs. 14,330</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Working capital for 800 stoves per month consists of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>utilities (one month)</td>
</tr>
<tr>
<td>overheads (one month)</td>
</tr>
<tr>
<td>variable cost per unit x 800 stoves</td>
</tr>
<tr>
<td>rent for one year</td>
</tr>
<tr>
<td><strong>Total working capital</strong></td>
</tr>
</tbody>
</table>

Thus the production of MPs is a highly profitable business if the demand is as stable as in this case study. The monthly income per worker amounts to Rs. 2000/= while the workshop has a net profit of Rs. 6378/= per month. These figures seem to be extraordinary because a monthly income of Rs. 1,200 – 1,500 for a metal worker is locally acceptable. It may be that the financial analysis is not fully correct at all points, because all calculations have been carried out based on data provided by the owner, who does not keep records at all. But even if that is the case, the profit margins will still be acceptable.

2.3. Constraints to privatizing stove production

FECT has been successful in shifting the MP production to the private sector. Nevertheless, almost all MP manufacturers are exclusively producing stoves on orders for FECT. The project was not successful to establish the link between producers and retailers without project involvement. Also the expansion of stove making to the other districts has failed. Several reasons can be mentioned.

a. The identification and training of metal workers is a shared responsibility of the Field Section and the Technical Section of FECT. So is the quality control. Confusion about the assignments, criteria and final responsibility accounts for the little progress in this field.

b. The metal workers who came to the project’s research centre for training appeared to be attracted by the expectation of credits, employment and high profits. When realizing that the project provides only training and that they are supposed to manage their own business, the metal workers did not take the risk of starting to manufacture a new product and stayed with their original product lines.
c. The fieldworkers have often hastily accepted metal workers for training without giving sufficient attention to the selection criteria. Achieving targets (training of a certain number of persons) became more important than the training of people with a sound potential.

d. The metal workers are not convinced that sufficient demand exists to convert to MPs. In the case study above MP production seems to be a very profitable business. The calculations are based on a yearly output of 9,600 stoves. As will be described in more detail in part II, chapter 3, the yearly production for the other stoves in the market (sawdust, metal horseshoe and triangular) is usually not above 4,000 stoves per producer. The manufacturers naturally will expect a demand for the MP which is even below this figure.

e. Apart from this fact, it seems that manufacturing of MP- stoves is not as profitable as producing traditional items. Although the financial analysis as carried out by SEBCON shows that MP production is more profitable per unit than sawdust stove production and metal horse shoe stove production, we are not certain that this is correct. Putting several responses and observations together, a picture of a much higher profit margin for traditional products appears. This assumption is supported by the fact that from the workshops making MPs now, only two had already a metal business and considered it worthwhile to take the effort to start manufacturing MPs in addition. The other four workshops did not have a business yet and took the MPs as a first try to establish a workshop backed by the guaranteed monthly project orders. The Afghans in Kohat do not produce other items apart from MPs either. The low quality metal used by them is most probably responsible for a sufficient profit margin.

f. Producers are reluctant to manufacture stoves according to FECT's specifications. The detailed guidelines for type and gauge of metal, the exact measurements and the quality control procedures are too rigid for a producer who is not used to manufacture standard quality products at all. The project's involvement in his business inhibits him from flexible pricing, flexible stove quality and the usage of different metal types depending on the availability. This is a reason why well-established producers have not shown much interest in MP production.

g. Furthermore FECT does not really know how they should organize the links between the manufacturers and the retailers. Although most of FECT's fieldwork is spent on promotional activities, the MP is not as widely known as for instance the sawdust stove. FECT has been working hard to promote the MP to consumers, but has given little attention to promoting the product to producers and distributors. Producers and retailers have been approached regularly by the project, but they were never seen as a target group in itself for which promotional activities are equally needed in order to rouse their interest. Wholesalers who act as an intermediary between the producers and the retailers were not considered at all and thus the project neglected the crucial role they play in the marketing mechanisms of stoves and other products. For more details see part II.

h. The little attention that FECT has paid to the establishment of a proper distribution network is reflected in the locations of the workshops above. While the already existing workshops (4 and 5) have their industries opened in the centre of business, the new workshops which produce only on orders placed by FECT, are located far from commercial activity in refugee camps or outskirts of Peshawar. This will prevent the shops from establishing a well-running business without project involvement. The lower rent that they are paying in these far-off areas can never compensate for the orders they will miss due to this bad location.
2.4. Conclusions

MP stove production seems to be sufficiently profitable according to one of the producers who presently makes MPs for FECT. Nevertheless, little enthusiasm has been shown by stovemakers to adopt the MP-technology. It may be that traditional metal stove making is even more profitable.

Furthermore, producers need to be convinced that sufficient demand exists before investing into a new product line. FECT should develop a strategy to rouse the interest of stove producers.

Most of the present MP producers are exclusively making MPs in workshops located in far off places. The producers do not have any distribution network at all. Therefore it can not be expected that the manufacturers will be able to disseminate the MP without project support. For a successful privatization of MP production new producers in central locations must be sought. Criteria for the selection of stove producers area given in part II, chapter 7.

To identify a stove producer who is prepared to make MP stoves according to the specifications and quality standards of the project and who at the same time is prepared to market his products himself is not a simple task. It will take much time and energy to work with producers and to motivate them. This should be a separate and clear assignment within the project organization, not leaving it partly to district officers who have many other duties and simultaneously leaving it partly to technical staff who basically are stationed in the project’s research centre.

CHAPTER 3
DISTRIBUTION ANALYSIS

INTRODUCTION
The dissemination strategy for the MP stove has gone through different stages. FECT tried to shift from a fully project controlled stove distribution towards more involvement from the private sector. The strategy which is implemented at present reflects both the community development approach of the past and the commercial approach of the future. In this chapter I will review the present dissemination strategy of FECT by focussing on these parts of the strategy which will be most relevant in a commercial marketing of the MP, i.e. retail outlets.

3.1 FECT’s dissemination strategies

3.1.1. House to house selling
The project has used so far different distribution channels. In 1988 the main method for disseminating the stoves was through project employed and trained lady promoters, who went out daily to sell the MPs in villages and refugee camps. They walked through the streets, going house to house to promote and explain the MP. They also organized demonstrations for small groups of women to show the performance of the stove and to explain the proper operation. The demonstrations took place in the homes of some village influential, in girl’s schools, health centres or vocational centres. The lady promoters were all stationed in Peshawar district. Occasionally they went out to the other districts for stove promotion, but cultural restrictions did not allow to organize this on a regular basis. To care for the stove distribution in the project areas out of Peshawar District, a few local women were employed to work as lady promoters in the far off districts. These lady promoters who were less educated, less skilled and less paid, were trained and supervised by the lady promoters who operated from Peshawar office.

3.1.2. Shops
Mid 1988 FECT started to sell stoves also through private shops in villages and refugee camps. A male promoter was employed for this purpose, who worked as a sales agent. The male promoter went to bazaars in the different districts to identify suitable retail outlets. There he instructed the shopkeepers how to carry out proper promotion for the stove, he sometimes trained them how to operate a stove and provided them with a banner to advertise the MP. Usually the male promoter organized a stove demonstration in front of the shop.

The shopkeeper received the MPs free of cost to display in his shop. For each stove he sold a commission of Rs. 5/= was paid, the unsold stoves were taken back at any time he wished.

3.1.3. Custody
A third, more informal distribution channel was added to the ones described above by the lady promoters themselves. After having done a demonstration in one of the above locations, they often left some stoves behind with the school teacher, health worker or wife of the village influential. She would sell these stoves to her relatives or guests, receiving a commission of Rs.5/= per stove from the project.
3.2. Present strategy: integration of distribution channels

In 1990 FECT made an attempt to integrate the different distribution channels as described above.

First of all, a survey was carried out by the female and male field staff together to select the suitable areas for MP dissemination. The criteria for target area selection were based on experience and read as follows:

- a minimum of 50% of the households is using wood as fuel,
- a minimum of 50% of the households is purchasing wood for fuel,
- a maximum of 35% of the households is using agricultural residues as a fuel,
- a maximum of 20% of the households is using electricity or kerosene as a fuel,
- a minimum of 50% of the households bakes nan in the tandoor or in the commercial bakeries,
- the village has a minimum of 250 households.

The first four criteria are directly related to the suitability of the area for the MP. The last two are related to the bakery programme of FECT, which is carried out simultaneously with stove dissemination.

The original idea was to select a limited number of villages and establish an integrated distribution network in each village. Each village would have a retail outlet being an existing well-running shop in the bazaar. The shop would be supported by two local promoters, a man and a woman. This local couple would be trained and supervised by the project’s field staff to promote stoves through house visits and demonstrations. The local couple would be employed by FECT for four months to create a demand for the MP in the village. After that period the stove shop should be able to sell the MPs on its own efforts.

In order to popularize the MP within the village, the project’s activities in a village would start with a large scale exhibition in which displays, demonstrations, speeches, and a fuel saving competition are organized. Tea and biscuits are served. After this promotional injection, the sales through the shop and the local couple would start.

The MPs are being delivered to the shops in the villages by the project’s field staff. The shopkeeper receives a commission of Rs. 5/= for each stove he has sold himself, and Rs. 2.5 for each stove that has been sold for him by the local couple. The stoves are given to him without payment, money is exchanged only in case of sales.

The establishment of this distribution network did not work out as planned. The target area selection surveys, the organization of exhibitions and the selection and training of local couples turned out to be very time consuming. During these activities no stoves could be sold. But still each district was confronted with a monthly target of 200 stoves to be disseminated. The field staff felt frustrated by the minimal sales during these preparational activities. The management felt uneasy with the little progress in achieving the quantitative targets during this phase.

The project then went for the short term successes instead of going for the long term effects. The policy as described above was followed only for a very limited number of villages. To increase the stove sales quickly, shops were opened as many as possible in all sorts of villages without target area survey in advance, without support of local couples or an exhibition. Now in April 1991, a total of 70 shops are selling the MP, while only 3 local couples are being employed. One of these local couples is working in a village where not even a retail outlet is found. It means that they are not a supporting activity for the shop, but have become an independent distribution channel. Exhibitions are organized exceptionally rather than routinely, not more often than once every four months per district. The practise of placing stoves in custody with vocational centres, schools and homes has also been included again in order to increase the stove sales with all possible
means. 80 custody places were being exploited in 1990 and 1991, with relatively high sales.

These distribution channels together have covered a total number of 138 villages in 1990 and 1991. In 5 villages only, the strategy has been implemented exactly in accordance to the original plan. In 3 other villages the strategy was slightly modified by employing only a local lady or a local man instead of a local couple. In 2 villages in Kohat the strategy was changed to incorporate energy education activities on a pilot basis.

The integration of the different distribution channels has totally failed. A closer look into the stove sales during 1990 and 1991 reflects the results of these unco-ordinated distribution activities. The overwhelming majority of the shops is selling a few stoves per month only. And, what is worse, 80% of the shops stop selling MPs after three months only.

Of the 138 villages where stoves have been disseminated, only 5 villages reveal a stove sales figure of 350 or more. Four of the villages are the ones where the project strategy was fully implemented: a local couple has been working, a retail outlet was found and an exhibition was organized. In the fifth village also an exhibition had been organized which was followed up by a local man only. This person is a social welfare officer who showed a keen interest in environmental protection and stoves. Instead of a shop, a private house was used as a retail outlet.

All other villages have a considerably lower penetration rate. Details are given in table 2.

Table 2. Number of stoves sold per village

<table>
<thead>
<tr>
<th>no. of stoves sold</th>
<th>no. of villages</th>
<th>Peshawar</th>
<th>Swabi</th>
<th>Kohat</th>
<th>Swat</th>
<th>Total villages</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 49</td>
<td>30</td>
<td>35</td>
<td>14</td>
<td>23</td>
<td>102</td>
<td></td>
</tr>
<tr>
<td>50 - 99</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>1</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>100 - 149</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>150 - 349</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>350 +</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total villages</td>
<td>41</td>
<td>47</td>
<td>23</td>
<td>27</td>
<td>138</td>
<td></td>
</tr>
</tbody>
</table>

This means that the market penetration rate per village is extremely low. The average stove distribution per village is 55 stoves. This is about the same in all four districts. After the first successes in a village, the project shifts its activities to a new place instead of intensifying its efforts in a village in order to reach a large coverage.

3.3. Retail outlets

The majority of the shops which are selected for selling the MP are village general stores. These stores have a variety of products for sale, but main commodities are food stuff. The reason for selecting general stores is simply the absence of other kinds of shops in villages. However, people are not used to buying stoves in a grocery and the shopkeeper is not used to selling stoves. There are a few hardware stores and crockeries among the retail outlets. These are the traditional stoves and kitchen utensils outlets. The fact that retail outlets are chosen which traditionally do not have contacts with metal workshops, makes a distribution network without project involvement not very feasible. At present the shopkeepers have agreed to sell MPs for the project since it does not harm to keep some stoves on their shelves as long as these stoves are delivered free of cost at their doorstep and no payment has to be made. It is unlikely that they will continue to do so if they have to purchase the MPs themselves in production workshops where they normally do not go to.
In 1990 and 1991 a total number of 101 shops have been selling MPs for some period. Only 16 shops have a total sales figure that exceeds 50. Out of these 16 shops, ten are located in villages were FECT has employed supporting promotional activities like an exhibition or a local couple. Three shops are located in larger towns and are moreover metal shops. It is interesting to note that two of these metal shops belong to the only five shops out of the total 101 which have been selling more than 100 stoves. For the remaining three shops specific reasons, like an active shopkeeper or a rich village can be mentioned for their relative successfullness.

Looking into the time period of selling it is striking that the great majority of the shops sells stoves two or three months only. Looking back from the 1st of April 1991 not more than 21 shops had been selling MPs for a period of four months or longer. Also this shows the bias towards short term successes rather than long term effects. The 21 shops that had the MP for a longer time on their shelves show a sales trend that gradually decreases from the first successful month onwards.

Table 3. Monthly stove sales of 21 shops

<table>
<thead>
<tr>
<th>Month</th>
<th>Total sales of 21 shops</th>
<th>Average monthly sales of 21 shops</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>352</td>
<td>17</td>
</tr>
<tr>
<td>2</td>
<td>194</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>181</td>
<td>8.5</td>
</tr>
<tr>
<td>4</td>
<td>175</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>99</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>92</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>58</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>6*</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>0*</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>10*</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>4*</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

* These are the sales of one shop only. All the other 20 shops have not been selling for more than 7 months.

Multipot Sales of 21 Shops
Totals per Month

Fig. 1 Monthly stove sales of 21 shops, totals per month
The table and figures above clearly show that the MP is a product that arouses the curiosity and interest of consumers immediately. While for new products in the market a bell-shaped curve is common, the MP shows a linear downward curve. The first month of selling appears to be the best month, being the month of most attention given to the product by the shopkeeper and by the project. If the shop was supported by an exhibition or demonstrations, these always took place in month one. This observation in combination with the identification of the most successful shops as above, makes it clear that the selling of the MP depends heavily on promotional activities. The MP is a product for which a market needs to be created.

A continuation and repetition of promotional activities in later months would have helped the shopkeepers to keep their sales going.

The project has so far not put efforts into the identification of wholesalers for the MP. Only one wholesaler in Swat is active as such. He receives stoves from FECT on commission basis and he sells those to other retailers adding Rs. 5 or 10 per stove. Although this man is successful in selling relatively large numbers of stoves, again the selection of this particular shop as a MP wholesaler is doubtful. First of all, this man’s main wholesale business is pesticides, fertilizer, fodder and cement and he has no substantial linkages within the stoves network. Secondly, this first wholesaler in the district is not in the centre of business (which would be Mingora) but in a smaller town and he distributes his products to general stores in smaller villages. It would have been more logical that first of all a wholesaler would have been selected who operates from the city within the hardware business and who distributes in turn to retailers and ‘sub-wholesalers’ in other towns and villages.

It seems that this wholesaler is well aware of FECT’s inexperience in the field of business. He has been successful in giving FECT the feeling that he is assisting the project rather than just having an additional business from FECT. FECT thought that they owed this man something and therefore agreed to give him credit, a bicycle to transport the stoves and a large amount of promotional materials like signboards which have never been used before. Now he is asking for a car also to transport the stoves. His sales (284) without any project support look impressive. The fact that he claims to supply to 20 shops impresses us as well. But on an average it adds up to a number of 14 stoves per shop only which is less spectacular.
3.5. Sales analysis

A total number of 20,037 MP-stoves have been sold by the project from 1st of January 1988 upto 1st of April 1991. In 1988 and 1989 the project was working for 75% of its time in Afghan refugee camps. A total of 7135 stoves has been sold in camps. This means that 12,902 MP's have been distributed in the Pakistani target areas. The number of rural households in the four concentration areas of FECT amounts to 650,714. 1) Thus FECT has so far reached not more than, say 2% of the market.


<table>
<thead>
<tr>
<th>YEAR</th>
<th>JAN</th>
<th>FEB</th>
<th>MAR</th>
<th>APR</th>
<th>MAY</th>
<th>JUN</th>
<th>JUL</th>
<th>AUG</th>
<th>SEP</th>
<th>OCT</th>
<th>NOV</th>
<th>DEC</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>212</td>
<td>344</td>
<td>282</td>
<td>317</td>
<td>368</td>
<td>667</td>
<td>537</td>
<td>754</td>
<td>671</td>
<td>846</td>
<td>650</td>
<td>511</td>
<td>6159</td>
</tr>
<tr>
<td>1989</td>
<td>494</td>
<td>349</td>
<td>418</td>
<td>598</td>
<td>384</td>
<td>564</td>
<td>507</td>
<td>729</td>
<td>414</td>
<td>645</td>
<td>654</td>
<td>473</td>
<td>6229</td>
</tr>
<tr>
<td>1990</td>
<td>141</td>
<td>141</td>
<td>494</td>
<td>70</td>
<td>315</td>
<td>427</td>
<td>453</td>
<td>478</td>
<td>715</td>
<td>826</td>
<td>711</td>
<td>798</td>
<td>5569</td>
</tr>
<tr>
<td>1991</td>
<td>802</td>
<td>496</td>
<td>782</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2080</td>
</tr>
</tbody>
</table>

Grand Total 1988 - 1991: 20,037

Monthly Stove sales
1988-1991

Fig. 3. Monthly stove sales 1988 - 1991
The sales figures in the three different years do not differ very much. 1990 output is somewhat lower, which is due to organizational restructuring of the project. The dissemination strategies for the MP has however changed considerably over the three years. It seems that only the latest and present strategy is going to have a greater impact as the first three months of 1991 show promising results.

The break down of the sales per quarter gives an interesting picture. For all the three years the stove sales were lowest in the first quarter of the year. The sales then gradually increase to reach a peak in the last quarter of the same year. In the first three months of the following year, sales are consequently dropping again to follow the same trend for the rest of the year. See fig. 4. Fig. 3 which depicts the monthly sales also shows clearly these yearly cycles. Although the stove sales seem to correlate with the season, the real explanation is probably somewhat different. As earlier mentioned FECT has modified its dissemination strategies and organizational structures several times over the years. The start of a new year has often been the start of either a new strategy or a new organizational set-up. A change in the project is directly reflected by a lower output. In the course of the year, the project adjusted itself to the new situation to arrive at higher outputs. But in the end the quantitative result was not better than before. This observation reveals that the potential of the project was limited to 6,000 stoves per year only. Whatever the methodology of the project was, the distribution of the stove did not exceed this number. However, if the trend over the past years will continue, 1991 output will be much higher, 10,000 – 12,000 stoves. The important change in strategy as compared to the years before, is the distribution of stoves by others than project staff. In 1988 and 1989 60% of the MPs have been sold directly by project promoters while in 1990 the share of project promoters dropped to 10%. In 1991 this trend continued to come down to a share of project promoters of only 2%. See table 5.

