

INCOME AND ENERGY USE PATTERNS

*Comparative assessment of 1995 and 1996 energy surveys
in Cape Town's low-income households*

REPORT ON 1996 SOCIO-ECONOMIC AND ENERGY USE SURVEY

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Introduction

An in-depth fieldwork of energy use patterns was undertaken between May 1995 and April 1997 in Cape Town's two of low-income townships - Khayelitsha (original formal houses and informal area of planned units, known as Site B) and Langa (the backyards in the formal township and the informal unplanned shanty units called Joe Slovo). A component part of data gathering was to undertake two yearly surveys, one in 1995 and the other in 1996. The main findings of the 1995 survey are outlined and discussed elsewhere.¹ This report compares the quantitative data of the 1995 and 1996 surveys. It compares some salient features relating to the interface between fuel use patterns and income fluctuations, by showing changes between 1995 and 1996 on income and fuel/appliance interactions. Some important qualitative questions, explored in greater depth in the forthcoming report, are also raised. This report is therefore not intended to be comprehensive and analytical, nor should it be read as a complete ethnographic text of the area.

Three important methodological issues that have influenced the validity of this data need to be raised.

- There had been constant movements between households throughout the research period for a number of reasons. Among them was the quest for reciprocity in other households, commitment to other households, or just long visits which may last up to six months at a time. As a result, the boundaries of households would be constantly shifting. The effect these movements had was on the sizes of households - which would change twice or more between the surveys. This report is comparing only income and energy consumption changes of the survey and, therefore, may not show adequately the demographic changes between the surveys.
- Income figures contained in this report should be read with extreme caution because (a) some households tended to down-play their income (especially in the first survey) to project an image of hopeless desperation;² (b) those who were engaged in income-generating activities were not able to determine how much they get from these activities; and (c) income generated outside what is perceived as formal work was not mentioned (for example, grants and remittances).
- The insecurity relating to tenure caused households especially in shack settlements (including backyards) to be constantly on the move. On two or three occasions, it has been impossible to track these households as they never left forwarding address - except in cases where they had moved within the same area and were able to be traced. The 15 core households we started with in Khayelitsha's formal households remained the same until the conclusion of our fieldwork in April 1997. The changes in other areas were as follows: (a) in Khayelitsha Site B; two households were substituted; (b) one household was substituted in Langa backyards and (c) in Joe Slovo, three households were substituted because two moved out of the settlement and one no longer wanted to be interviewed.

It is against this background that this report should be understood. In showing the connections between household income and energy use patterns on one hand, and the changes over time on the other, we present this report as follows. The first section contains a sketch of the general scenario in terms of household incomes and sizes, and then discusses the details of each settlement or

¹ Mehlwana AM and Qase N. 1997 Energy use in low-income households: Summary of 1995 energy survey in Cape Town. Project Reference No: EO9612. DME.

² When the project was introduced, participants and community leaders were told that the information collected would assist in informing policies on energy use, and that the project is linked to the Reconstruction and Development Programme. Invariably, some participants may have conceived thus as meaning that the 'government' is going to provide poor people with cheaper energy services. As a result some informants did not disclose their true household income since they wanted to be seen as very poor.

housing unit. The second section looks at fuel types across and within the housing types. Energy sources that are discussed are paraffin, electricity, bottled gas, batteries (both the dry-cells and car batteries), and wood. Each fuel or energy source is discussed under the following sub-themes: (a) fuel burden or expenditure; (b) appliance ownership; (c) method of acquisition; (d) date of acquisition; and (e) the cost of the appliances. The last section summarises the important points relating to household incomes, energy use, and appliance accumulation.

Household income and size

There has been a strong correlation between income and household sizes during the period of research. In terms of per capita income per month, larger households fared the worst. As shall be shown, in some housing units sizes of households kept changing; in others it remained constant. A household would lose members who contributed to its income and, on other occasions, would incorporate members who would constitute a 'burden' on its resources. Many factors were responsible for this, including when a person would join another household to be helped by the 'extended family', or when employed individuals would move out in search of independence.

Household size

The changes of household sizes during the almost two years of fieldwork were indeed substantial. This brings into focus what anthropologists, especially in southern Africa, have been arguing all along about the fluid nature of households, particularly African households (for detailed discussion of this topic see Ross³ and Spiegel⁴ among many).

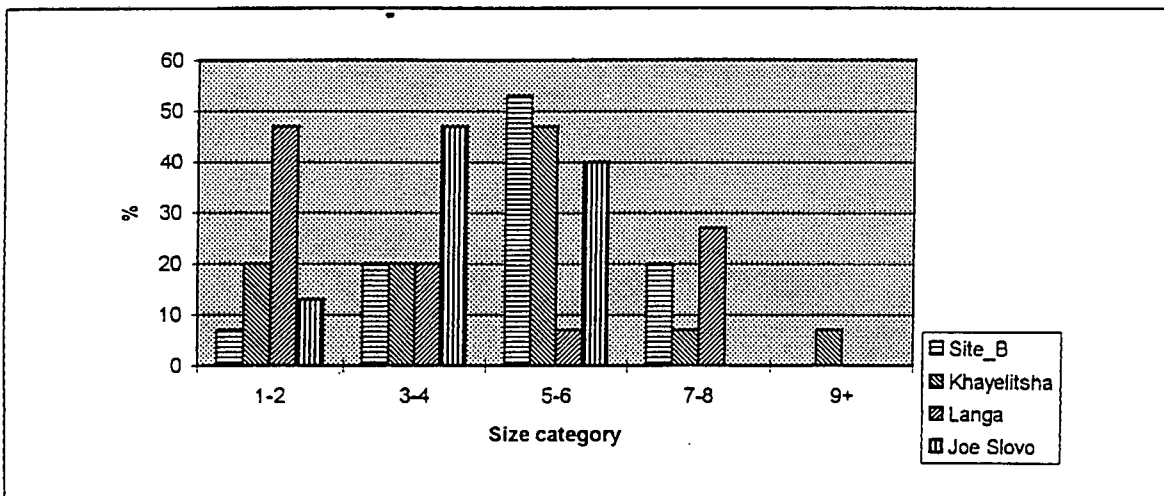


Figure 1: 1995 household sizes of the sampled households (n=60)

At first glance, Figures 1 and 2 do not show the differences of household sizes, although a closer inspection reveals them. The sizes of households change many times especially in informal housing units. An important issue relates to the fluidity of household boundaries and therefore contests the very notion of a household defined in static terms. We have noticed during fieldwork that changes relating to household sizes particularly occurred under three not mutually exclusive reasons:

³ Ross Fiona. 1993. Diffusing domesticity: domestic fluidity in Die Bos. Paper prepared for the annual conference of the Association for Anthropology in Southern Africa, Johannesburg.

⁴ Spiegel AD. 1995. Migration, urbanisation and domestic fluidity: reviewing some South African examples. African Anthropology Vol. II Number 2.

- *In settlements with no security of tenure* - The inhabitants of backyards of Langa were mostly living under a constant danger of eviction by their landlords. Towards the end of fieldwork in this area (after the 1996 survey), three households moved to other areas. Backyard dwellers often cited the constraint of not able to stay with their immediate families for extended periods in order not to upset their landlords. This meant that they would live with their children or other members of their households for a short time, usually on holidays, rather than on their landlords' sites.
- *In households where poverty was more pronounced* - Both international and local experiences have shown that people living below the poverty line tend to rely on their kin for support. This support would entail a member of one household living for an extended period in a household of a 'relative' purely for survival purposes. Children are given to, or taken by, relatives for upbringing, a family living with another for a certain period, and so forth. These are realities of life which have, in the ultimate analysis, energy implications.

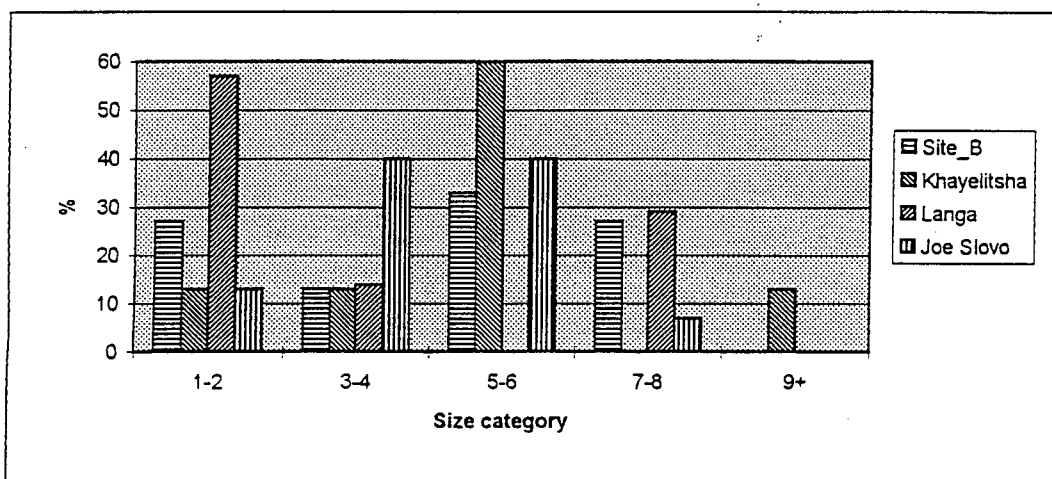


Figure 2 1996 household sizes of the sampled households (n=59)

- *Split households* - This situation was observed across housing types, particularly amongst backyards tenants (for reasons outlined above), in Joe Slovo and Site B. By split households we mean 'incomplete' households. Parts of these households could be found in rural locations or villages in the Eastern Cape (where the majority originated) or - where the sampled households do not have rural commitment - in greater Cape Town. In the former case, there was usually movements between urban and rural households. This circulatory migration, contrary to what some people believe, is a permanent phenomenon.

It is not the intention of this report to discuss in detail these issues and the degree to which they impact on energy consumption.

Income distribution and changes

We noted earlier that income figures should be read with caution. They should not be viewed as 'true' or exact, but as indications of the general economic status of these households. One important point to note is that incomes of these households did not change in real terms (see Figures 3 and 4). There had been very few households earning more than R2 000 (see Figure 4).

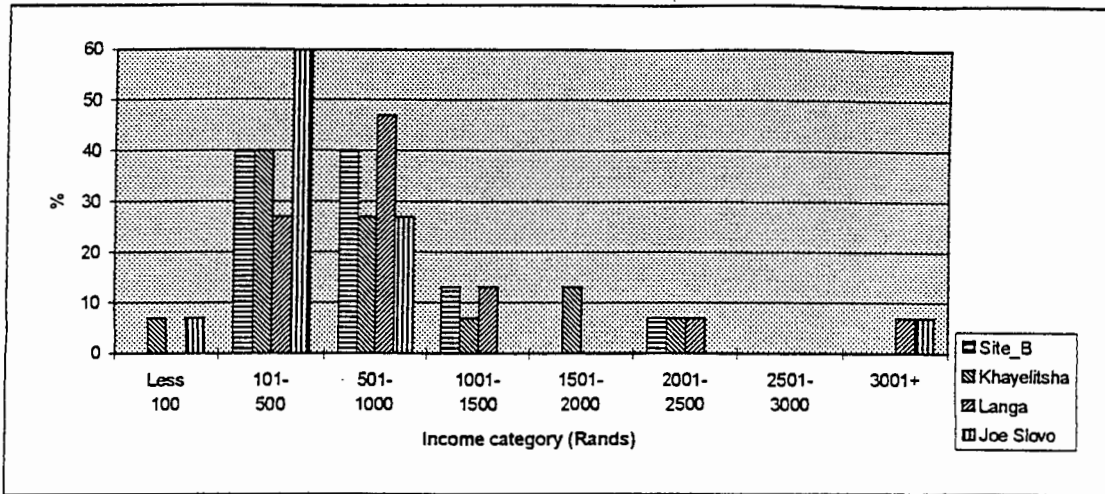


Figure 3: 1995 income per month of the sampled households (n=60)

It should be underscored that these figures do not include income derived from informal activities. Had this been calculated, the figures would change probably dramatically. We believe that there should be innovative ways of determining the actual income of households should be developed as this problem of unreliability of income figures is widespread in research.

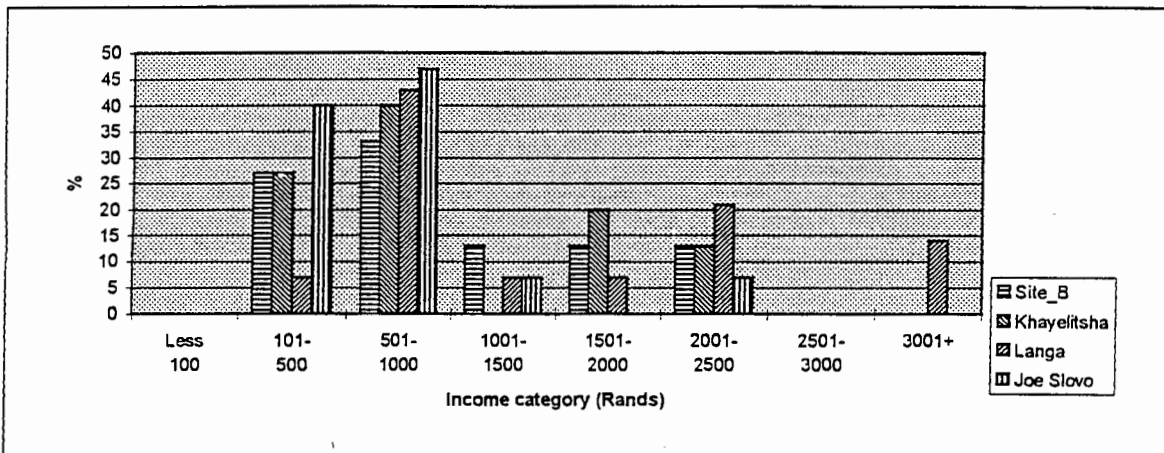


Figure 4: 1996 income per month of the sampled households (n=59)

Other issues of note are (a) that the incomes of most households continue to be derived from many sources, and (b) the unchanging income source of the income earners. Most people, especially those in the R100-R1 000 income bracket, are pensioners, domestic workers and, in case of men, employed in construction firms. Figures 5 to 8 shows differences in housing units related to earnings in 1995 and 1996.

