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WOODFUEL TRADE AND CONSUMPTION PATTERNS
IN SALISBURY'S TOWNSHIPS

by
D. Mazambani

INTRODUCTION

'Long back we used to collect firewood from the other side (east) of the Mukurwisi (Makabusi River), but now the trees are all gone so we have to buy the firewood we need Paraffin is very expensive and the electricity we get is just for lighting.'

(Statement from an old resident of Harare Township)

The problem of getting cheap firewood is now common in Salisbury's townships. It is getting worse each day as the removal of indigenous timber in the townships' surroundings becomes widespread.

Many third world countries face a major problem of woodfuel crisis. In historic times woodfuel shortages dislodged many population centres. Shortage of woodfuel was one of the reasons for the fall of the 'Great Zimbabwe' Kingdom in the mid-fifteenth century. The 'unnaturally large population, concentrated in one spot ... sooner or later exhausted the grazing, the fertility of the soil and timber available for building and firewood ...,' (Garlake, 1973). Beach (1930) noted that 'the people (of Great Zimbabwe) after the year 1100, had begun to make superior huts with walls made of thick daga rather than poles and daga'. The timber needed was therefore, for use mainly as firewood.

About the mid-nineteenth century many Ndebele towns north of the Limpopo were deserted when fuel ran out.

'The Amatebele ... are located in various towns and villages, scattered throughout the length and breadth of their land, so placed as to be near an abundant supply of fuel and water ... And when after a lapse of time the destruction of fuel in the neighbourhood necessitates the removal of the inhabitants of a town to another spot the old town is burnt and the new location assigned to the regiment called by the same name as the one abandoned.'

(Report by Major C.H.S. Stabh, 1870's)

In Ethiopia in 1891, Entoto, the then capital city was abandoned because of the shortage of firewood, (Vivian 1900). Menelik chose Addis Ababa to be his new capital. However, by the late 1890's 'immense consumption of firewood for cooking and heating rapidly exhausted Addis Ababa's local supplies. The city's supply of firewood had to be brought over relatively long distances ...' (Pankhurst, 1961).

In recent years urban centres with woodfuel problems are characterised by surroundings which are completely denuded of wood. Morgan (1978) observed that around Kano in Nigeria, 'the high density of rural population led to massive and extensive clearance of woodland, and that the city's fuelwood needs had to be met from an area of some thirty-two kilometres radius'. In Mali, deforestation around Mpoti affects an area of radius 100 kilometres (F.A.C. 1974). Other examples of towns with deforested surroundings are Khartoum and Dodoma. The woodlands around Khartoum are now completely denuded and wood for charcoal is exploited at distances up to 400 kilometres. 'Around the Tanzanian town of Dodoma there is patchwise degradation of vegetation within a radius of 40 kilometres,' (Le Houerou and Lundholm, 1976).

The result of this destruction of woodlands around towns is increasing costs of transporting woodfuel from distant sources. This in turn increases the buying prices of wood for most urban families which depend on wood for fuel. The costs of both wood and charcoal are climbing throughout most of Asia, Africa and Latin America, (Eckholm, 1976). There is therefore a growing drain, especially on the incomes of the low income families, and hence an increasing economic burden on the urban poor.

In Niamey, Niger, the average manual labourer's family spends nearly one quarter of its income on firewood alone. In Quagadougou, Upper Volter, the portion is twenty to thirty per cent (Eckholm, 1976).

In Salisbury a woodfuel trade developed in response to the increasing demand for firewood and as supplies in close proximity to the townships become depleted. The purpose of this paper is to examine some of the geographical aspects of the woodfuel trade in Salisbury. The variations in the cost and consumption patterns of woodfuel in Salisbury's townships are also discussed.

METHODS OF STUDY

Questionnaire interviews were carried out among those who are involved in the woodfuel trade and those who use woodfuel.

1. Woodfuel Trade

Two types of individuals are

- (a) Wood Vendors - these are mobile
- (b) Wood Traders - these are stationary

A questionnaire survey of woodfuel trade was carried out in April to May, 1980.

- (a) The sources of the woodfuel
- (b) How the transportation is done
- (c) The quantity of woodfuel used and the price situation.