**Quarterly Stove sales 1988-1991**

![Quarterly Stove sales 1988-1991](image)

*Fig. 4. Quarterly stove sales 1988 – 1991*
Table 5. Total stove sales per distribution channel for all districts 1990 - 1991 (Absolute and relative distribution)

<table>
<thead>
<tr>
<th>All Disticts</th>
<th>1990</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>1991</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Peshawar, Swat, Swabi, Kohat</td>
<td></td>
<td>JAN</td>
<td>FEB</td>
<td>MAR</td>
<td>APR</td>
<td>MAY</td>
<td>JUN</td>
<td>JUL</td>
<td>AUG</td>
<td>SEP</td>
<td>OCT</td>
<td>NOV</td>
<td>DEC</td>
<td>TOTAL</td>
<td>JAN</td>
<td>FEB</td>
</tr>
<tr>
<td>local couple</td>
<td></td>
<td>abs</td>
<td>%</td>
<td>abs</td>
<td>%</td>
<td>abs</td>
<td>%</td>
<td>abs</td>
<td>%</td>
<td>abs</td>
<td>%</td>
<td>abs</td>
<td>%</td>
<td>abs</td>
<td>%</td>
<td>abs</td>
</tr>
<tr>
<td>shops</td>
<td></td>
<td>102</td>
<td>72</td>
<td>16</td>
<td>37</td>
<td>13</td>
<td>36</td>
<td>5</td>
<td>16</td>
<td>34</td>
<td>119</td>
<td>50</td>
<td>47</td>
<td>63</td>
<td>2075</td>
<td>40</td>
</tr>
<tr>
<td>proj.promoters</td>
<td></td>
<td>16</td>
<td>12</td>
<td>33</td>
<td>23</td>
<td>97</td>
<td>26</td>
<td>2</td>
<td>36</td>
<td>6</td>
<td>13</td>
<td>4</td>
<td>46</td>
<td>2</td>
<td>460</td>
<td>10</td>
</tr>
<tr>
<td>others</td>
<td></td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>11</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>23</td>
<td>0</td>
</tr>
<tr>
<td>Grand Total</td>
<td></td>
<td>141</td>
<td>100</td>
<td>141</td>
<td>100</td>
<td>494</td>
<td>100</td>
<td>70</td>
<td>100</td>
<td>315</td>
<td>100</td>
<td>427</td>
<td>100</td>
<td>453</td>
<td>100</td>
<td>478</td>
</tr>
</tbody>
</table>

% = percentage of monthly total

Fig. 5. Total stove sales 1990 - 1991 - % of each distribution channel
The sales through shops show an opposite trend. In 1988 and 1989 the share of shops was 19%, while in 1990 that increased to 37%. In 1991 the share of shops was already 54%.

The sales via local couples and others has not significantly changed over the years.

This analysis makes clear that if FECT has to make any impact with its fuel saving stoves, the solution lies in stimulating distribution via other channels than the project staff only. Although the sales through shops have so far shown many deficiencies, as described earlier, still the potential is large. If selection of retail outlets is done thoughtfully and monitored carefully, the scope for dissemination is wide as the successful shops have demonstrated.

3.5. Conclusions

When the integrated dissemination strategy was implemented by the Field Section of FECT, the field staff realized that with this methodology no more than six villages per year could be covered. They did not believe that the target of 200 stoves per month could be completed in such a small number of villages.

The results as described above however show that the FECT's dissemination policy was originally well-designed but badly implemented. In four out of the five villages where the dissemination policy was accurately followed a relatively large coverage has been achieved. If each district would have implemented the strategy fully in six villages per year, the targets would have been achieved easily and lots of time and money would have been saved by concentrating on a limited area only rather than dispersing all efforts.

This conclusion also shows that the combination of different distribution channels into an integrated comprehensive marketing strategy in a small number of carefully selected locations is far more successful than a large number of unco-ordinated and isolated distribution efforts. The long preparation period that is required for such a strategy is worth the result.

The shops which have been selling MPs without project promotional support have not been successful at all. Apparently, the shopkeepers were not able to push the stoves themselves sufficiently, which is understandable as almost all of them are general store keepers, not stove sellers. It is strongly recommended to select retail outlets for the MP which are selling stoves already or other related items. Only these shopkeepers are familiar to stove selling and only these shopkeepers have contacts already with stove producers. For criteria for the selection of stove distributors, see part II, chapter 7.

Promotional activities for the MP show a quick result, which proves that the MP is an attractive appliance. However, stove sales drop gradually after the first month. This may be due to the haphazard strategy implementation of FECT's field section. Longer and repetitive promotion efforts in one village might maintain the stove sales over a longer period. The low sales in later months may also be due to dissatisfaction with the stove after the first trials. Monitoring surveys conducted by FECT continuously provide conflicting information about the appropriateness of the design. The MP has proven to be an attractive and desired product initially. The acceptability of the MP in the longer term is still uncertain. Extensive surveying is needed.

The distribution structures of FECT have been established without looking at and taking advantage of the existing networks in the market. This would automatically lead to a different type of retailers and to the acknowledgement of the important role of wholesalers as intermediaries. Part II of this study will elaborate on this further.

1) Source: Important District wise Socio-Economic indicators N.W.F.P., 1989*, Bureau of Statistics, Planning and Development Department, Govt. of N.W.F.P.
CHAPTER 4
PROMOTION ANALYSIS

INTRODUCTION

FEET's promotion strategy for the MP has developed in the recent years from simple door to door selling to extensive sales promotion and awareness raising activities. The combination of a sensitization programme and a promotional programme has created many organizational confusion as well as strategical problems.

In this chapter I will review all promotional and educational activities from a purely commercial perspective. It must be noted that the promotion activities were designed to support the distribution strategy as described in chapter 3. As the distribution of the MP is not yet commercial, the promotional activities are not developed for commercialization either. It is not intended to criticize the strategy but to identify the strong and the weak points for a future marketing of the stove by the private sector. Therefore the central questions are: What are the effects of the promotion activities on the stove sales? And what is the relation between the costs of the activities and its impact?

4.1 Promotion activities and materials

FEET's promotional activities consist of a comprehensive package. To enhance the sales in shops, the project organizes large exhibitions and smaller demonstrations in villages. Influential villagers are invited to participate and popularize the MP among the audience. The project staff gives demonstrations, speeches, organizes a fuel saving competition, serves tea, biscuits and nans and distributes promotion materials. In the weeks after such a happening, the MP is for sale in the village shop and a local man and a local woman visit the houses to promote the sales.

FEET has developed a variety of promotional materials to be distributed.

<table>
<thead>
<tr>
<th>Table 6 Stoves promotional materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>type of material</td>
</tr>
<tr>
<td>------------------</td>
</tr>
<tr>
<td>poster</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>user manual</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>hand-out 1</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>hand-out 2</td>
</tr>
</tbody>
</table>

EE = Energy Education

Since October 1990 FECT has started with an environmental awareness raising programme in addition to the promotional activities. The so called Energy Education lessons are conducted in the same villages as those where the MP is being sold. Approximately two or three villages per district are covered by EE-activities. The aim of these lessons is not directly to promote FECT's stoves and bakeries, but to educate people about the causes and effects of environmental degradation and to teach them how to contribute to protection. The activities were intended to support the distribution of fuel saving devices. Awareness raising activities preceding stove selling would enhance the sales. The EE-lessons are carried out in groups of about 14 women and men seperately and occasionally in boys schools as well. A course consists of 4 sessions and different methods and materials are being used.
Table 7. Energy Education materials

<table>
<thead>
<tr>
<th>Type of material</th>
<th>Objectives</th>
<th>Destination</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE-booklet</td>
<td>- environmental awareness raising</td>
<td>EE-course participants schoolteachers</td>
</tr>
<tr>
<td></td>
<td>- train field staff</td>
<td>village influencers other organizations</td>
</tr>
<tr>
<td>videos</td>
<td>- environmental awareness raising</td>
<td>EE-teaching material</td>
</tr>
<tr>
<td>flipcharts</td>
<td>- environmental awareness raising</td>
<td>EE-teaching material</td>
</tr>
</tbody>
</table>

A detailed analysis of the effectiveness of the different promotional activities and materials is impossible since FECT's record keeping has not been sufficiently detailed to do so. Therefore only a more general analysis has been made.

4.2. Effectiveness of FECT's promotional and Energy Educational activities

In 1990 and the first three months of 1991 FECT has spent almost Rs. 200,000/= on direct promotional and sensitizational activities for the MP. This amount includes all visual materials distributed in the villages and the costs incurred at exhibitions, demonstrations and EE-lessons. The salaries of field staff, transportation and administrative costs are not taken into account.

During these 15 months a total number of 7,649 stoves have been sold, which means that for each stove Rs. 25/= have been spent on direct promotional activities. A break-down per district shows a large difference between the districts, Swabi having the lowest costs per stove, Kohat having more than six times higher costs per stove. The details in the tables below indicate that Swabi has invested much less in exhibitions and materials than the other districts and furthermore no EE-activities were organized as yet. Surprisingly, Swabi has still the highest stove sales. This is all the more surprising as Swabi is known as the most difficult district for the project. Swabi is an agricultural area, with fewer wood resources and more crop residues. This makes it not a favourable area for the MP. When looking for differences between Swabi and the other districts that may count for the relative successfulness, it was found that Swabi has established the largest distribution network as compared to the other districts. Swabi has more shops, more villages with local couples and more custody places. Moreover Swabi is the only district that is distributing stoves through vocational centres. More than 20 vocational centres all over the district have been selling MP's on commission basis. In some months their sales was even 50% of the total sales in the district.

Table 8. Costs of FECT's promotional and EE-activities 1990 - 1st quarter 1991 in Rs.

<table>
<thead>
<tr>
<th>type activity</th>
<th>Peshawar</th>
<th>Kohat</th>
<th>Swabi</th>
<th>Swat</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhibitions</td>
<td>24,596</td>
<td>33,656</td>
<td>12,161</td>
<td>11,750</td>
<td>82,163</td>
</tr>
<tr>
<td>Small demo's</td>
<td>216</td>
<td>127</td>
<td>210</td>
<td>-</td>
<td>553</td>
</tr>
<tr>
<td>EE-lessons</td>
<td>6,771</td>
<td>9,347</td>
<td>16,118</td>
<td>-</td>
<td>36,118</td>
</tr>
<tr>
<td>Stove related*</td>
<td>29,994</td>
<td>38,099</td>
<td>12,053</td>
<td>15,726</td>
<td>95,872</td>
</tr>
<tr>
<td>Materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>61,577</td>
<td>81,229</td>
<td>24,424</td>
<td>27,476</td>
<td>194,706</td>
</tr>
</tbody>
</table>

* Bakery handouts, EE-booklet in English, flipcharts and videos are excluded.
Swabi should first of all be compared with Kohat and Peshawar, since the same dissemination and promotion strategies are applied in these districts. Swat is different because all stoves are exclusively sold through shops. Swat does not employ local promoters neither keeps its stoves in custody.

Comparing Swabi with Peshawar and Kohat District it becomes clear that the EE-lessons have made the stove very expensive. Most of the materials have been distributed during those lessons, which explains the high costs incurred at materials. Swabi and also Swat have not yet been included in the EE-programme, therefore all the materials distributed in these two districts were purely meant to increase the sales. While in Peshawar and Kohat many of the materials were distributed in the framework of EE and therefore basically aimed at sensitizing. If the EE-costs are deducted, the costs per stove decrease with almost 50% in Peshawar and Kohat (Table 12). Kohat’s stoves are extremely expensive (Rs. 60/= per stove extra). The reason is clear. Kohat has invested the largest amounts in exhibitions, EE and materials in the shortest time frame.

Looking at the figures only the conclusion would be apparent that EE does not contribute to increased stove sales. However, this conclusion is not justified. The co-ordination between FECT’s promotion and EE-activities has been so poor that EE-activities were conducted in villages where the retail outlet was closed down already or the local salesman and woman were already fired. If EE-lessons have created an extra demand for stoves, it is not reflected in the stove sales because the MP was not available any more.
It is therefore more fair to look at the promotional costs per stove and per participant excluding EE-expenses.

If the EE-costs are excluded, even then Peshawar and Kohat stoves are significantly more expensive than Swabi stoves. The higher costs are spent on exhibitions and promotion materials. Hence, the costs incurred are not counterbalanced by higher sales. Two different conclusions can be derived from this observation.

Firstly, we may say that the promotional materials and activities of FECT are not sufficiently effective. As far as the exhibitions are concerned, this statement can and will be investigated in detail below. With respect to the demonstrations and promotional materials no further research could be carried out since the distribution records of the project do not allow that.

Secondly, we may state that the investments made on promotion are not properly balanced in Kohat, Peshawar and also Swat. It seems that an overdosis of promotional materials has been given to a limited number of people in a limited area in too short a period of time (Peshawar and Kohat). In Swat an opposite trend is responsible for the high expenses. The promotion materials have been distributed to too many people in too many areas, while the MP was not available for sale. The promotional costs per participant confirm this conclusion. In Swabi less costs are made per participant than in the other districts. If again the EE-lessons are excluded, the costs per participant are more or less the same in each district. Only Swat is still much higher. The reason for this is that in Swat most of the efforts are invested in distributing promotion materials rather than in organizing promotional activities. Only for promotional activities the number of participants can be recorded and thus incorporated into the calculations.

Furthermore, the level of promotional activities has been too high considering the distribution network. A wide dissemination of materials makes no sense if the stove is not equally widespread available for sale. The stove sales in Swat, Peshawar and Kohat have not considerably increased by distributing all these materials, it only made the stove much more costly.

4.2.1. Effectiveness of exhibitions

A total of 16 exhibitions have been organized in 1990 and 1991 with a total cost of Rs. 82,000/=.

Approximately 7,700 people have been attending these exhibitions, which means an investment of Rs. 10.6 per participant. The effectiveness of exhibitions however must be assessed from the stovesales that have taken place during and after the event. In chapter 3 it became clear already that the most successful dissemination strategy consisted of the combination of an exhibition, a local couple and a shop. If one of these three elements is left out of the strategy, the sales are dropping dramatically.

The impact of the 16 exhibitions has varied extensively. In all the 16 villages the stove sales have been the highest in the month where the exhibition took place and the two or three months hereafter. Only in the villages where the exhibition was followed by a local couple and a shop the sales continued for some months longer. (Mankee Sharif, Yar Hussein, Kalo Khan) In some cases an exhibition was not followed up by a shop, nor by a local promoter. It was intended that the local promoter from a neighbouring village would work in that particular village as well. The results show that this did not work out well. These exhibitions were a waste of time and money as the villagers had no opportunity to buy stoves at all. A demand was created, but no retail outlets organized. In one case this has resulted in an investment of Rs. 500/= per stove sold. Also the villages with only a shop without local promoters do not show satisfactory results (Niemgoala, Kana Khel).

Another conclusion from the table is the importance of the size of the exhibition. Large exhibitions with a high number of participants and high expenses are definitely not more effective than smaller exhibitions with a lower number of attendants. The large exhibitions just make the MP more expensive, the investments are not justified by the impact (Nusrat Khel, Niem Goala, Tangi).
The cost-benefit analysis is most positive for small scale exhibitions with a limited number of participants. The costs incurred on exhibitions for each stove sold is only in these cases below Rs. 10/= . These exhibitions were held in Kalo Khan, Mankee Shareef and Kattee Khel.

Again it becomes clear that Swabi is doing better than the other districts (Table 13). An additional explanation for this is the fact that FECT's male and female field workers in Swabi co-ordinate their activities much better than the field staff in the other districts.

Table 13. Promotional exhibitions 1990 - 1991

<table>
<thead>
<tr>
<th>Village</th>
<th>exhibition participants</th>
<th>exhibition costs (Rs.)</th>
<th>total no. stoves sold</th>
<th>distribution channels</th>
<th>exhibition costs per stove sold</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PESHAWAR DISTRICT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kana Khel</td>
<td>75</td>
<td>1,500</td>
<td>87</td>
<td>shop</td>
<td>17.26</td>
</tr>
<tr>
<td>Khesary</td>
<td>85</td>
<td>1,500</td>
<td>33</td>
<td>nil</td>
<td>45.45</td>
</tr>
<tr>
<td>Mankee Shareef</td>
<td>105</td>
<td>1,600</td>
<td>684</td>
<td>shop, local couple</td>
<td>2.34</td>
</tr>
<tr>
<td>Merajee</td>
<td>88</td>
<td>1,500</td>
<td>68</td>
<td>nil</td>
<td>22.06</td>
</tr>
<tr>
<td>Palosee</td>
<td>93</td>
<td>1,500</td>
<td>19</td>
<td>nil</td>
<td>78.95</td>
</tr>
<tr>
<td>Sadu Khel</td>
<td>95</td>
<td>1,500</td>
<td>3</td>
<td>nil</td>
<td>50.00</td>
</tr>
<tr>
<td>Kattee Khel</td>
<td>80</td>
<td>1,400</td>
<td>139</td>
<td>shop, local couple</td>
<td>10.07</td>
</tr>
<tr>
<td>Bahadar Khel</td>
<td>87</td>
<td>1,500</td>
<td>26</td>
<td>nil</td>
<td>57.59</td>
</tr>
<tr>
<td>Tangi</td>
<td>1,500</td>
<td>12,696</td>
<td>383</td>
<td>shop, local couple</td>
<td>33.15</td>
</tr>
<tr>
<td><strong>Total Peshawar</strong></td>
<td>2,246</td>
<td>24,596</td>
<td>1,412</td>
<td></td>
<td>17.06</td>
</tr>
<tr>
<td><strong>SWABI DISTRICT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yar Hussain</td>
<td>750</td>
<td>5,654</td>
<td>567</td>
<td>shop, local couple</td>
<td>9.97</td>
</tr>
<tr>
<td>Kalo Khan</td>
<td>125</td>
<td>864</td>
<td>542</td>
<td>shop, local couple</td>
<td>1.59</td>
</tr>
<tr>
<td>Mankay</td>
<td>80</td>
<td>1,500</td>
<td>88</td>
<td>shop, local man</td>
<td>22.73</td>
</tr>
<tr>
<td>Sheikh Jans</td>
<td>525</td>
<td>4,143</td>
<td>130</td>
<td>shop, local lady</td>
<td>31.87</td>
</tr>
<tr>
<td><strong>Total Swabi</strong></td>
<td>1,410</td>
<td>12,161</td>
<td>1,305</td>
<td></td>
<td>9.32</td>
</tr>
<tr>
<td><strong>KOHAT DISTRICT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Togh</td>
<td>255</td>
<td>2,275</td>
<td>127</td>
<td>shop, local couple</td>
<td>17.91</td>
</tr>
<tr>
<td>Billitang</td>
<td>275</td>
<td>3,381</td>
<td>87</td>
<td>shop, local couple</td>
<td>38.86</td>
</tr>
<tr>
<td>Musrat Khel</td>
<td>2,500</td>
<td>28,000</td>
<td>445</td>
<td>local man</td>
<td>62.92</td>
</tr>
<tr>
<td><strong>Total Kohat</strong></td>
<td>3,030</td>
<td>33,656</td>
<td>659</td>
<td></td>
<td>51.07</td>
</tr>
<tr>
<td><strong>SWAT DISTRICT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Niemgala</td>
<td>1,000</td>
<td>11,750</td>
<td>284</td>
<td>shop</td>
<td>41.37</td>
</tr>
</tbody>
</table>

** several stoves have been sold also before the exhibition took place
** sales were delayed due to EE-pilot phase (see below); a local producer started selling stoves in the mean time; this private initiative is not included.

4.2.2. Effectiveness of Energy Education courses

It is not correct to assess the impact of EE-lessons on stove sales only. Th objective of EE is not sales promotion, but awareness raising in the first place. A better indication of the impact of EE would be the user rate and correct operation of the stove. Still it may be interesting to see if there
is an effect on the stove sales at all as EE was also intended to be supportive to the stove selling activities. EE courses have been organized in 8 villages in Peshawar and Kohat from October 1990 till March 1991.

The stove sales figures do not show any impact of the lessons. As explained earlier, this is due to co-ordination failures between the EE-section and the field section of FECT. Therefore little can be said about the effectiveness of EE on the demand for the MP. However, a pilot strategy in Kohat indicates that the awareness raising programme does help creating a demand for the MP. This pilot strategy has stimulated the start of MP production by a private metal worker. This concerns the Afghan metal worker who manufactures his stoves under a tree as described in chapter 2.

In two villages in Kohat District the EE-section of the project decided to try out a somewhat different approach. The EE-teachers organized their lessons in these villages and the field workers organized their exhibition, but stoves were not offered for sale until the awareness raising activities were completed. This strategy was adopted to see whether MP's would be used better and more frequently if they would have been bought only after extensive explanations. By organizing these activities people were demanding for the stoves, but the MP was not available for sale. Then the Afghan metal worker took his chance and started manufacturing MPs of a low quality himself. He sold his substandard but cheap MP's in the two villages. This is the reason why these two villages show very low sales figures in FECT's records despite the high promotional and educational investments made.

4.3. Effect of promotional activities on private initiatives

Although the promotional activities of FECT have generally been effective in increasing the stove sales, sometimes these have been less effective — and even counterproductive — in progressing towards a commercial dissemination strategy. The survey team noted several complaints from shopkeepers, telling them that FECT's activities are hindering their sales. Some examples.

The field workers are visiting villages in large project vehicles, which is understood by the people that the stoves are being supplied by a governmental organization. That makes them reluctant to pay for it, as government activities should be free of cost. Also shopkeepers change their attitude as soon as they understand that a foreign project is behind the stoves. Then normal business negotiations on equal terms are not feasible any more.

