

CHAPTER SIX

COSTS AND BENEFITS OF THE ELECTRIFICATION OF THE KATLEHONG TOWNSHIP

- 6.1 INTRODUCTION**
 - 6.1.1 HOUSING**
 - 6.1.2 SEWERAGE AND OTHER RUBBISH DISPOSAL**
 - 6.1.3 QUALITY OF LIFE**

- 6.2 MAIN SOCIO-ECONOMIC FEATURES OF KATLEHONG**
 - 6.2.1 PUBLIC FACILITIES**
 - 6.2.2 THE KATLEHONG SURVEY**
 - 6.2.3 EMPIRICAL RESULTS OF THE SURVEY**
 - 6.2.4 FINDINGS OF THE SURVEY**

- 6.3 CONCLUSION**

6.1 INTRODUCTION

Katlehong township is characterised by an air of desperation and uncertainty and a culture of poverty. Residents lack most essential services and amenities. They are the product of both population growth and old government policy which halted the provision of electricity supply with every newly erected house. This chapter tries to bring to the fore the extent of the scarcity of basic necessities of life and limited access by the poor to these necessities of life. The problem of homelessness, a problem that has become especially acute since the lifting of restrictions on migration from designated homelands, has resulted in a greater demand for services and amenities and all these problems has a direct bearing on township electricity supply. A demand for houses also creates a demand for energy in order to cook, light and also to perform all household chores.

Paul Streeten (1985:31), one of the originators of the 'basic needs' approach to poverty, makes the point that the least disagreeable feature of the voyage from Britain to a camp in Canada was the cramped space. As a result he has never regarded housing as quite so basic a need as food, water or sanitation. In South Africa, this view seems, at first glance, to have been confirmed when looking at an urban residential township of Katlehong, which is overcrowded and the majority of residents do not have electricity and have to rely mainly on wood, the availability of which varies widely.

In the Hlahatse section of Katlehong, where there is no electricity, paraffin is the standard fuel used by everybody, but more than a third of the households also burn wood, most of which they collect themselves. Indeed these city dwellers consume five times as much wood per person as do the 'rural' inhabitants (Wilson and Ramphele 1989:80). Another dimension of the problem of fuel was shown by a study of energy and poverty in Soweto, where Eberhard found that fuel for cooking, heating and lighting often costs more per unit of energy for the poor than it does for those who are better off (Eberhard 1986a:12). In Eden Park, a coloured township adjacent to Katlehong, those households wealthy enough to afford the connection fee for electricity, spent on average R25 per month on energy. Poorer households that had to use paraffin and candles, incurred running costs nearly three times as high - R75 per month. Rivett-Carnac (1979:158) have found the same results in Umlazi outside Durban, where households without electricity spent more than twice as much (R42 per month) on fuel as did those better-off households in the same township who spent only R18. This conclusion was furthermore confirmed by even starker findings in a later survey by Eberhard (1986:9). The question about fuel, as Gandar (1986:13) has pointed out, is not whether the poor can afford electricity in South Africa but whether they can afford not to have it.

Indeed, given the ecological consequences of the 'relentless search for fuel' by people without electricity, the real

question surely is whether the country as a whole can possibly afford not to ensure that everybody has access to it.

Table 6.1 presents thirteen townships within the Pretoria-Witwatersrand-Vereeniging (PWV) area and their accesses to services provided by their respective municipal services. The table also tries to bring to the fore the extent of the need for basic necessities in Katlehong.

Table 6.1: The provision of basic services in certain PWV townships, 1990/1991

| AREA | ELECTRI-CITY | WATER | SEWERAGE | ROADS |
|---------------|--------------|-------|--------------|--------------|
| ALEXANDRA | 10% | 1% | BUCKET-BORNE | 3KM TARRED |
| ATTRIDGEVILLE | 100% | 100% | WATER-BORNE | 75KM TARRED |
| BEKKERSDAL | 1.2% | 100% | BUCKET-BORNE | 3.5KM TARRED |
| DAVEYTON | 90% | 100% | WATER-BORNE | 60KM TARRED |
| DUDUZA | 10% | 100% | 66,7% WATER | 10KM TARRED |
| EVATON | 9% | 15% | 15% BUCKET-B | 30KM TARRED |
| IMPUMELELO | 1% | 100% | WATER-BORNE | 1KM TARRED |
| KAGISO | 10% | 100% | WATER-BORNE | 65KM TARRED |
| KATLEHONG | 40% | 100% | 50% WATER-B | 7KM TARRED |
| RATANDA | 48% | 100% | 10% WATER-B | 12KM TARRED |
| THOKOZA | 70% | 100% | 60% WATER-B | 42KM TARRED |
| TSAKANE | 5% | 100% | BUCKET-BORNE | 25KM TARRED |
| VOSLOORUS | 100% | 100% | WATER-BORNE | 50KM TARRED |

SOURCE: URBAN FOUNDATION 1990 a: 134

Against this background, the general living conditions in the different urban residential townships of the PWV can be further highlighted with reference to:

6.1.1 Housing

6.1.2 Sewerage and other rubbish disposal; and

6.1.3 Quality of life

These three dimensions are important as they directly relate to the electrification process. For example, it would be useful to know the total number of housing units in the PWV area, number of residents per housing units, number of shacks and shortages. This has a direct bearing on the costs and benefits of electrification as they serve as the measure of the standard of living of the particular area.

6.1.1 Housing

One of the most striking features noticed during the period 1989 to 1992 when conducting interviews was the extent to which research workers were surprised about overcrowding and inadequate housing conditions generally, and backed up their objective descriptions with assessments by people themselves as to what they thought about it all. A typical example is the case of aunt Laura, aged 52, who has been living in the small shack at Katlehong all her life. She lives with her bedridden mother and her brother who receives a disability grant because

he suffers from tuberculosis. The mother receives a pension. Aunt Laura does not work because she has to look after her mother. Before the family moved to where they are now living, they were lodgers in a two-roomed house. They moved because the house was overcrowded. There were seven adults and six children staying in the two-roomed house. The mother, brother, and aunt Laura all sleep in one room. They have to sleep head-to-toe because there is not enough space. If people are living like this, then they lose respect of each other. The absence of privacy for married couples, the need for space for children to play, the impossibility of having visitors, are all part of the pain, quite explicitly felt by those enduring a dimension of poverty that is to be found across the length and breadth of the Pretoria-Witwatersrand-Vereeniging area. The extent of overcrowding is overwhelming, particularly on the Reef.