Information on the sources of woodfuel was provided by the names of the vendors who sell wood. The number of vendors was related as a percentage of the total population.

Consumption estimates were obtained from the vendors. The number of cords sold during the winter months (May-August) was converted into cubic metres by the twelve wood traders. The weekly and annual consumption of woodfuel was compared by the traders and vendors. The cost of woodfuel was compared.

2. Woodfuel Consumption

A second questionnaire survey was carried out among the various household uses of woodfuel. Three levels of stratification were used.

- (i) The township level
- (ii) The income group
- (iii) The Unit (section)

1. Woodfuel Trade

Two types of individuals are involved in the woodfuel trade. They are:

- (a) Wood Vendors - these deal directly with the consumers; and may be mobile or stationary.
- (b) Wood Traders - these are involved in the transportation of wood from the source areas to the city. They sell wood to the vendors as well as the consumers.

A questionnaire survey of 112 wood vendors and twelve wood traders was carried out in April to May, 1980. The aim of the survey was to obtain information on the following:

- (a) The sources of the woodfuel sold in Salisbury.
- (b) How the transportation and distribution of woodfuel is organized.
- (c) The quantity of woodfuel entering trade, and the demand and supply situation.

Information on the sources of woodfuel was given by the wood traders. These provided the names of the districts and areas in these districts from where they buy wood. The number of times each place (area) was mentioned was calculated as a percentage of the total mentions of all places.

Consumption estimates were based on figures provided by both wood traders and vendors. The number of cords sold by the 112 vendors per week during the winter months (May-August) and during the rest of the year were summed. The average number of cords sold by a vendor per week was then calculated and converted into cubic metres of stacked wood. The total number of cords sold by the twelve wood traders to both vendors and consumers (households) per week, and the weekly and annual averages per trader were calculated. The cost of woodfuel was based on the buying and selling prices of wood traders and vendors. The selling prices of vendors in the various townships were compared.

2. Woodfuel Consumption Patterns

A second questionnaire survey was carried out in May to June to investigate the various household uses and expenditures on woodfuel. A total of 324 households were interviewed after stratified random sampling had been done. Three levels of stratification were used, and these are:

- (i) The township level
- (ii) The income group level
- (iii) The Unit (section) level

A uniform number of households were interviewed from each Unit level (in some townships the term section is used instead of Unit). Stratification was done because there is no homogeneity between and within townships. The second level of stratification (income group) was based on the value of accommodation, that is, monthly rental charges excluding service and water charges. This is shown in Table 1.

TABLE 1

Income groups and value of Accommodation

Income Groups	Monthly Rents
Low	\$10,00 or less
Medium	\$11,00 - \$15,00
High	Above \$15,00

In Glen Norah township most houses are owned by companies which subsidize the rents. All the sections where rents are just below \$10,00 and where there is subsidization, were therefore classified as medium income accommodation.

During the survey, whenever it was suspected that a person in the medium income group was living in low income accommodation because of the shortage of houses, general questions were asked about the occupation of the household head. If it was decided that the household be classified as medium income, this was done.

The households interviewed were then grouped according to their income groups and whether they have electricity supply or not. The uses and cost of woodfuel were compared with those of other fuels used in the townships.

RESULTS

Development of Woodfuel Trade

There are three main factors that have promoted the development of the woodfuel trade.

- (a) Widespread destruction of woody vegetation around high density housing areas; this still continues unabated today.
- (b) Lack of electrification in most townships. About sixty-one per cent of the households in Salisbury's townships did not have electricity supply in December 1979.
- (c) Rising costs of paraffin which is the only other common source of fuel, especially for cooking.

Official records of wood vending in Salisbury go as far back as the early 1950's. The number of wood vendors increased as the population in the townships increased, (Fig.1). There was a dramatic decrease from forty-three vendors in 1961 to thirty-one in 1962 because twelve vending sites in the 'Musika Area', Harare, were demolished in accordance with the Musika re-development plan. This demolition was found necessary because the temporary structures for the vendors were becoming permanent residences as opposed to shelters for night watchmen. After 1965 the number of vendors increased steadily up to 1973. The rapid increase of vendors in the 1970's can be explained by the influx of Africans into Salisbury, mainly due to the pressure of the war in the rural areas. This population increase had a direct influence on the demand for woodfuel in Salisbury's townships. Whereas in 1955 about 39 wood vendors served the needs of about 49 500 people, in 1979 the number of vendors increased to 117, to serve about 550 000 people.