Female project staff walking through villages and going door by door is not appreciated at all. The shopkeeper judges this as unfair competition with his business and it makes him less active in stove promotion. The villagers consider it very strange that women roam about in the streets and often become suspicious. Why is it, that these people are so keen to bring stoves into the houses? If it is not normally sold in shops like all other commodities, something must be wrong with it? Even the streetsellers who are regularly visiting villages are not knocking on doors. This part of the promotion strategy is clearly a remnant of the community development approach of the project's history.

The last example concerns the EE-lessons. The participants of these 4 session courses are provided with several promotional materials. In addition they receive 3 tree saplings and a small hand axe as an incentive. While spreading the news about these gifts, the news is rapidly modified into a story telling that saplings and axes are being given out for free with each stove. Shopkeepers are sometimes being blamed if they cannot provide these to their customers.

A positive effect on the private initiative has been described in 4.3.2. where a private metalworker started manufacturing stoves autonomously after FECT had been creating a demand in the area.
4.4. Conclusions

The promotion strategy of FECT is a mixture of awareness raising activities, promotion activities with a community development background and real sales promotion activities. This mixture of approaches has resulted in a badly co-ordinated strategy with varying successes. If implemented well structured and consistently, the promotion activities have a large impact on sales.

The cost effectiveness of the activities and materials has not been observed very well. This should be an integrated part of any commercial promotion strategy.

Proper guidelines for the use of promotion material and the organization of exhibitions are needed to ensure a positive relationship between costs and effects. Promotion and education activities are a waste of money if they are conducted in areas where no stoves are for sale. The promotion and EE activities must be redesigned into an integrated mix which is in tune with the project's distribution strategy.

A promotional campaign aimed at consumers must be carefully designed in such a way that private initiatives of producers and retailers will be encouraged. In addition specific promotional activities aimed at producers and distributors should be developed.

Setting guidelines will only be effective if these are followed properly. As has become clear earlier in the product and distribution analysis as well, the consistent implementation of altogether well designed strategies is a very weak point of the project. Strong supervision of all activities must be a priority.
CHAPTER 5
CONCLUSIONS

5.1. Product analysis

The difficult operation of the MP is the biggest impediment towards the sustainability and commercialization of the stove. A household utensil that makes life more difficult for a housewife will in the end never sustain. Everywhere in the world one can see that only those products aimed at housewives are totally adopted if they are more convenient to use than the product it seeks to replace. It may be doubted if heavy and repeated promotion and awareness raising can overcome this drawback.

This negative feature of the MP may very well be a killer assumption to its sustainable and commercial distribution.

In the evaluation of FECT organizational weaknesses have been identified as the important reasons for the relatively low sales in the past. It may be that the weakness of the MP is equally responsible. The fact that the field staff hopped rapidly from village to village and the fact that all shops discontinue their sales after a few months is certainly due to logistical reasons. But the operation of the MP is definitely also a reason why many housewives stop using the stove after some months. Initially they are attracted by the new and nice looking product and its status. Later on these factors have lost their relevance and only the usefulness remains to be important. This may account for the absence of demand in all shops after four to six months.

FECT has rarely given the chance to users to replace their MP after it was worn out. The practise to replace the MP with a new one is the best indicator for the appropriateness of the product. Data on this aspect do not exist. Only the stated willingness to replace their MP has been investigated in some monitoring surveys. However, showing interest to purchase a new stove, does not mean at all that it will actually happen.

It is strongly recommended that extensive research will be conducted into the long term adoption rate of the MP. Is it correct that many users neglect the stove after some months? What are the reasons? Is it correct that demand for the stoves drops in all shops after four to six months? Why?

Furthermore, stoves must be offered for sale again in previously successful villages to find out if replacements actually do occur.

Further research is needed to find out if greater convenience is possible without dropping the efficiency of the MP.

The MP should be offered for sale in different sizes and different qualities to meet the needs of different consumers.

5.2. Commercial thinking

A commercial strategy to be implemented by a development project means a dramatic change in activities, attitudes and ways of thinking. The project should first of all start employing staff that has marketing and business knowledge and experience. The evaluation of FECT has shown that the project lacks understanding of commercial techniques. Many future mistakes will therefore be due. And even small mistakes may discourage producers and retailers. A wrong selection of retail and production locations may cause complete failures and substandard manufacturing of stoves may spoil the reputation of the product among users.
5.3. Integration of strategies

The most important characteristic of a marketing strategy is the integration and co-ordination of the different parts of the strategy. Production, distribution and promotion must all be designed in close relation and integrated into one comprehensive marketing system. Many of the mistakes made in the past were due to the lack of co-ordination between the different parts of the overall marketing strategy. It is impossible to start implementing only one part of the strategy and introduce the rest at a later stage. It will be very hard for instance to convince the present producers of the MP to continue manufacturing MP's if FECT would stop ordering stoves from them. They have never had an incentive to put efforts into creating a market for their products and now the set up of their business will not enable them to do that easily.

Hence, a commercial approach should be thought out thoroughly. The new strategy should be implemented at a manageable pace rather than raising expectations and threaten the project's future. Producers will become impatient if demand is too low and consumers will become impatient if production is too low. The project should ask itself if it is able to handle such an approach with all its implications. Otherwise the choice for it must not be made.

5.4. Supervision and co-ordination

The evaluation of FECT shows that the project had problems in implementing its strategies consistently. Main reason for that is the lack of supervision in the field. Too much attention has been given to activities in the office, while the fieldwork has been neglected too often. The implementation of a new strategy such as commercialization will require permanent and intensive supervision of the activities. Priority in FECT's organizational structure must be to set up an extensive supervision capacity.

The second weak point in FECT's performance has been the bad co-ordination between activities of the different sections. As stated above a successful marketing strategy is characterized by an integration of well co-ordinated strategies. Therefore much attention must be paid to establish a structure which co-ordinates the activities of the different sections effectively.

5.5. Organizational set up

A commercial dissemination strategy will require a different organizational set up as compared to the present more development oriented strategy. FECT should seek advice from organizational experts and learn from business organizations to restructure their own project.
PART 2

RESEARCHING

THE MARKET
INTRODUCTION

In the second part of this marketing study we have conducted a market research. Market research is always needed before the introduction of a new product can take place. The information gathered by market research reduces the risks involved in decisions. It will influence decisions on pricing the stove and on the scale of advertising. The information collected will directly affect the planning of production and distribution strategies as well as product design.

Our market research focussed on four issues.

1. DEMAND FORECAST

It is necessary to know what the total potential market for the product will be and to identify at what segment of the market it should aim.

We have tried to find the answers to the following questions:

1. What is the potential market for the MP?
2. What is the probably volume of future sales?
3. What is the geographical distribution of the market?

This will tell whether the potential market is large enough to justify manufacturing the product at all. Further it will assist in selecting the appropriate production strategy and planning the production levels. Also the scale of promotion will depend on the volume and geographical distribution of the market.

2. CONSUMER ASPIRATIONS

A second use of market research is to find out consumer preferences and attitudes. It is necessary to know if consumers will accept the product. It is also needed to know where customers prefer to purchase a product such as a wood stove. This will be helpful to design an appropriate distribution strategy.

The questions we have asked are:

1. What features of improved wood stoves do consumers want?
2. Why do customers buy improved stoves?
3. How important is styling of the product?
4. What price levels are acceptable?
5. What are the consumer's buying habits?

To find answers to these questions, we have interviewed two samples of 120 women each in the project's target area.

3. EXISTING STOVE MARKET

The third part of our market research deals with the actual stove market which exists in the project's target areas. The intention is to use existing production and distribution networks as much as possible for marketing the MP. In that case the consumers will see the stove in its right context and compare it with existing models. Moreover existing producers and distributors will not try to disrupt the distribution of the MP.
Therefore our objective was to establish a detailed picture of the production, distribution, promotion and pricing strategies of the stove models that are for sale in the market. By understanding how the traditional stoves are being marketed, the scope and limitations for introducing the MP into the same market will be understood.

Questions for this part of the market research were:

1. Which stoves are available in the market?
2. What are the respective production and distribution strategies?
3. What is the share of the market of each stove model?
4. What are the profit margins for stove producers and distributors?
5. Are producers and distributors interested in the MP?
6. What are the consumer prices for the different stove models?
7. What type of production activities are carried out for the products?

Placing the MP within this field will mean opting for decentralized informal and labour intensive production.

4. ALTERNATIVE STRATEGIES

A good market research is investigating several options for marketing the new product. Alternative strategies should be compared in order to arrive at a proper decision. This marketing study has been looking into two other alternative marketing methods which possibly could be used for manufacturing and distributing the MP.

In addition to our research on the informal stove production as under 3 we investigated the market situation of kerosene stoves. The kerosene stove was selected for research because it is a comparable product in many respects. The purpose of the product is the same, the consumers target group is partly the same and also the production techniques are to a large extent comparable.

Placing the MP within the kerosene stoves market mechanisms will mean a choice for centralized medium scale production.

The third alternative that we wanted to investigate was a more advanced industrial production strategy. If the project would want to have the MP marketed through such a channel, the best option would be an aluminium cooking pots factory. Even though the production techniques are not the same, a factory of this kind could easily modify its production methods for the manufacturing of MPs. A major reason for selecting this type of industry is again the purpose of the product. It is a product used in kitchens as is the MP. Every household owns and uses at least two aluminium pots, thus the distribution network is extensive and the consumer target group is largely the same.

For each of the two alternatives we have tried to establish a general picture. Our aim was to collect data about the following.

Production: production methods, production levels, production costs.

Distribution: distribution network, mode of transportation and costs, mark-ups, type of retail outlets.

Pricing: wholesaler's prices, retailer's prices, consumer's prices, mode of payment.

Promotion: type of promotional activities and costs.
To collect all this information we have paid frequent visits to the bazaars and workshops in Peshawar, Kohat, Mingora and Mardan. The first three towns were selected for the survey as they are the capitals of the concentration areas of FECT. Mardan was added during the research since it turned out to be an important production centre for biomass stoves which supplies its products to Swat and Swabi. Only by including Mardan into the study, we have been able to cover the total project area.

Our respondents were workshop owners, metal workers, retailers and wholesalers for all the products. The interviews were sometimes formally done with a questionnaire, sometimes through an informal conversation all depending on the situation. An important survey technique however proved to be accurate observing the shops, workplaces and bazaars. We asked our respondents to open up in detail about their business and that is of course what a real business man never will do.

Therefore estimating production levels and production costs was extremely difficult. The producers have many reasons for not revealing their actual business like taxes and competition. They were all understating their production output and overstating their production and labour costs. Furthermore there is a large seasonal difference in stoveproduction which is impossible to comprehend completely by surveying the market in four weeks only as we had to do.

Crosschecking the production figures with sales figures by wholesalers and retailers made it once again clear that the manufacturers were giving severe understatements. However the wholesalers and retailers appeared to overestimate their sales with such large numbers that with their information the overall picture became more blurred instead of more clear. The stove distributors had their own reasons for exaggerating their business. They tried to give the impression of a very well running business as they hoped to gain something from the project.

The production levels and production costs presented in this chapter are the result of several interviews with producers, their competitors, wholesalers and retailers. By putting all the stories together, we arrived at figures which are to our opinion the best possible estimates.
CHAPTER 1
DEMAND FORECAST 1

INTRODUCTION

Before planning a widespread dissemination of the MP it is necessary to know what the possible number of customers for the stove will be.

The objectives of our forecasting has been as follows.

1. What is the potential market?
2. What is the probable volume of future sales?
3. What is the geographical distribution of the market?
4. What is the segment of the market the MP should aim at?

1.1. Demand estimation

The demand forecast is based on the analysis of household surveys conducted by FECT's field section among 505 respondents spread over four districts: Peshawar, Charsadda, Swabi and Kohat. The SEBCON team analyzed the data from this survey to arrive at an estimation of the potential demand and sales of the MP.

The assumption was accepted that those respondents who are using and purchasing wood as a fuel and who are also indicating their willingness to buy a multipot stove form the potential buyers group of the stove. In addition, two other categories can be considered as potential buyers: 1. those who are using alternate fuel (kerosene, dung, crop residues, gas) but also showed their willingness to buy a stove and 2. those who stated that they might buy a stove. These two categories have not been included into the demand forecast as they will not be the major target group for the MP.

The response to the question on willingness to buy a MP for Rs. 60/= was selected as the key variable in estimating the demand for the stove and the percentage distribution of the responses was applied to determine the upper limit of demand. If figures for those who are willing to buy and those who might buy are considered as potential demand, it can be stated that a maximum of 89% of the households have a potential demand. This could materialize only if the population precisely follows the responses reported in the questionnaires. However in actual practise large deviations are likely and the population often behaves differently.

Because of the economic incentive offered by the fuel saving capacity of the MP, it is assumed that only those households which buy wood and use it as a fuel can be classified as the potential buyers of the stove. Almost 53% of the households can be classified in this category. (Table 14.) However to set a tighter limit on our estimates we are assuming furthermore that the most potential buyers are those who are purchasing fuel wood and who also showed their willingness to buy a MP. A total of 37% of the households covered in the surveys falls in this group. (Table 15.)

<table>
<thead>
<tr>
<th>Table 14. Distribution of wood users and purchasers by income groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>district</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>Swabi</td>
</tr>
<tr>
<td>Peshawar</td>
</tr>
<tr>
<td>Kohat</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>
The maximum demand is expected to be in Swabi where 47% of the respondents were purchasing fuel wood and showed their willingness to buy a stove for Rs. 60/=. Peshawar had the lower demand: 31%. These percentages when applied to the total number of rural households in the project's target areas provided the total potential demand. Table 3. presents a district wise picture of the demand for the MP. ForCharsadda District the percentage demand of Peshawar has been applied as the household survey interviewed only 7 respondents inCharsadda. However, the two districts have comparable features. The survey did not provide any data on Swat District. Therefore the overall percentage of 37 has been applied.

The estimates show a potential demand of 237,000 multipot stoves in the five districts of NWFP. However, to be more cautious and conservative in forecasting the demand it is further assumed that only 80% of the potential buyers will actually buy the stove. Final estimates indicate an effective demand for 190,000 stoves in the five districts.

Table 15. Distribution of wood users and purchasers who are willing to buy a multipot stove

<table>
<thead>
<tr>
<th>district</th>
<th>number hh.</th>
<th>percentage hh.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swabi</td>
<td>80</td>
<td>47%</td>
</tr>
<tr>
<td>Peshawar</td>
<td>61</td>
<td>31%</td>
</tr>
<tr>
<td>Kohat</td>
<td>42</td>
<td>41%</td>
</tr>
<tr>
<td>Total</td>
<td>183</td>
<td>37%</td>
</tr>
</tbody>
</table>

Table 16. Potential demand for multipot stoves by district

<table>
<thead>
<tr>
<th>district</th>
<th>rural popul.</th>
<th>no. of rural hh.</th>
<th>% of no. of hh.</th>
<th>Effective demand (80% of total potential demand)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swabi</td>
<td>722,000</td>
<td>103,143</td>
<td>47%</td>
<td>68,065</td>
</tr>
<tr>
<td>Charsadda</td>
<td>565,000</td>
<td>80,714</td>
<td>31%</td>
<td>25,021</td>
</tr>
<tr>
<td>Peshawar</td>
<td>1,127,000</td>
<td>161,000</td>
<td>31%</td>
<td>49,744</td>
</tr>
<tr>
<td>Kohat</td>
<td>503,000</td>
<td>71,857</td>
<td>41%</td>
<td>29,174</td>
</tr>
<tr>
<td>Swat</td>
<td>1,638,000</td>
<td>234,000</td>
<td>37%</td>
<td>85,410</td>
</tr>
<tr>
<td>Total</td>
<td>4,555,000</td>
<td>650,714</td>
<td>36.5%</td>
<td>237,419</td>
</tr>
</tbody>
</table>

Potential Demand Multipot Stoves by District

Fig. 6. Potential demand for multipot stoves by district
This estimate does not include the demand from alternate fuel users who showed an inclination to buy a stove. If this group is included the demand will increase by another 9%.

An additional increase in demand is anticipated from those households who said that they might buy a stove. Assuming that at least half of the households in this category will buy a MP, will further increase the demand by 12%. These figures were however not included in the potential demand in order to keep the estimates more conservative.

1.1.1. Demand by income group

The SEBCON report further gives an estimation of the demand by income group to identify which segment of the market will be the main target group. The survey classified each household into rich, middle or poor categories. This classification by status has been used as proxy for income groups. Table 4 and 5 include the district wise results.

The tables show that the willingness to buy a MP decreases as we move from higher to lower income households. Three quarter of the affluent respondents were willing to buy a stove as compared to only 45% from the poor income group. Considering the fact that only 10% of households are in the upper income group, the total demand for the stove from this group would be relatively small as compared to that from the middle and lower income groups.

More than one third (37%) of the respondents from the poor households were not sure and said that they might buy the stove. In contrast respondents from the high income groups were more clear about their decision: 75% of them were willing to buy while 10% refused.

In terms of absolute numbers, the middle income group will be the dominant buyer of the MP. This is the segment of the market which should have priority in FECT's marketing efforts.

|Table 17. Willingness to buy a MP by income group (absolute numbers) |
|---|---|---|
| **district** | **Rich** | **Middle** | **Poor** |
| | yes | maybe | no | yes | maybe | no | yes | maybe | no |
| Swabi | 3 | 5 | 5 | 65 | 18 | 5 | 45 | 26 | 7 |
| Peshawar | 27 | 8 | 1 | 72 | 28 | 11 | 15 | 22 | 13 |
| Kohat | 8 | 2 | 1 | 53 | 12 | 2 | 1 | 1 | 0 |
| Total | 38 | 10 | 1 | 191 | 58 | 18 | 61 | 49 | 20 |

|Table 18. Willingness to buy a MP by income group (percentages) |
|---|---|---|
| **district** | **Rich** | **Middle** | **Poor** |
| | yes | maybe | no | yes | maybe | no | yes | maybe | no |
| Swabi | 75 | 3 | 0 | 66 | 25 | 10 | 58 | 33 | 9 |
| Peshawar | 75 | 3 | 22 | 66 | 25 | 10 | 58 | 33 | 9 |
| Kohat | 67 | 0 | 17 | 61 | 14 | 2 | 17 | 17 | 0 |
| Total | 62 | 2 | 16 | 66 | 20 | 6 | 42 | 34 | 18 |

Figures of each income group do not necessarily add up to 100% as a certain part of the respondents did not reply unabashedly to this question.
1.2. Sales estimates

The actual stove sales will be a combination of new stove purchases and stove replacements. SEBCON has calculated the estimated number of stove replacements to arrive at the final potential stove sales.

The average life of a multipot is approximately one and a half years after which it has to be replaced. The above estimate of 100,000 stoves is for new purchases. Monitoring surveys of the project have shown that 60% of MP users intend to replace their stove if it has worn out. However, it will be more safe to assume that in reality about 40% will actually do so.

If 40% of the stove buyers replace their MP within two years of its date of purchase, then replacements will account for a large number of sales.

To estimate the sale due to replacements the following methodology was adopted:

**step 1**

It is assumed that the sale of the stoves will cover 20% of the total potential demand each year starting from 1992. By the end of the fifth year, the sale of the MP will have covered the total potential demand.

**step 2**

Assumed that 20% of the stoves in a given year will be replaced before the end of the next year and another 20% before the end of the third year.

The yearly sale by replacement using the above assumptions was calculated.

Tables 19 and 20 show the sales estimates for new purchases and replacements by district.

The population growth has not been incorporated in the sales forecast. The rural population is growing at a rate of 2.8%, but the increase in the number of rural households is less than 1%. The additional number of potential buyers from this group will have little impact on the total demand.

### Table 19. Potential sale of multipot stoves (replacement)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Swabi</td>
<td>5,38</td>
<td>878</td>
<td>2,318</td>
<td>2,606</td>
</tr>
<tr>
<td>Charsadda</td>
<td>1,502</td>
<td>3,502</td>
<td>4,202</td>
<td>4,724</td>
</tr>
<tr>
<td>Peshawar</td>
<td>1,278</td>
<td>1,522</td>
<td>2,654</td>
<td>2,771</td>
</tr>
<tr>
<td>Swat</td>
<td>2,733</td>
<td>6,013</td>
<td>7,216</td>
<td>8,112</td>
</tr>
<tr>
<td>Total</td>
<td>7,675</td>
<td>16,855</td>
<td>20,262</td>
<td>22,778</td>
</tr>
</tbody>
</table>

### Table 20. Potential sale of multipot stoves (incl. sales and replacements)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Swabi</td>
<td>7,690</td>
<td>9,228</td>
<td>11,074</td>
<td>11,751</td>
<td>12,255</td>
</tr>
<tr>
<td>Charsadda</td>
<td>4,391</td>
<td>5,269</td>
<td>6,323</td>
<td>6,759</td>
<td>6,997</td>
</tr>
<tr>
<td>Peshawar</td>
<td>7,960</td>
<td>9,552</td>
<td>11,682</td>
<td>12,162</td>
<td>12,245</td>
</tr>
<tr>
<td>Swat</td>
<td>4,608</td>
<td>5,602</td>
<td>6,722</td>
<td>7,133</td>
<td>7,439</td>
</tr>
<tr>
<td>Total</td>
<td>38,375</td>
<td>46,050</td>
<td>55,260</td>
<td>58,637</td>
<td>61,153</td>
</tr>
</tbody>
</table>
1.2.1. Validity of sales estimates

The author has serious doubts about the sales estimates presented. First of all the assumption as under step 1, that each year 20% of the potential sales will effectively take place is not in accordance with the common diffusion models for new products (fig. 7.). The number of households buying their first MP is more likely to follow a bell shaped curve which indicates that the number of stove adopters gradually increases over the years, to reach a peak and consequently decreases again. The linear curve presented here, shows an equal number of adopters each year which is not realistic.