On the Witwatersrand, excluding the densely settled homeland area of Winterveld, north of Pretoria, there was an estimated shortage of 150 000 houses. In Soweto alone the estimated shortage in 1988 was 50 000 houses and growing at a rate of 4 000 per year, whilst over the previous seven years an average of only 1100 houses per year had been built (Central Statistics Services 1988:42).

6.1.2 Sewerage and other rubbish disposal

One of the most unpleasant aspects of poor housing in the Reef area relates to sewerage and removal of garbage. Evidence was presented to the conference of the Carnegie inquiry from all corners of the Pretoria-Witwatersrand-Vaal townships about the chronic failure of local authorities to plan an appropriate infrastructure for the dense concentrations of working - class people (Wilson & Ramphele 1989:205).

In greater Soweto, the outbreak of a measles epidemic which claimed the lives of nearly 300 children in 1982/3, led to the appointment of a special committee to investigate the conditions, particularly in the squatter area on the edge of the city. There, the investigation found an overflow and random dumping of sewerage from the pit latrines which were still being used. A bucket system is now provided in some areas, but, according to residents, they still need pit latrines because collection is inadequate (Wilson and Ramphele 1989:71).

In Alexandra, on the Witwatersrand, a report for the Carnegie inquiry described sewerage flowing in the streets as a result of the overloading of the existing bucket system. The report also drew attention to the 'uninviting bad odour' in consequence.

On the other side of Johannesburg in the Mapetla hostels, there are three toilet pans for a block housing 544 people - one more statistic that the eye slides over without registering anything, an average of 180 people needing to use one toilet in a densely settled city environment. Small wonder that conditions become squalid and people get angry (Wilson and Ramphele 1989:102).

6.1.3 Quality of life

At first glance, living standards seem to have improved dramatically. In Soweto, for example between 1962 and 1982, the proportion of african households with an income less than R2000 a year (measured in constant 1982 prices) halved from 42 per cent to 21 per cent. At the other end of the spectrum, the proportion of households with an annual income of more than R4500, more than quadrupled from 7 per cent to 33 per cent. These figures exaggerated, to some extent, the changes that have taken place (Wilson & Ramphele 1989:102). Over the same period african households became much bigger as a result of the lack of housing, which compelled many families to 'double up' as one household. Nevertheless, the figures do reflect significant improvements that took place over two decades but particularly during the first half of the 1980s. Despite this, however, poverty remains endemic in the area. After a careful survey of nearly twenty studies undertaken in the PWV between 1982 - 1988, Pillay concluded:

PAGE 129 NOT RECEIVED

TABLE 6.2: Household demand patterns of different South African groups, 1985

| Percentage of group's household expenditure | | | | | |
|---|---------|---------|-----------|--------|-------------|
| Metropolitan areas | | | | | Home-lands: |
| | Whites | Indians | Coloureds | Blacks | Blacks |
| Food | 13,2 | 23,0 | 26,3 | 30,3 | 41,4 |
| Clothing & footwear | 3,2 | 5,5 | 5,9 | 8,1 | 10,2 |
| Housing and electricity | 20,5 | 22,7 | 19,1 | 10,5 | 5,1 |
| Fuel and light | 0,1 | 0,4 | 0,4 | 1,4 | 4,4 |
| Household equipment | 3,5 | 4,8 | 4,7 | 5,3 | 7,8 |
| Recreation and entertainment | 1,7 | 1,1 | 1,0 | 0,6 | 0,3 |
| Communication | 1,1 | 1,7 | 2,7 | 1,4 | 0,4 |
| Average annual expenditure/person | R11 140 | R3 914 | R2 400 | R2400 | - |

SOURCES:

Bureau of Market Research. 1988A. Household expenditure in the National States and TBVC countries, 1985. Research report no 145. Pretoria: Bureau of Market Research, University of South Africa, P.14, Table 2.3. Bureau of Market Research. 1989A. A comparison of the income and expenditure patterns of metropolitan households in the RSA, 1985. Research report no 159. Pretoria: Bureau of Market Research, University of South Africa, P.42, Table 3.13 & Appendix A.

Unfortunately, electricity expenditure is not presented separately in the Bureau of Market Research reports; it is nevertheless very instructive to consider the breakdown of the total expenditure on fuel and light (Table 6.3).

Gas, coal, wood and paraffin are shown to be the most important commercial forms of energy amongst blacks in the metropolitan regions. Coal and paraffin are most important; as will be shown below, there is a paraffin dominance in areas where coal is not freely or cheaply available.

Apart from charcoal and furnace oil - black expenditures dominate all the categories of fuel and light expenditure to the extent that black spending on all items of fuel and light makes up 82 per cent of the total expenditure by all groups in South Africa.

It is also instructive to note the differences in black metropolitan expenditure patterns across regions. Some pertinent figures are presented in Table 6.4.

TABLE 6.3: Expenditure on fuel and light by metropolitan households, 1985

(Thousands of rands per annum)

| | Whites | Coloureds | Indians | Blacks | Total |
|--------------------|------------------------|-----------------------|----------------------|------------------------|-----------------------|
| Gas | 3 073 | 3 929 | 81 | 7 665 52,0%* | 14 748 |
| Coal | 395 | 791 | 1 143 | 70 880 96,8% | 73 209 |
| Charcoal | 7 561 | 171 | 368 | 775 8,7% | 8 875 |
| Wood | 2 532 | 493 | 120 | 17 689 84,9% | 20 834 |
| Paraffin | 572 | 4 800 | 77 | 56 510 91,2% | 61 959 |
| Methylated spirits | 1 350 | 208 | 33 | 2 393 60,1% | 3 984 |
| Matches | 2 826 | 1 398 | 710 | 6 759 57,8% | 11 693 |
| Candles | 1 642 | 1 148 | 196 | 15 459 83,8% | 18 445 |
| Furnance Oil | 816 | 6 | 0 | 393 9,7% | 4 071 |
| Total | 23 623 10,8% | 12 944 6,0% | 2 728 1,3% | 178523 82,0% | 217818 100% |

* Percentage of total.

Source:

Bureau of Market Research. 1988B. Household expenditure in the metropolitan areas of the RSA by population group, 1985. Research report no 155. Pretoria : Bureau of Market Research, University of South Africa, P.50, Table 2.10.

In the Cape, Port Elizabeth, East London and Durban, spending on coal is limited.

The ratios differ markedly from those calculated for the metropolitan areas for 1977 (Viljoen, 1989:53), probably, mainly because the low overall level of expenditure influences the accuracy of the sample data, but the overall pattern remains the same. The Transvaal, on the other hand, shows mainly a coal-dominated consumption pattern, thus confirming "a regional division into coal dominant and paraffin dominant regions" (Viljoen, 1989:54).