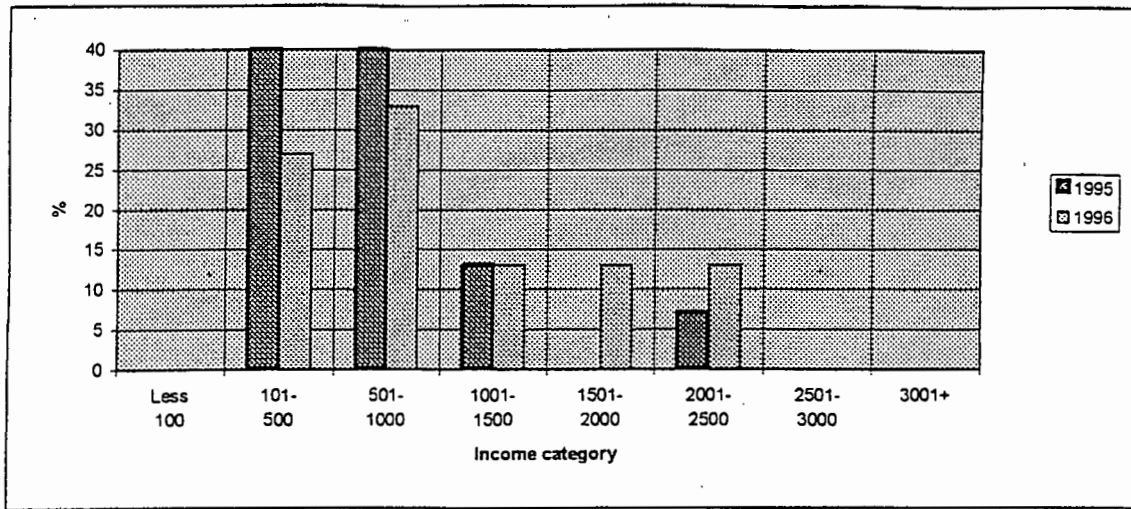


Figure 5 1995-96 Site B comparative income (n=15)

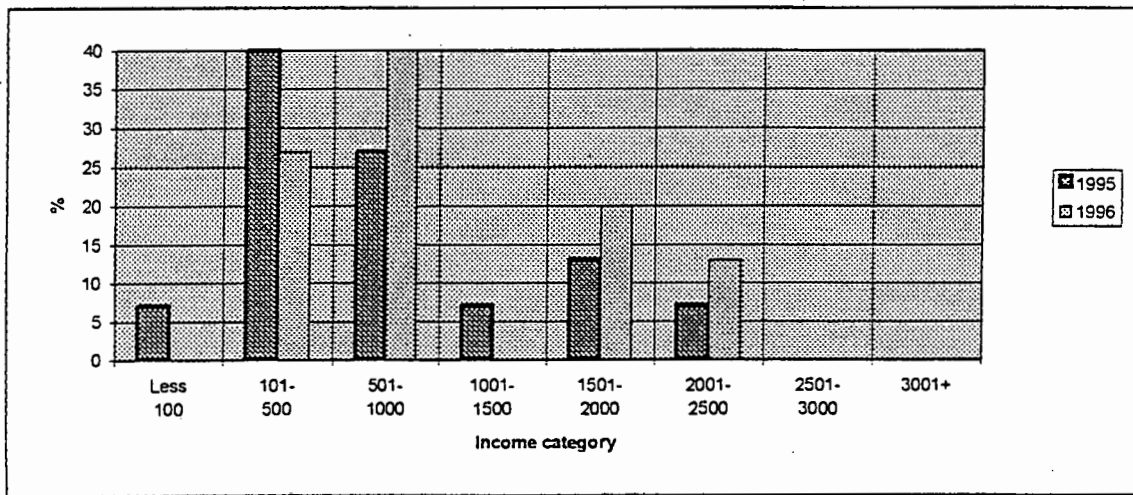


Figure 6 1995-96 Khayelitsha comparative income (n=15)

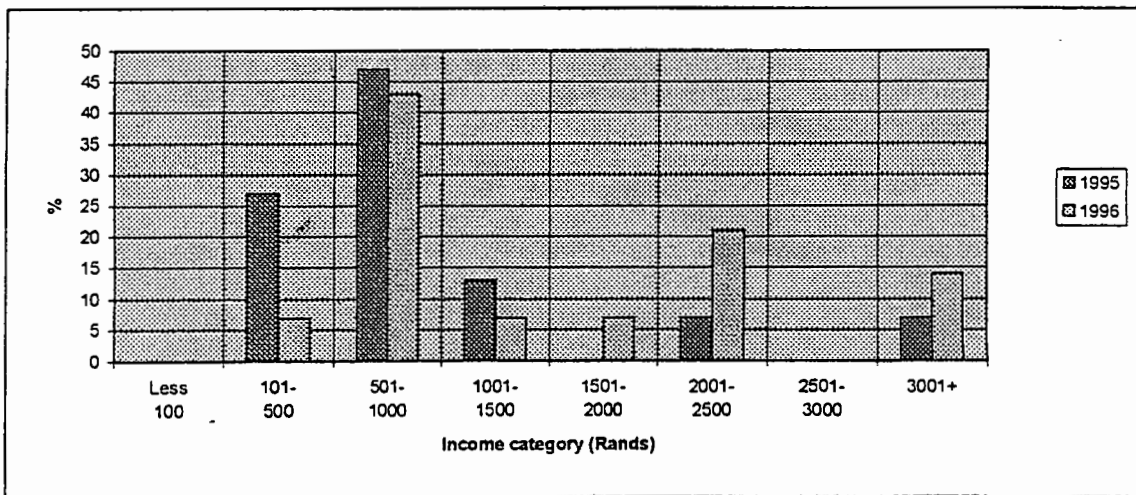


Figure 7: 1995-96 Langa backyards comparative income (n=15 1995 & n=14 1996)

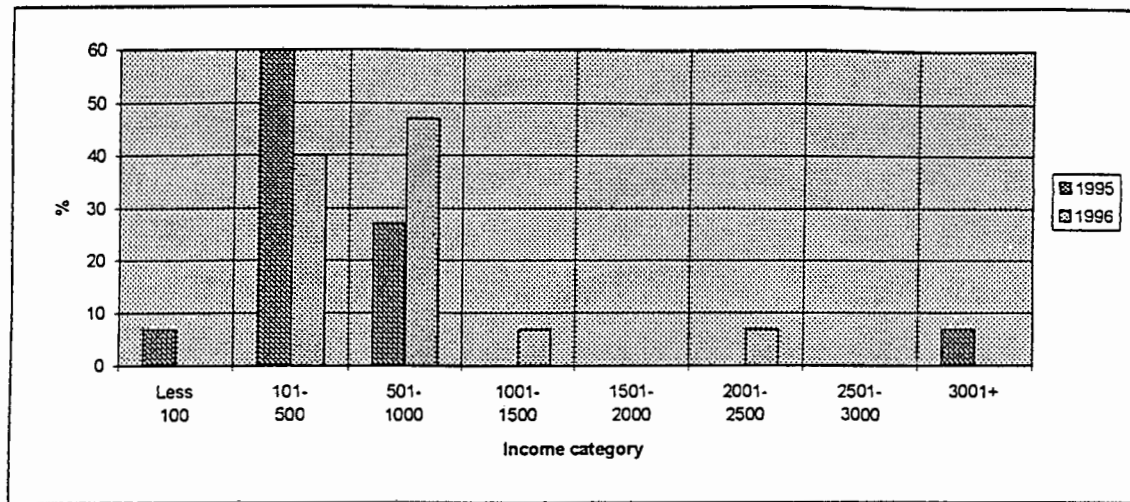


Figure 8: 1995-1996 Joe Slovo comparative income .(n=15)

The implications of changing income on fuel use patterns are noted. As in previous studies, there is a strong symbiotic relationship between the income of households and the type and amount of fuels used, although in some instances this relationship is not clear, for reasons explored in the forthcoming report. Here, we are mainly concerned with the correlation of income and fuel use. Two particular observations regarding income and fuel use are worth mentioning.

- The low and often erratic income results in households *not investing* heavily in electric appliances. It will be shown below (see section on electricity) that many electrified households' acquisitions of electrical appliances are limited to 'basics' such as hot-plates and entertainment appliances, and they hardly buy appliances such as geysers and vacuum cleaners.
- Again, in part as a result of their income, expenditure on fuels and appliances often *competes with other household priorities* such as food, investment in other homes or remittances to rural homes, and other priorities. In some cases, the purchase of energy usually comes second, as incomes in these households are purely for survival.

It is no wonder therefore that there were no substantial changes over the years in terms of household appliance acquisition, especially as far as electric and gas appliances are concerned. This point is further examined below.

Paraffin use patterns

Fuel expenditure

Perhaps one of the most intriguing questions relating to paraffin expenditure is: why did electrified settlements (Khayelitsha and Site B) spend more on, and use more, paraffin than, say, Joe Slovo which did not have electricity, or the backyards of Langa where the majority used paraffin for major uses (see Figures 9 and 10)? Was it because households in Khayelitsha and Site B had more income to spend than in Langa and Joe Slovo? Or was it because of the difference in household sizes between these households? Did households in Khayelitsha and Site B cook more often than their counterparts in Langa and Joe Slovo? To what extent did electricity contribute in changing this pattern - this heavy reliance on paraffin?

The answers to these questions are many. As a way of answering them, we analyse and compare the amount of paraffin and the costs involved in these housing units over the two-year period.

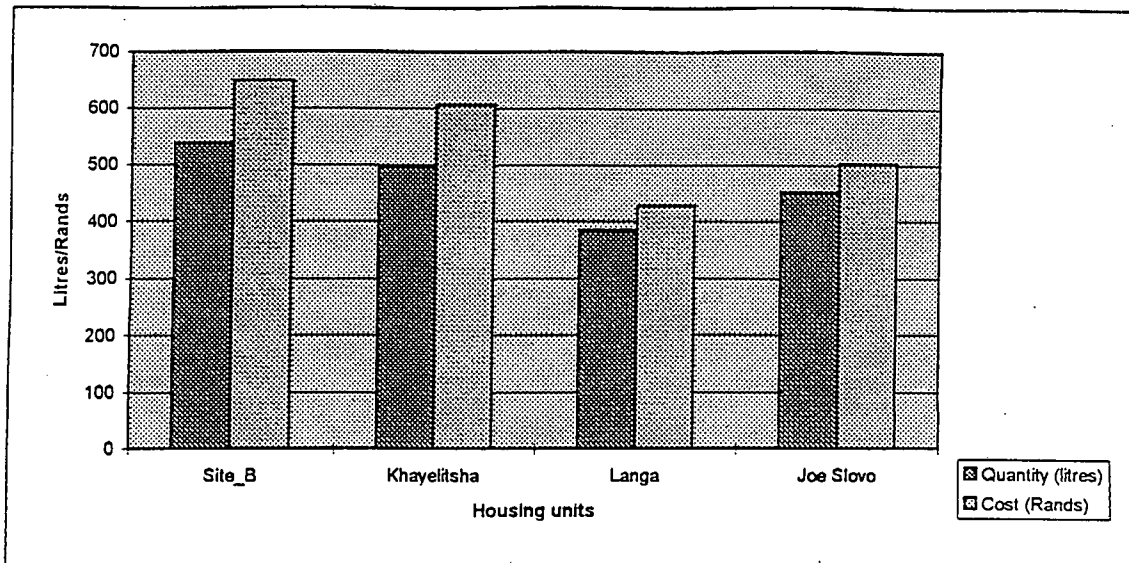


Figure 9 Comparative quantity and cost of paraffin - 1995 (n=60)

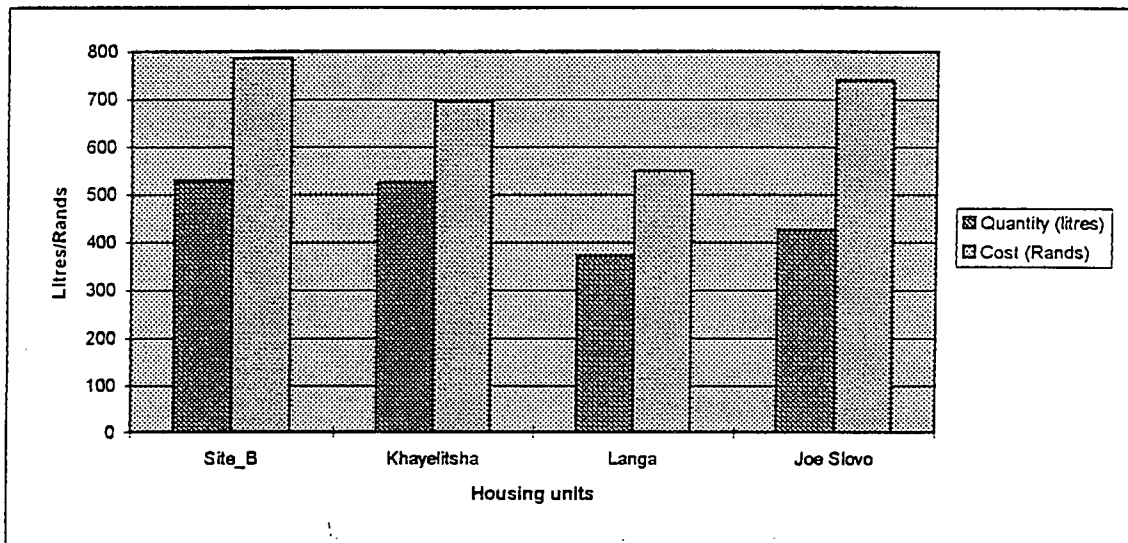


Figure 10: Comparative quantity and cost of paraffin - 1996 (n=59)

What is noticeable in these figures has been the relatively constancy in paraffin consumption in all housing units (Figures 9 and 10). The provision of electricity in Khayelitsha and Site B seems, at first glance, not to have any impact. This observation is, however, incomplete as we do not have pre-electrification data with which to compare. Nevertheless, there is a strong indication based on current data that the situation is not substantially different to the pre-electrification era (see also a discussion on electricity appliances below). In Khayelitsha, it seemed, paraffin consumption, ironically, increased in 1996 although these households have electricity.