![Fig. 7. Curves for adopter distribution](image)

Fig. 7. Curves for adopter distribution 2)

Furthermore, it also does not seem to be realistic to expect that the total potential market will be covered in a time frame of five years only. Experience in other countries indicates that a number of 8 to 10 years is far more realistic.
The sales estimates for new purchases would consequently not be 20% of the total potential market each year, but would rather follow a pattern as under. However, this pattern is highly tentative as it is not based on proper calculations. In order to discover the proper sales estimates it is recommended use the prediction techniques as are described in the literature: N. Bossche, "The Dissemination of woodburning stoves in the Sahel countries." October, 1983. 3) and I.C. Hendry, "The three-parameter approach to long range forecasting." Longe Range Planning, March 1972, 40 - 45.

% sales of total potential market
(190,000 units)

<table>
<thead>
<tr>
<th>Year</th>
<th>% Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>2</td>
<td>3.5</td>
</tr>
<tr>
<td>3</td>
<td>8.0</td>
</tr>
<tr>
<td>4</td>
<td>20.0</td>
</tr>
<tr>
<td>5</td>
<td>35.0</td>
</tr>
<tr>
<td>6</td>
<td>20.0</td>
</tr>
<tr>
<td>7</td>
<td>8.0</td>
</tr>
<tr>
<td>8</td>
<td>3.5</td>
</tr>
<tr>
<td>9</td>
<td>1.0</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

For estimating the total sales the yearly sales by replacements have to be calculated and added following the techniques as above.

It must be noted here as well that the project would not be in the position to properly handle a stoves sale of 38,000 in the first years of the new strategy. The training of producers and distributors, the promotional campaign, the quality control and the monitoring of all activities will initially be too complicated and time consuming to cover such an output. It is strongly recommended to start the programme on a lower level and grow slowly at a manageable pace.

1.3. Geographical area prioritization

A cross district analysis shows that the maximum number of stoves were demanded in Swat. 35% (68,000 units) of the total sales will occur in Swat. This is mainly because of the large rural population in Swat as compared to the remaining four districts. In terms of percentage, Swabi has the highest potential where 47% of the rural households are estimated to be buyers of the MP.

Prioritization of target markets should be based on a mix of several factors such as total demand, production facility and its cost, distribution facility and impact of promotion. Together these factors determine the priority of an area for marketing the stove.

Kohat will be a relatively difficult area for producing and marketing the stoves because of its lack of a proper infrastructure as compared to Peshawar and Swabi. This makes it difficult to develop a wide distribution network and will increase promotional costs. Also the research into the existent marketing channels for metal stoves (chapter 3) revealed that stove production in Kohat is rare. Furthermore Kohat has the least share in the total demand mainly because of its population. It accounts for only 12% of the total demand and offers a relatively smaller market. These factors provide comparatively less incentive for producing and marketing the stoves in the district. Hence Kohat should not be the priority target market.
Although Swat also has certain disadvantages like poor accessibility, the total demand for stoves is very high. Its share in demand is almost equal to that of Peshawar and Swabi combined. In addition the district is also afflicted by rapid deforestation which has increased the price of wood to a higher level than in the other districts. It is therefore recommended that Swat should be assigned high priority for marketing the MP.

Peshawar,Charsadda and Swabi district have a sizeable market to capture and also have a better infrastructure which can be utilized for developing production and distribution networks. The market research in Chapter 3 will show that the most important stove production centres in NWFP are located in Peshawar and in Mardan, which is close to Swabi. The proper infrastructure and the geographical proximity of the three districts will moreover reduce the promotional costs significantly. Therefore Peshawar,Charsadda and Swabi should be treated as a separate large market.

The potential demand for the MP will vary considerably within the districts. Wood use, wood purchasing habits and income levels do not only differ per district, but also from village to village. Hence a geographical target area prioritization has to be made as well per district by using the variables and techniques as described in this chapter.

1) This chapter is largely based on the report "Market Research on Multipot stoves" which was prepared by SEBOON (Pvt.) Ltd. Islamabad on the request of the author.
3) Publisher is unknown. The paper is available in GTZ-GATE library, Eschborn, Germany.
CHAPTER 2
CONSUMER ASPIRATIONS

INTRODUCTION

The second part of the market research deals with consumer’s preferences and needs. Two household surveys were conducted in the four concentration areas of the project with a total sample size of 120 and 121 households respectively. The objectives of the two surveys were:

a. To identify the most suitable retail outlets as perceived by women
b. To identify women’s preferences for attributes of improved stoves.
c. To assess the willingness to purchase stoves at different price levels.

To meet the objectives two surveys with different methodologies were set up. In the first survey women were asked where they believe that good quality kitchen utensils can be purchased. After this they were asked where they actually had bought their own kitchen equipment. Furthermore five different stove types were presented to them each having a special characteristic. The women were asked to indicate their preference. The five stoves were: 1. fast cooking stove, 2. fuel saving stove, 3. tasty nan baking stove, 4. easy multi fuel stove, 5. smokeless stove.

The second survey was set up as a market test. In the compound of an influential village woman we displayed six different metal stove models. Each stove had different features and prices. The stoves offered for sale were:

1. FECT’s MP for Rs. 65/=  
2. FECT’s MP decoratively painted for Rs. 80/= The main characteristics of these two stoves are fuel saving, fast cooking and mobility.
3. The previous project Handle stove for Rs. 65/=  
4. The Handle stove colourful painted for Rs. 80/=. The main attributes of the two stoves are very high fuel savings, extremely fast cooking and mobility.
5. A two-pot cooking-baking-heating stove with a chimney for Rs. 350/=.
6. Same two pot stove as under 5 but colourfully painted. The advantages of these stoves are fuel saving, fast cooking, smokeless, and the potential to cook two pots and bake one bread simultaneously while operating only one fire. The stove can also be used as heating stove.

Small groups of women were invited to visit the place and see the stoves. A detailed explanation was given about each model. The women were asked which stove they would like to buy if at all. We clearly explained them that it was just a test, we were not really asking them to buy. For many women this explanation was necessary to get their co-operation. Others were so attracted by the stoves that they kept on pressing us to sell the stoves to them on the spot. After the selection was made, we checked with them if they really would pay for that stove if it was for sale, or whether they only had indicated their preference. In the latter case, they were asked once more to make a selection based on their real purchasing power.
2.1. Survey findings

2.1.1. Retail outlets and buying habits

The question about good retail outlets and locations for purchasing kitchen utensils made the women feel rather uneasy. They are not comfortable answering questions about their opinions. As a habit they immediately say that they do not know that sort of things. "We do not know, we are just like dogs" was not an exceptional response. It happened often that they told the (female) interviewer to give the answer for her. It is also true that the women really do not have ideas about shopping areas as most of the shoppings are being done by the male household members. The question about retail outlets therefore has generated only valuable information about the location of shops. Specifications about preferred types of retail outlets could not be collected.

The majority of the women believes that kitchen utensils can best be bought in cities. As a second source for good kitchen equipment street-sellers were mentioned. Very few respondents think that also their own village or another larger village sells good quality kitchen ware.

Table 21. Preferred location for purchasing good quality kitchen utensils (percentage of respondents)

<table>
<thead>
<tr>
<th>City</th>
<th>streetsellers</th>
<th>own village</th>
<th>other larger village</th>
<th>do not know</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>65%</td>
<td>20%</td>
<td>12%</td>
<td>27%</td>
<td>7%</td>
<td>100%</td>
</tr>
</tbody>
</table>

The second question asked the women where their own kitchen utensils were purchased and who bought these. Again the most frequent mentioned location is cities, while a substantial number of households also purchase kitchen ware in their own or another village. From the items we inquired about only the aluminium products are offered for sale by street-sellers. Almost 50% of the respondents is in reality also buying these products from them.

The 'commercially fuelled stoves' are most frequently purchased in cities, while biomass stoves are more often bought in villages. All stoves are almost exclusively purchased by male members of the household. Only one exception was reported where the housewife herself had bought the kerosene stove. The aluminium goods are equally purchased by women and men because these items are offered for sale at the doorstep by street-sellers.

Although the men are responsible for providing new kitchen equipment, it seems as if they do discuss that in some detail with their wives. The conclusion is drawn from the fact that women generally do know where their husbands or sons have purchased the items. Only about the tawa it is often not known, but this is because a tawa has usually been included in the dowry.

Table 22. Purchasing habits of households (1) in percentages

<table>
<thead>
<tr>
<th>Item</th>
<th>% owning item</th>
<th>Total no. of owners</th>
<th>% purchased by men</th>
<th>% purchased by women</th>
<th>% do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>tawa</td>
<td>100</td>
<td>80</td>
<td>12</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>teakettle</td>
<td>100</td>
<td>56</td>
<td>44</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>aluminium pots</td>
<td>100</td>
<td>48</td>
<td>52</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>thermosflask</td>
<td>72</td>
<td>99</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>kerosene stove</td>
<td>9</td>
<td>91</td>
<td>9</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>sawdust stove</td>
<td>7</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>metal horseshoe stove</td>
<td>7</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>gas stove</td>
<td>30</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>electric stove</td>
<td>4</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
The percentages given in table 22 do not vary much among the districts. It only has to be noted that all metal horseshoes were located exclusively in Swat District. From the total number of gas stoves found (36) more than half of these were located in Swat (22).

Table 23. Purchasing habits of households (2) (percentages)

<table>
<thead>
<tr>
<th>Item</th>
<th>City own village</th>
<th>Other larger village</th>
<th>Street sellers</th>
<th>Do not know</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kettle</td>
<td>50</td>
<td>9</td>
<td>25</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>Aluminium pots</td>
<td>36</td>
<td>6</td>
<td>13</td>
<td>45</td>
<td>0</td>
</tr>
<tr>
<td>Thermosflask</td>
<td>29</td>
<td>5</td>
<td>15</td>
<td>50</td>
<td>1</td>
</tr>
<tr>
<td>Kerosene stove</td>
<td>94</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Sawdust stove</td>
<td>36</td>
<td>1</td>
<td>55</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Metal horseshoe stove</td>
<td>25</td>
<td>50</td>
<td>25</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Gas stove</td>
<td>72</td>
<td>11</td>
<td>17</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Electric stove</td>
<td>80</td>
<td>0</td>
<td>20</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 23 shows the buying locations of the households that own the item. Thus the percentages given, are the percentages of the total number of households possessing the item as in table 22. Also the percentages shown in table 23 do not differ much between the four districts. Only Swabi is deviant in the sense that relatively more shopping is being done in villages as compared to the other districts.

In addition it has been asked from the women whether they are able to decide themselves about the purchase of kitchen equipment up to an amount of Rs. 100 and Rs. 200. 45% of the women stated to be able to spend Rs. 100 themselves if she has that amount in her pocket, while only 26% is able to decide herself about Rs. 200. These answers are not in accordance with the actual buying habits which shows that the men are mostly purchasing kitchen tools. A break down per district reveals that only in Swat large numbers of women are allowed and able to spend the money themselves, while in the other districts the large majority of the women need permission from their husbands. The reason for this is probably the fact that Swat is relatively a more prosperous area than the other districts. This statement is confirmed by the fact that for instance 61% of all gas stoves found in the households were located in Swat.

Table 24. Women's ability to decide about the spending of money on kitchen utensils

<table>
<thead>
<tr>
<th>Amount</th>
<th>Swat</th>
<th>Kohat</th>
<th>Swabi</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rs. 100</td>
<td>55</td>
<td>27</td>
<td>24</td>
<td>45</td>
</tr>
<tr>
<td>Rs. 200</td>
<td>36</td>
<td>17</td>
<td>0</td>
<td>26</td>
</tr>
</tbody>
</table>

63
2.1.2. Preferred stove attributes

The last question in this survey was about the preferred features of an improved stove. Not one single improved stove characteristic was identified as the most popular or most needed. The preferences are more or less equally divided over the five options, although the interest in a tasty nan baking stove or a multi fuel stove was the lowest. The preferences do not differ substantially amongst the districts. Only in Swabi the interest in a multifuel stove is higher than in the other districts. Also the number of women who could not express any preference was highest in Swabi. 9% of the respondents was not interested in any improved wood stove at all.

Table 25. Consumer’s preferences for characteristics of improved wood stoves

<table>
<thead>
<tr>
<th>% of preferences</th>
<th>reasons for preference</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>saves time for other duties</td>
</tr>
<tr>
<td>21</td>
<td>will stop eye, throat and chest infections, will stop blackening cooking pots and kitchen walls</td>
</tr>
<tr>
<td>25</td>
<td>saves money spent on wood</td>
</tr>
<tr>
<td>11</td>
<td>pleases husband and children</td>
</tr>
<tr>
<td>12</td>
<td>convenient for crop residues</td>
</tr>
<tr>
<td>9</td>
<td>cannot afford a new stove, prefer gas or do not face any problem with clay stove</td>
</tr>
<tr>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

2.1.3. Preferred stove models and affordable price levels

The second survey on consumer’s aspirations looked into the stove preference in relation with the ability to pay for that stove.

The two-pot cooking-baking-heating stove made a very good impression among the village women. However, most of them could not afford such a stove and selected therefore one of the cheaper models.

The multipot stove and the multi purpose stove were then equally selected as a first choice. Respectively 45% and 46% of the women expressed their interest to purchase this type of stoves. For both models the decorated stove was preferred over the plain stove. The women were attracted by the colours and some women also considered it advantageous that the paint would prevent the stove from rust. The handle stove which accommodates only one size pot was not appreciated at all.

Also 9% of the respondents was not interested in buying a stove or told us from the beginning that they could not afford it.

However, when it was checked with the women whether they really would pay for the selected stove, many of them changed their mind (31%). Only 27% was still interested to purchase one of the two the multi-purpose stoves. The rest decided not to purchase a stove after all or to go for the multipot stove.

A total of 39% would really purchase one of the two multipot stoves. When making their final selection, less women opted for the decorated stoves. 34% of the women decided not to buy any stove.
Table 26. **Consumer's preferences for improved woodstoves and willingness to buy**

<table>
<thead>
<tr>
<th></th>
<th>% first choice</th>
<th>% first choice and also prepared to buy</th>
<th>% finally selected to buy</th>
</tr>
</thead>
<tbody>
<tr>
<td>plain multipot stove</td>
<td>22</td>
<td>19</td>
<td>24</td>
</tr>
<tr>
<td>coloured multipot stove</td>
<td>23</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>plain handle stove</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>coloured handle stove</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>plain multipurpose stove</td>
<td>14</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>coloured multipurpose stove</td>
<td>32</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>do not want any stove</td>
<td>8</td>
<td>8</td>
<td>34</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td><strong>69</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

The most frequently mentioned reasons for selecting the multipot stove were: it is portable, it is fuel saving, it cooks fast and it has a reasonable price.

Reasons for wanting the two-pot cooking—baking—heating stove were: it is multi purpose, it is good looking, it is good for large families and it directs the smoke.
2.2. Conclusions

2.2.1. Retail outlets

Kitchen utensils and especially stoves are commonly purchased by men, not by women. This means that the marketing activities for the stoves have to be aimed at two segments of the target group. Firstly the stove users, the women, secondly the stove buyers, the men. Both have to be convinced about the usefulness of the stove, women in addition have to be taught proper stove operation.

Those kitchen utensils which are sold by street sellers at the doors of the houses are equally purchased by men and by women. If the project wants to sell its products directly to the end user, the distribution of the stoves through these vendors may be a good option.

Villagers are used to purchase their kitchen equipment in cities, even if these are far off. It is commonly believed that cities have the best quality products. Therefore retail outlets in urban areas should not be neglected. Although the target group of the project lives in rural areas, their buying habits show, that they will be reached as well through retailers in the city areas.

2.2.2. Consumer aspirations

An interest among the target group for improved stoves is certainly existent. Women have different needs and aspirations as far as the improvements are concerned. Not one special stove feature has been found as the most desired one. Fast cooking, fuel saving and smoke removal are the most important attributes.

Women are attracted by good looking products, but prefer to save some money if the same benefits can be gained from a cheaper less decorated model. A multi-purpose stove is very desirable, but a stove price of Rs. 350/= can be afforded by a minority only.

The results of the survey suggest that the MP alone is not able to satisfy the demand for stoves. A smokeless stove and a multi purpose stove at affordable rates are likely to find a market as well.
CHAPTER 3
BIOMASS STOVES - SAWDUST, METAL HORSESHOE AND TRIANGULAR STOVES

INTRODUCTION

The production and distribution strategies for the MP do not only depend on the potential demand for the stove and on consumer’s preferences. The project wants to introduce the MP into the existing marketing mechanisms for stoves or related items. Usage of existing channels and patterns will provide the best chance for sustainability.

The last chapters of this report deal with the research on the production, distribution and promotion strategies which prevail in the target areas for biomass stoves, kerosene stoves and aluminium cooking pots. The difference between these products is not only a matter of different production strategies (namely decentralized informal and manual manufacturing versus centralized formal mechanized manufacturing) but moreover a matter of a totally different marketing strategy. A description of the sales points where biomass stoves, kerosene stoves and aluminium cooking pots are available will explain this.

Located in the old city bazaar of the provincial capital Peshawar one will find the biggest stove market of NWFP. The metal hardware area of the city is called Rethi bazaar and is famous for its metal stoves, buckets, mason’s and agricultural tools. In Rethi bazaar one will see more than 50 small metal shops among other products selling sawdust, metal horseshoe and triangular stoves. Sawdust and triangular stoves are the most frequently sold stoves in the market, the metal horseshoe is available in limited quantities only. The stove season for all stoves is winter when in addition also heating stoves are for sale. From Rethi stoves are being distributed all over the province.

Rethi bazaar is really a hardware bazaar. The shopkeepers are often busy manufacturing and repairing metal items which creates a hell of a noise and dirt in the environment. The shops are tiny and stuffed with filthy metal products. The stoves are displayed in front of the shops in the open air. The sawdust stoves are made from old drums or other scrap metal and they often look terrible. The stoves are rusty, ditched and some seem to fall apart very soon. The metal horse shoes are of much better quality, the metal is often new. But even these are not very stable. Triangular stoves are made from iron rods which are quite strong. But also the triangulars for sale in the market are rusty. The overall impression one gets is of a rather unorganized unattractive business area. Biomass stoves are almost exclusively for sale in Rethi. In only few of the other bazaars of Peshawar metal biomass stoves are found.

Picture:
Rethi bazaar
Quite in contrast to Rethi is Kissa Khani bazaar. To Kissa Khani one has to go for kitchen utensils. The shops are much larger and clean, the products are well arranged and attractively displayed. Kerosene stoves and aluminium cooking pots and to a lesser extent electric and gas stoves are for sale in Kissa Khani.

The distinction between biomass stoves and 'commercially fuelled stoves' is sharply reflected by these two different marketing strategies. The two groups of stove types are aiming at different target groups and have therefore selected different types of retail outlets. The stoves are presented in a different style and environment, which gives the product a different status.

Where do we want to place the MP within this field? As the MP is a biomass stove, it would be logical to place it along with the sawdust stoves in Rethi bazaar. On the other hand the MP is a product of a better quality and styling than the traditional biomass stoves. Also its price is somewhat higher, which makes it altogether comparable with the cheaper models of the kerosene and electric stove.

It would be a crucial marketing decision for the project which type of retail outlets to select. It will be a decision at what segment of the market the project initially wants to aim. Does FECT want to introduce the MP first of all to the more well to do consumers in order to give the MP a higher status, which consequently will attract the poorer segments of the market? In that case the MP should be sold in Kissa Khani. FECT should set a relatively high price to attract affluent customers who attribute a high value to the stove and are thus willing to pay for it. The stove then will gain a high status. The premium price may gradually be lowered as competition increases and the value attached diminishes (market skimming objective).

Or does FECT want to reach the poorer segment of the market immediately? Than Rethi bazaar would be the proper choice and FECT should set a relatively low price to stimulate the growth of the market and to increase the market share (market penetration objective).