Across metropolitan regions, fuel and light spending by blacks is remarkably stable as a proportion of their total household expenditure. In only three regions does this proportion fall outside the range 1,4 to 1,7 per cent. The discrepancy between the ratios in these three regions (Johannesburg, lying above this range at 2,0 per cent, as against Cape Peninsula at 1,0 and Pretoria at 0,7 per cent) is at first glance anomolous, for Pretoria and Johannesburg are almost continuous. The reason for the different behaviour lies in the fact Pretoria's black townships have long been electrified, whereas the same did not yet apply to those of Johannesburg in 1985. Table 6.5 shows how consumer behaviour differs between regions in terms of expenditure on (non-electric) fuel and light, electrical equipment (mainly home appliances) and television sets.

Table 6.4: Black household expenditure on main items of fuel and light for selected metropolitan regions, 1985

(Thousands of rands per annum)

| | Gas | Coal | Wood | Paraffin | Total Fuel |
|------------------------------|----------------|-----------------|----------------|----------------|------------------|
| All metropolitan regions | 7 665 (4%) | 70 880 (40%) | 17689 (10%) | 56510 (32%) | 178523 (100%) |
| Cape Peninsula | 1 440 (22%) | 893 (14%) | 472 (7%) | 2 720 (42%) | 6 481 (100%) |
| Port Elizabeth/ Uitenhage | 1 984 (22%) | 275 (3%) | 177 (2%) | 5 116 (56%) | 9 075 (100%) |
| East London | 169 (22%) | 23 (3%) | 15 (2%) | 435 (56%) | 9 075 (100%) |
| Durban | 289 (9%) | 43 (1%) | 13 (0%) | 2 129 (63%) | 3 377 (100%) |
| Pretoria | 78 (1%) | 2 291 (35%) | 477 (7%) | 1 148 (18%) | 6 518 (100%) |
| Johannesburg | 216 (0%) | 27 339 (45%) | 6 568 (11%) | 12806 (21%) | 60 653 (100%) |
| Rest of Witwatersrand | 1 822 (3%) | 26 719 (46%) | 5 866 (10%) | 15017 (26%) | 57 701 (100%) |
| Vaal Triangle | 239 (2%) | 5 573 (47%) | 1 528 (13%) | 2 022 (17%) | 11 954 (100%) |
| OFS Goldfields | 617 (4%) | 3 395 (21%) | 678 (4%) | 9 173 (56%) | 16 501 (100%) |

SOURCE:

Bureau of Market Research. 1988A. A comparison of the income and expenditure patterns of metropolitan households in the RSA, 1985. Research report no 159. Pretoria: Bureau of Market Research, University of South Africa, Table 2.10 and Annexure A, Tables A1 to A13.

Total black expenditure on non-electric fuel and light at R178,5 million in 1985, was considerably in excess of black

spending on electrical equipment of all sorts (R51,5 million), and on television sets (R61,0 million). Yet black spending on electrical equipment and television sets was in overall terms already large proportions (13 per cent and 41 per cent respectively) of all spending on these categories in metropolitan regions in 1985 - an indication of the extent to which blacks have become important consumers of electricity and electrical appliances.

The growth potential is obvious; if television purchases of blacks in metropolitan regions already make up 41 per cent of the total television purchases, their share in total electrical equipment expenditures may soon also rise to such levels, as electrification proceeds and black incomes rise. Blacks would usually purchase less expensive appliances, given low income levels, thereby reducing their share in the overall appliance market below their share in electricity consumption.

In overall terms, the most important items of electrical equipment purchased by black metropolitan consumers are fridges (R22,7 million, 30 per cent of the total market), the category hot plates/stoves/microwaveovens/broilers (R7,1 million, or 10 per cent of the market), deepfreezers (R3,8 million, 17 per cent), electric irons (R3,6 million, 25 per cent), heaters (R3,2 million, 40 per cent), and electric kettles and filters (R3,1 million, 35 per cent of the market).

Notably absent from the list are washing machines, tumble dryers, dishwashers, and carpet cleaners or polishers - all appliances that are at this stage outside the financial reach of the majority of blacks (Bureau of Market Research, 1989a:54, Table 6.10).

TABLE 6.5: Black household expenditure on fuel and light, electrical equipment and television sets for selected metropolitan regions, 1985

(Thousands of rands per annum)

| | Fuel and light | Electrical Equipment | Television sets | All expenditures |
|------------------------|----------------|----------------------|-----------------|------------------|
| All Metropolises Ratio | 178 523 100 | 51 469 29 | 60 980 34 * | 12341906 |
| Cape Peninsula Ratio | 6 481 100 | 2 891 45 | 3 123 48 | 638 849 |
| P.E./Uitenhage Ratio | 9 075 100 | 2 289 25 | 5 936 65 | 655 709 |
| East London Ratio | 772 100 | 195 25 | 506 66 | 55 735 |
| Durban Ratio | 3 377 100 | 1 554 46 | 1 584 47 | 316 076 |
| Pretoria Ratio | 6 518 100 | 4 106 63 | 5 266 81 | 969 386 |
| Johannesburg Ratio | 60 653 100 | 17 504 29 | 22 507 37 | 3050 236 |
| Witwatersrand Ratio | 57 701 100 | 16 313 28 | 12 488 22 | 3964 843 |
| Vaal Triangle Ratio | 11 954 100 | 1 952 16 | 3 922 32 | 808 484 |
| OFS Goldfields Ratio | 16 501 100 | 2 059 12 | 3 147 19 | 988 484 |

* Percentage of total expenditure on fuel and light.

Source:

Bureau of Market Research. 1988A. A comparison of the income and expenditure patterns of metropolitan households in the RSA, 1985. Research report no 159. Pretoria : Bureau of Market Research, University of South Africa, Table 2.10 and Annexure A, Tables A1 to A13.

The ratios shown in Table 6.5 are useful in allowing us to see in which areas purchases of electrical equipment and television sets in relation to the expenditure on fuel and light (non - electrical) amongst blacks are relatively more common - a crude proxy for the extent of electrification. As is to be expected, expenditure on electrical equipment and television sets by black households in Pretoria is much closer to their overall expenditure on non-electric fuel and light. Cape Town shows a pattern of a relatively electrified community, perhaps partly due to the definition and drawing of boundaries for the sample survey.

In the last few years, rising incomes, urbanisation, the availability of television, and to some extent electrification, have altered black demand patterns considerably. The effect of electrification is reflected in the fact that black metropolitan expenditure on fuel and light decreased by 26 per cent in real terms between 1975 and 1985, while the black metropolitan population grew and total black metropolitan expenditures increased by 51 per cent in real terms. In a decade, fuel and light expenditure thus halved (from 2,95 per cent to 1,45 per cent) as a proportion of total black metropolitan expenditure.