One would expect high figures of paraffin consumption in Joe Slovo. This was, however, not the case. In terms of household size in 1996 (see Figure 2 above), Joe Slovo was not dissimilar to Khayelitsha, but the latter consumed more paraffin than the former. Why? Could it be that paraffin was more expensive in Joe Slovo and Langa, leading to these households to use it seldom? Was it because households in these two areas lived in abject poverty?

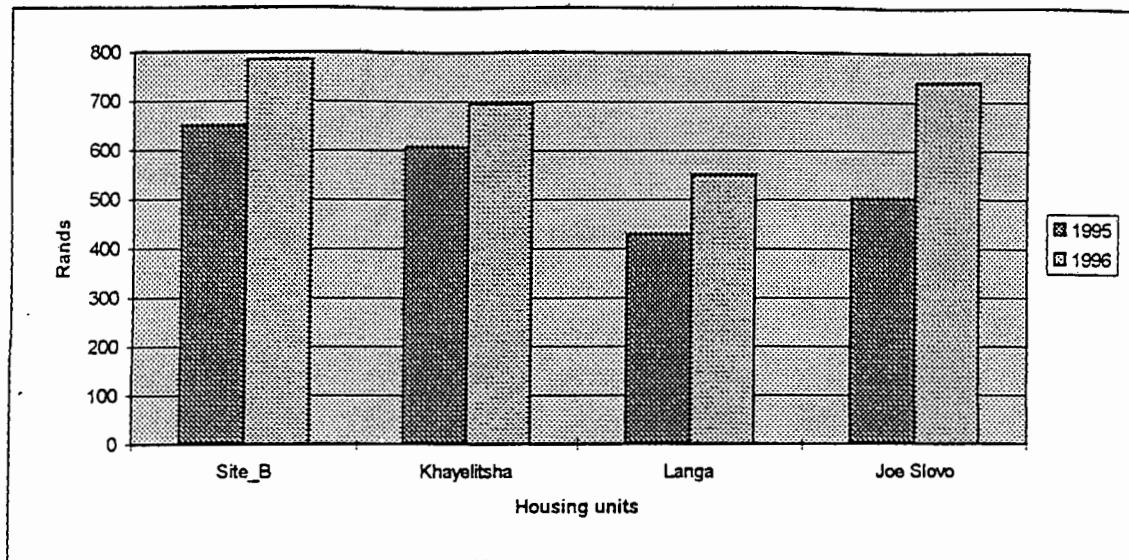


Figure 11: 1995 and 1996 expenditure on paraffin

It is our contention that the affirming answers to the above questions do not really explain this anomaly. Granted, in the case of backyard households, their relative small sizes meant that the dwellers used less paraffin. This, however, still does not explain Joe Slovo's situation where tenure is more secured, but households still used less paraffin than those in Khayelitsha and Site B. Again, paraffin prices in Langa and Khayelitsha were not substantially different. The prices of paraffin fell between R1,20 and R1,80 for 750 ml, the amount commonly bought by households in all the sampled areas. The prices of paraffin were, indeed, lower in Langa. As far as the level of poverty between the settlements is concerned, there were no substantial differences either, if figures on household incomes (see above) are anything to go by. We maintain that the explanation goes further than figures outlined in this report. We make no attempt to tease out reasons as these are analysed elsewhere. Our intention here is to merely raise questions which are explored in a qualitative report.

Paraffin appliance ownership

The ownership of paraffin appliances by the sampled households closely follows the patterns of fuel use discussed above. Figure 12 shows clearly that paraffin appliances are still unchallenged for cooking, although electricity was used more often than paraffin for lighting in Khayelitsha and Site B. It is worth noting that, unlike the paraffin expenditure discussed above, Joe Slovo, had as expected, more paraffin appliances than all the other housing units, closely followed by Langa. Khayelitsha had the least number of paraffin appliances. Again, the question is why? Why was it that the households which spent more on paraffin had the least number of appliances and those using less paraffin had more appliances?⁵

Figure 12 also shows the widespread use of flame (wick) and primus (pump) stoves with the former - although is cited as the most dangerous of the appliance in terms of use - being preferred. Again, we do not here attempt to explain the reasons that households, especially in fire-exposed areas such as Joe Slovo, preferred to use wick stoves than safer and more durable paraffin appliances such as pump stoves or a certain kind of stove called 'beatrice'.

⁵ It should be remembered that our sample of 60 households - 15 in each housing unit - is not representative. It would be very enlightening to conduct a more representative survey in these areas to determine the extent to which this phenomenon represents a regional picture.

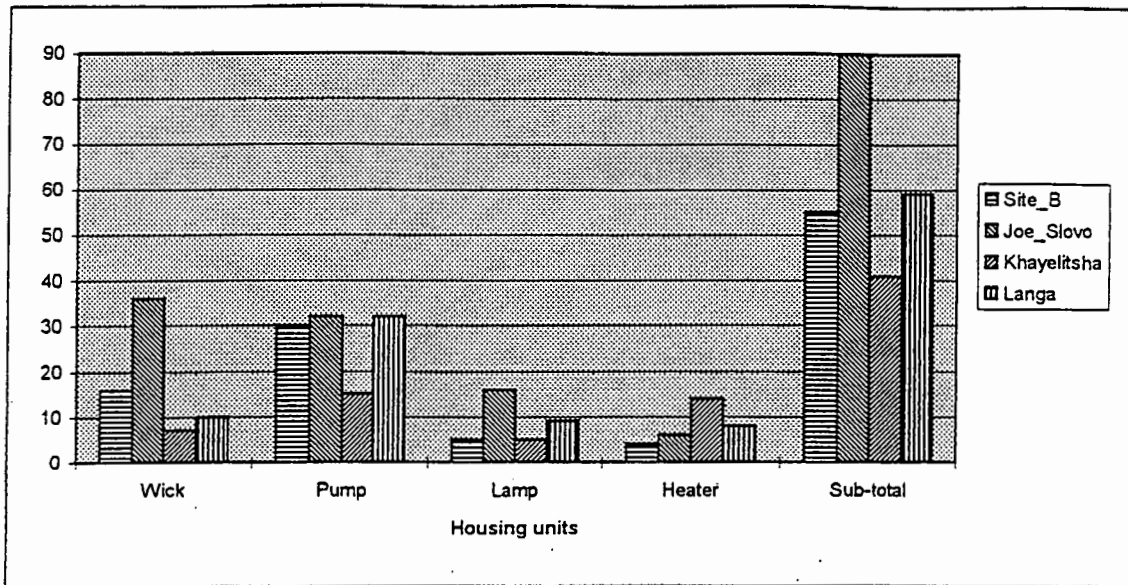


Figure 12: Paraffin appliances by end-use

One advantage of paraffin stoves, especially those used for cooking, is that they are widely available. Spaza shops - and there are multitudes of them - sold these appliances at low prices. In 1996, a popular African trading store in Langa called Nabe charged R25 for a wick stove, R60 for a pump stove and R93 for a 'beatrice' stove. Because of the low price of these appliances all of them were bought new for cash (see Figure 13).

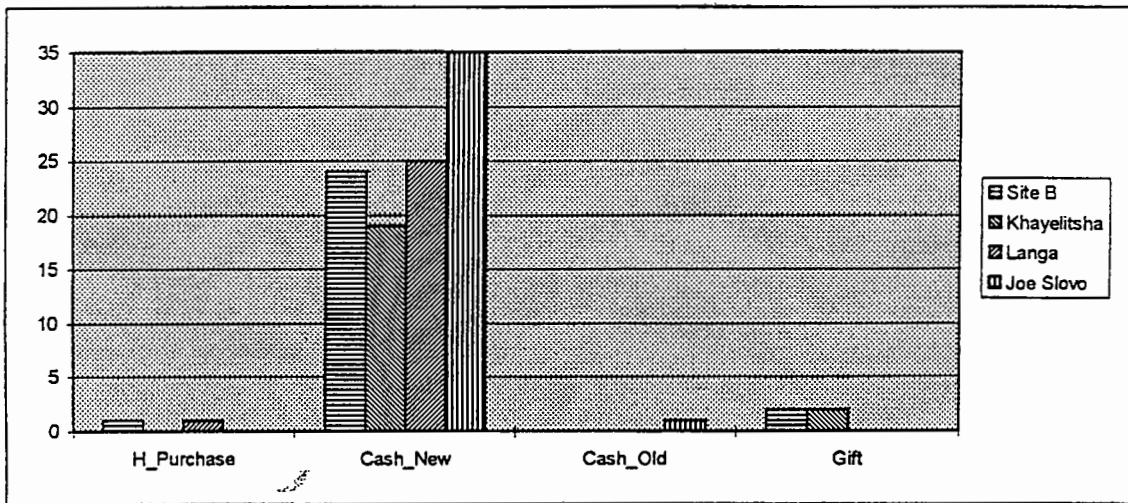


Figure 13: Methods of paraffin appliance acquisition

As paraffin stoves, especially wick stoves, were used often, their life cycle was short, and they were replaced more often than other appliances. Figure 14 shows the appliance acquisition patterns of the sample during the last six years. In Joe Slovo, between 1994 and 1996 there had been more paraffin appliances purchased, for two reasons: the settlement was established in 1994 and these households probably started then to accumulate appliances; the old appliances had to be replaced because they had aged.

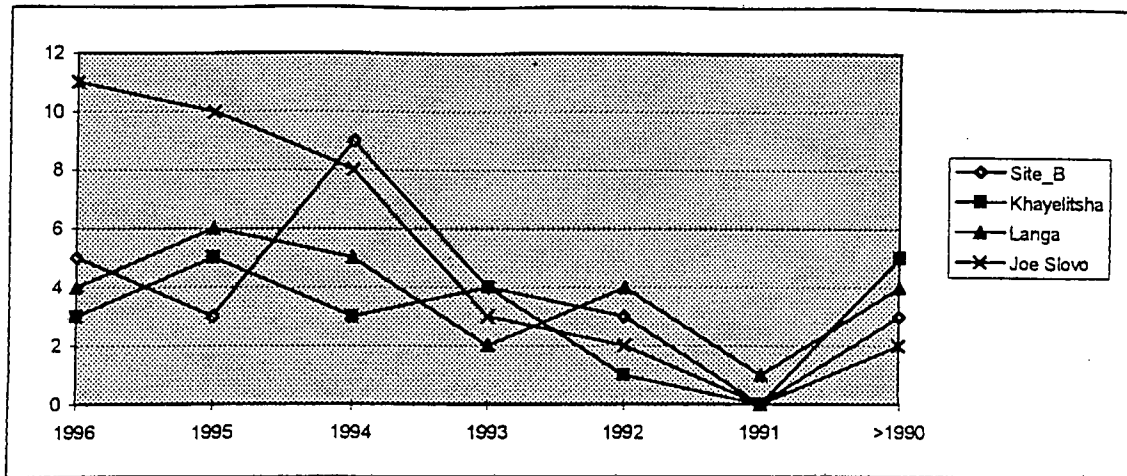


Figure 14: Paraffin appliance accumulation

It was easy to replace these paraffin appliances as they are comparative cheap. A woman in Joe Slovo bought three flame stoves in a space of three months (in each case the stove broke down).

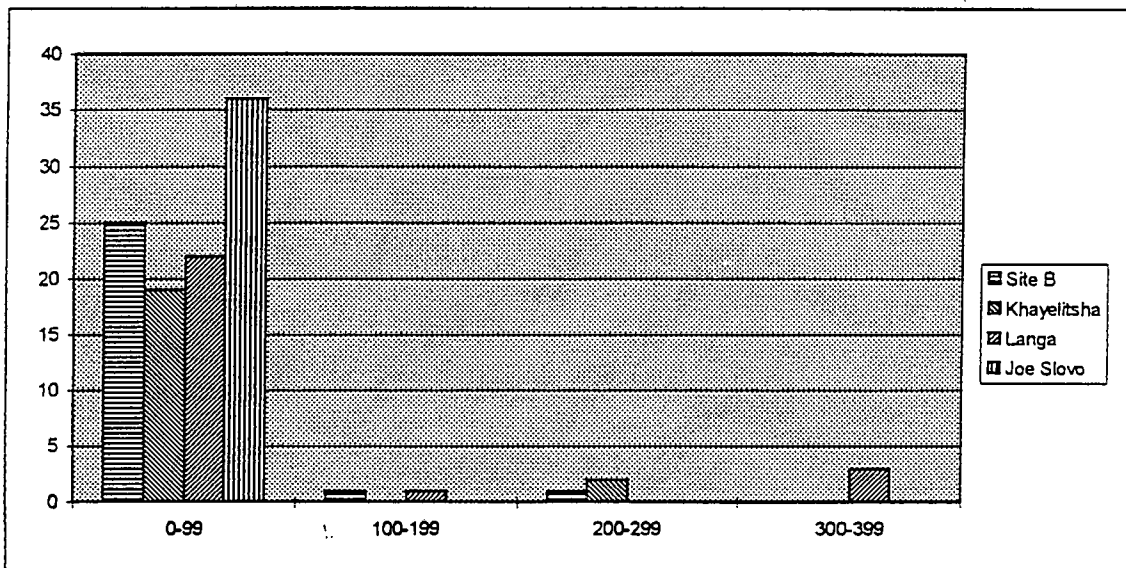


Figure 15: Cost of paraffin appliances

The only appliances that exceeded R100 were paraffin heaters, which (were also used for cooking) unlike the paraffin stoves, they were purchased on hire purchase.