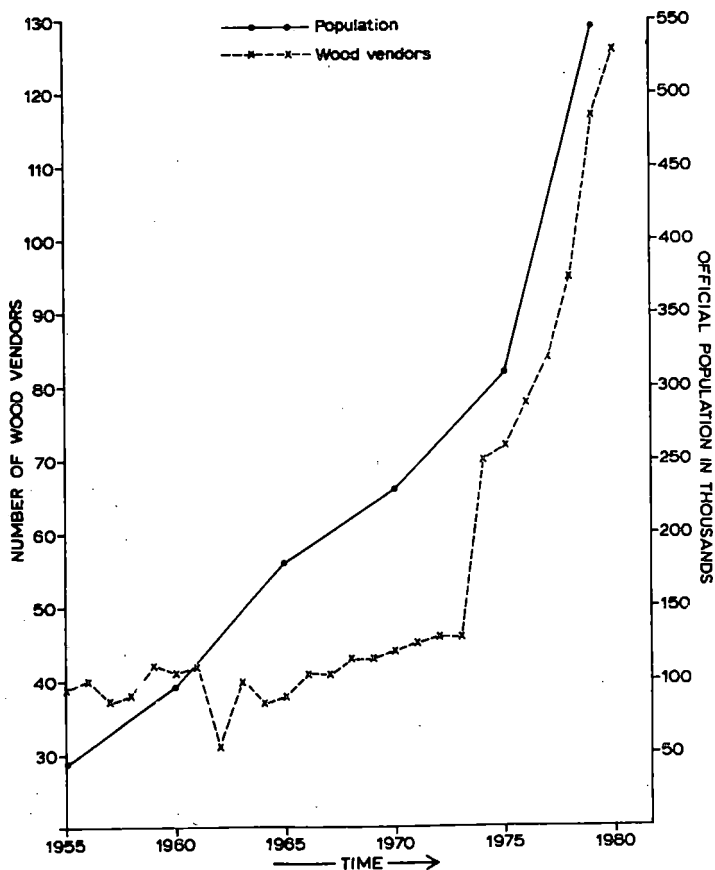


Figure 1: Increase in population and number of wood vendors, 1955-1980

DISTRIBUTION AND OPERATIONS OF WOOD VENDORS

Among the main reasons given for being wood vendors are unemployment and dissatisfaction with previous employment. These reasons were given by 53 and 24 per cent respectively, of the wood vendors who were interviewed. Some (13%) inherited the trade from relatives, while the rest (10%) began wood vending after retiring from work. The latter are found mainly in the two oldest townships, Harare and Highfields. The distribution of wood vending sites by townships is shown in Table 2.

TABLE 2 Distribution of Wood Vendors

Townships	No. of Vendors	Townships	No. of Vendors
Dzivarasekwa	4	Mufakose	4
Glen Norah	3	Rugare	4
Glen View	4	Tafara	2
Harare	28	Seki	13
Highfields	19	St.Mary's	9
Kambuzuma	1	Zengeza	5
Mabvuku	5	Chirambhuyo	26

Where there are no woodlands nearby, there are more vendors than where wood can still be collected from neighbouring woodlands, (Fig.2). In the former townships the wood vending business flourishes throughout the year, and in the latter, selling wood is much more pronounced in winter. In townships such as Mufakose, Kambuzuma, Dzivarasekwa and Glen Norah most vending sites are found next to shopping centres, (Fig.2). These sites were allocated to the vendors by local government administrations. Vendors pay rents for their vending sites ranging from \$2,40 per month in Mufakose to \$4,50 per month in Zengeza.