As previously argued (see chapter 3), the rate of urbanisation in South Africa would in all likelihood be much more rapid in future than in comparable semi-industrial countries, at least until the urbanisation "backlog" has been eliminated.

Given the past under-provision for black urbanisation, the large numbers of new arrivals from rural areas and the rapid urban population increase, would often not have access to suitable formal housing, urban land or infrastructure.

Without such facilities, including electricity, their consumer demand would not be significantly different from those of rural inhabitants at the same income level. The transformation of consumer demand requires housing, electricity and potable water as complements to consumer durables.

Electrification is thus one of the factors that may affect black consumer demand patterns and may thereby enhance the growth of the domestic market for durable and semi-durable goods. The middle ranges of the spectrum of consumer goods will chiefly benefit from such changed black demand patterns. As there is already a well-developed domestic market for such goods and given the existence of economies of scale, the effect would be to stimulate domestic industry without severely threatening the balance of payments (Dreyer & Brand, 1986), currently the chief constraint on economic growth.

6.2 MAIN SOCIO-ECONOMIC FEATURES OF KATLEHONG

Katlehong, part of the East Rand, was singled out for the survey because a large section of Katlehong does not have electricity.

It also forms a geographic unit and consists of the total population of \pm 37 000 households in formal housing units rented, \pm 18 000 households in formal units owned. There are no accurate statistics on the number of people who live in the 10 hostels in Katlehong. The population in Katlehong shack areas is estimated around 50 000. Shack settlements, a consequence of population growth are today a common feature of African township life within South Africa's industrial heartland - the Pretoria-Witwatersrand-Vereeniging region. Though these shacks, or informal dwellings were originally limited or confined to backyards, they have now risen in open spaces either within or adjacent to the townships.

Some have been erected without authority, even on land which does not belong to the local authority administering the area. Registered tenants charging sub-tenants and backyard dwellers monthly rentals (as much as R50 in some cases), has added to this rise in shack settlements as families who resented paying the high rentals fled from the overcrowded homes and backyards to put up their own houses on vacant land. 200 Houses from 37 000 formal units rented were randomly selected for the purpose of the survey. Katlehong was established in 1945 and is located south of Germiston beyond the Heidelberg freeway. It is sandwiched between Thokoza (Alberton) on the west and Vosloorus (Boksburg) on the east. The Katlehong township is divided into sixteen wards for the purpose of electing members of its council. Its geographical size is 2597 hectares.

Table 6.6 Socio-economic statistics for Katlehong township, 1990
A. HOUSING

| Type of accommodation | Number | Rentals |
|-----------------------|--------|--|
| Formal units owned | 17058 | R45 per month |
| Formal units rented | 37000 | R45 per month |
| Hostels | 10 | Rentals start from R10 to R25 per month (varies with the size) |
| Shacks | 50 000 | R15 per shack per month |

B. INFRASTRUCTURE

| Percentage of electricity supply available to households | Percentage of houses with sewerage | Percentage of tarred roads | Percentage of lit streets |
|--|------------------------------------|----------------------------|---------------------------|
| 32 | 100 | 7 | 52 |

C. AMENITIES

| | Total Amenities | Electrified Amenities |
|-------------------|-----------------|-----------------------|
| Sports stadiums | 2 | 1 |
| Soccer fields | 15 | 13 |
| Tennis courts | 1 | 0 |
| Netball fields | 1 | 0 |
| Golf courses | 0 | 0 |
| Bowling greens | 0 | 0 |
| Swimming pools | 1 | 0 |
| Cricket pitches | 0 | 0 |
| Softball diamond | 1 | 0 |
| Rugby fields | 0 | 0 |
| Athletic tracks | 1 | 0 |
| Boxing gymnasium | 1 | 1 |
| Volleyball courts | 1 | 0 |
| Public halls | 1 | 1 |
| Libraries | 1 | 1 |
| Post offices | 2 | 2 |
| Police stations | 3 | 3 |
| Cinemas | 2 | 2 |
| Night clubs | 2 | 2 |
| Food outlets | Many | all |
| Hardware shops | Many | all |
| Pleasure resorts | 1 | 1 |

D. HEALTH

| Health centres | Number | Electrified Centres |
|----------------|--------|---------------------|
| Hospitals | 1 | 1 |
| Clinics | 4 | 4 |

E. EDUCATION

| Institutions | Number | Electrified |
|-----------------------|---|-------------|
| Creches | 4 | 1 |
| Primary schools | 29 plus 3 farm schools; number of pupils is 43941 plus 9316 at farm schools | 7 |
| Secondary schools | 7 plus 1 technical plus 1 for deaf & blind - number of pupils is 13289 plus 363 at farm schools | 2 |
| Tertiary Institutions | 1 teachers training - college - 29249 students - 1 technical college - 54321 students | 1 1 |

F. COST OF TRANSPORT

| Destination | Rail | Bus | Taxi |
|--------------|--------------|--------------|-------|
| Alberton | Single R1.40 | Single R1.15 | R2.30 |
| | 5 Day R9.90 | 5 Day R8.20 | |
| | 6 Day R11.90 | 6 Day R9.90 | |
| Johannesburg | Single R1.90 | Single R2.00 | R2.90 |
| | 5 Day R9.40 | 5 Day R10.00 | |
| | 6 Day R11.20 | 6 Day R12.00 | |

G. TRANSPORT DISTANCES

| Distances to employment | Destination |
|-------------------------|--------------|
| 13 km | Germiston |
| 6.7 km | Wadeville |
| 5 km | Alberton |
| 21 km | Johannesburg |

H. COMMERCIAL ACTIVITIES

| Type | Number | Description |
|------------------|--------|-------------------------------------|
| Industrial parks | 2 | 1 with 25 units - Urban Foundation |
| | | 1 with 48 units - Anglovaal concern |

I. OTHER REGISTERED BUSINESSES

| Type of business | Number | Businesses with electricity |
|------------------|--------|-----------------------------|
| General dealers | 84 | 72 |
| Electricity | 3 | 3 |
| Carpet & tile | 1 | 1 |
| Timber yard | 1 | 1 |
| Dry clean depots | 4 | 4 |
| Radio/TV repairs | 1 | 3 |
| Motor spares | 3 | 1 |
| Undertakers | 1 | 1 |
| Paraffin depot | 1 | 1 |
| Concrete works | 1 | 1 |
| Scrapyards | 2 | 2 |
| Upholstery | 1 | 1 |
| Carpentry | 2 | 2 |
| Hardware | 2 | 2 |
| Cold drink sales | 1 | 1 |
| Scouring pad | 1 | 1 |
| Bottle recycler | 2 | 2 |
| Panelbeating | 2 | 2 |
| Motor repairs | 1 | 1 |