Electricity use patterns

Expenditure and energy burden

One limitation of this report is that it does not give a break-down of kWh of electricity consumed by the sampled households. This absence results from households tending not to keep their electricity coupons. It is hoped that units of electricity consumed will be investigated later - based on the money these households paid for their electricity. To quantify the quantity of electricity

consumed is made more difficult by some households not paying for their electricity.⁶ Figure 16 below shows the costs of electricity in 1995 and 1996.

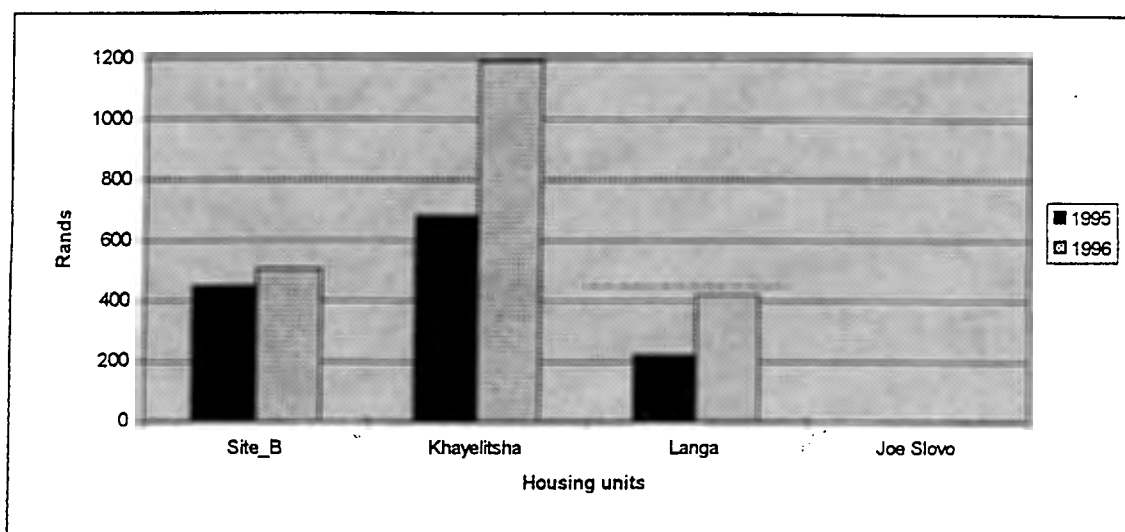


Figure 16: Comparatives costs of electricity in 1995-96

Households in Khayelitsha have argued that the increase of electricity costs was not mainly caused by the increase in its use, but by the increase of tariffs. In a workshop that we facilitated, concerns were raised about the escalating and inconsistent costs of electricity.⁷ Therefore, Figure 16 should not *only* be seen as showing increased electricity use, but showing the increase of the electricity price.

In Langa, however, the situation is different - only four backyard shacks out of 15 had access to electricity; in 1995, there were only three. We have outlined elsewhere the reasons that compel backyarders to have or not have electricity.⁸ The backyarders have little bargaining power in terms of determining the price of electricity they have to pay since they do not have separate meters.

Electrical appliance ownership

The major uses of electricity by the sampled households were for lighting and entertainment. Indeed, all the electrified households used electricity for these purposes (Figure 17), although some were using it in conjunction with other energy sources. We do not examine here why people with electricity were using other fuels for lighting. As shall be shown below, entertainment appliances such as television and hi-fis appeared to be prioritised over cooking appliances. Indeed, over the two-year period we have been conducting fieldwork, we have observed a steady accumulation of entertainment appliances by household irrespective of whether a household is electrified. Households that previously had portable black and white televisions replaced them with more expensive colour sets. One thing to note is that decisions relating to the re-purchase of television sets were not influenced by the gender of the purchaser. Women, men and children alike professed a desire to have big and colour televisions. Children would 'force' their parents into buying them.

⁶ Qase N, S Blom and AM Mehlwana. 1996. Knowledge is power: empowering households with energy information. Progress report prepared for the DME. EDRC report series, UCT.

⁷ Mehlwana AM and Qase 1997. Capacity building and energy services: interactions and service providers. Progress report prepared for the DME. EDRC report series, UCT

⁸ Mehlwana AM and Qase 1996. Social determinants of energy use in low-income in Cape Town. Report No. E09420. DME.

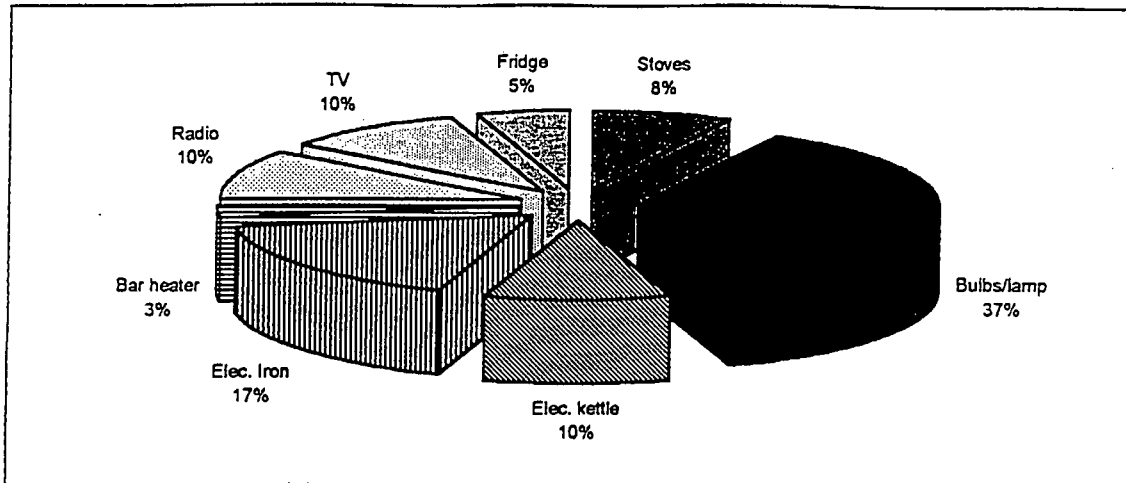


Figure 17: Percentage of electrical appliances owned by the sample (n=59)

There has been a general knowledge that electricity is not cost-effective for space-heating. Indeed, most of the existing heaters were purchased before or immediately after the electrification process. In 1996 there had been a substantial reduction of using bar heater for space heating and, indeed, in purchasing of these heaters. Those who own them used them sparingly - usually just a few hours per day. Most bar heaters were gifts.

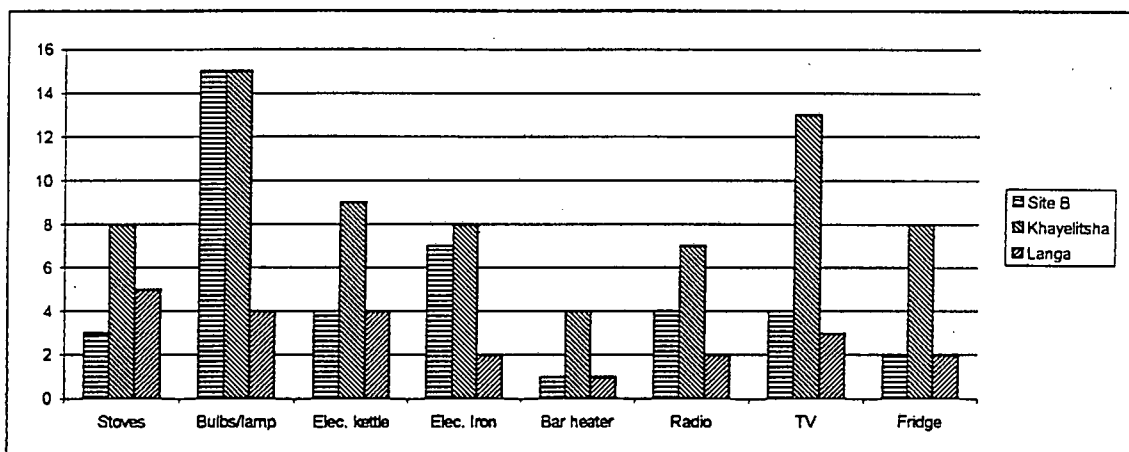


Figure 18 Number of appliance owned by the sampled households

Noticeable was the absence of the so-called 'luxury appliances' (see Figure 18) - washing machines, vacuum cleaners, geysers, and so forth. Is it because these households are poor that they are not able to buy extra appliances? Or is it because they have been recently electrified and are therefore not sufficiently accustomed to electricity use? Some households could afford these appliances but decide not to invest in them. Indeed, we have observed households who would rather buy an appliance and transport it to a household in the Eastern Cape than use it in Cape Town. Most household owners have been in Cape Town or in similar urban environments and are familiar with electricity. Even though they may not have owned houses with electricity, they must have been exposed to electricity equipment in other people's homes and in workplaces.

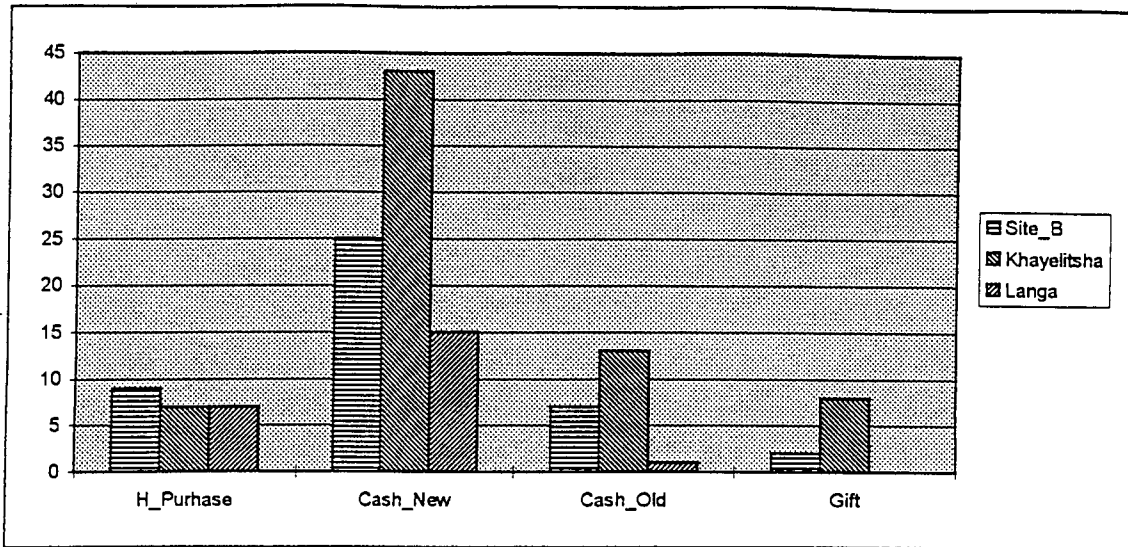


Figure 19: Methods of appliance acquisition

The more expensive an electric appliance was, the method of acquisition would change from cash to hire purchase (HP) (see Figure 19). Most large appliances such as televisions, hi-fis, refrigerators and hob/oven stoves fall in this category.

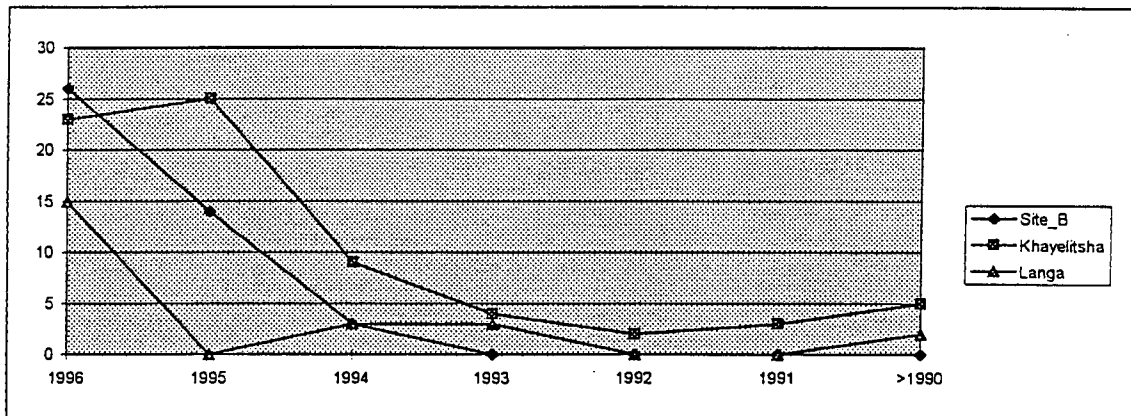


Figure 20: Appliances accumulation

It appears that there has been a steady accumulation of appliances in Khayelitsha area after the area was electrified between 1993 and 1994 (Figure 20). Indeed, the purchase of electrical appliances in Site B began in 1993, and some Khayelitsha households had accumulated electrical appliances even before the area was electrified. One possible explanation is that some of these households originated from areas which had access to electricity (for example, townships of Gugulethu and Langa). Our contention, however, is that electrical appliance acquisition is not a unilinear process. If it is read in conjunction with paraffin use patterns in these areas (see Section 3), it becomes clear that the process of *full* electrification will not be realisable in the short- to medium-term.