Most vendors have one full-time and two or more casual employees. During the time of the survey (April, 1980) there were 110 and 118 people in full-time and casual employment, respectively. More people are employed during the winter months, May to August. These employees chop the wood. Casual employees are usually paid off after chopping the agreed number of cords. Plate 1 shows a vending site in Mabvuku township. Three employees are seen in the picture. When a wood vendor is employed in other activities the full-time employee oversees both the chopping and selling of wood, as well as guarding the site overnight. In Harare township some vendors stay at their vending sites permanently.

They cook under self-built shelters. The busiest times at the vending sites are early morning and evening hours. During these hours a vendor may serve as many as thirty customers in less than half an hour.

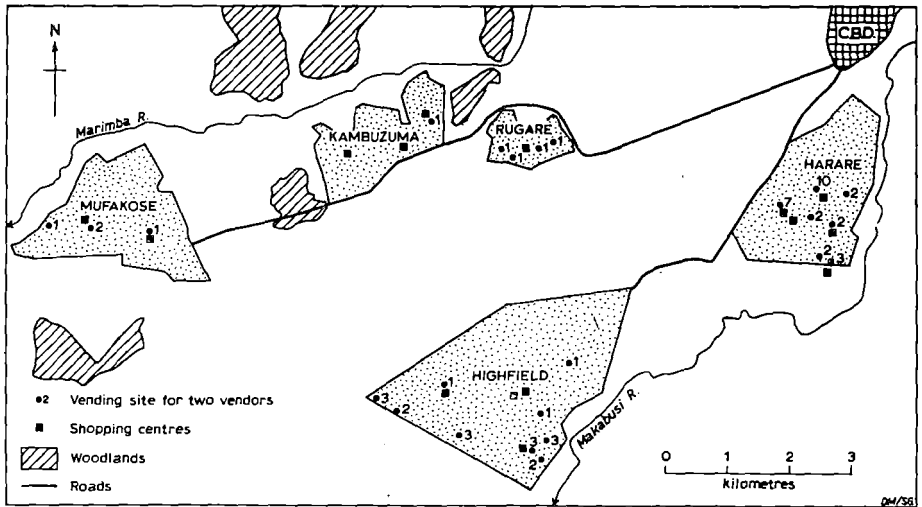


Figure 2 : Distribution of wood vendors in selected Townships



Plate 1 - Wood Vending Site in Mabvuku Township

SOURCES AND TRANSPORTATION OF WOODFUEL

A large proportion of the woodfuel consumed in Salisbury's townships comes from commercial farming areas. Wood is also trucked into the city from some tribal trust lands. Although a large percentage of the woodfuel comes from farming areas within the Salisbury district, some of it is transported from as far away

as Umvuma, Karoi and Mtoko, (Fig.3). The respective distances from Salisbury are 200, 202 and 130 kilometres. Wood is also transported from around and beyond Marandellas which is about 65 kilometres east of Salisbury.

The long distances covered to collect wood for consumers in Salisbury compare with examples in other third world cities. Some of these examples have already been quoted above. The main long distant sources of the woodfuel utilized in Salisbury's townships are located along the major transport routes to the South, North East and North West.