I. cont.

| | | |
|---------------------|----|----|
| Spring manufacturer | 1 | 1 |
| Bakery | 1 | 1 |
| Steelworks | 1 | 1 |
| Detergent manufact. | 1 | 1 |
| Welders | 5 | 5 |
| Butchers | 11 | 11 |
| Window frame manuf. | 1 | 1 |
| Cinemas | 2 | 2 |
| Garages | 2 | 2 |
| Paper distribution | 1 | 1 |
| Fresh produce | 17 | 11 |
| Glass works | 1 | 1 |
| Milk depot | 5 | 5 |
| Restaurants | 10 | 6 |
| Tailor/dressmakers | 7 | 4 |
| Driving schools | 2 | 2 |
| Herbalists | 4 | 0 |
| Dairies | 2 | 2 |
| Dry cleaners | 6 | 6 |
| Art gallery | 1 | 1 |

Source: Van der Berg (1990:45)

6.2.1 THE KATLEHONG SURVEY

During the study, information was gathered by the use of a questionnaire (Appendix B) from Katlehong residents, people who have been staying in the township for a period of at least five years and their ages ranging from 21 to 65 years.

Since it is generally not feasible to study the entire population, the study relied on random sampling and 90 households were interviewed in Ramokonopi area, 45 households in Phoko and 65 households in Hlahatse East (200 households in total).

Three field-workers were hired to help in the collection of data and to avoid biasing the information from the respondents. The field-workers were extensively briefed and a 100 per cent response rate was obtained as the respondents were told in advance by the councillor of the region and also through letters, and telephonically to expect the field-workers.

In Katlehong's townships, only sections of the formal housing have electricity, (the Hlahatse and Phoko areas do not have electricity at all), and this amounts to 32 per cent of all formal homes. The remaining 68 per cent has to make its own arrangements for cooking, lighting, etc. This obviously includes all the shack areas, the homes of the most poor. According to residents, these shack settlements, started in 1982 when a small number of families who were tired of living in congested conditions in backyards, erected 90 shacks on an open piece of ground beyond the railway line on the north-side of the township. It rapidly grew into a settlement with a population of about 35 000. These people relied mainly only on a 750ml bottle of paraffin per day.

This works out to be expensive, it raises the cost of reading, washing and eating dramatically, and is a significant factor in impoverishing the very poor still further.

The survey revealed that all the residents of Hlahatse and Phoko would prefer to have electricity. In an interview with the mayor of Katlehong, he indicated that 70 per cent of the residents of those areas have applied for electricity and are on the waiting list and have even paid their installation fee. The remaining 30 per cent are mostly people living in the shacks with a very low income level or are unemployed. In the electrified area, 90 per cent of the householders interviewed by the field-workers are utilising the service, and are even up to date with their payment of bills i.e. a R45 flat rate. The Hlahatse and Phoko residents are mostly making use of paraffin and gas for lighting and cooking.

6.2.2 EMPIRICAL RESULTS OF THE SURVEY

The total sample population consisted of 200 households, 90 households from Ramokonopi East (electrified) and 110 from the area without electricity, being Phoko and Hlahatse sections of Katlehong.

Section one of the questionnaire consisted of the personal data of 160 females and 40 males all of whom were personally responsible for paying rent. The ages of the females ranges from 21-63 years and those of males ranges from 31-64 years.

Table 6.7: Distribution of respondents by educational level

| Educational level | Number | % |
|-----------------------------------|--------|-----|
| Primary school (sub A - std 6) | 32 | 16 |
| Secondary school (std 7 - std 10) | 80 | 40 |
| Diploma certificate | 56 | 28 |
| Degree | 32 | 16 |
| Higher degree | - | - |
| Total | 200 | 100 |

As reflected in Table 6.7 most respondents had received a fair level of education. The majority (84 per cent) had completed some high school education.

The survey revealed that all houses in Ramokonopi East have access to electricity and all the residents were up to date with their flat rate monthly payment of R45. Respondents also indicated that they cannot afford to have even one day without electricity. Houses randomly selected at Ramokonopi East showed an overwhelming (about 98 per cent) satisfaction towards the flat rate system, but major dissatisfaction was cited towards the poor metering system. The remaining 2 per cent preferred the metering system as opposed to a R45 flat rate.

On the other hand, Phoko and Hlahatse residents do not have access to electricity at all. Of the 110 households interviewed, 85 have applied for electricity and 60 residents have even paid their installation fee of R170.

In both areas, households are forced to rely on fuels such as gas, wood, coal, candles and paraffin. Only those areas close to the main road have street lights. The survey results indicated that of the 110 houses from Phoko and Hlahatse, 85 (77 per cent) houses would prefer to use electricity for household chores such as cooking, heating and lighting. The remaining 25 (23 per cent) of those interviewed stated they would not prefer electricity due to perceived cost implications, like purchasing expensive electrical appliances.

The last section of the questionnaire looked at the household income to see if there was any correlation between the desire for electricity supply and the household's income. The survey revealed that there is a clear correlation between income and the use of substitute fuels, with coal being used by lower income households exclusively and gas by those with higher incomes at Phoko and Hlahatse section. In absolute terms, higher income households tend to spend more on energy. As far as income levels were concerned, it appeared that households in Ramokonopi East (electrified) area earned an average income of +R1000 per month, while those in Phoko and Hlahatse area (unelectrified) earned a monthly average of +R790.

The average amount spent on energy requirements (including wood, paraffin, gas and candles) by those households that did not use electricity in the Hlahatse and Phoko areas came to R49.20 and R67.00 per month, respectively.

This compared with an average monthly amount of R45.00 spent on electricity by the households in Ramokonopi East. These figures seem to suggest that the utilisation of electricity as an energy source is relatively cheaper.

All the residents at Ramokonopi East have been using electricity ever since they came to the area. Although they could not easily quantify how much they spent on electrical appliances as the prices varies from shop to shop, the following are estimated figures obtained from residents:

| | | | |
|--------|--------|-----------------|-----------------|
| TV= | Ranges | R499.00 (small) | -R1900.00 (big) |
| Fridge | = | R1500.00 | |
| Stove | = | R1200.00 | |
| Iron | = | R 95.00 | |
| Kettle | = | R 49.00 | |

Not all residents have these appliances, but the most popular was the TV, iron and kettle.