If one looks at the prices of the most commonly bought appliances (see Figure 21), it is noticeable that most are in the R1-R99 range. It can be deduced that these are basic appliances such as hotplates, bar heaters or other appliances bought second-hand. Again we do not explore why people opt for cheaper (and, we would argue, unreliable) appliances.

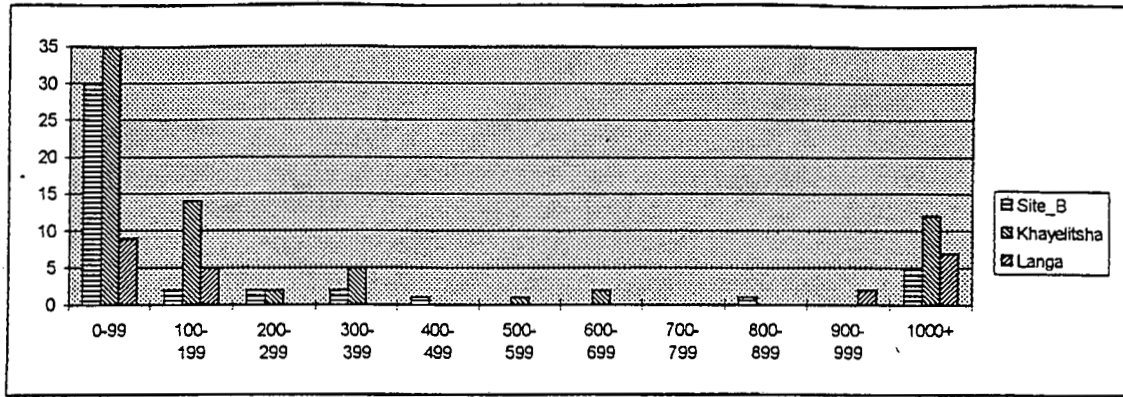


Figure 21: Cost of appliances (in Rand)

Gas use patterns

Gas expenditure

Very few households used LPG for cooking. Indeed, it appeared that the number of households using gas decreased. For instance, in Khayelitsha the use of LPG decreased from 130 kg of LPG consumed to 120 kg. Although this may not be seen as a substantial reduction of gas use, it was nevertheless a notable differences for this sample. In Site B, as well, gas use was reduced substantially, while there was an increase in other areas (see Figures 22 and 23).

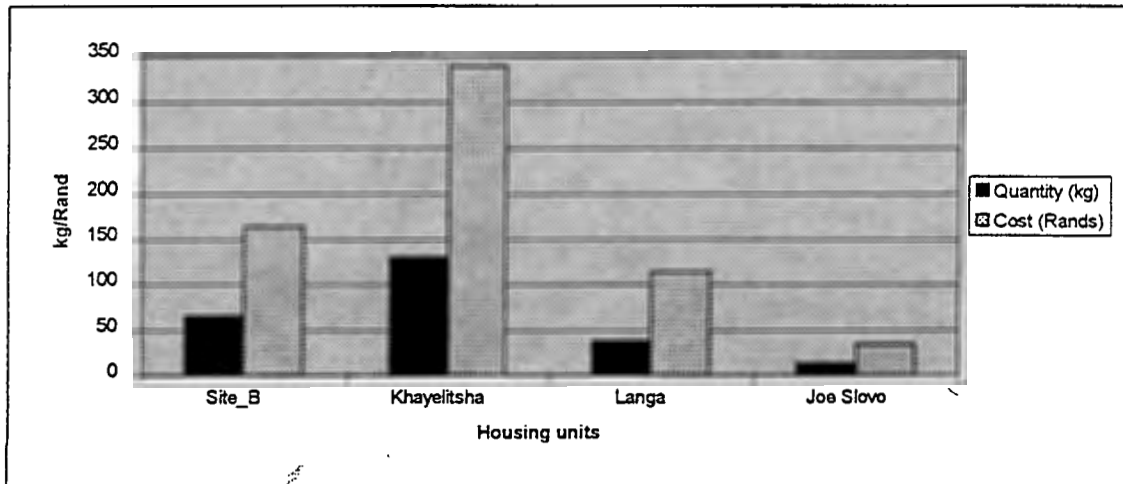


Figure 22: Amount and cost of LPG consumed per month in 1995

Electricity was partially responsible for the reduction of gas use. It would be, however, misleading to suggest that electricity was the *only* cause of this reduction because, as shown earlier, electricity use has not increased dramatically during the survey periods. Instead, we have seen the increase in paraffin use in electrified areas. Although gas prices may seem to be too high, it is notable that during our research very few people mentioned that LPG is very expensive. What then was the cause of unpopularity of gas in Site B and Khayelitsha?

During workshops in these areas safety issues of LPG seemed to be a point of concern. Households would prefer paraffin instead of gas because the latter was perceived as more dangerous, while people have 'control' of paraffin. What was also interesting is that throughout the research period none of the fires that occurred were caused by gas.

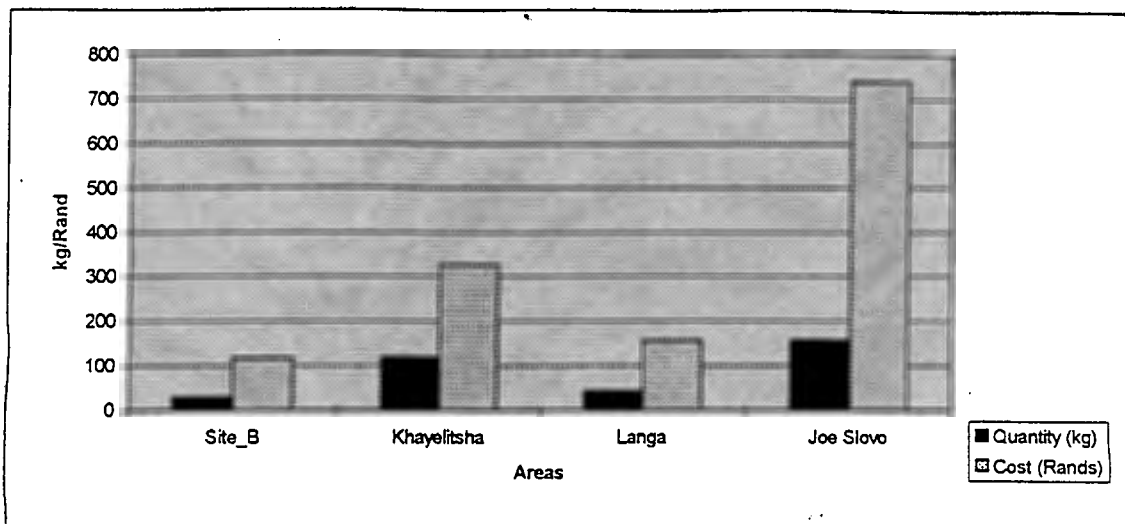


Figure 23: Amount and cost of LPG consumed per month in 1995

We have argued elsewhere⁹ that gas is a cleaner and, perhaps, a safer fuel than paraffin. In order to address people's fears and perceptions regarding gas, the following issues should be addressed: (a) its safety aspect; (b) improving its accessibility; and (c) making gas appliances available.

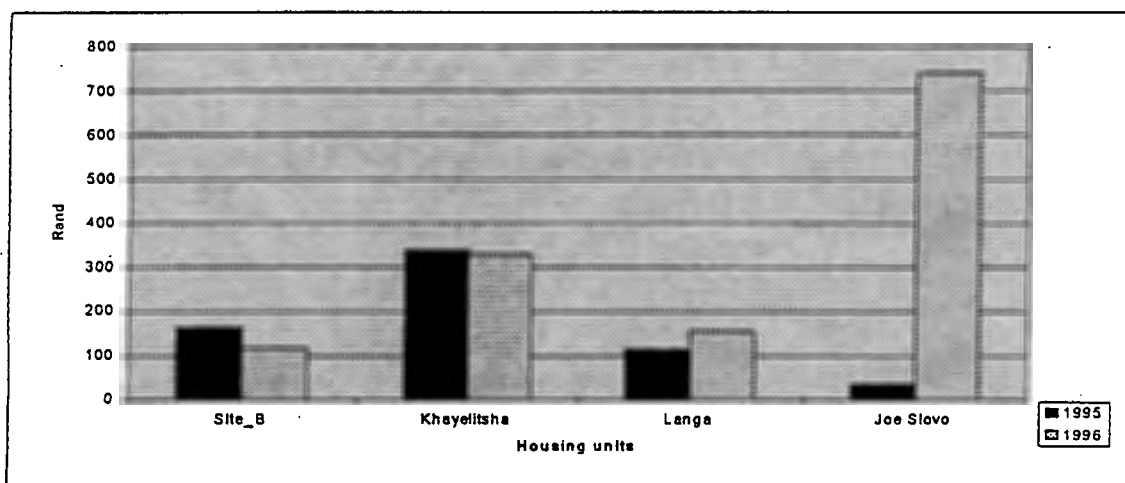


Figure 24: 1995-1996 comparative costs of LPG

There is a big market for LPG especially in places like Joe Slovo - which, incidentally, was the only sample area which showed increase gas use (see Figure 24). The safety of gas, heaviness and also its few retail outlets in the area were the major concerns. A significant number of the sampled households in Joe Slovo were owned by women and they found it a laborious task to carry large gas canisters to hawkers to be refilled. The problem relating to gas appliances, which are not easily available, was also a major issue. The latter point is discussed below.

Appliances

While it could be seen from gas expenditure that households in Joe Slovo spent more on and consumed more LPG than households in other settlements, it is worth noting that this did not

⁹ Mehlwana AM and Qase N 1997. op.cit.

translate into the number of appliances owned. According to Figure 25, there were more gas appliances in Khayelitsha than in Joe Slovo or any other area, although these Khayelitsha households owned these gas appliances (which are mostly gas plates), they were not using them frequently. Since there was more multiple fuel use in Khayelitsha, gas hobs were used mostly for back-up. It would take a longer time for a household to refill its canister than in Joe Slovo or Langa. In the case of the latter settlements, gas was used as the main fuel for cooking.

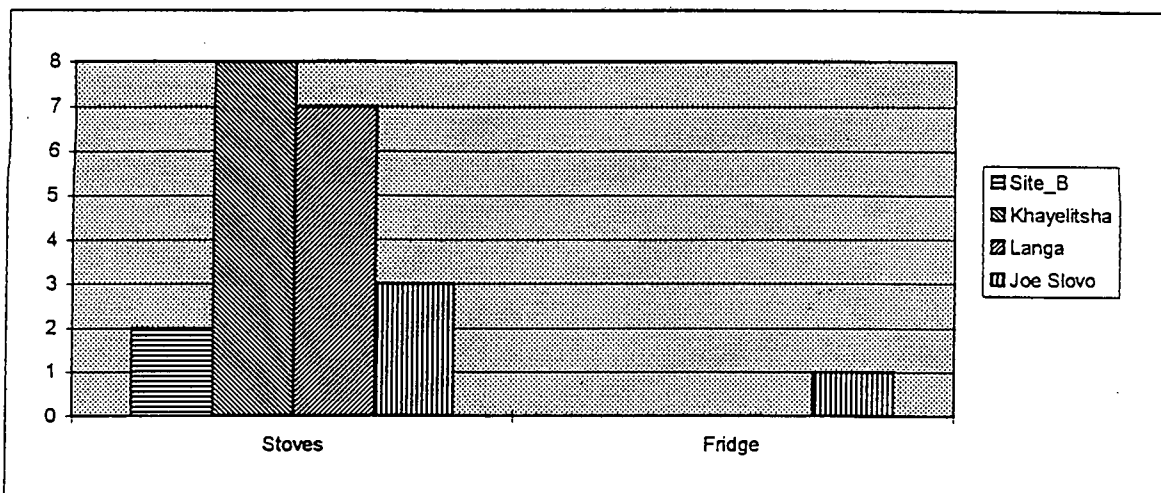


Figure 25: Gas appliances of the sampled households

Since these gas appliances were simple gas plates, they were not expensive - which compares favourably to paraffin stoves. Households who could afford gas bought its appliances for cash. It is also noticeable that some of gas appliances were hand-down appliances - given to households as gifts from relatives or friends who have discontinued using gas. What is also important to highlight is the fact that only one household, in the sample of 60, used gas for purposes other than cooking - like refrigeration, lighting or space-heating.

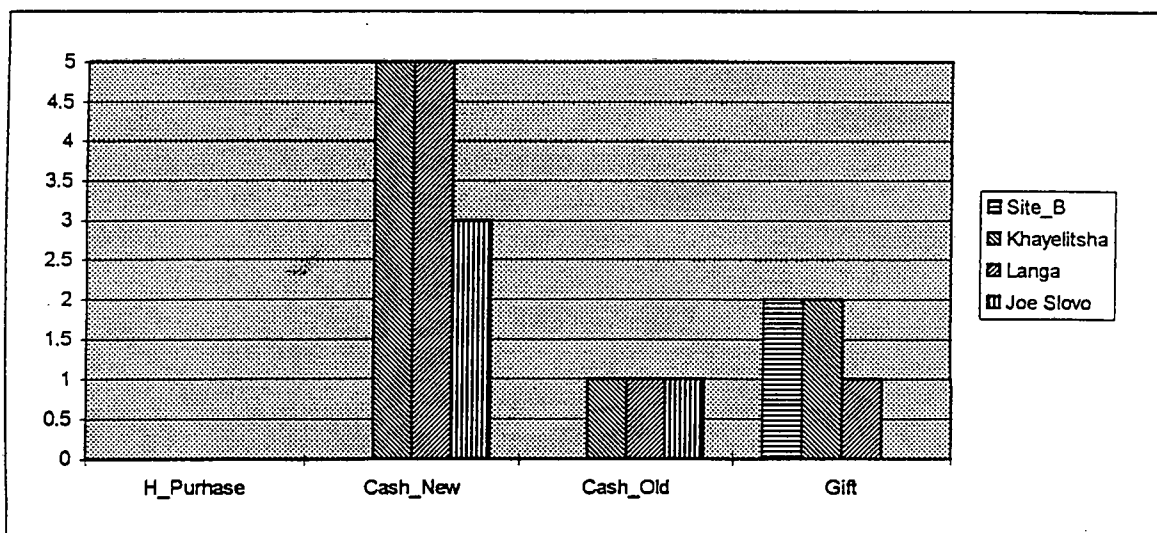


Figure 26: Methods of gas appliance acquisition

There was not a definite pattern of gas appliance accumulation by the sampled households. What was most noticeable, however, was that before electrification, there were more gas appliances in Khayelitsha, and in 1996 there were no gas appliances bought (Figure 27). Households in

Khayelitsha were beginning to invest in electric stoves while keeping their gas stoves for emergency purposes and as a back-up to save on electricity.