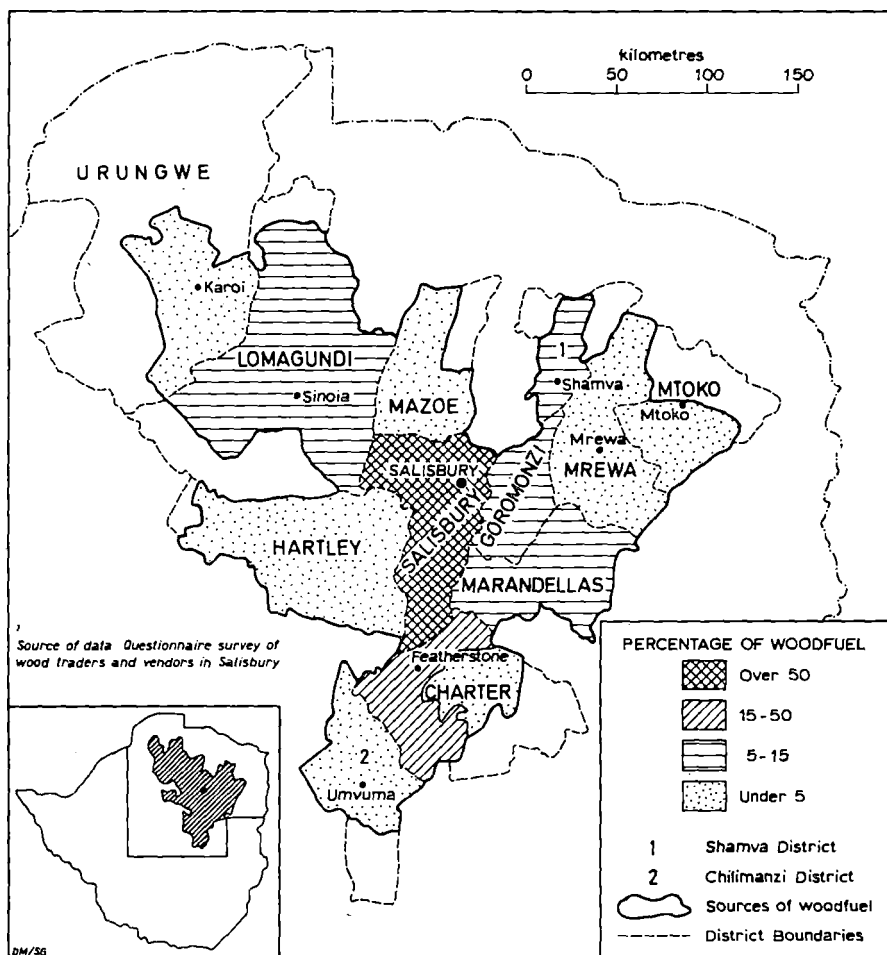


Figure 3: Sources of woodfuel consumed in Salisbury's Townships

In addition to the distant sources, there are two types of local sources of woodfuel. The first and most common source are the woodlands adjacent to some townships. In these areas there is uncontrolled and indiscriminate felling of trees for wood fuel. Residents of Kambuzuma and Mufakose, for example, have chopped down almost every tree on some hills lying between these townships. In the Chitungwiza area there is no more woody vegetation anywhere between the townships and the Hunyani River. The remaining few trees are found on some termite hills only.

The other source of woodfuel are farms near the townships. The residents of Glen View, for example, buy Eucalyptus wood directly from the farm which is found west of this township. This new development is a result of the woodfuel crisis in this township. There is also illegal felling of trees for woodfuel on many farmlands around Salisbury. Transportation of woodfuel to Salisbury might have been taking place by the early 1950's. Of the twelve African traders interviewed two were already transporting wood in 1955. The number increased as the population and hence the demand for wood in the townships increased. In 1980 the number of African wood traders had increased to twelve. Two commercial transport firms are also involved in transporting wood to some vendors. Most of the African wood traders own one or two lorries each. They employ full-time drivers and loaders. As soon as the wood is brought to Salisbury it is sold to wood vendors or directly to the households. Although these traders are the main transporters of wood to the city, wood also reaches Salisbury by other means. Truck owners also supply wood to the townships. Most of these are small businessmen who fled the rural areas during the war. The frequency of their trucking declined in the post war era. Carts drawn by cattle and donkeys bring woodfuel to Seki township in the Chitungwiza area. There is no evidence, however, of woodfuel being brought to townships in greater Salisbury through this means.

QUANTITY OF WOODFUEL SOLD IN SALISBURY

It is difficult to get meaningful estimates of the quantity of woodfuel consumed in the townships per year because:

- (a) It is impossible to quantify the wood collected by households from local sources.
- (b) Small truck owners and some wood traders who sell wood directly to households were very reluctant to be interviewed.
- (c) It is difficult to locate some of the wood traders.

Therefore only the quantity of wood sold by the 112 wood vendors and 12 traders who were interviewed, can be cited (Tables 3 and 4). The amount of woodfuel sold by wood vendors per year is about 23 000 cords or 80 000 cubic metres of stacked wood. The number of cords sold by wood traders is about 31 000 cords which is approximately 110 000 cubic metres of stacked wood. Therefore, the wood traders sell about 8 000 cords of wood directly to the households. Considering their reluctance to be interviewed, these people are certainly selling many more cords to the households. Their role in meeting the woodfuel needs of families in the townships is, therefore, very important.