Four open-ended questions were put to respondents, giving them the opportunity to express their general feelings about electricity, their likes, their dislikes as well as the perceived benefits of electricity. General feelings about electricity are summarised in Table 6.8.

Table 6.8: General feelings about electricity

| Feelings | % of respondents |
|---|------------------|
| Easy, helpful, convenient | 38,1 |
| Fast | 14,5 |
| High account (cost) | 13,8 |
| Clean | 6,0 |
| Economical/cheaper | 5,0 |
| Like it | 4,8 |
| A necessity | 4,0 |
| Improve way of living | 3,6 |
| Supply extra light | 3,1 |
| Good & reliable | 1,9 |
| Other feelings | 1,9 |
| No feelings | 1,9 |
| Don't know | 0,7 |
| Meter checkers should know how to read meters | 0,5 |
| No fires/candles are good | 0,2 |
| Total | 100,0 |

The major feeling about electricity in general (mentioned by 38,1 per cent of respondents) is that it is easy, helpful and convenient. The fact that it was fast (compared to a coal stove for example), was also appreciated by 14,5 per cent of respondents, but the high cost was mentioned by 13,8 per cent. Most of the other feelings in general were positive.

A question on the positive feelings about electricity were included and the results are summarised in Table 6.9.

Table 6.9: Positive feelings about electricity

| Feelings | % of respondents |
|----------------------------|------------------|
| Easy, helpful, convenience | 36,5 |
| Fast | 22,9 |
| Supply extra light | 13,1 |
| Clean | 11,0 |
| Economical/cheaper | 5,0 |
| Many uses at same time | 4,8 |
| It is modern | 1,9 |
| Nothing | 1,9 |
| Many appliances to choose | 0,7 |
| Good and reliable | 0,7 |
| Other | 0,7 |
| No fires/candles are good | 0.2 |
| Total | 100% |

The convenience of electricity again made the top of the list with 37 per cent of respondents mentioning it. Electricity as a work-relieving mechanism for women is especially appreciated. The quickness of electrical appliances relative to appliances using other energy sources, is also a strong positive point and is appreciated even in small things like being able to make a quick cup of tea when coming home after work. The extra light supplied by electricity and the cleanliness of the home (without the fuss of a coal stove) are strongly appreciated. The cost-effective entertainment provided by television, was also a big plus of electricity (no mention was made of the educational effect of television). The results on the negative feelings about electricity are summarised in Table 6.10.

Table 6.10: Negative feelings about electricity

| Feelings | % of respondents |
|--------------------------------|------------------|
| Nothing | 42,9 |
| Too much money | 34,8 |
| Power failures | 12,6 |
| Other | 6,5 |
| Danger | 1,9 |
| Not applicable | 0,3 |
| Main switch weak | 0,3 |
| Using more appliances | 0,3 |
| Pay a lot, but don't use a lot | 0,3 |
| Total | 100 |

It is heartening that 42,9 per cent of the respondents had nothing bad to say about electricity. The main criticism concern the cost (34,8 per cent) and power failures (12,6 per cent).

The benefits of electricity, as perceived by respondents in electrified homes, are summarised in Table 6.11.

The perceived benefits as presented in Table 6.11 show a high correlation with the positive feelings about electricity as indicated earlier.

TABLE 6.11 Perceived benefits of electricity

| Perceived benefit | % of respondents |
|--------------------------------|------------------|
| Easy, helpful, convenient | 27,8 |
| Fast | 21,6 |
| Clean | 13,1 |
| Economical | 7,9 |
| Supply extra light | 5,9 |
| Improved way of living | 5,5 |
| Don't know | 3,6 |
| Many uses at same time | 3,6 |
| Other | 2,4 |
| Nothing | 1,7 |
| Many appliances to choose from | 1,4 |
| Essential/necessity | 1,4 |
| Pay once and not in bits | 1,2 |
| Good and reliable | 1,0 |
| Modern | 1,0 |
| City is bright | 0,7 |
| No fires/candles are good | 0,5 |
| Travelling safer at night | 0,2 |
| Total | 100 |

Some specific feelings/perceptions/attitudes towards electricity were tested among respondents, by asking for agreement and disagreement with a specific statement. The statements and percentage of respondents agreeing with each are presented in Table 6.12.

Table 6.12 Agreement with specific feelings towards electricity

| Feeling/perception/attitude | % of respondents |
|----------------------------------|------------------|
| Electricity is way of the future | 91,1 |
| It must be used sparingly | 85,1 |
| It is convenient to use | 79,7 |
| It is a necessity | 79,1 |
| It is a luxury | 66,7 |
| It is dangerous | 66,0 |
| Has improved my way of living | 49,7 |
| It is easy to afford | 31,7 |
| Total | 100 |

A very high 91,1 per cent of respondents agreed that electricity was the way of the future. A surprisingly high 85,1 per cent agreed that electricity must be used sparingly, which could be an indication that, notwithstanding the fact that respondents appear not to fully realise the relationship between consumption and cost, they in actual fact know that they have to use less if they want to pay less.

Electricity was rated as a necessity by 79,7 per cent of respondents, indicating that no large-scale disconnection will take place on a permanent basis. The convenience of electricity also found wide support (79,4 per cent).

The involvement of the town council with the communities that have electricity was also surveyed (Ramokonopi East) and the results are shown in Table 6.13.

Table 6.13a: Frequency of visits by town council

| Frequency of visits | 1 Officer | 2 Officers |
|---------------------|-----------|------------|
| Everyday | 20,0% | 5,0% |
| 3 times per week | 5,0% | - |
| once a week | 55,0% | 2,5% |
| Twice a month | - | - |
| Once a year | 2,5% | - |
| Irregular | 2,5% | - |
| Don't know | 15,0 | 92,5 |
| Total | 100% | 100% |

Table 6.13b: Time spent by officers with respondents

| Particulars | Ramokonopi East |
|-------------------|-----------------|
| Little time | 7.5 |
| 15 minutes | 5,0 |
| 30 minutes | 7,5 |
| 1 hour | 12,5 |
| More than an hour | 55,0 |
| As long as needed | 12,5 |
| Total | 100% |

It seems as if a considerable amount of time is spent with a respondent once the officers are in the area. Approximately 50 per cent of the respondent see officers for more than an hour, more than 10 per cent for an hour and 12,5 per cent for as long as needed. Nearly 80 per cent of the respondents therefore have access to professional advice for more than an hour as long as needed. Only a few people 7,5 per cent meet with officers for a short period of time only.