In order to be able to make a good decision the market survey has been looking into both possibilities. The production and distribution mix as well as the pricing strategies both for biomass stoves and kerosene stoves have been investigated. In addition some information has been collected on the marketing of cooking pots also. In the following chapters I will describe the marketing strategies for the different products to find out where and how the MP would fit in.

3.1. The stoves market in Peshawar

3.1.1. Stoves production

The survey team identified 18 stove producers of biomass stoves in Peshawar city. For all of them stoves is only one of their product lines. Apart from stoves they may manufacture masonry tools, agricultural tools, chains, buckets, iron gates, hinges etc. The techniques, tools and machinery applied are simple, it is a labour intensive industry. The production workshops are small. In 8 of the workshops the owners are producing alone without any regular labourers. Sometimes their sons are assisting. In six other workshops one or two labourers are employed which depends on the season. The production levels of these workshops are not very high, up to 4000 stoves per year only. The four remaining producers are working on a much larger scale, together they are responsible for 70 - 80% of the stove production in Peshawar. Still their labour force does not exceed 5 workers.
In addition to these production workshops, there are a few workers in Rethi bazaar who occasionally manufacture some stoves while sitting in their shops, waiting for customers. Their output is however negligible.

Almost all sawdust stove producers have their production centre somewhere in the suburbs of Peshawar city. The rent of the land is lower which enabled them to establish a larger workshop with storing facilities for the raw material and the finished products. The sales of the stoves is not done from these suburb working places. Each producer is having at the same time a retail outlet in Rethi bazaar. The outlets are equally tiny and unattractive shops as all the others, one would not understand immediately that the shopkeeper actually is a relatively large producer and wholesaler.

Also the large triangular stove producers have their workshops outside Rethi bazaar. They are blacksmiths who manufacture triangular stoves on order for other shopkeepers in Rethi.

Table 27. Production workshops Peshawar city

<table>
<thead>
<tr>
<th>Producer</th>
<th>Sawdust production 1990</th>
<th>MHS production 1990</th>
<th>Triangular production 1990</th>
<th>Retail place</th>
<th>Labourers (incl. owner)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sharif</td>
<td>12,960</td>
<td>-</td>
<td>-</td>
<td>suburb Rethi</td>
<td>3 - 4</td>
</tr>
<tr>
<td>Jamal</td>
<td>8,640</td>
<td>-</td>
<td>-</td>
<td>suburb Rethi</td>
<td>3</td>
</tr>
<tr>
<td>Fazal</td>
<td>6,910</td>
<td>360</td>
<td>-</td>
<td>suburb Rethi</td>
<td>3</td>
</tr>
<tr>
<td>Badshah Gul</td>
<td>3,745</td>
<td>145</td>
<td>-</td>
<td>Rethi</td>
<td>2 - 3</td>
</tr>
<tr>
<td>Tanweer</td>
<td>3,455</td>
<td>720</td>
<td>-</td>
<td>suburb Rethi</td>
<td>4</td>
</tr>
<tr>
<td>Latif</td>
<td>3,455</td>
<td>10</td>
<td>-</td>
<td>Rethi</td>
<td>2</td>
</tr>
<tr>
<td>Waheed</td>
<td>2,160</td>
<td>120</td>
<td>-</td>
<td>suburb Rethi</td>
<td>2</td>
</tr>
<tr>
<td>Shoaib</td>
<td>1,730</td>
<td>180</td>
<td>-</td>
<td>Rethi</td>
<td>2</td>
</tr>
<tr>
<td>Ishfaq</td>
<td>1,500</td>
<td>350</td>
<td>-</td>
<td>suburb Rethi</td>
<td>2</td>
</tr>
<tr>
<td>Iftikhar</td>
<td>300</td>
<td>20</td>
<td>-</td>
<td>suburban other*</td>
<td>1</td>
</tr>
<tr>
<td>Fazle Subhan</td>
<td>250</td>
<td>-</td>
<td>-</td>
<td>suburban cantonm. cantonm.</td>
<td>1</td>
</tr>
<tr>
<td>Babu</td>
<td>300</td>
<td>-</td>
<td>-</td>
<td>suburban suburb</td>
<td>1</td>
</tr>
<tr>
<td>Shakeel</td>
<td>20</td>
<td>10</td>
<td>-</td>
<td>suburban suburb</td>
<td>1</td>
</tr>
<tr>
<td>Mohm.Azam</td>
<td>-</td>
<td>-</td>
<td>8,665</td>
<td>suburban other*</td>
<td>4 - 5</td>
</tr>
<tr>
<td>Chinar</td>
<td>-</td>
<td>-</td>
<td>1,835</td>
<td>suburban other*</td>
<td>1</td>
</tr>
<tr>
<td>Iliahi</td>
<td>-</td>
<td>-</td>
<td>210</td>
<td>Rethi other*</td>
<td>1</td>
</tr>
<tr>
<td>Iltikf</td>
<td>-</td>
<td>-</td>
<td>65</td>
<td>Rethi</td>
<td>2</td>
</tr>
</tbody>
</table>

* these producers manufacture stoves only on order, which are sold by other shopkeepers in Rethi bazaar.
** no. of labourers involved in stove production only.

The most important product in Peshawar's stove market is the sawdust stove. The total production is estimated to be 45,000 per year.

The skills and equipment required for the production of sawdust stoves is comparable to the requirements for the MP. A sawdust stove producer could easily manufacture MP's if he decided to do.

Sawdust stoves are always made from second hand metal. The metal may come from old oil or tar drums, car bodies or low quality thin scrap metal. The drum metal is usually old but of a relatively good quality. Stoves made from car's or truck's metal are much heavier and stronger. The stoves made from the thin scrap metal are of poor quality and do not last long. Most common in the market are the drum made stoves. The production cost for such a stove is Rs. 20 - 23/= including labour, excluding overheads.
The metal horseshoe stove is produced in small numbers as the demand for this stove is very low. The total yearly production in Peshawar is estimated not to exceed 5,000. The MHS is made from better quality sheets, which look new and shiny although it is recycled metal as well. Most producers who are engaged in manufacturing sawdust stoves are manufacturing some horseshoes as well. The production cost for the most common size MHS is appr. Rs. 32/= including labour, excluding overheads.

The raw material for both stoves is supplied by local dealers. Scrap metal is often auctioned. The producers go themselves to purchase the raw material and they organize and pay for the transportation individually. Although all producers in Peshawar have strong relations (often through family ties) they have not established any form of co-operation. Each producer is working on his own and trying to compete with the others as strongly as possible. No co-operative initiatives were found.

A metal worker is able to produce 7 - 10 stoves daily. The mode of payment is always per piece which is Rs. 5 - 7/=.

In addition to the Peshawar production an estimated 1,000 MHS are yearly imported from the Punjab and sold in Rethi bazaar. Lower production costs in the Punjab enables the retailers to sell these MHS for comparable prices.

The survey team identified only four triangular stove producers. These producers are not manufacturing sawdust or metal horseshoe stoves and vice versa. The triangular stove is a different stove which requires different production techniques. As there appears to be a sharp distinction between sawdust and MHS-producers on the one hand and triangular stove producers on the other hand, the producers of the triangular stove are not expected to be interested in the production of sheet metal stoves as the MP is. Yearly production of tripods in Peshawar is estimated at 11,000.
3.1.2. Stove pricing

The producers are setting different price levels for different customers. Wholesalers are buying larger quantities than retailers and they are therefore enjoying a few rupees discount. Retailers are again purchasing at cheaper rates than consumers will do. Thus each producer has three different price levels:

<table>
<thead>
<tr>
<th></th>
<th>Sawdust Stove</th>
<th>Metal Horseshoe Stove</th>
<th>Triangular Stove</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production cost*</td>
<td>21</td>
<td>32</td>
<td>10</td>
</tr>
<tr>
<td>Wholesaler's price</td>
<td>26</td>
<td>34</td>
<td>15</td>
</tr>
<tr>
<td>Retailer's price</td>
<td>35</td>
<td>36</td>
<td>17</td>
</tr>
<tr>
<td>Consumer's price</td>
<td>40</td>
<td>41</td>
<td>23.5</td>
</tr>
</tbody>
</table>

*including labour, excluding fixed costs

The prices presented here are for the most common stove models found in the market. Prices and margins will vary considerably depending on stove size, quality and season.

The margins for the sawdust stove are much higher than for the metal horseshoe. The reason for that is the competition with the MHS coming from Punjab. It is obvious that the sawdust stove is the most attractive product for producers and only if the MP can offer comparable margins, the producers will show any interest.

The prices and mark-ups outlined here are valid for the situation in the market as we surveyed it during the month of May. In the winter months which is the peak season for stoves, the prices and margins are higher as there is a great demand. Another factor influencing the demand is the availability of scrap metal. During periods of scarcity, stoves become more expensive.
3.1.3. Case study Haji Bacha Gul

SEBCON consultants have carried out a financial analysis of one of the sawdust and MHS stove producers in Peshawar as a case study. Bacha Gul owns a workshop which is operating on a small scale and produces stoves in addition to other items which includes spades, weighing scales, tawa and tagari (construction tool). The owner manages the project and employs eight persons, six of them are skilled labourers, two are unskilled labourers. Manufacturing is mostly manually.

Bacha Gul reported an average annual sale of nearly 1.33 million of which the net profit was Rs. 145,000. According to the sales figures provided by the owner, maximum turnover was from the sale of the weighing scale and the tagari. Annual sales of each of the two items generated Rs. 342,000. The sawdust stove had a smaller share and accounted for only 10% of the total sales turnover. Bacha Gul repeatedly reported to produce SD at at cost of Rs. 33.75 per piece. Considering the survey results presented in 3.1.2. which gives a synthesis of all SD-producers, it must be highly exaggerated.

On average the workshop produced 3,600 sawdust stoves per year. MHS are made in much smaller quantities.

The total workshop cost amounted to Rs. 160,000 which included a fixed cost component of Rs. 63,000 and a working capital of Rs. 98,000.

The workshop has an IFRR of 93% and a payback period of 1.11 years.

The production of sawdust stoves is possible with simple and inexpensive implements and machines. The fixed costs are significantly low due to the little investment required for purchasing equipment. The minimum investment required for producing sawdust stoves is approximately Rs. 31,000 with a fixed cost component of Rs. 24,000. For details see Annex 3.

SEBCON further investigated the capacity and scope of this particular workshop to produce MPs. Bacha Gul would not require any additional investment for fixed assets. He already has land, a building, equipment, furniture and fixtures which can be used for the production of MPs. The additional investment required is for working capital only and amounts to Rs. 25,000/=.

Bacha Gul would be able to produce 20 MPs per day or 6,000 stoves per year by employing two or more skilled workers.

The production cost per MP is calculated as under:

<table>
<thead>
<tr>
<th>Raw material*</th>
<th>Rs. 41.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour cost**</td>
<td>8.00</td>
</tr>
<tr>
<td>Overheads</td>
<td>2.00</td>
</tr>
<tr>
<td><strong>Total cost per unit</strong></td>
<td>Rs. 51.00</td>
</tr>
</tbody>
</table>

* Raw material cost is based on the case study of Khal Mohammed.

** Labour cost as reported by Bacha Gul.

The expected selling price of the MP to retailers would be Rs. 63/= following the margins which we established for the SD (1.3.2.). The retail price for consumers would in that case be Rs. 68/=.

Since the additional investment for Bacha Gul is very small, his rate of return on the additional investment is very good and his payback period short.
3.1.4. Distribution of stoves

The sawdust and metal horseshoe stoves are distributed over the 60 metal shops in Rethi bazaar. The stoves are transported through tonga's, carts or suzuki's. Within Rethi transportation also takes place on the heads of labourers. The producers pay themselves for the transportation of their goods.

The producers who have their retail outlet in Rethi bazaar act at the same time as wholesalers in stoves to retailers in Rethi and other areas of NWFP. In addition there are three wholesalers in Rethi who are not producing themselves. They are buying stoves from the different producers.

Three out of the four triangular stove makers do not have their outlet in Rethi. These producers are fully dependent on the wholesalers for their sales. The wholesalers are giving orders to these producers and sometimes during peak season they even pay in advance. Therefore these wholesalers have quite a strong influence on the business. While for instance transportation costs are normally born by the one who purchases, if he is not in the same bazaar, in this particular case, the producers are made responsible for the transportation of their stoves to the wholesalers.

All transactions are done on the basis of trust and understanding. Contracts between producers, wholesalers and retailers are never drawn up, even not in case credit is involved.

From Rethi sawdust and metal horseshoe stoves are being distributed to the North: Mardan, Swat, Dir, Chitral, Bajour. To the South: Kohat, Thal, Hangu, Darra, Parachinar. To the East: Swabi, Rawalpindi. To the West: Landi Kotal.

The distribution of the stoves is organized in different ways. Usually a wholesaler or retailer from the province comes down to Rethi to purchase several products for his shop. He places orders for stoves along with other goods. The number of stoves per order depends on the size of the wholesaler/retailer and on the season. Ranges of 30 to 250 per order were found. The stoves are sometimes purchased on credit and usually transported through a professional transportation company. The one who buys, pays for that.

A second method of distribution is through salesmen. The producers-cum-wholesalers may send their salesmen to other areas. They collect the outstanding credit from their customers and at the same time take new orders. In that case the producer will arrange for the transportation as well, although he will not bear the costs.

A third method is ordering by telephone.

The retailers in other towns of NWFP who have purchased from Rethi in turn may act as wholesaler to shopkeepers in surrounding areas.

All transactions are often partially done with credit apart from the sales to consumers.

Within the total distribution network each party is enjoying his own appropriate profits. The wholesaler adds Rs. 9/= to the price when selling sawdust stoves to other retailers. When selling to individual consumers his mark-up is Rs. 14/= . A retailer in turn adds Rs. 5 - 10/= per stove for his customers. These mark-ups must not be taken as absolute figures, but rather as trends which vary per producer, per retailer and per season.

The distribution network for the stoves consequently looks as below in fig. 8, 9 and 10. These flowcharts show the channels which are used for distributing the stoves. The figures indicate the price paid for the stove by the recipient. Transportation cost are not included, but are reflected by the higher prices paid by consumers in other areas.
Fig. 8. Distribution network of dust stoves

Fig. 9. Distribution network of metal horse shoe stoves

Fig. 10. Distribution network of triangular stoves
3.1.5. Case study wholesalers

SEBCON also interviewed two wholesalers in Peshawar to discover their potential and interest for distributing MPs in addition to their other commodities. Mr. Sabir Shah deals mainly in hardware items. He is also selling sawdust stoves. The main hardware items being sold in his shop are axes, hammers, household utensils and rubber pipes. Sabir Shah will be interested in selling a minimum of 300 MPs per month. The reason behind this is to cover his additional fixed costs i.e. rent for a store @ Rs. 1000/= per month.

Picture: Sawdust stoves and triangular stoves in the bazaar

The additional investment required to start selling 300 MPs per month is Rs. 77,100. This amount includes Rs. 17,100 required to purchase 300 MPs @ Rs. 57/= and Rs. 60,000 for advance payment for the store room which is to be hired for storing MPs. The rent of the store room is estimated Rs. 1000 per month.

The acceptable profit for Sabir Shah would be Rs. 5/= per MP.

Mr. Ghulam Rasool is another hardware wholesale dealer in Peshawar. Ghulam Rasool operates on a larger scale than Sabir Shah. Sawdust stoves, MHS and triangular stoves are among his product lines. Ghulam Rasool has his shop in Rethi bazaar with a workforce of five persons; two of them are his sons and two are permanent employees working as loaders.

Approximately 90% of his stoves are sold to retailers. The owner reported an annual sale of Rs. 1,200,000 of which the share of stoves was nearly 14% (or Rs. 167,355).

Ghulam Rasool expects to sell 1,500 MPs per month. The additional investment required by him to start selling MPs at his shop is Rs. 135,000. This includes Rs. 85,500 required for purchasing 1,500 stoves @ Rs. 57/= and Rs. 50,000 as advance payment for a store room.

Acceptable profit margin would be Rs. 5/= per stove.
3.2. The stoves market in Kohat

3.2.1. Stoves production

Stove production in Kohat city is limited to heating stoves only. Five producers are engaged in manufacturing heating stoves which is their single product. Sawdust stoves and triangular stoves are exclusively purchased from Rethi bazaar in Peshawar. Also metal horseshoe stoves are brought from Peshawar although the survey team came across two exceptions to this rule. One of the two wholesalers in Kohat occasionally orders some metal horseshoe stoves from a local blacksmith. The wholesaler provides the producer with the raw material himself. This transaction concerns not more than 120 stoves in a year. The same wholesaler purchases sometimes metal horseshoes from Lahore also if the stocks in Rethi are short.

3.2.2. Stoves distribution

The stoves market in Kohat city is somewhat different from Peshawar's market. Kohat's city centre may be divided into three different bazaars. The Charsi bazaar is famous for its hardware products and comparable to Peshawar’s Rethi bazaar, although the shops are much better organized with attractive displays. However as far as stoves are concerned, only the triangular stove is for sale in Charsi bazaar. The survey team identified appr. 10 shops. The sawdust and metal horseshoe stoves are for sale in Bannu bazaar. Bannu is the tinworkers and scrap metal dealer's bazaar. The distinction between triangular stoves on the one hand and sawdust and metal horseshoe stoves on the other hand which exists in Peshawar's production strategies, is continued in Kohat's retailing strategies. Not more than 3 stove selling shops were found in Bannu bazaar. All over Kohat 5 other shops were found selling sawdust and metal horseshoe stoves, which makes a total of 8 retail outlets.

The third bazaar in Kohat is the main bazaar. General stores, kitchen utensils shops, food stores and also some hardware shops are located in this bazaar. For kerosene stoves one has to go to the main bazaar.

From marketing point of view the Kohat market is part of the Peshawar market as no extra production capacity is involved. The only difference is an extra level in the distribution channel, which are the two wholesalers in Kohat. These wholesalers distribute the stoves among shopkeepers in Kohat city and surrounding areas. Individual retailers also go themselves to Rethi to buy stoves for their own shops, thus leaving the Kohat wholesalers aside.

3.2.3. Stove pricing

The extra costs to transport the stoves from Peshawar to Kohat makes the stoves Rs. 2 – 3/= more expensive for Kohat consumers as compared to Peshawar consumers. This is valid for the sawdust and the triangular stoves. The metal horseshoe shows much higher profit margins and consequently a much higher retail price for Kohat customers. We have not been able to discover the rationale behind this reality. 1)

<table>
<thead>
<tr>
<th></th>
<th>Metal horseshoe stove</th>
<th>Sawdust stove</th>
<th>Triangular stove</th>
</tr>
</thead>
<tbody>
<tr>
<td>wholesaler's cost</td>
<td>Rs. 45/=</td>
<td>Rs. 28/=</td>
<td>Rs. 21/=</td>
</tr>
<tr>
<td>retailer's cost</td>
<td>50/=</td>
<td>33/=</td>
<td>23/=</td>
</tr>
<tr>
<td>consumer's cost</td>
<td>60/=</td>
<td>48/=</td>
<td>27-29/=</td>
</tr>
<tr>
<td>Kohat city</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>consumer's cost</td>
<td>60/=</td>
<td>48/=</td>
<td>27-29/=</td>
</tr>
<tr>
<td>Kohat district</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* incl. transportation Rs. 2/=  
** incl. transportation Rs. 1/=
3.3. The stoves market in Mardan

3.3.1. Stoves production

The stoves production in Mardan is confined to triangular, sawdust and some heating stoves only. The producers in Mardan have the capacity to manufacture for the total market in Mardan as well as for exporting stoves to other areas. Metal horse shoe stoves are brought in from Lahore. Thus, the stoves market in Mardan is completely independent from Peshawar's market.

About 10 regular sawdust stove producers were found in Mardan. They manufacture the stoves in their homes or in small rented shops in the suburbs. Their yearly output is estimated to be 16,000 stoves. The stoves are purchased by retailers or wholesalers in Mardan bazaar who take care of the distribution.

In addition some 5 km out of Mardan city many blacksmiths have their business. The place is called Gujar Gahri and is famous for its good quality products. The main business is agricultural tools, chains, tobacco drying furnaces and door locks. Two of the blacksmiths produce sawdust stoves as well during the three winter months. Their total produce is estimated at 1,500 sawdust stoves per year.

The triangular stoves are exclusively produced in Gujar Gahri. Five producers are engaged in that. The two sawdust stove producers are among them. The distinction between sheet metal stove producers and triangular stove producers which was found in Peshawar is apparently not the same in Mardan. One of the five triangular stove producers is manufacturing these tripods in bulk, these stoves are his main business. For the other four triangulars are only a side business. The total production of the Gujar Gahri producers is estimated at 11,000 triangular stoves.

