USER REQUIREMENTS FOR DOMESTIC ENERGY APPLICATIONS HOUSEHOLDS IN INFORMAL URBAN SETTINGS

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Declaration

I declare that this dissertation is my own original work. It is being submitted in partial fulfilment for the degree of Master of Philosophy at the University of Cape Town. It has not been submitted before for any degree or examination at any university.

Signed by candidate

M M Van Gass

.....day of ..... 1994.

ABSTRACT

The thematic focus of this dissertation is the specificity of user requirements for domestic energy applications in informal urban settlements and how these are fashioned by the contextual pre-conditions of poverty and instability. The fieldwork focused on a group of people who can be defined by the facts that they are people who house themselves, possibly fall into the lowest or no income sector of the population, are peripheral to the mainstream economic activity in the country and are temporary or permanent or roving urbanites.

The research approach is done from the viewpoint that user requirements should inform the design of systems for domestic energy applications and that these subjective requirements constitute the correct point of departure from which to evaluate the efficacy of energy support services.

The bulk of this dissertation consists of recounts of research interviews, illustrating some aspects of user requirements. These are presented as 'primary data' with the purpose of rendering the research more transparent and of offering an information resource with the option of re-interpretation by the reader.

The dissertation concludes that appropriate energy services will have to be characterised by adaptability and diversity as well as by sensitive responses to the micro networks of urban subsistence household economies.

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CHAPTER 1 AREA OF RESEARCH

I have selected as the area of research for my dissertation the user requirements for domestic energy services of poor and marginalised households in informal urban settlements.

The selection of the area was influenced by current political, social and economic contexts, my immediate research environment at the University of Cape Town, and my own personal interests. Specific energy debates at the Energy for Development Research Centre (EDRC), where my studies were based, focused my attention on energy end-use issues. Other contemporary debates on urbanisation, and cultural change coincided with my interests in the impact of technological change on people's lifestyles. Further my personal opinions that had developed while I was doing course work at EDRC in energy and development studies, and in other departments at the university, as well as my interests in the design of appliances, impacted on the selection of a dissertation topic.

1.1 POLITICAL, SOCIAL AND ECONOMIC CONTEXT.

1.1.1 SOCIO-POLITICAL CHANGE AND MARGINALISATION

This investigation is done from within a society where large numbers of people are involved in historical processes of change such as rapid urbanisation, technological change and informal settlement. Most of these people have a history of political and economic marginalisation. The transition to democratic government in South Africa heralds a period in which the previously marginalised sector of the population will be politically empowered to improve their living standards. Hence, historically this is an opportune moment to undertake a study concerning the user requirements of the marginalised sector of the population (1).

In order to obtain a profile of marginalised urban people in the South African context it is necessary to disaggregate this grouping and to look at the various levels of poverty and at degrees of exclusion from urban infrastructure. I firstly look at an overview of facts on population and poverty and secondly at urban informal settlement in relation to services provision.

(1) Within this context Eberhard (1994a) outlines the need for research around development issues and the formulation of policies and programmes which are aimed at meeting basic needs in a time when there will be increased government spending on redistributive programmes.

1.1.2 POVERTY PROFILE

Data on population and poverty

In order to delineate the energy user groups to be researched, it is necessary to look to the intersection of three sets of information: income or **poverty profile,** population and **household growth** statistics (disaggregated according to these specific poverty profiles) and **housing type** together with urban settlement characteristics.

Figure A shows the government White Paper on Housing (1994) outline for the national income profile for households. The Living Standards Measure (LSM) categories presented by ESKOM (1994) also indicate that the larger percentages of the population are to be found in the poorest sectors of the population (figure B).