Another factor determining the cost of energy supply cited by most respondents at Phoko area, was that coal was cheaper to residents closer to the railway siding compared to those further away. A bag of coal (needs for about a month) cost residents from Phoko R20.00 compared to R65.00 those staying further away from the railway station. This is attributed to high transport cost, poor infrastructure in the area and the rising demand by workers for high wages. But in most instances, respondents preferred to travel from their homes to railway station shops in order to buy coal at a lower price than it being delivered to their homes.

6.2.3 Findings of the survey

The study set out to find whether electricity can really improve the standard of living in the black townships. This was done in four steps as outlined in the introduction in chapter one. The summary will also follow the similar logistic order.

Electricity is the preferred energy supply option for households in developed urban areas, yet two-thirds of the black population living in urban areas still do not have access to it. There is still widespread questioning of the appropriateness and affordability of electricity for black townships. The evidence from many studies over the past decade seem to contradict these assertions.

Once the initial installation fee has been paid, electricity is in most cases cheaper than other fuels for cooking, heating and lighting (Eberhard 1986:124).

There was a general agreement amongst the respondents that electricity was a more convenient and safer service capable of providing much greater comfort than alternative fuels.

Users of electricity pointed out that its plug-in capability was a source of much convenience because it enabled them to carry out household tasks more rapidly than before and save much time and effort in the process. Respondents generally perceived electricity to provide better lighting, heating and personal securities than other energy forms. They also felt that electricity was an important means of improving the educational standards of individual users within the household. These advantages can be viewed as private benefits which accrue to the individual users of electricity themselves.

6.3 CONCLUSION

The overall impression from the survey is that the benefits from electricity far exceeds the cost of electricity. The private benefits include greater reliability, efficiency, conveniency and safer service capable of providing much greater comfort than alternative fuels. It enables households to perform their household chores much quicker and save much time and effort in the process.

Electricity provides better lighting, heating and personal security than other energy forms. Electricity also improves health conditions and educational standards. Social benefits also accrue from electricity in the form of an improvement in the quality of social life.

On the cost side, most respondents felt that electrical appliances were very expensive and the fact that they still have to pay R170.00 installation fee was too much. Although most respondents acknowledges the benefits of electricity, the majority of them showed reluctance of using it unless its coupled with awareness programmes of how to use electricity. They cited a major risk involved in using electricity for the time especially when seeing the red and blue wire. The rent on itself is a major cost to respondents because at the end of the month, respondents have to pay their monthly tariff.

From the ensuing discussion it is clear that electricity remains the key basic need for a better life as it is an important mean of improving the educational standard of its users within the household. It can provide means towards a more efficient labour market, more recreational time and greater security, all of which help to improve the quality of life and the prospect for sustained economic growth.

CHAPTER SEVEN

SUMMARY, CONCLUSION AND RECOMMENDATIONS

7.1 SUMMARY AND POLICY IMPLICATIONS

7.2 RECOMMENDATIONS

7.3 AREAS FOR FURTHER RESEARCH

7.1 SUMMARY AND POLICY IMPLICATIONS

The procedures involved in estimating the net social value of a public project are both complicated and controversial at the best of times. Very few of the non-pecuniary costs and benefits of electrification can be quantified and incorporated into a standard cost-benefit analysis, aimed at determining the social desirability of extending the supply of electricity in such townships as Katlehong. Nevertheless, it is possible to identify certain broad trends which may at least facilitate such exercise.

Energy use is an important factor in economic growth and development. Underdeveloped areas may be defined as those areas which do not have access to electricity for domestic energy requirements. One critical factor for development centres on the realization that progress will be difficult unless the quality of 'human resources' is improved directly.

The basic needs approach promotes economic development through fulfilling the basic needs of all people in a cost-effective manner and within a specific time frame. The main purpose of the basic needs approach is to develop man.

Human beings have basic needs and any process of growth that does not lead to their fulfilment or even worse, disrupts them, is in transgression of the idea of development.

Basic needs are nothing more than an income redistribution plan in favour of the poor, who are targeted to receive early the benefits of development instead of waiting until the fruits of economic betterment trickle down to them. What at best basic needs policies are likely to produce are certain development benefits, whose probability of occurrence is difficult to estimate in advance, and which fall under the category of externalities.

In terms of evolution, basic needs represent a random shock introduced to enhance human dignity and accelerate the realisation of human potential. Basic needs therefore becomes a goal to which the evolutionary socio-economic forces are expected to adjust in time. In this framework basic needs are manifestations of a new mentality towards the alleviation of poverty.

For both the government and individuals, the choice between different ways of investing resources rest to a great extent on an evaluation of the costs and benefits associated with these investments. The alternatives will differ as to the magnitude of the costs that must be incurred, the time scale of both costs and benefits, and the uncertainty of risk surrounding the project. The technique of cost-benefit analysis has been developed to make the evaluation as systematic, reliable and comprehensive as possible and to eliminate the need for guess work, hunch or intuition.

The development and utilization of electricity creates an economic atmosphere that has direct and indirect benefits for the local economy. Examples of these benefits are the economic, social, demographic and public services. The direct impact is felt by most households who are able to effect household tasks more rapidly than before and save much time and effort in the process. Electricity undoubtedly provides better lighting and heating than other energy forms.

Electricity also has an indirect impact on development. It improves the quality of life of the community by raising their income. There is a strong argument among the residents that the absence of electricity supply impoverishes communities (along with the inadequacy and expense of other services such as transport) as households are forced to rely on expensive fossil fuels which consume a disproportionate amount of their income. Energy provision is seldom thought to be an important factor in the planning of mass housing projects. Yet, through the denial of electricity, and the poor design, insulation, construction and orientation of houses, which increase their heating requirements, household spend more on energy.

Electrification leads to higher productivity and income, which also means increases in the income of producers and shop-owners through purchases of electrical appliances.

Given the interdependence of the economy, this higher income and the demand for electrical appliances stimulates a multiplier effect that eventually results in an increase in economic activity.

The results of the survey confirms that availability of electricity as a basic need appears to be far from satisfactory. However, Ramokonopi East seems to be better off in terms of its access to electricity. With the increasing population and rate of urbanization, the problem of adequate household energy supply is shifting to these areas, which experience major social and economic costs as a result of dependence on costly and inconvenient fossil fuels and batteries.

Electricity is a basic need in that it plays a general role in the development process. It enhances an individual's chances of obtaining a balanced diet as well as improving the peoples understanding of themselves.

Private benefits, social benefits as well as macro benefits emanated from the survey. Individual households pointed out that electricity was the most convenient and safer service and it was capable of providing much greater comfort to its users. Gas cylinders were reportedly cumbersome to carry.

The entire community believed that electricity improves the standard of living and improves health conditions among their families and also reduced the risk of damage to personal property. The provision of street lighting reduces the number of criminal acts and enables residents to attend meetings at night.