The raw material for the stoves is easily locally available in Mardan. For the sawdust stoves usually old drum sheets are used for the stove body and new metal stripes for the legs. Triangular stoves are made from old iron bars and sometimes partially new iron stripes for the body.

It may happen that a producer does not have sufficient money to purchase the raw materials. In that case a wholesaler sometimes provides the money as either a payment in advance or simply as a loan.

The stove producers in Mardan and Gujar Gahri mainly produce on orders by retailers and wholesalers. Unlike Peshawar stove makers they do not act as wholesalers themselves. Since they are largely dependent on the distributors for the marketing of their products, the wholesalers have a strong say in the business. While in Peshawar the stove manufacturers are setting the price levels, in Mardan it are mostly the wholesalers who are in the position to do so.
3.3.2. Stove pricing

The price levels for the sawdust stove in Mardan are somewhat lower than in Peshawar. The production capacity in Mardan is larger as compared to the demand in the market. That brings the prices down. Furthermore Peshawar producers and distributors are more business minded than the people we found in Mardan. This observation is confirmed by the prices the producers have set for their clientele. No special discounts are given to wholesalers as is customary in Peshawar. Wholesalers are paying same prices per stove as the smaller retailers do.

The triangular stoves produced in Mardan are of a better quality and heavier than the ones from Peshawar. That makes them more expensive per item, but cheaper per weight.

<table>
<thead>
<tr>
<th></th>
<th>sawdust stove</th>
<th>triangular stove</th>
</tr>
</thead>
<tbody>
<tr>
<td>production cost*</td>
<td>Rs. 21/=</td>
<td>Rs. 8/=</td>
</tr>
<tr>
<td>wholesaler's price</td>
<td>27/=</td>
<td>21/=</td>
</tr>
<tr>
<td>retailer's price</td>
<td>27/=</td>
<td>24/=</td>
</tr>
<tr>
<td>consumer's price</td>
<td>35-40/=</td>
<td>27/=</td>
</tr>
</tbody>
</table>

*including labour, not including fixed costs

3.3.3. Stoves distribution

The stove selling shops in Mardan city are located in Malmandi and Shahidano bazaar. This is the place where the blacksmiths are. A total number of 30 stove selling shops were found. However during the time of interviewing, which was in May, very few stoves were displayed in the bazaar. The sales seem to be more exclusively confined to the winter season than is the case in Peshawar.

The sawdust stoves are transported from the workshops in the suburbs to Shahidano bazaar on carts and tongas. The transportation costs are estimated to be Rs.0.75 per stove which is born by the producer himself.

The triangular stoves are transported to Shahidano bazaar from Gujar Gahri by tonga or Suzuki. Costs for that are about Rs.0.25 per piece. The producer pays.

The distribution network for both triangular and sawdust stoves is somewhat different as compared to that in Peshawar. The stoves are almost exclusively manufactured on orders from retailers and wholesalers in Mardan and other areas. Producers do not sell themselves directly to consumers. In many cases retailers do not purchase the stoves directly from the producers either. They buy the appliances from a wholesaler in Mardan to whom they are going already for other commodities.

The producers are selling their products always on cash to their customers, while the wholesalers may re-sell it to retailers on credit. Thus, if a shopkeeper does not have sufficient cash at hand, he may want to purchase the stoves from a wholesaler instead of buying it directly from the producer.

The stoves production from Mardan is partly consumed by Mardan itself, partly by other areas in the province. The sawdust stoves are besides Mardan mostly exported to Malakand, Swat, Tangi, Charsadda and Swabi. The triangular stoves are rarely sold in Mardan itself. The target market for triangualrs is in Buner, Swat, Bajaur and Dir.
The distribution network for the stoves produced in Mardan is as follows:

**Fig. 11. Distribution network sawdust stoves Mardan**

```
producer Mardan ---> wholesaler Mardan ---> retailer Mardan
                   |                       | 35-40
  |                        | 27
  27                      
  ↓                      
  wholesaler other areas 
  35
  ↓                      
  wholesaler other areas 
  | 38
  ↓                      
  retailer other areas
  | 40-45
  ↓                      
  consumer other areas
```

**Fig. 12. Distribution network triangular stoves Mardan**

```
producer Mardan ---> wholesaler Mardan ---> retailer Mardan
                   |                       | 27
  |                        | 30
  21                      
  ↓                      
  wholesaler other areas 
  24
  ↓                      
  wholesaler other areas 
  | 27
  ↓                      
  retailer other areas
  | 30
  ↓                      
  consumer other areas
```

The metal horseshoe stoves for sale in Mardan are produced in Lahore. These are of a larger size than the ones commonly found in Peshawar. The shopkeepers purchase the stoves for Rs. 40/= and sell them for Rs. 50/= to consumers. The transportation costs for the stoves are born by the shopkeeper. These are Rs.3/= per stove including taxes.

3.4. The stoves market in Mingora

3.4.1. Stoves production

The survey team identified six regular stove producers in Mingora. Although the producers are engaged in the manufacturing of all types of sheet metal stoves, their main business is heating stoves.

These six producers are all making sawdust stoves up to a total which does not exceed 1,500 stoves per year. They also make metal horseshoe stoves if a special order is given. 500 - 600 stoves per year are produced.

Three producers from the six mentioned are mainly producing for the shopkeepers in Mingora bazaar. Their workshops are located in some smaller streets within the main bazaar and the sales directly to consumers is therefore negligible. Apart from stoves they are engaged in manufacturing birdcages, agricultural tools, funnels, tin cups and so forth.
The other three producers are basically tinworkers and manufacture stoves mostly during the summer season. This is an important difference as compared to the stove production in Peshawar and Mardan. The peak season for stove makers in the latter two districts is winter while in Mingora this is in summer as far as cooking stoves are concerned. This is because the Mingora producers are fully engaged in manufacturing heating stoves in the winter months. They produce the stoves for their own retail outlets as well as on orders given by other shopkeepers in the bazaar.

Triangular stoves are produced by 10 blacksmiths in surrounding villages of Mingora, their total output does not exceed 1,000 stoves yearly. Agricultural tools form the major component of their business.

The sawdust stove bodies in Mingora are made from thin new metal sheet, which is cheaper than scrap metal in Mingora. The top and bottom plate of the stove need to be from stronger material. Thick scrap metal is used for that, which comes from the local scrap metal market.

Stove production in Mingora is much more expensive as compared to Mardan and Peshawar. This is because the scrap metal is not easily available and transportation in this mountainous area is difficult and expensive. Therefore the Mingora shopkeepers find it more profitable to import the sawdust stoves from Peshawar and occasionally from Mardan. Metal horseshoe stoves are brought from Peshawar and Lahore, while the triangular stoves mostly come from Gujar Gahri. It is estimated that more than 80% of the total cook stoves sales turnover in the bazaar concerns stoves which are imported from Mardan, Peshawar and Punjab.

3.4.2. Stove pricing

Price levels for Mingora produced stoves are as follows:

<table>
<thead>
<tr>
<th></th>
<th>Sawdust stove</th>
<th>Metal horseshoe stove</th>
<th>Triangular stove</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production cost</td>
<td>Rs. 7</td>
<td>Rs. 7</td>
<td>Rs. 7</td>
</tr>
<tr>
<td>Wholesaler's cost</td>
<td>35</td>
<td>40</td>
<td>27</td>
</tr>
<tr>
<td>Retailer's cost</td>
<td>35</td>
<td>42</td>
<td>27</td>
</tr>
<tr>
<td>Consumer's cost</td>
<td>40-45</td>
<td>48</td>
<td>30</td>
</tr>
</tbody>
</table>

As the production levels in Mingora are low, the wholesale market is not very large. That explains why there is no or little discount for stoves purchased in bulk.

In addition to the Mingora based stove producers, several regional blacksmiths have their workshops in the villages and towns of Swat district. These blacksmiths are amongst others engaged in the production of heating stoves and triangular stoves for a local market. Important stove production was for instance found in Kwaza Khela, Matta and Chakdarra. This type of regional stove makers is not as common in Peshawar, Kohat and Swabi.

3.4.3. Stoves distribution

Mingora does not have a special hardware bazaar as is known in Peshawar, Kohat and Mardan. The stove selling shops are spread all over the city, a total of appr. 45 shops. Stoves are always sold in hardware shops along with other metal goods.

The producers deliver the stoves to the shopkeepers upon cash payment, while they organize and pay for the transportation themselves. A handcart or manpower is used for that. Costs per stove are appr. Rs. 0.25.
The most important stove in the market is the triangular stove. Although the local production is not above 1,000, the sales in Mingora market are several times higher. While walking through the bazaar one will see large bundles of stoves displayed in front of the shops. Sawdust and metal horseshoe stoves are only found in small numbers.

As mentioned earlier, the majority of the cooking stoves in Mingora are brought in from Peshawar, Mardan and Lahore. At the same time a certain percentage of the Mingora production is distributed to upper-Swat. Small retailers from villages in upper-Swat come down to Mingora to purchase stoves along with other commodities. Bigger retailers from upper-Swat often bring their products from Peshawar also.

Distribution areas for stoves from Mingora are: Matta, Buner, Madyan, Kalam, Besham, Shapoor, Alpoori, Kohistan.

The price levels for the stoves imported from Mardan and Peshawar are as under:

<table>
<thead>
<tr>
<th></th>
<th>Sawdust Stoves</th>
<th>Metal Horseshoe Stoves</th>
<th>Triangular Stoves</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wholesaler's Cost</strong></td>
<td>Rs. 36.50*</td>
<td>Rs. 37.5**</td>
<td>Rs. 42/=</td>
</tr>
<tr>
<td><strong>Retailer's Cost</strong></td>
<td>36/=</td>
<td>42/=</td>
<td>27/=</td>
</tr>
<tr>
<td><strong>Consumer's Cost</strong></td>
<td>40 - 45/=</td>
<td>45/=</td>
<td>30/=</td>
</tr>
</tbody>
</table>

*incl. transportation Rs. 1.5  
**incl. transportation Rs. 2.0

3.5. Stove Promotion

The survey team asked all stovemakers and stove sellers about promotion activities carried out to push the sales. Apart from the occasional employment of salesmen, who go out to get orders and to collect credit installments, not any promotional activity for biomass stoves is being organized.

3.6. Summary and Conclusions

The stove industry in NWFP is operating in the informal sector. Different types of stoves are produced in small workshops, which manufacture usually a range of other products as well. Stove production is often of minor importance as compared to the other commodities. In Peshawar two or three exceptions to this rule are found. This concerns stove producers operating on a larger scale, who almost exclusively deal in stoves.

The workshops are usually run by several members of the same family. In most cases the owners are also involved in the production process and perceive the labour cost as profit. The production is carried out with simple tools and machinery which keeps the overhead costs at a very low level. Therefore stoves can be produced profitable even at low production levels. Raw material supply for stoves is usually not problematic.

None of the distributors deals in stoves only. Cash earning from the sale of stoves constitutes a small proportion of the total earning of a distributor. The share varied from 8% to 18% for the three distributors interviewed for this study. However, considering the fact that the total sale have been understated by the owners, this share is even lower.

The wholesale businesses are usually owned and operated by members of the same family with the help of one or two additional employees who normally work as loader.
The fact that stoves are invariably marketed with other items and have a significantly smaller share in the total sale, indicates the low priority of the commodity in the distribution channel. Since the sales are low, the distributors might be reluctant to invest and market large quantity of stoves.

Yet, wholesalers play a major role in the distribution of stoves. In many cases the manufacturers are dependent on wholesale dealers for the marketing of their products. Wholesalers are often in the position to give advance payment or to provide the raw material to producers. At the same time wholesalers often sell their commodities to retailers on credit. By providing these services to both parties, the dealers have manoeuvred themselves into a very strong and central position by making all others dependent on them. Therefore, it must be a priority for FECT to gain the co-operation of wholesalers for the commercial distribution of the MP.

The production and distribution strategies for biomass stoves show differences between the districts. Peshawar is the largest production centre for biomass stoves. The devices are distributed all over the province. In Peshawar triangular stoves are manufactured by other producers than the ones who make sawdust and metal horse shoe stoves.

The producers act mostly as wholesalers themselves and have their own retail outlets in Rethi bazaar. All biomass stoves are offered for sale in Peshawar’s hardware bazaar.

Kohat does not have its own production capacity for cook stoves, the stoves are imported from Peshawar. Triangular stoves are not for sale in the same shops as the MHS and SD stoves. While the triangular stove is available in the hardware bazaar, SD and MHS are available in the tinworkers bazaar.

Mardan is the second large stove production centre in the province. Triangular stoves are produced by blacksmiths some kilometers out of the city. SD stoves are manufactured by the same blacksmiths and also by producers within the city. The producers in Mardan produce almost exclusively on orders from wholesalers and retailers, they do not act as wholesalers themselves. Mardan does not import stoves from Peshawar, only from Punjab. Mardan exports stoves mostly to the North. All stoves are for sale in the hardware bazaar.

Mingora produces mainly heating stoves although a relatively low production level for triangular and sawdust stoves is maintained. Most cook stoves are brought from Mardan, Peshawar and Punjab. Mingora does not know a specific hardware bazaar, hardware stove selling shops are dispersed over the city. Biomass stoves in Mingora are generally Rs. 3/= more expensive as compared to Peshawar.

FECT must be well aware of the differences in production, distribution and pricing of the stoves in different areas. If the marketing of the MP wants to follow the existing pattern for biomass stoves, not one single strategy can be designed for all five concentration areas. The project should accept that the MP will be cheaper in Peshawar and Mardan, more costly in Kohat and Swat.

If FECT selects the informal sector for manufacturing and distributing the MP, a retail price of Rs. 65 - 68/= in Peshawar and Mardan, and Rs. 70 - 73/= in Kohat and Mingora will be likely.

Promotion activities are not employed at all by any of the informal sector producers. Hence, this is a part of the marketing strategy that cannot be commercialized. The project should put many efforts in creating a demand for the stoves. Only if this can be carried out successfully stove producers and distributors will show interest in dealing in the MP.

1) The survey team has made several attempts to discover the price levels for the MHS in Kohat. It proved to be extremely difficult to find the real margins. The prices given here may differ from reality as well.
CHAPTER 4
KEROSENE STOVES

INTRODUCTION

Kerosene stoves are for sale in the market in many different sizes, qualities and prices. For the purpose of this survey we have taken the most frequently sold stove as a sample to understand the market mechanisms. This is a kerosene stove with 24 burners produced in Peshawar.

4.1. The Peshawar stoves market

4.1.1. Production of kerosene stoves

In Peshawar we identified four kerosene stove producers. Mr. Lal Mohammed is the biggest producer with a total monthly production of 3000 stoves. Kerosene and oil pump stoves are his exclusive product lines. He manufactures kerosene stoves in five different sizes, resp. 8, 16, 21, 24 and 28 burners. All stoves are produced in different qualities.

Mr. Iqbal is the second big producer of kerosene stoves. His monthly output is estimated at 2250 stoves. His factory is in the suburbs of Peshawar.

Lal Mohammed's factory is located in a village out of Peshawar city, his retail outlet is in Kissa Khani bazaar. The production of kerosene stoves is far more mechanized than the production of biomass stoves. Rather advanced tools and machinery is available in the factory which enables an output of 25 stoves daily by one labourer plus a helper. The factory employs permanently three skilled labourers. During winter season two extra workers and two helpers are hired. Labour wages for skilled workers are Rs. 50/= per day. His yearly production output is estimated to be almost 40,000 stoves.

The sheet metal used for the kerosene stoves is imported from Japan. It reaches the factory through a wholesaler in Mardan. The material for the burners is brought from Lahore.

The production costs for a 24 burner kerosene stove comes to Rs. 45/= excluding fixed costs, which are higher in this type of industry than in the informal sector workshops.

4.1.2. Stove pricing

The margins for kerosene stoves are higher as compared to the biomass stoves.

<table>
<thead>
<tr>
<th>Production cost*</th>
<th>Rs. 45/=</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wholesaler's price</td>
<td>65/=</td>
</tr>
<tr>
<td>Retailer's price</td>
<td>65 - 70/=**</td>
</tr>
<tr>
<td>Consumer's price</td>
<td>75/=</td>
</tr>
</tbody>
</table>

*excluding fixed costs, including labour which is Rs. 3-4/= per stove.
**price differs if the retailer is exclusively buying kerosene stoves or if he buys other products at the same time.

83
4.1.3. Kerosene stoves distribution

As described earlier, kerosene stoves are sold in kitchen utensils shops. Kissa Khani bazaar is famous for crockery, but also in Peshawar's other bazaars many kitchen utensils shops and thus kerosene stoves are found.

The stove producers have their own retail outlet in Kissa Khani bazaar. Apart from sales to consumers, their main business is selling in bulk to other wholesalers. The wholesalers in Peshawar often provide advance payment in cash or in raw material to the producers. In return the producer organizes and pays for the transportation of the stoves to the wholesaler. Within Peshawar that is done on carts. Outside Peshawar the producers do not pay for the transportation. If a wholesale dealer out of Peshawar purchases more than 250 stoves at a time he will get one rupee extra discount. The stoves are transported on pick-ups and trucks.

The kerosene stoves produced in Peshawar are distributed to many areas in NWFP: Mardan, Charsadda, Kohat, Swat, Bannu, Dir, Chitral, Thall, Hangu.

While the kerosene stoves are often sold to wholesalers on advance payment, to retailers the stoves are mostly sold on credit. The repayment of the credit must be done in weekly installments. Mr. Lal Mohammed sends a sales agent to the shopkeepers to collect the installments and to take new orders at the same time. Also one of the most important kerosene stove wholesalers in Peshawar, Mr. Khurshid, sends a sales agent to other areas to collect orders for his stoves. The employment of salesmen is the only type of promotion we have seen in the stove business.

However, another practice found may be noted here as promotional activity. That is labeling. The stove producers face heavy competition from kerosene stoves that are smuggled in from China. The quality of the China stoves is much better, the price is relatively low. To push the Peshawar produced stoves, 'China-labels' are attached.

Apart from Peshawar and China kerosene stoves, also kerosene stoves which are produced in the Punjab are for sale in the Peshawar. These stoves enter the market either via Punjabi wholesalers, or via Peshawar wholesalers. Punjabi stoves are also of a better quality than Peshawar stoves, their price is somewhat higher. Again some fake 'Punjabi labels' were seen on Peshawar produced stoves.

4.1.4. Case study Lal Mohammed

SEBCON has looked into the potential production of MPs by the kerosene factory of Mr. Lal Mohammed. Lal is very interested to start producing MPs as his business seems to fall. However, he is not prepared to bear the risks himself, he requires orders from FECT.

Lal Mohammed has already the required land, building, machinery and furniture and fixtures for producing MPs. An additional investment of Rs. 375,500 is needed, out of which the cost of dies is Rs. 37,500 and a working capital of Rs. 500,000 which is required if the total production capacity would be used. Lal Mohammed has the capacity to produce up to 400 MPs per day or 120,000 MPs per annum.

The production cost calculated by him is Rs. 50.00 per MP. Break down of production cost is as under:

| Raw material* | Rs. 41.00 |
| Labour cost   | Rs. 6.00  |
| Overheads     | Rs. 3.00  |
| Total production cost | Rs. 50.00 |

*Raw material cost is based on Khol Mohammed's workshop.
Lal Mohammed will use a mechanized production process for manufacturing MPs and as compared to the manual production he will have lower labour costs but higher overheads. Raw material cost will be the same in both cases. The labour costs are expected to go down further as the more complicated kerosene stove requires only Rs. 4/= per piece on labour.

The acceptable selling price for Lal Mohammed is Rs. 55/= per stove leaving him Rs. 5/= as profit margin per MP. The retail price for consumers would be Rs. 65/= following the margins which are common for kerosene stoves.

The profit margin of Rs. 5/= is surprising since the margins on kerosene stoves are reportedly much higher. It may be that a profit of Rs. 5/= is acceptable to him only if FECT guarantees to purchase. A profit of Rs. 15 - 20/= seems more acceptable, which would increase the retail price of the MP significantly.

Return on additional investment works out to be more than 100%, which is extremely high.

Payback period for the additional investment is less than one year.

4.2. The stoves market in Kohat

4.2.1. Kerosene stove production

Kohat is importing all its kerosene stoves from Peshawar and Punjab. Not any producer was found. Only repairing of kerosene stoves is being done in Bannu bazaar and in the suburbs.

4.2.2. Kerosene stoves distribution

Kerosene stoves are for sale in kitchen utensils shops in the main bazaar of Kohat. The retailers have purchased their stoves directly from Peshawar producers or wholesalers or in some cases from a wholesaler in Kohat. The retailers may go down to Peshawar to buy the stoves themselves along with other products. They also may order for stoves per telephone or through the sales agent that Mr. Lal Mohammed is sending. The transportation costs and taxes are born by the retailers, which makes the stove appr. Rs. 5/= more expensive for Kohat consumers than for Peshawar consumers.