FIGURE A : PROJECTED MONTHLY HOUSEHOLD INCOME DISTRIBUTION FIGURES (1995)

INCOME CATEGORY	PERCENTAGE	NUMBER OF HOUSEHOLDS
R 0 - R 800	39.7%	3.30m
R 800 - R1 500	29.0%	2.41m
R 1 500 - R2 500	11.8%	0.98m
R 2 500 - R3 500	5.6%	0.46m
>R3 501	13.9%	1.15m
TOTAL	**100%**	**8.3m**

FIGURE B : NUMBER OF HOUSEHOLDS IN VARIOUS ECONOMIC CATEGORIES (LSM)

It is my experience that there is a blind spot in available statistics, obscuring the picture of the characteristics and requirements of the very poor. (It is easier to access data about how many houses will be built or electrified, than how many will not). Data produced and used to serve narrow planning strategies gives a limited perspective of housing and service requirements. The limits to available development resources sets limits to strategic perspectives and consequently needs that cannot be met drop out of vision (1).

(1) Even disaggregated figures given in the publication 'South Africans Rich and Poor: Baseline household statistics' Project for Statistics on Living Standards and Development', does not outline the target groups in enough detail to use the data for planning (SALDRU, 1994).

Growth in Unemployment

DBSA (1994) statistics show that there has been a growth in unemployment between 1980 and 1991 and that in the Western Cape where my study is situated, with a population of 3130 139 the percentage of population with no income is 33,8 %. (1). This should be seen in context of the national statistics on the sectoral distributions of the labour force (figure C).

(1) Unemployment figures for the Western Cape:
1980 54 472 8,4%
1991 204 624 13,3 %

'In 1991, only half the extended labour force had formal employment (see figure B), compared with nearly two thirds in 1980' (DBSA, 1994).

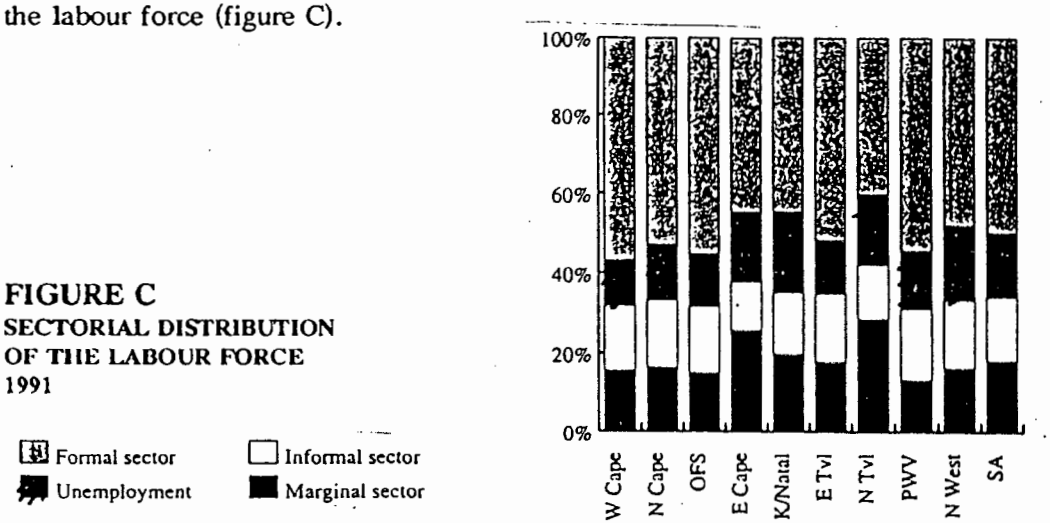

FIGURE C
SECTORIAL DISTRIBUTION OF THE LABOUR FORCE
1991

A culture of Poverty

Future scenarios predicting economic growth and employment opportunities are pessimistic for the very poor. For people currently peripheral to the main stream economy, and who need cash in hand to improve their lifestyles, predictions of economic growth have to be seen in terms of world trends predicting 'jobless growth' and effective further impoverishment of the already poor (2).

(2) 'In 1991,.... The performance of the economy was sluggish indeed. Between 1980 and 1991, the formal economy created a net of 350,000 jobs, whereas the labour force grew by 4,5 million people.'
'The economy grew more capital intensive over this period, corresponding to the international trend of jobless growth' (DBSA, 1994).

The uncertainties that are evident in future income capacity prediction are overwhelming for the very poor households peripheral to the money economy. When looking at South Africa's typically third World income distribution figures where 50% of the population is unemployed (1) and in the 1980's already 50% of the population lived below the Minimum Living Level (2), one wonders whether the formal economy is not peripheral to the culture of poverty in the country.