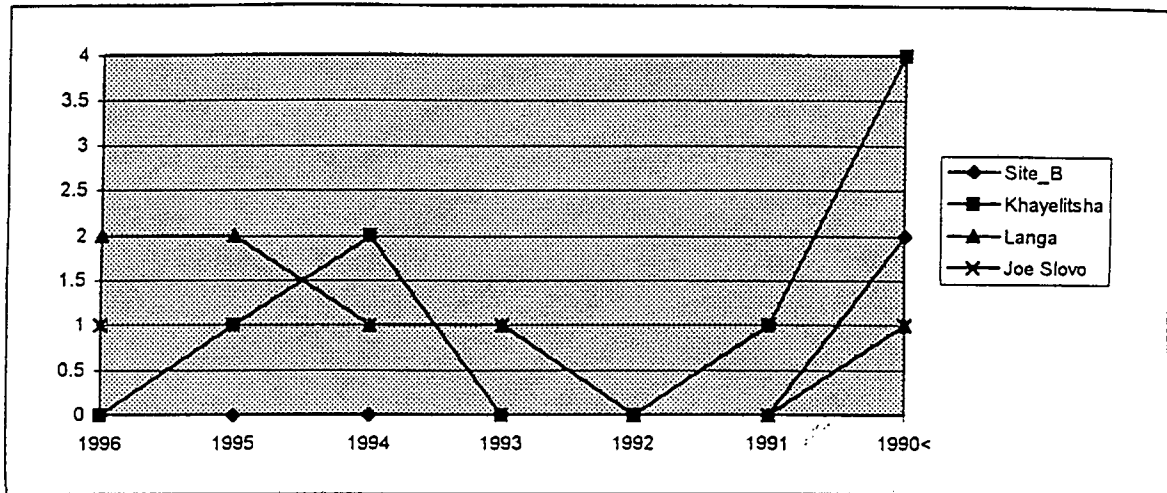


Figure 27: Dates of appliance purchase

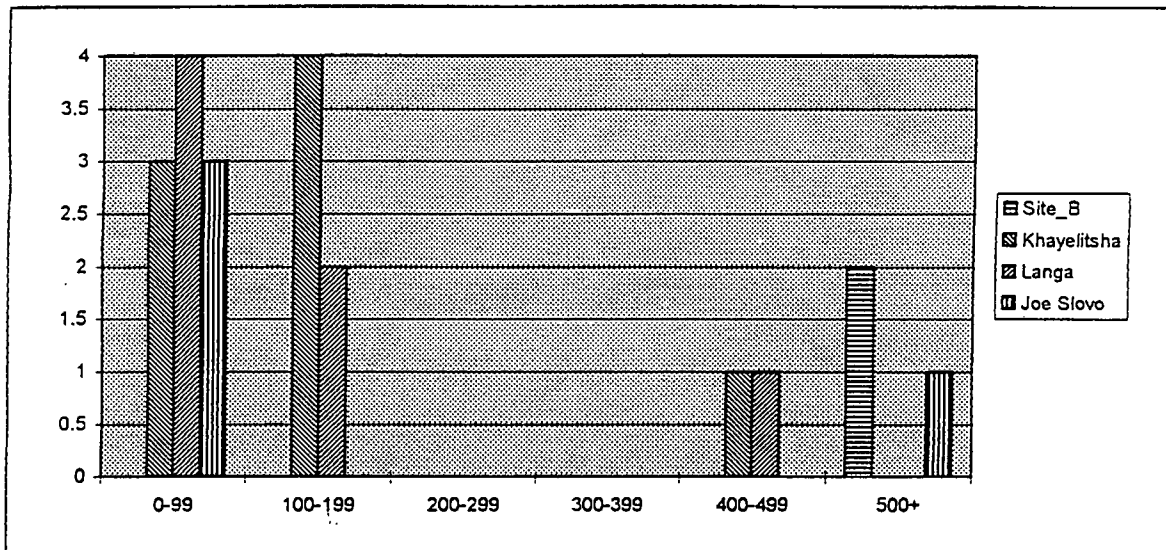


Figure 28: Cost of appliances

We had not come across any household which used gas for all its cooking requirements in 1996. In 1995, we reported only one household which used gas for all its cooking, and that was in Khayelitsha.¹⁰ This leads us to believe that LPG is not taken very seriously by many households to perform all its cooking (and even thermal and lighting) needs. Some in-depth research need to be undertaken to understand the gas-use patterns by poor households with the view of promoting its use.

Battery use patterns

Dry-cell batteries are used by most of the sampled households - indeed all four housing types used them to power transistor radios or hi-fis (Figures 29 and 30). Car batteries, on the other hand, were used mostly by households without electricity (Figures 32 and 33). It was therefore surprising

¹⁰ see Mehlwana AM & Qase N 1996. Op. cit.

to discover two households in Site B still using car batteries for televisions. In areas like Joe Slovo, most people were in during the day and were inclined to use more dry-cells (see Figure 31).

We have noticed a pattern in the use of dry-cells. In Khayelitsha - where there is a relatively higher consumption of electricity - dry-cells were used less. This suggests that electricity is used more for entertainment (radio and television) than for cooking (electricity is used more for lighting).

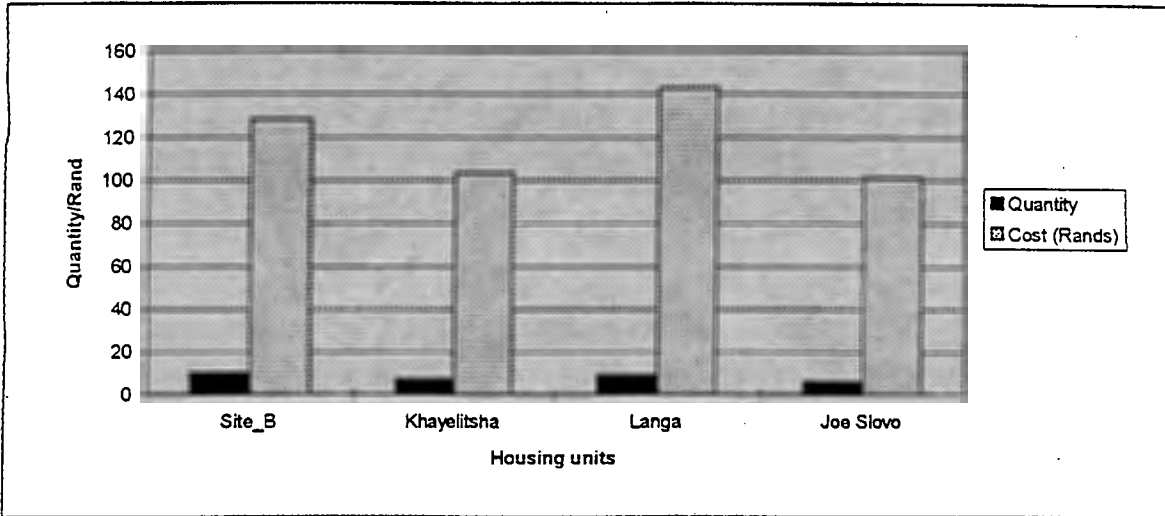


Figure 29: Expenditure on dry-cell batteries in 1995

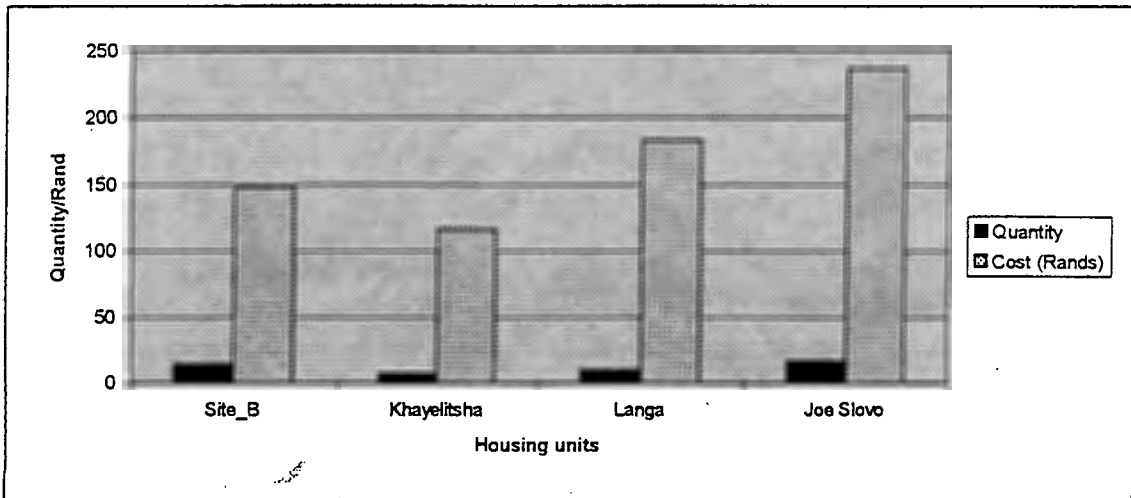


Figure 30: Expenditure on dry-cell batteries in 1996

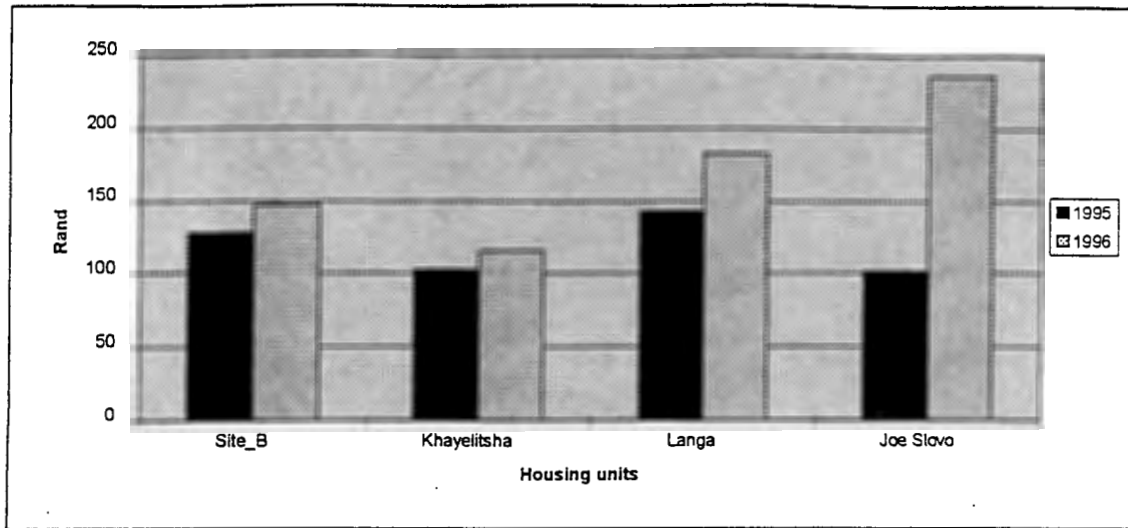


Figure 31: 1995-1996 comparative costs of dry-cell batteries

It seems that in all settlements, there has been an escalating cost of dry-cells. This, however, should not be seen as meaning an increased use of these batteries. Looking at both Figure 29 and 30, it is noticeable that the quantities of dry-cells used were decreased in 1996 (although this reduction is not compensated by the reduction of costs).

The use of car batteries was not as widespread as the use of dry-cells. The car batteries were used mostly to power small televisions. Indeed, as shall be shown later, there were very few households in Joe Slovo that did not have television. In Langa, there was a high number of households which did not own appliances that use car batteries. Indeed, Figures 32 and 33 look identical, with the exception of dry-cell battery use in Site B. There are three reasons that discourages car battery use:

- These batteries are expensive to buy and maintain. The periodic fees to have them re-charged were more than some households could afford. It cost R5 to recharge a battery which would last for three days (if used sparingly) or even as little as a few hours.
- The service stations where these batteries are recharged were very far. To go and recharge a battery in Joe Slovo entailed crossing a dangerous highway to the 'coloured' locations. Besides the long distance, these batteries are difficult to carry.
- The last reason is the appliances using this fuel. Televisions, as shown below, are very expensive.