<table>
<thead>
<tr>
<th>Kohat wholesaler's cost</th>
<th>Rs. 66.5*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kohat retailer's cost</td>
<td>72</td>
</tr>
<tr>
<td>Kohat consumer's cost</td>
<td>75-80</td>
</tr>
</tbody>
</table>

*Including transportation, Rs. 1.5 per stove.

Wholesalers in Kohat are in turn distributing kerosene stoves to shopkeepers in other areas. The consumers in these areas further South are paying Rs. 85/= for the same stove. Besides kerosene stoves watercoolers, glass ware and crockery are their most important wholesale products. The stoves are sold to: Kohat suburbs, Hangu, Thall and Parachinar.
4.3. The Mingora kerosene stoves market

4.3.1. Kerosene stoves production

Also in Mingora no kerosene stoves are produced. As in Kohat, the stoves are being imported from Peshawar and Punjab or smuggled in from China.

4.3.2. Kerosene stoves distribution

The stoves are for sale in crockery shops in the main bazaar. However at least two hardware shops were found, which were selling sawdust, triangular and heating stoves as well as kerosene stoves. The difference between the marketing strategies for kerosene stoves and biomass stoves as we found in Peshawar and Kohat seems to be less strict here.

The distribution network and logistics in Swat is similar to Kohat.

<table>
<thead>
<tr>
<th></th>
<th>Mingora wholesaler’s cost</th>
<th>Mingora retailer’s cost</th>
<th>Mingora consumer’s cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rs. 68/=</td>
<td>75/=</td>
<td>80/=</td>
</tr>
</tbody>
</table>

*including transportation Rs. 3/= per stove.

From Mingora kerosene stoves are distributed further North. The distribution areas are the same as for the biomass stoves (see 3.4.3.). The retailers in Upper-Swat have to pay for transporting the stoves from Mingora to their shops, which makes the stove again more costly for the consumers in these areas. The same kerosene stove in Upper-Swat costs about Rs. 90/=.

4.4. Conclusions

Kerosene stoves are centrally produced in Peshawar using sophisticated machinery. Therefore labour costs are relatively low, overheads relatively high. This results in a production price of the MP, if produced in a kerosene factory, which would be more or less equal to the production price in an informal sector workshop which has higher labour costs but lower overheads.

The production capacity of a kerosene stoves factory is much higher than the potential MP stove sales in the first years. It is unclear if MPs can be produced at the same price levels if the required production output is much lower.

A distribution network for kerosene stoves exists all over NWFP. Therefore only one production unit would be required. The distribution channels include only kitchen utensils shops, generally no hardware stores. If the MP would be placed within these patterns, the stove would be isolated from other biomass stoves. The presentation of the stove would be very different which would affect the response of the consumers. It is most likely that if the MP is offered for sale in crockery shops, the higher income groups would adopt the MP initially, while the lower income groups are likely to be the buyers in hardware shops.

As is the case with biomass stove dissemination, also in this case the wholesaler is the crux in the distribution network. Co-operation with wholesale dealers must be established in the first place.

No promotion activities are being organized by the kerosene stove producers or wholesalers, therefore FECT has to invest considerably in creating a market for the MP.
CHAPTER 5
ALUMINIUM COOKING POTS

INTRODUCTION

The third and last alternative investigated is the production of MP's in a centralized larger scale production unit. Our objective was to understand how the production and distribution channels as well as pricing and promotion of the products from such a factory are organized. By establishing a picture of the mechanisms, we will understand if and how the MP would fit in.

5.1. Production of aluminium cooking pots

The production of aluminium pots and kettles is done in medium sized industries. In Peshawar are three aluminium utensils manufacturers, in Mardan two. One of these five producers has been selected for a case study.

Mr. Javaid Iqbal has his factory in an industrial estate in Peshawar city. He manufactures the more simple aluminium kitchen utensils like cooking pots, buckets, milk pots and flour pots. The production has a higher degree of automation than the other industries described so far. Like the kerosene stoves production, the production of aluminium utensils is completely organized through division of labour. Of all the production units visited this was the only one practising quality control procedures. A team of two technicians was responsible for maintaining quality control by continuous inspection and monitoring of the products.

A total number of 40 - 50 workers are employed in his factory. His monthly production amounts to 25,000 kg, which equals to appr. 32,000 units. As raw material scrap metal from Karachi and Peshawar is used.

The attempts to estimate the production cost for aluminium utensils have not been successful.

Mr. Javaid Iqbal sells his products only to wholesalers and retailers, he is not dealing with consumers. The pots are produced in different qualities with accordingly different prices. The average price paid by a wholesaler is Rs.60/= per kg., while a retailer pays Rs. 61/= per kg.

5.2. Distribution of aluminium cooking pots

Mr. Javaid Iqbal has his showroom on the highway which leads from Peshawar to Islamabad. He sells his products only to retailers and wholesalers, who in turn sell the goods further to the end users. Iqbal supplies to 20 wholesalers and 30 retailers.

For the wholesalers in Peshawar (which are eight in number) Iqbal organizes and finances the transportation of the products. The customers in other areas have to bear the costs themselves. Also packaging and storage are services that Iqbal provides to wholesalers.

All transactions are done on credit with a duration of 15 - 20 days.

The aluminium pots from Peshawar are distributed all over the province. North: Mardan, Swat, Dir, Chitral, Bajaur. East: Rawalpindi, Mansehra, Abbotabad. South: Kohat, Hangu, Bannu, Parachinar, Miranshah.
For aluminium pots a new distribution channel is commonly used which is never used for biomass or kerosene stoves. These are the so-called street sellers or barterers. Street sellers go every morning to a wholesale shop in the outskirts of the city to purchase aluminium pots and plastic items. They load the goods on their bicycle or on their heads and try to sell it in surrounding villages. The transaction with villagers is mostly done by bartering scrap metal, old aluminium pots and plastic. Cash money is hardly involved, usually just a few rupees if the scrap offered by the customer is not sufficient to purchase the new pot. The street seller returns at night to the wholesaler to deliver the unsold products and to sell the scrap materials which he received from the wholesaler. The wholesaler in turn sells the scrap to a dealer.

This barter system is beneficial to all parties involved. The villagers often lack cash money, so bartering is a good option for them to acquire new kitchen utensils. The street seller also prefers to be paid in kind as re-selling the scrap to the wholesaler again gives him some profit, which makes the whole transaction more profitable as compared to selling for cash money. Finally the wholesaler as well makes an extra profit by selling the materials to a scrap dealer.

Each party in the total distribution network has its own costs and its own margins for the aluminium products. For the average quality items the costs and prices are as under. Transportation costs are not included.

<table>
<thead>
<tr>
<th></th>
<th>Peshawar</th>
<th>Kohat</th>
<th>Mingora</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>wholesaler's cost</strong></td>
<td>Rs./kg.*</td>
<td>Rs./kg.*</td>
<td>Rs./kg.*</td>
</tr>
<tr>
<td>retail's cost</td>
<td>60</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>consumer's cost</td>
<td>61</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td><strong>street seller's cost</strong></td>
<td>65</td>
<td>66</td>
<td>68</td>
</tr>
<tr>
<td>consumer's cost if paid in kind to street seller</td>
<td>69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>consumer's cost if paid in cash to street seller</td>
<td>76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* A medium sized aluminium cooking pot frequently used in households weighs approx. 600 grams. A Peshawar consumer would pay Rs. 39/= for such a pot, a Kohat consumer Rs. 39.5, a Mingora consumer would pay Rs. 41/=.

5.3. Streetsellers

The streetsellers are a new potential distribution channel. In order to assess whether this channel would be suitable for the MP also, some more details about their methods and rates should be given here.

The streetsellers are a common sight in every village of the project's target area. They buy their aluminium and plastic kitchen utensils from wholesalers at the edges of cities or larger towns. The wholesaler sells the products to them on credit. The streetsellers usually load their basket up to 18 - 22 kg, although weights of 30 kg. are also found. Most of them carry the basket on their heads and travel by bus or tonga to the surrounding villages. Some travel by bicycle and one streetseller was found to have his own donkey cart.

Each seller has his own area which consists of several villages up to a maximum of about 10.

Streetsellers and their products are popular in villages. For women it is a good chance to purchase their kitchen utensils themselves without leaving their houses. Secondly, the streetsellers are prepared to sell their products on credit. Although the credit period is short, not longer than two weeks, this is still attractive.

And finally, the possibility to barter instead of paying in cash is very advantageous.
The streetsellers prefer to sell their goods through barter because that gives them higher margins than payment in cash. Also the villagers prefer to barter instead of paying cash because it is for them an ideal way to get rid of their waste in a profitable way. It is estimated that in only 5% of the total transactions money is involved. The remaining 95% is bartering. The scrap that the streetsellers are accepting as payment is all kinds of plastic, old aluminium pots and all kinds of metal and tin. For each of these materials they have different rates.

The scrap material is resold to the wholesaler at a higher price which gives the streetseller an extra profit.

<table>
<thead>
<tr>
<th>value of material if:</th>
<th>purchased from consumers Rs./kg.</th>
<th>sold to wholesaler Rs./kg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>scrap metal</td>
<td>5.0</td>
<td>5.8</td>
</tr>
<tr>
<td>plastic quality 1</td>
<td>5.0</td>
<td>5.8</td>
</tr>
<tr>
<td>plastic quality 2</td>
<td>6.7</td>
<td>8.3</td>
</tr>
<tr>
<td>plastic quality 3</td>
<td>8.3</td>
<td>11.6</td>
</tr>
<tr>
<td>old aluminium</td>
<td>29.4</td>
<td>35.0</td>
</tr>
</tbody>
</table>

The average daily sales of a streetseller is 3.9 kg of aluminium goods. The mark-up from consumers would give him a gross-profit of only Rs. 17/= per day if all the transactions were done in kind. If we assume that 50% of the goods are paid with scrap metal, 15% with old aluminium, 30% with old plastic and 5% with money, than the total extra margin for the streetseller would be Rs. 53/= per day by selling the waste materials to the wholesaler at higher prices. The total gross-profit for a streetseller thus amounts to Rs. 70/= per day. 1) If all transactions were done in cash, his daily profit would be Rs. 42/= . His 'overhead costs' are the bus fare, his bicycle or donkey cart and his basket.

The streetsellers will be interested to sell MP's only if they can earn as much from it as they do now. 3.9 kg of aluminium is equal to 6 – 7 units. By selling 3.9 kg of aluminium products per day, they receive scrap material in return of a value of Rs. 288/= which is re-sold to the wholesaler. If we assume that a streetseller would sell the MP for scrap material with a value of Rs. 65/= to consumers, then he would need to sell at least four stoves per day to receive the same amount. Four MP's have a weight of 7.2 kg. which is almost double the weight he sells now.

This calculation does not show very promising prospects for the MP. First of all the streetsellers will have to carry a much heavier load on their heads to earn the same amount of money. Secondly, it is unlikely to expect that they will be able to sell 4 stoves per day, if their sales of very common and popular products as aluminium utensils does not exceed 7 items daily.
5.4. Conclusions

At this point it is not possible to conclude whether MP production in an aluminium pots factory would be a feasible option or not. The production techniques for aluminium cooking pots are somewhat different, therefore it can not be assessed easily what the production cost for a MP in this unit would be. More information would be required from Mr. Javaid, who was not available for interviews any more in the later stages of our survey.

A major advantage of selecting this production strategy would be the existence of quality control procedures.

The distribution network of aluminium pots is comparable to that of the kerosene stoves. Retail outlets are generally the same. Arguments for selecting this distribution network are discussed in 4.4.

Streetsellers provide a new sales point. Their commodities are almost exclusively aluminium and plastic utensils. As described in chapter 2, the only retail outlets commonly used by women for kitchen utensils are the streetsellers. This would make the vendors an ideal distribution channel for a product as the MP. Like all the other respondents in our survey, streetsellers have expressed an interest only on the condition that the project will create a market for the stove. However, the relative high weight of the MP will be a serious constraint.

1) For the calculation of the mark-up, see annex 4.
CHAPTER 6
PROMOTION

INTRODUCTION

Promotional activities must be employed in the proportions which will be most effective for its purposes within the budget. The use of mass media has been propagated by many staff members of FECT. In the context of this study some attempts have been made to assess the cost-effectiveness of advertising through mass media.

6.1. Advertising

According to the results of the household survey appr. 23% of the households own a television set. Coverage figures are even higher as they are always bigger than the ownership figures.

Promotion through television can be done by either advertisement or through short documentary programmes on multipot stoves. Rates for time slots on television are shown in Annex 5.

The household survey showed that 45% of the households has radio sets. Rates for radio commercials on the local broad cast are also shown in annex 5.

The costs for advertisements through the local t.v. and radio seem to be reasonable. However, one has to realize that advertising is a long term process. It takes time to find the effective means of communicating the message and designing the appropriate ads. Furthermore the message has to be repeated often enough for customers to take notice and to be influenced by it. Advertising will only have a lasting effect if undertaken over a period of 2 or 3 years. The project must be sure that it has the necessary resources to support an advertising campaign over such a period.

If radio and television are being used to promote the MP large groups of consumers will be reached. If the advertisements are repeated often enough a significant increase in demand may be expected. But the use of the mass media will only lead to significant increases in stove sales, if the stove is widely available for sale in the areas reached by the local t.v. and radio.

Advertising through mass media will not only reach the consumers but producers and distributors will be influenced as well. An appropriate advertising campaign may also stimulate producers and distributors to adopt the MP for their business.

Newspaper advertising is not recommended because of the low literacy rate in rural areas, especially among women. This factor coupled with little circulation in rural areas further reduces the scope of its impact.
6.2. Sales promotion

An alternative to advertising is sales promotion. "Advertising brings the customer to the product whereas sales promotion brings the product to the customers." 1) In other words, advertising aims at creating a demand even before the customer enters the shop, while sales promotion seeks to make the product more interesting and attractive once the customer sees it. Sales promotion is a technique to increase sales by helping distributors.

Sales promotion techniques to be considered are:

a. Prominent display of the stove outside and inside the shops.
b. Pictures or descriptive material placed along the stoves displayed.
c. Stove demonstrations at the retail outlet.
d. Public stove demonstrations in hujjas and appropriate locations for women. (FECT's stove exhibitions)

The ILO-publication 'Creating a Market' stresses the importance of gaining the co-operation of the retailer. He is the one who can display the stoves to advantage and inform the customer fully about it. He is also the one who can ruin the display and fail to tell the customer how to use it correctly.

To achieve this vital co-operation two methods are common in business. First method is to simply offer the retailer financial inducements, for instance an allowance for displaying the product in the best place. Or he may be extended credit. Second method, which is usually more effective, is the establishment of close personal contact with the retailer. Project's field staff should frequently visit wholesalers and retailers shops.

Sales promotion is an appropriate means if sales increase is sought in a limited geographical area or if funds are too restricted for the use of mass media. If the sales promotion activities are regularly repeated over a period of time, it may have an effect similar to advertising.

6.3. Conclusions

Advertising in mass media will only have a large impact if repeated frequently over a period of 2-3 years. Therefore the beneficial use of advertisements is very costly and probably not advisable as the project operates only in a limited geographical area. Sales promotion is an alternative and it has potentially an impact comparable to advertising. The co-operation of retailers and wholesalers is a crucial factor for effective sales promotion. Therefore it is recommended that the project invests extensively in training and motivating distributors.

1) Source: Creating a Market, ILO, 1965
CHAPTER 7
CONCLUSIONS AND RECOMMENDATIONS

7.1. Production strategies

The decision for a production strategy depends not on the production costs only. A cost benefit analysis to choose between different options tries to simplify things too much by reducing all the complexities to a single figure. A more promising tool is a decision matrix which enables to see the pros and cons of different options and to make a value judgement about which option is most attractive.

<table>
<thead>
<tr>
<th>PRODUCTION OPTIONS</th>
<th>decentralized informal workshops</th>
<th>centralized factory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production capacity per annum</td>
<td>6,000</td>
<td>120,000</td>
</tr>
<tr>
<td>Investment cost for MP as additional product (Rs.)</td>
<td>25,500</td>
<td>537,500</td>
</tr>
<tr>
<td>Payback period (yr) on additional investment</td>
<td>2.0</td>
<td>1.0</td>
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<tr>
<td>Internal Rate of Return on additional investment</td>
<td>93% *</td>
<td>100%</td>
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<tr>
<td>Consumers' price (Rs.)</td>
<td>68</td>
<td>55 - 65</td>
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<tr>
<td>Training costs</td>
<td>high</td>
<td>low</td>
</tr>
<tr>
<td>Contacts with end users</td>
<td>fair</td>
<td>poor</td>
</tr>
<tr>
<td>Quality control</td>
<td>difficult</td>
<td>easy</td>
</tr>
<tr>
<td>Record keeping</td>
<td>difficult</td>
<td>easy</td>
</tr>
<tr>
<td>Monitoring</td>
<td>difficult</td>
<td>easy</td>
</tr>
<tr>
<td>Research capacity</td>
<td>poor</td>
<td>fair</td>
</tr>
<tr>
<td>Promotional capacity</td>
<td>poor</td>
<td>fair</td>
</tr>
<tr>
<td>Access to credit</td>
<td>poor</td>
<td>good</td>
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<tr>
<td>Responsiveness to demand</td>
<td>good</td>
<td>poor</td>
</tr>
<tr>
<td>Flexibility to incorporate modifications</td>
<td>good</td>
<td>fair</td>
</tr>
<tr>
<td>Distribution channels</td>
<td>short</td>
<td>long</td>
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</tbody>
</table>

* IRR given by SERCON is only 44% as they assume a lower profit margin on MP production. 93% is the IRR of the informal workshops including all different product lines. We have assumed that a workshop will manufacture MPs only if they provide a similar profit margin, thus resulting in an IRR that is equal to that of the other products.

A major advantage of the informal sector production is its low investment and fixed costs. That makes it possible to produce profitably even for a small total demand. A larger production unit becomes more advantageous as the market grows. Investments and specialization will pay off and even become essential to maintain competitiveness in price and quality.

The consumers' price for a stove will be initially lowest in an informal sector workshop. The stove price as above for the centralized factory is based on a production level of 120,000 units per year. When the demand grows and production levels increase, stove factories will produce cheaper stoves.
A major problem of the informal sector stove production is quality control. As soon as a demand for the stove has been established, unsatisfactory copies will appear on the market which undermine all efforts to convince households that the new stoves save wood.

All producers interviewed expressed their interest for MP production on the condition that FECT would place orders. Not any among them was prepared to invest in the new product as they did not know if a market for the MP is existent. FECT will have to put all efforts into creating a market for the stove.

7.1.1. Criteria for selection of stove producers

Criteria have been established for the selection of potential stove producers which equally apply to informal sector producers as to industrial producers.

A suitable stove producer should:

1. Have a sound financial business with stoves or related product lines.
2. Manufacture metal products of good quality.
3. Have frequent transactions with well-established wholesalers in hardware or kitchen utensils in Kohat City, Peshawar City, Mardan City and/or Mingora.
4. Have a production capacity that can meet the expected demand in the area of distribution.
5. Be prepared to receive training both in stove production and design as well as energy education.
6. Have storage facilities.
7. Be prepared to accept quality control procedures.
8. Be prepared to co-operate in record keeping, monitoring and feedback activities.
9. Ideally be willing and be able to co-operate in stove designing.

Stove production in decentralized informal workshops will require 5 to 8 workshops with a production level of 5,000 - 8,000 stoves per year per workshop. The locations of the workshops should reflect the prevalent marketing mechanisms for stoves. This implicates that the workshops should be divided over the districts as follows:

<table>
<thead>
<tr>
<th>District</th>
<th>Workshops</th>
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</thead>
<tbody>
<tr>
<td>Peshawar</td>
<td>2 - 4</td>
</tr>
<tr>
<td>Mardan</td>
<td>1 - 2</td>
</tr>
<tr>
<td>Swat</td>
<td>1 - 2</td>
</tr>
<tr>
<td>Kohat</td>
<td>0 - 1</td>
</tr>
</tbody>
</table>

The sequence of the districts in this list indicates the priority of establishment.

In case industrial production is aimed at, the factory should be located in Peshawar.
7.2. Distribution strategies

MP stove distribution should follow the existing patterns. This means that the stoves must be sold through producers-cum-wholesalers and wholesalers-cum-retailers who are dealing in kitchen utensils or stoves already.

Also potential stove distributors are reluctant to invest anything in MP distribution as long as they have not seen a proof of the existing demand.