1.1.3 INFORMAL SETTLEMENT AND SELF HELP CITIES.

Local rapid urban expansion is resulting in the growth of informal urban areas in and around South African cities. This is part of a world wide trend.
Current discussion in urban design disciplines about the growth of 'self help cities' (3) suggests that these 'informal areas' are to become the environment in which most of the world population will find themselves in the future (4). If this settlement pattern is to become the norm of the urban future, it is vital for an investigation of energy end-use to understand the nature and dynamics of such urban settlements (5).

Safier and Turner's (1986) historical review of the relationship between the formal and informal sectors of the city is insightful. It is also instructive in contextualising current initiatives for site and services provision and energy policy planning. The informal components of cities have expanded continuously during the course of the twentieth century. Safier and Turner suggest that the relationship between the formal and informal sectors of the city has gone through changes in the process - the first response to informal settlements was to bulldoze them, then the planning professions became involved in the areas, then there were efforts at economic and social level to overcome their marginality that was so much at odds with the formal city. By the 1980's the dynamic shifted to the political arena where community organisations were working to "force attention on the potential problems and needs of such cities.."
This was a recognition of the essentially different characteristics of new Third World cities. Safier and Turner (1986) foresaw a crossing of the boundaries between 'self-help' and the conventional city.

(1) "In South Africa as a whole, including the reserves, the proportion of the total population living, in 1980, below subsistence (measured as the urban MLL) was estimated to be 50 per cent" (Wilson and Ramphele, 1989: 17).

(2) "MLL. The Minimum Living Level.
This measure of the level of household poverty is used as datum of the minimum household income required to provide adequate access to food, clothing, fuel/lighting, washing/cleansing, rent, transport plus tax, medical expenses, education and household equipment replacement (Wilson and Ramphele, 1989 :17).

(3) "We may define the self-help city throughout the Third World as being built by those citizens whose economic capacity will not support either the purchase of housing and other goods or who are unable to provide the level of rates and taxes which will allow the public sector to do the job" (Safier and Turner, 1986).

(4) Correa (1986) describes informal self help cities as typical of the Third World and cites Bombay, where half of the nine million inhabitants are squatters, as an example. He predicts the characterisation of the urban future as such a 'new landscape': "By the year 2000 the World Bank estimates there will be 50 cities of 15 million or more, of which 40 will be in the Third World" .

(5) Correa (1986) is optimistic about the dynamics of such a 'new landscape'. He singles out the incremental growth process of development as positive and opposes it to the failures of scaled up planning methodologies based on the multiplication of successful solutions for the accommodation of large numbers of people.

Locally, there has been much the same pattern of informal urban growth, with added complications of Apartheid legislation. Dewar et al (1990b: 207) describe official perspectives equating informal settlement with squatting and relate the 1980 policy modifications towards 'orderly urbanisation' leading to the establishment of Khayelitsha. The 1994 Government gazette on housing describes the current housing crises (1).

(1) "Living conditions, existing housing stock and rate of supply: A relatively small formal housing stock, low and progressively decreasing rates of formal and informal housing delivery in South Africa have resulted in a massive increase in the number of households forced to seek accommodation in informal settlements, backyard shacks and in overcrowded conditions in existing formal housing" (Government Gazette 1994 Housing).

Information supplied by the Development Bank of South Africa (1994) on local informal housing suggests that self help cities are a feature of the South African landscape:

"Housing estimates on rather dated information suggest that the housing backlog in the country as a whole is around 2.1 million units. **At least a third of the existing housing stock in urban areas is informal. Informal structures in the North West, Northern and Western Transvaal and Eastern Cape constitute around half the total number of houses,** while the PWV alone has at least half a million informal structures."

1.1.4 HOUSING

The 1994 white paper on housing, (Government Gazette no 16178) gives overall figures for existing housing stock (2).