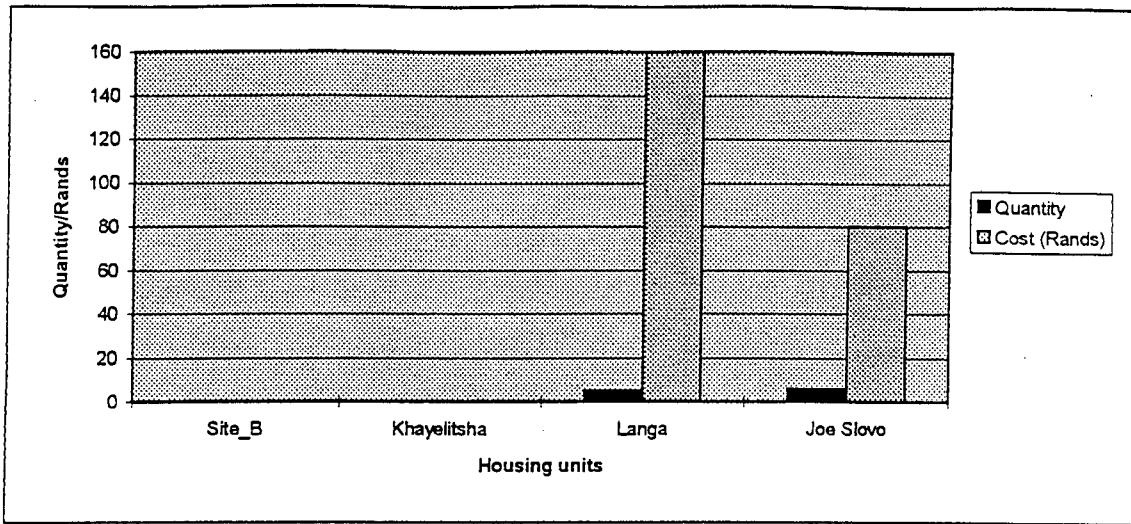


Figure 32: Car battery recharge costs per month (1995)

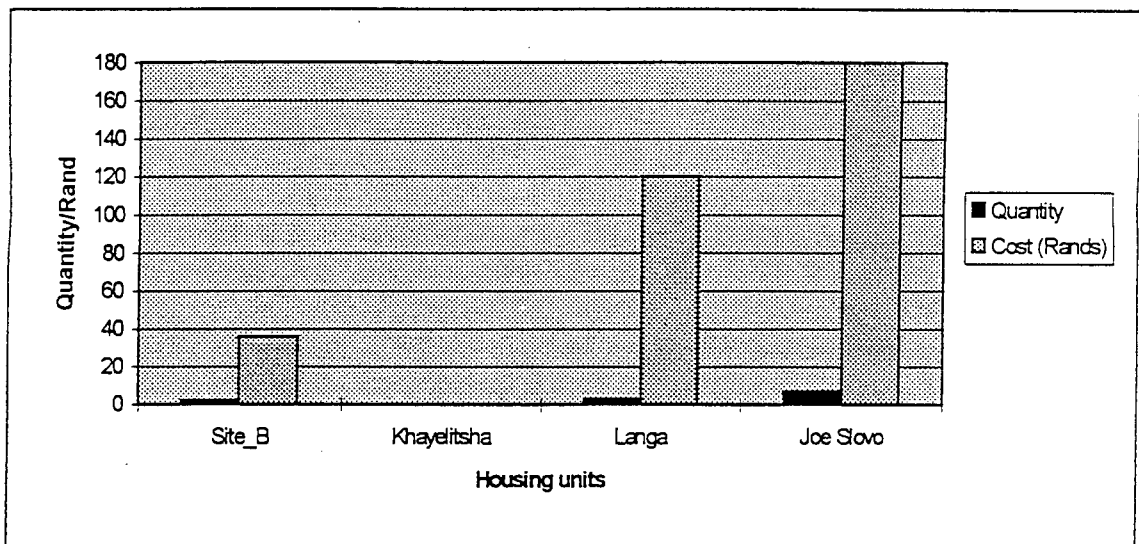


Figure 33: Car battery recharge costs per month (1996)

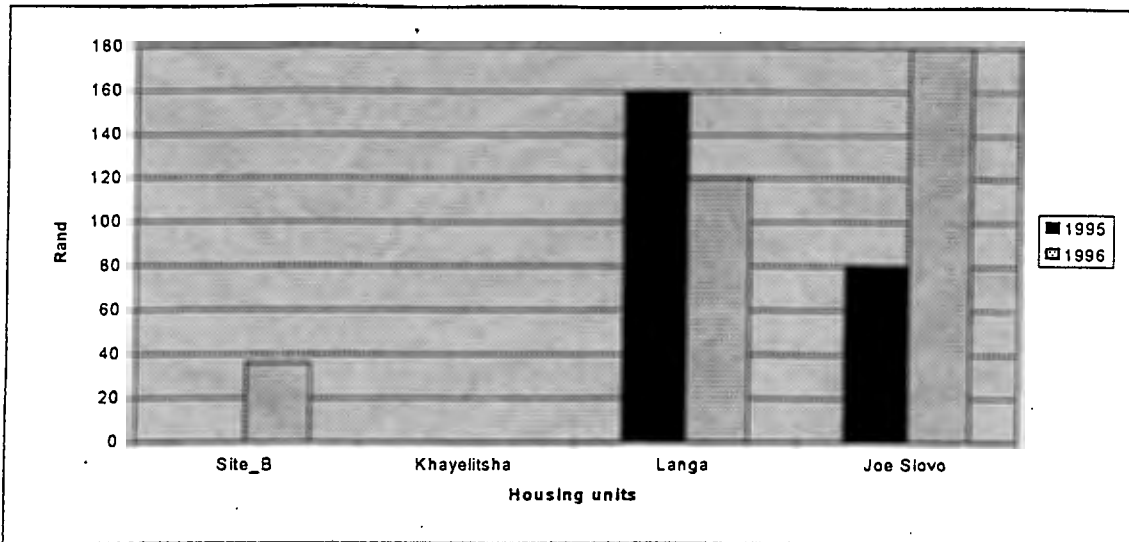


Figure 34: 1995-1996 comparative costs of car batteries

Appliances

We stated above that the major use of dry-cell batteries was to power radios, and that of car batteries was to power televisions. Radios were in the R40-R99 range (Figure 38 below), and most households could afford them. When radios became sophisticated (e.g. radio and tape), the buying pattern also changed to HP (Figure 36). We have seen that a significant number of households got their radios as gifts. In terms of the date of purchase and because of their relative durability, most had been bought a long time ago.

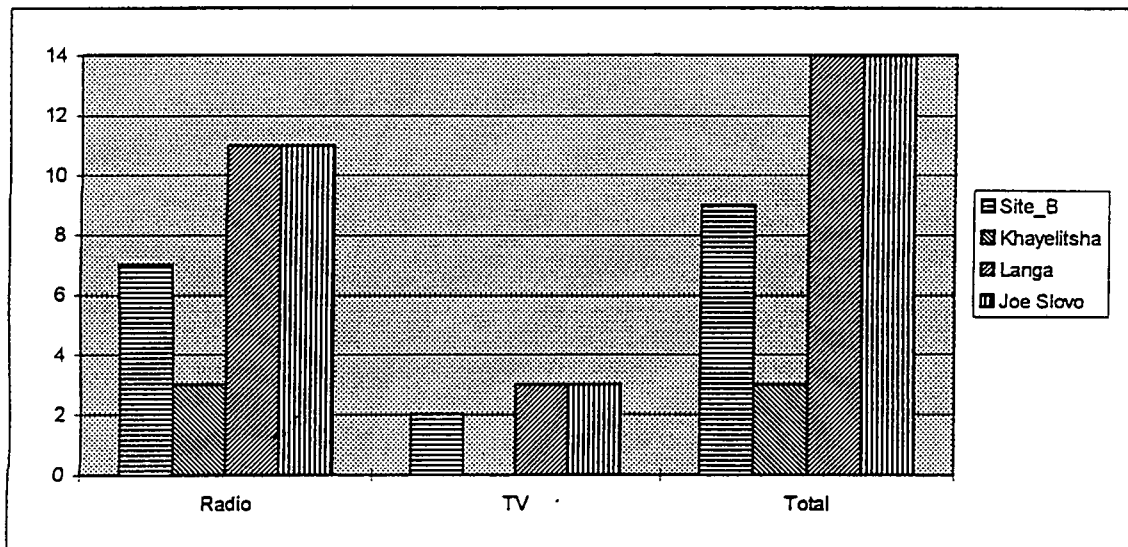


Figure 35: Number of appliances using dry-cell and car batteries

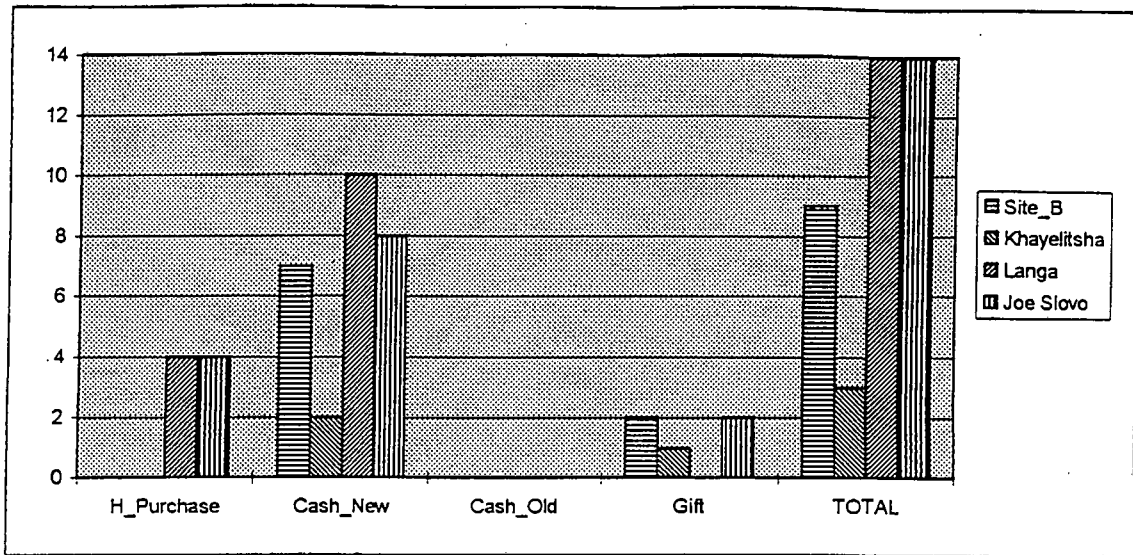


Figure 36 Method of appliance acquisition

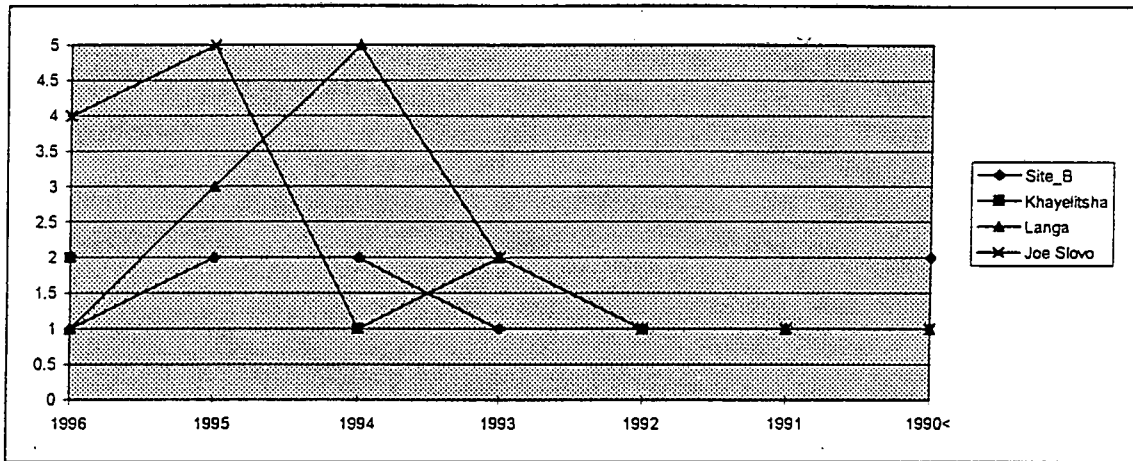


Figure 37: Dates of appliance acquisition

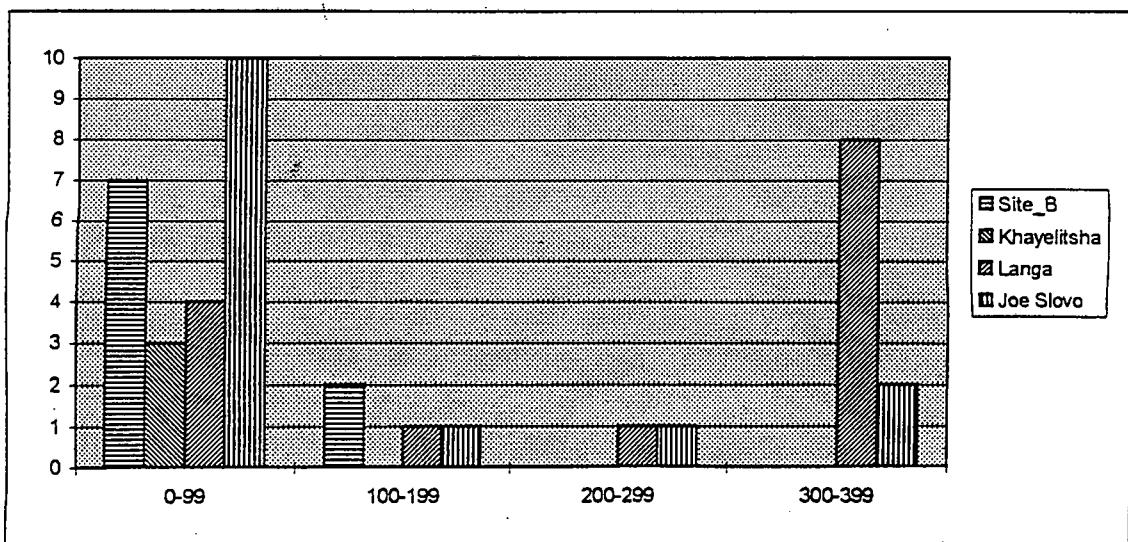


Figure 38: Cost of appliances

Summary of the report

What has been central in this report is the continued use of paraffin. In order to understand how and why so many households use this fuel, it is best to adopt a holistic outlook. There can be no single explanation for appliance use. Figure 39 shows that 42% of our sample of 60 households use paraffin. This point is augmented by many energy surveys conducted in their region and beyond. We have also shown above the increase of paraffin between 1995 and 1996 in all settlement types irrespective of electrification.