7.2.1. Criteria for wholesalers selection

A wholesaler should:

1. Deal in hardware and biomass stoves or kitchen utensils.
2. Purchase his other commodities from a MP producer or from producers or wholesalers who are located near to a MP-producer.
3. Have storage facilities.
4. Have outspoken promotional capacities.
5. Have a sound financial business which enables him (and he must be prepared) to sell stoves to retailers on credit.
6. Have frequent sales to retailers in hardware and biomass stoves or kitchen utensils in larger villages of Peshawar, Kohat, Swabi and/or Swat.
7. Supply his products to at least 15 retailers who meet the criteria as under 6.
8. Be prepared and be able to conduct quality control procedures for the MP.
9. Be prepared to receive training in stove promotion, quality control and energy education.
10. Be prepared to co-operate in record keeping, monitoring and feedback activities.

The number and location of the wholesalers required depends on their distribution network. No information is available on the number of shops supplied per wholesaler. It is roughly estimated that 8 - 10 wholesalers would be needed to meet the potential demand.
7.2.2. Criteria for selection of retail outlets

A retailer should:

1. Have a successful business in hard ware and biomass stoves or kitchen utensils.
2. Be located in a larger village in a central and frequented shopping area.
3. Purchase frequently products from a wholesaler who is selected for MP distribution.
4. Have outspoken promotional capacities.
5. Be prepared to receive training in stove promotion as well as energy education and quality control.
6. Be prepared to co-operate in record keeping, monitoring and feedback activities.

It is roughly estimated that a retail outlet would be selling an average of 300 stoves per year if the criteria are strictly followed. In that case a total of 200 shops would be needed to respond to the total demand in a period of 5 years.

7.3. Pricing strategy

In normal market activities new products start being expensive and become cheaper as they take off. Higher prices help to establish a product's credentials and help to recompense those producers who took the initial risks. Furthermore, it is better that wealthy consumers take the risk first in trying out a new stove as they can afford to do so. Later the prices will fall to more realistic levels as more producers become interested and competition increases.

In order to encourage the producers who reportedly have been hesitant and even reluctant, FECT should be prepared to accept a higher consumer MP price in the first years. The market itself will decide about acceptable price levels.

Following the existent patterns in the market, a difference in stove price will prevail in the different concentration areas of the project. The MP will be cheapest in Peshawar and Mardan, most expensive in upper-Swat.

If we follow the price levels of the sawdust stove which is the most competitive product in the market from producers and distributors perspective, the following price levels for the consumer are likely to be set:

<table>
<thead>
<tr>
<th>Area</th>
<th>Price Range</th>
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</thead>
<tbody>
<tr>
<td>Peshawar customers</td>
<td>65 - 70/-</td>
</tr>
<tr>
<td>Kohat customers</td>
<td>67 - 72/-</td>
</tr>
<tr>
<td>Mardan customers</td>
<td>60 - 65/-</td>
</tr>
<tr>
<td>Mingora customers</td>
<td>70 - 75/-</td>
</tr>
</tbody>
</table>
7.4 Promotion strategy

Promotional activities are rarely conducted by the producers and distributors interviewed. For a new product such as the MP they will not invest in promotion either. However the potential sales will only be transformed into effective sales if proper promotional activities are carried out. Therefore implementing promotion strategies will remain to be a project's responsibility.

A good option for MP promotion using existing patterns will be the distribution of the MP through streetsellers. This option has many advantages. The promotion will be done face to face which has proven to be very effective. The end users of the MP are directly reached in this way and the promotional activities can be narrowly focussed to the actual target area.

However as we have seen it is unlikely that streetsellers will show interest in MP selling due to the high weight of the stove. It is therefore recommended to subsidize the vendors directly and see this as an investment in promotion. Such a strategy has to be worked out carefully as it potentially contains many loopholes.

First of all the subsidy should not make the streetsellers unfair competitors to the wholesalers and retailers. The existing mechanisms should remain untouched. Streetsellers must still buy the MP from the wholesaler like they do for their other products. This will give the wholesaler his appropriate margin.

Secondly, the streetsellers should promote the MP along with their other products in order to avoid giving the MP an exceptional status which reportedly creates suspicion and reluctance to pay.

A workable and effective strategy needs to be developed for subsidizing the streetsellers.

A choice for advertising the MP in mass media should only be made if the project can afford to advertise frequently over a period of 2 - 3 years. As the MP will be sold only in a limited geographical area, sales promotion may be the best alternative.

1) Source: Caceres, R et al, "Stoves for People"
2) Source: Stewart, B, "Improved Wood, Waste and Charcoal Burning Stoves."
CHAPTER 8
GENERAL CONCLUSIONS

Time frame

A programme which plans for the commercial dissemination of improved stoves has to make a time frame of 8 - 10 years before significant and sustainable results are to be expected. Stove projects in countries like Kenya and Sri Lanka have demonstrated this. It takes long before stove manufacturers will trust a new product and see sufficient demand to investigate in its production without outside support.

It also will take long until consumers autonomously demand for a new product such as a woodstove. As mentioned earlier in the introduction to this study, stoves are products which try to improve existing items. There is not a direct and urgent need for consumers to adopt a new stove, since they have a reasonable product free of cost at hand. Thus, the demand for the stove has to be created which is a long and probably continuous process.

The project, its counterpart and the donors should realize this if they make the choice for commercial dissemination. A lot of investments have to be made in the first years of the strategy while qualitative results will be absent. Unless all parties involved realize that commercialization is a long term process and unless they have the patience to wait for the foregone benefits, the project should not adopt this strategy.

Limits to the scope of commercialization

Production and distribution of a metal stove have certainly the potential to become commercial. Promotional activities are not common in the target area for related products. Therefore there is not any chance that producers and distributors will take over this function. Also research and development, training of producers and distributors and monitoring will remain to be tasks of the project. Quality control will initially have to be carried out by the project as well, but attempts must be made to gradually transfer this function to the private sector.

Quality control

A serious difficulty when privatizing stove production is to keep the stove quality up to the mark. Experience in other countries also show that producers try to increase their profits by dropping the quality or decrease the quality in order to lower the stove price when competition takes off. The use of lower quality metal and consequently lower stove prices may not be problematic. As our market research revealed, all stoves in the market are available in different qualities and at different prices. But the dimensional specifications of the MP should strictly adhered to. A slight change in the height of the potsupports and door size will adversely affect the fuel saving capacity.

Quality control procedures can be built in easily in a centralized production unit. It will be much more difficult in a decentralized production strategy. If the project wants to privatize quality control as well, a brand name will probably be the only way. The subject can be approached from three different angles.

First of all the producers should be properly trained to understand the importance of the dimensions. Those who have proved to manufacture consistently according to the specifications, will be allowed to use the stoves brand name. However, as we have seen Peshawar produced kerosene stoves are found in the market carrying Chinese labels. Therefore, secondly the distributors must also be aware of the MP specifications. They are in the position to reject or accept the stoves offered by the producers. Distributors who sell the proper MP's only, may be offered an exclusive dealership.
Finally, consumers must be taught as well to understand the importance of the stove dimensions. Brandname and dealership must be known to them. This all should be an integrated part of the promotion strategy. Ideally users must be able to differentiate between a good and a bad stove.

Gaining the cooperation of producers and distributors

As soon as producers and distributors realize that a foreign project or governmental organization is involved their attitude changes drastically. FECT's technical section has experienced this while training potential stove producers. They asked for extra ordinary credits and refused to cooperate when FECT did not respond to their demands. We also experienced that during our interviews. Immediately when our respondents learned about the project, they stopped negotiating on equal terms, but started seeking extra assistance, money and profits. Foreign projects and governmental organizations are associated so strongly with receiving things, that they are unwilling to cooperate on basis of partnership. The project must cautiously develop a methodology to overcome or avoid this serious hindrance.

When changing from a project implemented dissemination strategy towards a privatized dissemination strategy, more target groups have come up. Not only the stove users are the project's target group but also the stove manufacturers and stove distributors. Each party must be treated as such and will need its own approach. Not only a marketing strategy must be developed aimed at consumers, but also marketing strategies need to be developed aimed at producers and distributors.

STOVE PRODUCERS

Product

The product to be promoted to them is not the MP itself but the concept, the design and the technology of the MP.

Distribution

The product must be made available to the manufacturers. They must gain access to the technology and must be trained. The producers must be carefully selected according to the criteria.

Promotion

A strategy must be designed to encourage the manufacturers to adopt the MP as an additional product line.

Price

The manufacturers will have to pay a price for starting production of the MP. Apart from initial investments also additional costs like training, changing their technologies and taking a risk must be considered. The producers must be able to earn a handsome profit from manufacturing the MP, the project should interfere as little as possible.

STOVE DISTRIBUTORS

Product

The MP itself as well as the concept is the product for distributors. They should know its advantages and benefits and they should see a potential market.

Distribution

The MP must be made available to them as well as the information about its characteristics. The distributors must also be trained to properly promote the MP and explain its operation.

Promotion

The MP as such needs to be promoted to wholesalers and retailers. A special methodology must be prepared.

Price

The price for distributors consists of an investment in a new product line, the risk involved and the occupation of storage facilities. A adequate profit must be within reach for wholesalers and retailers.
Project structure and capacity

As has been described in part 1 of this study the project's organizational structure and its ability to consistently implement strategies is not well developed. Furthermore, the attitudes and skills of the project employees are mostly not compatible with a commercial approach. All in all it is suggested that the project in its present set up does not have the potential to successfully increase its scope and impact through a commercial approach.
ANNEXURES
The burning issue

By Imran Khawaja

The doctors at Mayo hospital are tired of discovering women with burns and scalds. The nurses are overworked and the patients are in a state of shock. Women's organizations are working to provide assistance to the victims.

A recent survey of Mayo Hospital found that about 60% of burn victims are women. The most common cause of burn injuries is cooking, particularly in those who use traditional stoves. The burns are often severe, with many victims requiring hospitalization.

The hospital's burn unit is facing a critical shortage of resources, including medical equipment and personnel. The staff is working hard to provide the necessary care to these victims, but they are overwhelmed by the number of cases.

The situation is especially dire in rural areas, where access to medical care is limited. Women are more vulnerable to burn injuries due to their role in cooking and childcare. The government needs to take urgent action to address this issue and provide better support to women and their families.

Source: Frontier Post, April 1991

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Note: The text contains a few errors and inconsistencies, likely due to the age of the document. The focus is on the issue of burn injuries among women, particularly in rural areas.
### Monthly Stove Sales per District 1990-1991

#### Monthly Sales Per District

<table>
<thead>
<tr>
<th></th>
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<td>215</td>
<td>204</td>
<td>91</td>
<td>166</td>
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<tr>
<td>Swabi</td>
<td>46</td>
<td>37</td>
<td>473</td>
<td>33</td>
<td>98</td>
<td>203</td>
<td>212</td>
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<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>76</td>
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<td>90</td>
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#### Grand Total

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<td>461</td>
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</tr>
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<td>2131</td>
<td>618</td>
<td>2749</td>
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<td>Kohat</td>
<td>724</td>
<td>620</td>
<td>1344</td>
</tr>
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<td>Swat</td>
<td>795</td>
<td>361</td>
<td>1176</td>
</tr>
<tr>
<td>TOTAL</td>
<td>5569</td>
<td>2080</td>
<td>7649</td>
</tr>
</tbody>
</table>

---

**Figure:**

Monthly Stove Sales per District 1990-1991

- **Axes:**
  - X-axis: January 1990 - March 1991
  - Y-axis: units of MPS

- **Legend:**
  - Peshawar
  - Swabi
  - Kohat
  - Swat

- **Data Representation:**
  - MPS: Multi-Purpose Stoves
### Stove Sales Peshawar District 1990-1991

<table>
<thead>
<tr>
<th>District</th>
<th>1990</th>
<th>1991</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>JAN</td>
<td>FEB</td>
</tr>
<tr>
<td>Peshawar</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>abs</td>
<td>%</td>
</tr>
<tr>
<td>local couple</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>shops</td>
<td>63</td>
<td>66</td>
</tr>
<tr>
<td>proj.promoters</td>
<td>16</td>
<td>17</td>
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<tr>
<td>others</td>
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<td>Sub Total</td>
<td>95</td>
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</table>

### Stove Sales Swabi District 1990-1991

<table>
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<th>District</th>
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<th>1991</th>
</tr>
</thead>
<tbody>
<tr>
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<td>JAN</td>
<td>FEB</td>
</tr>
<tr>
<td>Swabi</td>
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<tr>
<td></td>
<td>abs</td>
<td>%</td>
</tr>
<tr>
<td>local couple</td>
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<tr>
<td>others</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sub Total</td>
<td>46</td>
<td>100</td>
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</table>

% = percentage of monthly district total

**Stove Sales Peshawar District 1990-1991**

**Stove Sales Swabi District 1990-1991**

% of each distribution channel
### Stove Sales Kohat District 1990-1991

<table>
<thead>
<tr>
<th>District</th>
<th>1990</th>
<th>1991</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kohat</td>
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</tr>
<tr>
<td>JAN</td>
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<tr>
<td>FEB</td>
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<td>MAR</td>
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<tr>
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<td>JUN</td>
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</tr>
<tr>
<td>JUL</td>
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<tr>
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</tr>
<tr>
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<tr>
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<tr>
<td>Sub Total</td>
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</table>

*% = percentage of monthly district total

### Stove Sales Swat District 1990-1991

<table>
<thead>
<tr>
<th>District</th>
<th>1990</th>
<th>1991</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swat</td>
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<tr>
<td>Sub Total</td>
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</tbody>
</table>

*% = percentage of monthly district total

---

Stove Sales Kohat District 1990-1991

- **Local Couple**: 28%
- **Shops**: 30%
- **Proj. Promoters**: 29%
- **Others**: 23%

Stove Sales Swat District 1990-1991

- **Local Couple**: 26%
- **Shops**: 30%
- **Proj. Promoters**: 26%
- **Others**: 28%
Annex 3 MINIMUM INVESTMENT REQUIRED FOR PRODUCING SAWDUST STOVES

MINIMUM INVESTMENT REQUIRED FOR PRODUCING SAWDUST STOVES

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Price/Unit</th>
<th>Total Cost</th>
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<td>2,500</td>
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<tr>
<td>Hammer (0.5 Kg)</td>
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<td>10</td>
<td>10</td>
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<tr>
<td>Hammer (1.0 Kg)</td>
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</tr>
<tr>
<td>Wooden Hammer</td>
<td>2</td>
<td>30</td>
<td>60</td>
</tr>
<tr>
<td>Iron</td>
<td>4</td>
<td>500</td>
<td>2,000</td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
<td>2,000</td>
</tr>
<tr>
<td><strong>Total equipment Cost</strong></td>
<td></td>
<td></td>
<td><strong>6,960</strong></td>
</tr>
</tbody>
</table>

Working Capital

Working Capital = Utilities (one month) + Overheads (1 month) + Advance rent for 1 year + Variable Cost per unit x No. of Stoves

Working Capital for 300 stove per month = 23,625

Raw Material Required for producing one sawdust stove (Rs) = 27.75
Labour Cost = 6.00
Total Variable Cost = 33.75

Utilities (one month) = 1,000
Overheads (one month) = 500
Rent Advance for one Year = 12,000
ANNEX 4 CALCULATION OF STREETSELLERS AVERAGE DAILY MARK-UP

Average daily sales of street sellers: 3.86 kg

3.86 kg purchased from wholesaler for Rs. 65/= per kg = Rs. 250.90

3.86 kg bartered with consumers for materials of a value of Rs. 69.46 per kg = Rs. 268.12

Streetsellers mark-up = Rs. 17.22.

Thus, the customers are paying a certain amount of waste materials to the streetsellers with a total value of Rs. 268.12.

If consumers pay with scrap metal, Rs. 5/kg:

53.63 kg = Rs. 268.12

Vendor sells scrap metal to wholesaler for Rs. 5.8/kg:

53.63 kg = Rs. 311.00

extra mark-up = Rs. 42.88

If consumer pays with old plastic: Rs. 6.67/kg:

40.20 kg = Rs. 268.12

Vendor sells old plastic to wholesaler for Rs. 8.57/kg:

40.20 kg = Rs. 344.51

extra mark-up = Rs. 76.39

If consumer pays with old aluminium: Rs. 29.4/kg:

9.12 kg = Rs. 268.12

Vendor sells aluminium to wholesaler for Rs. 35/kg:

9.12 kg = Rs. 319.20

extra mark-up = Rs. 51.08

If consumer pays in cash: Rs. 76/kg new products:

3.86 kg x Rs. 76 = Rs. 293.36

extra mark-up = Rs. 25.24

If the vendor barters his products with the customers according to the assumption as under, his daily extra mark-up is Rs. 53.28.

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Material</th>
<th>Extra Mark-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%</td>
<td>Scrap metal</td>
<td>Rs. 21.44</td>
</tr>
<tr>
<td>30%</td>
<td>Old plastic</td>
<td>Rs. 22.92</td>
</tr>
<tr>
<td>15%</td>
<td>Old aluminium</td>
<td>Rs. 7.66</td>
</tr>
<tr>
<td>5%</td>
<td>Cash</td>
<td>Rs. 1.26</td>
</tr>
</tbody>
</table>

Total extra mark-up = Rs. 53.28

Normal mark-up = Rs. 17.22

Total daily mark-up = Rs. 70.50
Annex 5 RATES FOR TELEVISION AND RADIO ADVERTISEMENT

Rates for Commercials (Peshawar Television)

<table>
<thead>
<tr>
<th>Duration of one spot (seconds)</th>
<th>Time Allocation</th>
<th>Rate per Spot (Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Any time</td>
<td>353</td>
</tr>
<tr>
<td>10</td>
<td>Fixed time</td>
<td>1,058</td>
</tr>
<tr>
<td>15</td>
<td>Any time</td>
<td>504</td>
</tr>
<tr>
<td>15</td>
<td>Fixed time</td>
<td>1,512</td>
</tr>
<tr>
<td>20</td>
<td>Any time</td>
<td>633</td>
</tr>
<tr>
<td>20</td>
<td>Fixed time</td>
<td>1,899</td>
</tr>
</tbody>
</table>

Sponsorship Rates (Peshawar Television)

<table>
<thead>
<tr>
<th>Programme Duration (minutes)</th>
<th>Time for Commercial (seconds)</th>
<th>Rate (Rs/sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 - 30</td>
<td>90</td>
<td>7,633</td>
</tr>
<tr>
<td>50 - 60</td>
<td>180</td>
<td>11,676</td>
</tr>
</tbody>
</table>

Rates for Commercials (Peshawar Radio)

<table>
<thead>
<tr>
<th>Duration of one spot (seconds)</th>
<th>Rate per Spot (Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>280</td>
</tr>
<tr>
<td>15</td>
<td>480</td>
</tr>
<tr>
<td>30</td>
<td>750</td>
</tr>
<tr>
<td>45</td>
<td>900</td>
</tr>
<tr>
<td>60</td>
<td>1,000</td>
</tr>
<tr>
<td>Programme Duration (minutes)</td>
<td>Time for Commercial</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>30</td>
<td>7</td>
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<tr>
<td>45</td>
<td>10</td>
</tr>
<tr>
<td>75</td>
<td>15</td>
</tr>
<tr>
<td>90</td>
<td>20</td>
</tr>
<tr>
<td>150</td>
<td>30</td>
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BIBLIOGRAPHY

Antoine, Baya-Vuma, 10 Years of Improved Stoves in the Sahel, Sweden, 1989.


Clarke, Kathryn, Marketing Strategy to Disseminate Improved Stoves throughout Sri Lanka, ITDG, November 1990.


Guidelines for Urban Stove Programmes, Statement of the Meeting, Sri Lanka Urban Stoves Seminar Negombo, 4 - 16 September 1989, ITDG.


Important Agency-wise Socio Economic Indicators of F.A.T.A. 1990, Bureau of Statistics, Planning and Development Department, Govt. of N.W.F.P.

Important District-wise Socio Economic Indicators N.W.F.P, 1989, Bureau of Statistics, Planning and Development Department, Govt. N.W.F.P.


Janssens, Premeeta, The Transfer of Appropriate Technology, Group Technologie Intermediaire D'Haiti, Centre de Documentation Technologique et D'Assistance Technique, Petionville, Haiti, W.I.

Khattak, Yasmin, Field Testing of 15 Improved Metal Stoves versus Traditional Clay Stoves, Peshawar District, Domestic Energy Saving Project Pakistan, November 1989.

Krosigk, Hilda, von, Fieldstudy on Traditional Claystove Design, Mardan Division, Swabi District, Domestic Energy Saving Project (GTZ), Pakistan, October 1988.


Rahmat Jan, Naheed Aziz, Second Follow-up Stove Survey Swabi, Pak-German Fuel Efficient Cooking Technologies Project (GTZ/PCAT), Pakistan, October 1990.


Zahid, Naseema, Aziz, Nahid, MPS Follow-up Survey in Kohat, Pak-German Fuel Efficient Technologies Project (GTZ/PCAT), Pakistan, April 1991.