(2) " 3.1.3 (b) Approximately 1,5 million urban informal housing units exist in South Africa at present.These include around 620 000 serviced sites.... as well as almost 100,000 unused serviced sites.
3.1.3 (d) Approximately 13,5 % of all households (1,06 million) live in squatter housing nationwide, mostly in free-standing squatter settlements on the periphery of cities and towns and in the back yards of formal houses.
Low rates of formal housing delivery coupled with high rates of new household formation have resulted in a massive growth in the number of people housed in squatter housing." (Government Gazette no 16178, 1994)

The future situation in South Africa is described by Trolllip (1994:15):

"Household formation will be approximately 2,5 million between 1990 and 2010. The distribution of these households will depend very much on state housing policy and economic development in South Africa. Most growth is expected to occur in urban areas in the low-income categories. The major variable in terms of housing types will be the rate of provision of 'serviced sites', the basic unit for building planned informal settlements".

Trollip's remark about the rate of provision of serviced sites, should be considered in view of the affordability of such sites for poor households. Information on new household formation should be disaggregated to more definitive groupings for the various poverty sectors of the population, than what is currently done. Serviced site repayments should then be correlated to expenditure capacities of very low income households in order to establish whether these sites, housing and services will be accessible through real-cost repayments or welfare grants. The proportion of informal to formal housing differs for the various regions of the country, and information should be geographically specific.

EPRET projections indicate no housing shortage for the year 2010. Whereas this projection allows a positive margin of error in planning energy provision for an optimistic full compliment of houses it fails to scrutinise affordability at any level: national economy, regional economy, metropolitan economy, and most important household economy.

FIGURE D
Figure D illustrates projections for numbers of different housing types used by EPRET in the description of a future housing scenario for energy planning (Trollip 1994). Over the next 20 years the provision of 2,4 million serviced sites together with other housing provision is estimated to reach 2,7 million housing units.

The Reconstruction and Development Programme (RDP) policy framework published in 1994 by the African National Congress, if successfully implemented, will contribute greatly to creating opportunities for better housing. By the end of the 5 year period of the programme the number of unhoused households will total four million and the proposed delivery of approximately one and a half million well constructed low income houses will still leave two and a half million households in the position of building their own houses [ANC 1994).

Housing figures for Cape Town indicate a total of 19 5427 units in the categories 'urban informal unplanned', 'urban informal planned' and 'backyard shacks' (ESKOM 1994). This information is not correlated on a geographical basis to household income categories. The same source however indicates that on a national level 38% of households (not disaggregated into rural - urban split) in the lowest income category (LSM1), and 31% in the second lowest (LSM2), live in informal houses.

1.2. SOME LOCAL CONTEMPORARY ENERGY DEBATES

At the Energy for Development Research Centre, debates about equity, sustainability and efficiency in energy provision systems, were pertinent to my views of energy end-use.

1.2.1. EQUITY.

Inequitable access to energy sources and systems is seen as one of the most pressing problems of energy provision in South Africa. Amongst the various local energy users the very poor are currently greatly marginalised in terms of access to energy provision systems.

This situation of inequity can be seen against the background of the highly skewed income distribution and access to services characteristic of South African society (1). Given this situation, it is not surprising that little is known about the requirements of users in this end-use sector. The need for research in this area was confirmed by the focus of the Energy Policy Research and Training Project, (EPRET) 'Widening access to basic energy services for the urban and rural poor,' conducted at EDRC concurrent to my studies there.

It is my opinion that equity can only be achieved by satisfying the user requirements in this hitherto marginalised sector.

(1)Eberhard (1994b :11) elaborates on the situation of inequity: "Equity is an issue in any society, but is a particularly severe problem in South Africa with it's highly skewed income distribution, spatial development and access to services. While industry, commerce and nearly all 'white ' households have adequate energy services, the majority of black households in urban and rural areas do not".

1.2.2. ENVIRONMENTAL SUSTAINABILITY, ENERGY EFFICIENCY AND DEMAND SIDE MANAGEMENT.

The environmental and economic sustainability of energy generation and delivery is debated against the background of the use of limited hydrocarbon fuel resources. These limitations call for the efficient use of available resources and has lead to the practice of 'demand side management', with the objective of promoting end-use efficiency (1). The practice of energy efficiency through demand side management could benefit both the consumer and the supply sectors in the energy system and has resulted in a new focus on end-use analysis (2). The interventions of demand side management in end-use practice may however not always be in the interests of the consumer, where it has been initiated primarily to ameliorate problems of supply.