TABLE 3

Woodfuel Sold by Wood Vendors

	WINTER PERIOD (May-August)		SUMMER PERIOD (Sept.-April)	
	Cords	Cubic Meters of Stacked Wood	Cords	Cubic Meters of Stacked Wood
Total sold by 112 Vendors per week.	620	2 130	360	1 240
Average sold by one Vendor per week.	5,5	19	3,2	11
Total wood sold during winter and summer periods.	9 920	34 080	12 960	44 640

TABLE 4

Woodfuel Sold by Wood Traders

	Cords	Cubic Meters of Stacked Wood
Average/week/ Trader	49	170
Total/week/12 Traders	590	2 040
Total/year/12 Traders	30 680	106 080

USES OF WOODFUEL

The main uses of woodfuel is for cooking and heating. Woodfuel ranks highest

in the first preference of fuels used for cooking among households without electricity supply. Seventy-three per cent of these households mentioned it as a first preference fuel. Paraffin was mentioned by only 27%. About 70% of those who usually use paraffin use woodfuel as a second preference. Thus, out of a total of 314 households which have no electricity supply, 92% of them use woodfuel for cooking. This is because woodfuel is comparatively cheaper than paraffin (Fig.4) which is the only available alternative fuel for cooking. As most of these households are in the low income group they can not afford the cost of paraffin. Some use paraffin only during the morning when preparing breakfast for the household head and school children.

Woodfuel is also used by fourteen per cent of the households with electricity which is for lighting purposes only. Table 5 shows the fuels used for heating in the townships. Woodfuel ranks highest among all the fuels used by households with or without electricity supply. It is used by about 80% of the total sample from the townships. Even where there is electricity supply, that is, in most medium and high income households the majority use woodfuel. The reasons being that for most low income and some medium income families an electric heater is considered to be an expensive item. Secondly, and perhaps more important is the fact that an electric heater does not have the same heating efficiency as an open fire especially when a family is large. This applies even among high income families. Almost every house that was visited had a fireplace. Thirdly, electric heaters can not be used in houses which have only 1 amp of electricity supply. There is therefore a high demand of woodfuel for heating purposes. That is why the averages sold by wood vendors are higher in winter than in summer, Table 2.

Woodfuel is also useful in various other ways. The embers from open fires are widely used in pressing irons. Secondly, some traders in the informal sector use open fires for boiling or roasting green maize before selling it, especially during the summer and autumn seasons. Others use woodfuel for frying meat on hot metal sheets. This is common at beer gardens where the meat is sold.

TABLE 5

Fuel Used for Heating

(a) Households without Electricity Supply

Fuels Used	No. of Households	Percentage of Total Interviewed
Woodfuel	299	95
Charcoal	6	2
None	9	3
TOTAL	314	100

(b) Households with Electricity Supply

Fuels Used	No. of Households	Percentage of Total Interviewed
Woodfuel	115	55
Electricity	30	38
Charcoal	5	2
None	10	5
TOTAL	210	100

COST OF WOODFUEL

In most Salisbury townships the price of woodfuel rose by about two hundred and fifty per cent between 1978 and 1980. In 1978 housewives used to pay ten cents for ten pieces of chopped wood. At present most are paying the same amount for only four pieces. This rise is partly due to the increasing cost of paraffin. Wood vendors increase their selling prices as the cost of paraffin rises. Rising prices of woodfuel also reflect the difficulty with which wood is being procured by wood traders. As the distances they travel to get wood increase so does their expenditure on diesel and petrol. The selling prices of most wood traders increased by fifty to one hundred per cent during the period stated above. In 1978 most wood vendors could get a cord of wood for \$8,00. At present nearly fifty per cent of them purchase wood at an average cost of \$12,00 per cord, although costs range from \$10,00 to \$16,00 per cord.

The cost of woodfuel varies with the townships. Woodfuel is more expensive in townships where wood can no longer be obtained from local sources. In such townships as Harare, Highfields, Glen Norah, Glen View and Rugare, households spend an average of 50 cents per day on woodfuel for cooking and heating water. In peripheral townships such as Mabvuku, Tafara, Dzivarasekwa, Mufakose and Kambuzuma the average expenditure per day is 40 cents. In the Chitungwiza townships the average is still 30 cents; however, very soon this is going to rise as most housewives are now walking long distances to collect bundles of woodfuel.