Macro benefits also accrue to new industries. Introduction of electricity supply creates a demand for electrical appliances. New entrepreneurs may see an opportunity to enter the market, create new vacancies and generate income to the entire community of Katlehong.

Turning to the various costs involved, the Katlehong survey found that the cost of alternative energies (coal, wood, gas and paraffin) far exceeded the corresponding cost of electricity. Smoke emitted from coal and wood fires was a constant danger to the health of the community. The costs involved in electricity includes the installation fee, flat rate rental, risk in its operation and the rising costs on electrical appliances.

In summary, therefore it appears that benefits that accrue from electricity supply exceeds the cost that can be incurred. In the long term this means better quality of life, improvement in employment and a conducive learning environment.

Electricity can really substitute coal and wood usage and thus has the potential to substantially reduce the severe air pollution in the Pretoria-Witwatersrand-Vereeniging areas. On the whole, the Katlehong survey seems to suggest that an economic case can indeed be made for involving the broader township in subsidising the supply of electricity in Hlahatse and Phoko. This can be done by encouraging the government to subsidise the supply of electricity but this on the other hand means imposing higher taxes on businesses and employed households. This may also be achieved by encouraging the Escom organisation to supply the bulk of electricity to the entire Katlehong township while at the same time lowering the cost per unit of electricity. For example this involves lowering the R45.00 flat rate to R42.00, which the residents of both Phoko and Hlahatse are prepared to spend. Bulk supply of electricity will also generate income to Escom as well.

It was also evident from the survey that certain producer - consumer external benefits arose from electrification. The provision of street lighting by the state-owned electricity company was considered to have contributed to a significant drop in the number of criminal acts in the Ramokonopi east area. Respondents also mentioned that street lighting made it easier to organise and attend social events such as funeral night vigils, meetings at the community centre, discos and churches in the evening. Given the structure of urban township societies, this is arguably one of the most important and neglected external benefits of electrification.

While these technological externalities all appear to benefit the inhabitants of Katlehong, the same is not necessarily true of pecuniary external benefits. The latter include increases in the demand for and the supply of electrical appliances such as television sets, refrigerators, stoves and smoothing-irons and ultimately also in the demand for productive inputs used in these industries. The introduction of electricity to all the areas of Katlehong can be expected to encourage at least some local industries and business enterprises to expand their operations (or new enterprises might be attracted) and thus create new job opportunities for the unemployed.

Likewise, to the extent that electricity improves the health and educational standards of individual users, it may ultimately generate spillover effects on the consumers and producers alike. But these effects will be lost to the economy, if the newly educated also happen to be those most likely to join the stream of migrants to the rest of Southern Africa. It would thus appear that the pecuniary benefits associated with an increase in electricity supply are likely to extend beyond the Katlehong area.

Other benefits of electricity supply include:-

1. Environmental protection - since electrification eliminates the problem of deforestation.

2. Electricity also has indirect long term effects of improving the balance of payment. Manufacturing volume would substantially increase as a result of the demand for domestic appliances and other electrical goods brought about by electrification.
3. Electrification would decrease the marginal propensity to import. Local manufacturing would become more viable due to the economies of scale benefit arising from mass manufacturing and expansion of new markets. This will facilitate import replacement.
4. Electrification could also facilitate competition which could reduce inflationary pressures. Electricity is a key to productive resource utilisation in as far as it contributes to the use and development of technology.
5. Electricity bring with it long-term social benefits such as high literacy levels, lessening political tensions related to large disparities in wealth and a reduction in the birth rate.
6. Electrification could also result in an increase in household's disposable income available for the purchase of other durable goods. The savings on energy costs arises because households can also buy their appliances on credit.

The survey also revealed that the private cost of alternative energy sources far exceeded the corresponding costs of electricity. This is reflected in different amounts spent on electricity and alternative fuels.

The amount spent on energy requirements (candle, wood, paraffin and gas) by residents of Phoko and Hlahatse was estimated at R67.00 and R49.20 per month respectively compared to R45.00 by those staying in Ramokonopi East. It is not surprising that the majority of households in Hlahatse and Phoko could not afford not to have electricity.

Certain technological external costs were found to be significant in the case of alternative energy sources, but virtually non-existent in the case of electricity. Respondents in both areas mentioned the constant high risk of damage and injuries resulting from using gas and coal.

In one extreme case, a respondent in Hlahatse recounted how a gas fire once set his house ablaze and in the process completely gutted an adjacent resident's backyard shacks. Individual users of alternative energy fuels all indicated that the smoke emitted from coal and wood fires was a constant danger to health.

7.2 Recommendations

The Katlehong survey highlighted several important features which showed a strong preference for electricity over alternative forms of energy. In the light of the above findings, the report makes the following recommendations:

1. There is a general need of electrification of all townships on a massive scale. This may be achieved by encouraging Escom organisation to supply the bulk of electricity to all areas while at the same time lowering the cost per unit of electricity. Bulk supply of electricity will generate income to Escom but at the same time ensures that all residents have access to electricity.
2. Improvement of the overall supply quality is needed. There is a need to upgrade and improve the electricity supply network and related services in the Pretoria-Witwatersrand-Vereeniging area. The situation facing residents is daunting: too few pay-points, broken meters, inaccurate meters, broken meter boxes and an incomplete and inaccurate customer data base.
3. Thought should be given as to how the financing of electrification could be structured so as not to unfairly burden the initial consumer. The installation fee could

perhaps be spread over four months.

4. Also in new housing projects, it could be considered to build in the cost of reticulation into the lease or purchase cost of the house, so spreading the capital of electrification over the longer period of repayment of the mortgage by the householder.
5. Innovating financing schemes could also be developed to ease the initial costs of purchasing a range electrical appliances.
6. A better system of payment of electricity has to be installed in all areas. A pre-paid metering system as introduced in some areas in the Eastern Cape allows the consumer to control his own usage. The pre-paid metering system is operated through inserting a coded card and the consumption will be shown on the meter by a series of coloured lights, with a distinctive warning light to indicate that the household is running 'on reserve'.

7.3 AREAS FOR FURTHER RESEARCH

The study concluded could not as a result of time, funds and space constraints, analyze and indeed quantify a number of pertinent issues. These are listed below as a guide for possible further research.

Firstly, to establish whether there is a close relationship between electricity supply and labour mobility in several developing countries.

Secondly, it is suggested that an empirical study be conducted into the comparative performance of the various councils in all the townships in supplying electricity. In the course of this dissertation, it becomes apparent that the performances by different councils varied significantly in many respects.