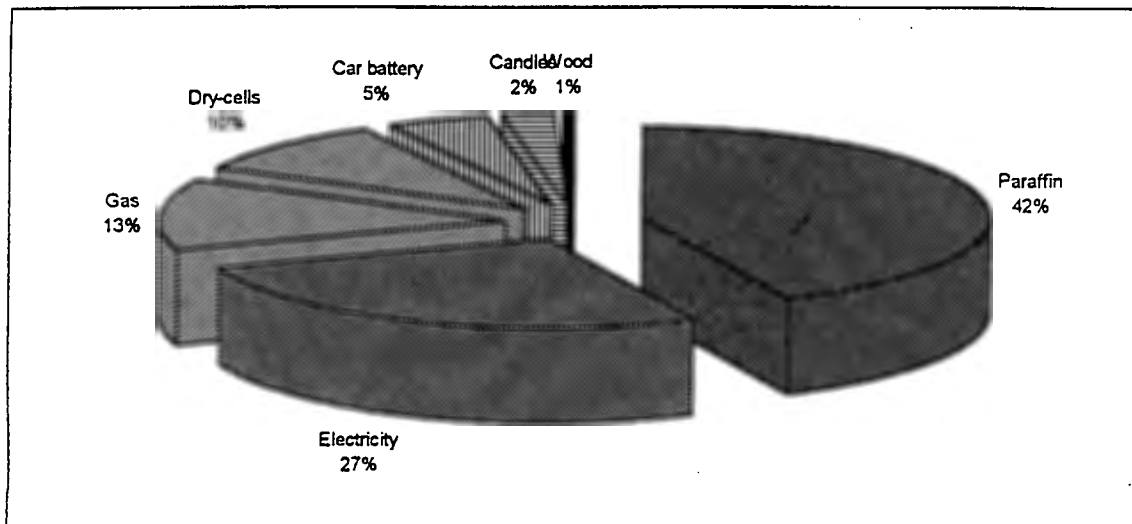


Figure 39 Percentages of fuels used by the sampled households

It is also important to note that we should not reject the transitional model out of hand as irrelevant, short-sighted and one-dimensional. Perhaps, if one looks at the Khayelitsha situation, one can see that it fits the transitional model in many ways. In Khayelitsha, households paid about R700 in 1995 and increased their electricity expenditure to about R1200 in 1996 (Figures 39 and 40).

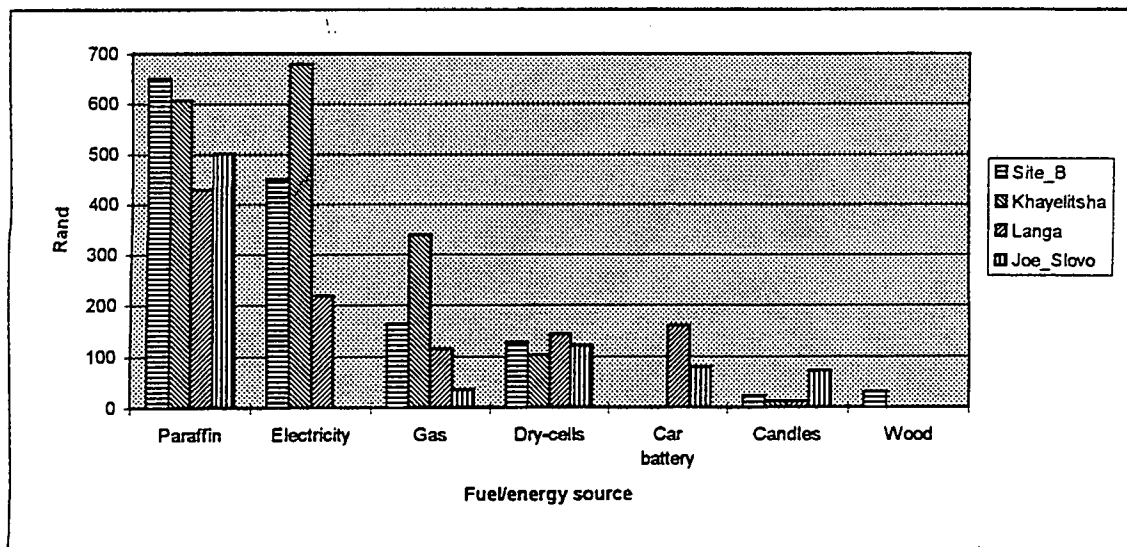


Figure 40: Energy expenditure in real terms (1995)

Although this can be seen as a classic case of transition to full electricity, it should be noted that these households did not reduce their paraffin intake.

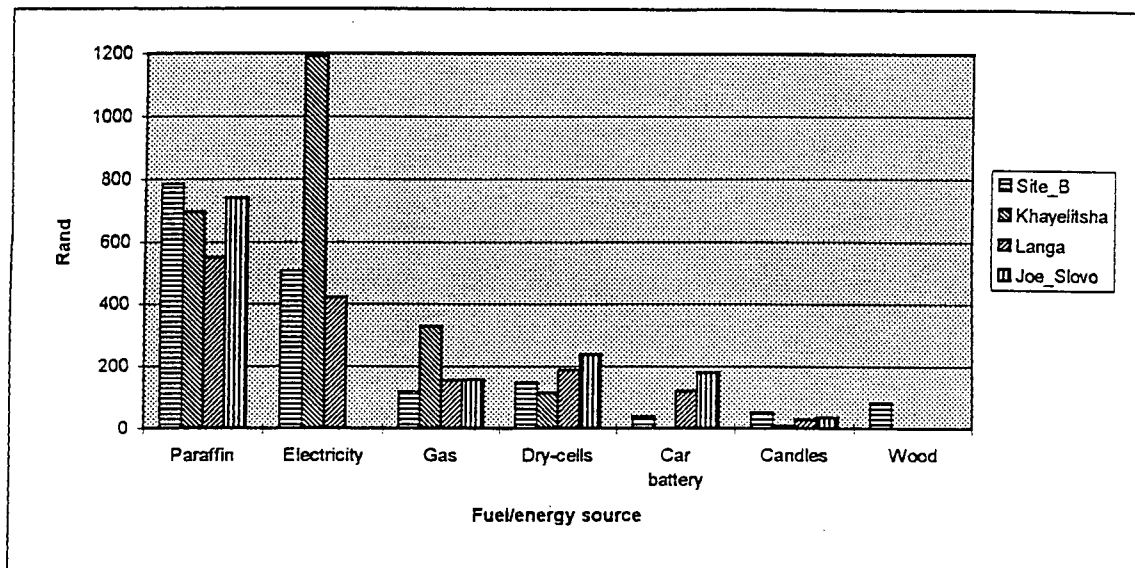


Figure 41: Energy expenditure in real terms (1996)

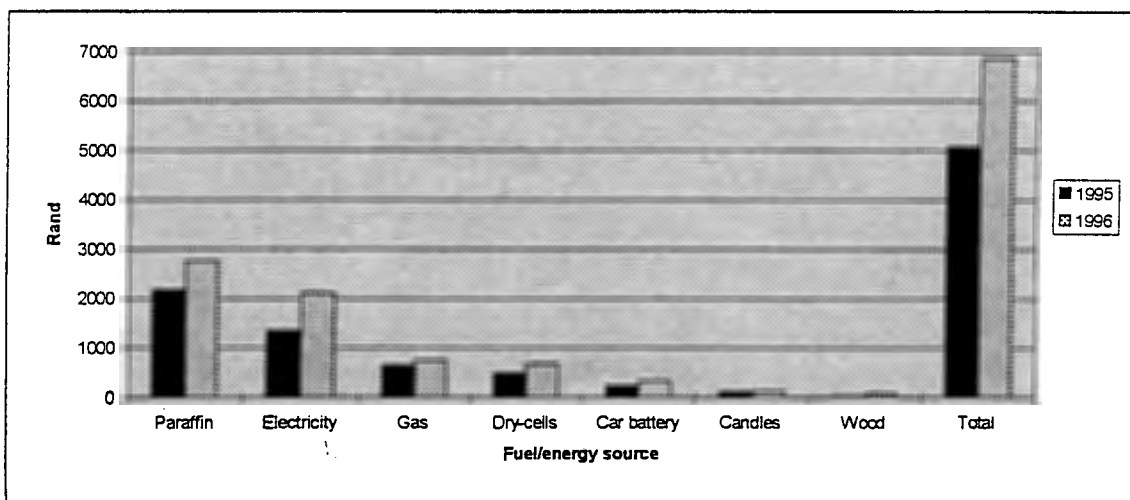
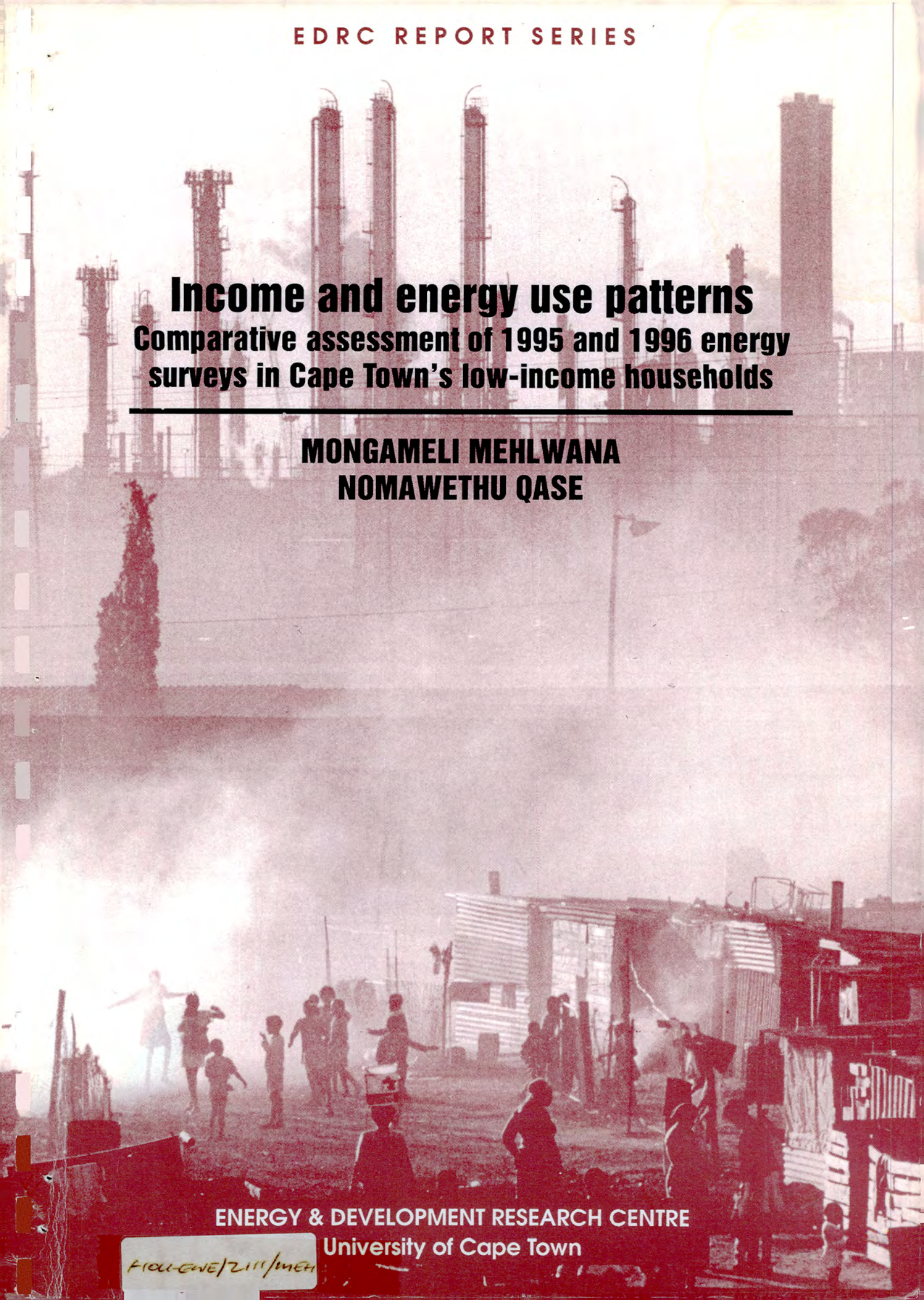


Figure 42: 1995-96 expenditure on fuels

Another point to note is the use of gas by the sampled households. Although many surveys on energy use suggest that the Western Cape has a high number of gas users, our samples showed a mere 13% of gas users. We also noticed that, in areas which traditionally used gas, like Khayelitsha, there has been a decrease in numbers of households using gas. Maybe this is not indicative of the general regional context, as our sample was not representative.

Other points that need to be alluded to concern the use of wood and candles. These fuels, as the figures above attest, were not used frequently. In the case of wood, only Site B used it - mostly for income-generating activities. Woodland is relatively nearer to Site B than other areas (although women claimed to travel more than three hours to and from the wood areas). Candles were seen by most households in the sample as 'emergency fuels' as they were used when there is an electricity shut-off (Site B and Khayelitsha), when the paraffin stove's glass cover was broken, or in a room with no readyboard.



Income and energy use patterns
Comparative assessment of 1995 and 1996 energy surveys in Cape Town's low-income households

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