Expenditures on woodfuel for cooking vary with income groups. Figure 4 shows that the approximate average monthly expenditure on woodfuel by low income families is \$8,00. This is less than what it should be because most low income households supplement the wood they buy by collecting wood from adjacent woodlands. Medium income households spend an average of about \$11,00. House-

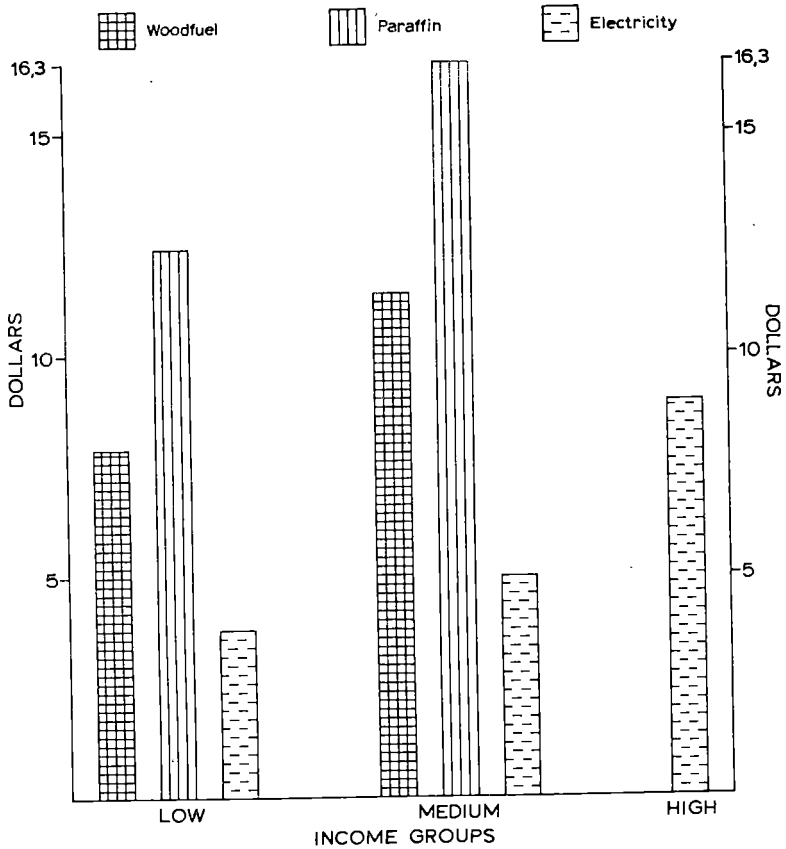


Figure 4 : Monthly average costs of fuels

holds in the high income category do not use woodfuel for cooking, Figure 4 also illustrates that average monthly costs of woodfuel for low and medium income households are higher than the average costs of electricity for households in the same income groups. Secondly, the cost of paraffin is much higher than that of woodfuel and electricity. This explains why there is a high preference for woodfuel than paraffin among households without electricity supply. Thirdly, the cost of woodfuel for cooking purposes only, for low income households, is not much less than the cost of electricity for cooking, lighting and heating for the high income households.

Low income households without electricity supply, are therefore, spending a higher proportion of their incomes on woodfuel than the proportion spent by higher income households on electricity. Considering that most of the low

income household heads are general industrial workers and domestic employees, this proportion is about 15 to 20% of their incomes. If the cost of candles is included the proportion spent on fuels for cooking and lighting becomes well above 20% (Most households use candles worth 20 to 30 cents each day).

CONCLUSION

Woodfuel trade is well established in Salisbury's townships. It provides a vital service in meeting the fuel needs of low income households, and it will continue to have this role until such a time when all houses in the townships are electrified. The trade is, however, contributing to the deforestation around and far away from Salisbury.

As local supplies become more difficult to obtain and woodfuel is transported from long distances, so the cost of this most needed fuel by the low income households, increases.

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