1.2.3 SUSTAINABILITY OF ENERGY SYSTEMS IN A CONTEXT OF POVERTY

Socio-economic development theory on issues of poverty and subsistence lifestyles stimulated my interests in the sustainability of energy services in that context. My interest focused specifically on experiences and coping strategies of end-users of urban energy technologies.

O'Keefe (1992) highlights the added insecurity of supply resulting from the weak economic position of most developing countries. The debate on economic sustainability of national energy systems in third world countries, centres around security of energy provision within national economies that cannot deal with the large fluctuations in international energy prices. O'Keefe suggests that insecurity of supply results in an in-elasticity of household energy budgets (3). My dissertation will highlight survival strategies, aimed at sustaining energy services, employed by the very poor. I investigate the relationship between patterns of fuel-use, sustainability, and the insecurity of income and limited capacity of micro-economies of poor households (and those who lead subsistence lifestyles) to access commoditised energy sources.

(1) Demand Side Management; Intervention, usually through market and pricing mechanisms, is aimed at influencing energy consumption patterns of end-users.

(2) "While much of energy planning and policy analysis still focuses on individual supply sectors (Electricity in particular), many now accept that energy planning should start with an analysis of energy end-use demand. This enables a range of energy demand management and supply options to be considered so that demand can be met in the most efficient and sustainable way" (O'Keefe et al 1992a, Chapter 3).

(3) "..in Maputo, Mozambique and Lusaka, Zambia, extensive surveys of urban household demand were conducted. What is obvious from the results of these surveys is that rather than moving up an energy ladder when income is increased, there is actually a tendency to maintain all fuel technology systems instead of spending money on improve technology and more expensive forms of energy. What this seems to imply is that the model of income elasticity accepted for energy purchasing in the North does not apply to the South: rather than moving to higher quality fuels and technologies, households will move to increase the security of their supply when their income increases. Southern economies are risk-minimising, not benefit maximising, and an energy ladder does not really exist: the upper middle class will use wood, charcoal, kerosene, gas and electricity, because none of their fuel supplies or technologies is guaranteed. A so-called 'move-up' the ladder would work against their own energy interests by leaving them dependent on an unreliable supply" (O'Keefe,1992b).

1.2.4. ENERGY END-USE ANALYSIS.

The analysis of energy end-use has served mainly the objectives of demand-side management and end-use efficiency, and that of projecting future demand for energy planning(1). End-use analysis that has tended to focus on these objectives, placed an emphasis on fuel/energy consumption and quantitative efficiencies. Recent research trends in demand analysis recognises the complexities of domestic end-use. However the focus needs to shift to the quality of energy services and practical use of appliances in order to render the kind of information that could be used to meet the requirements of end-users. This requires a shift of perspective where the analysis of end-use in no longer only a refined tool (for trend analysis and multiple correlation forecasting, Eberhard, 1994b:13) used in supply strategy, but has quality end-use as it's main objective.
The lack of appropriate information in the area of end-use is exacerbated in research programmes where requirements of institutionalised systems of supply are prioritised over the under-explored field of user application needs (2) In this regard I was critically aware of research approaches underpinning policy on energy supply as formulated by the EPRET project hosted at EDRC at the time of my studies. Throughout my research I interacted with the EPRET team and this served as constant reminder of the importance of collecting primary data related to issues that were discussed in this forum and that I encountered in the field.

(1) "While analysis of energy supply options is a fairly well-established practice, analysis of demand is still a relatively underdeveloped science" (Eberhard 1994b:12).

(2) The tension between demand and supply side orientations, is reviewed by Trollip (1994) who describes the historical international practice in national energy planning as viewing the planning process primarily from the supply side. Trollip notes that this practice was often reflected in the approach adopted by EPRET researchers and warns of the effect that it may lead to the reproduction of existing unsatisfactory supply arrangements.

1.2.5. INTEGRATED ENERGY PLANNING.

Integrated Energy Planning (IEP) promotes planning that is integrated with overall economic planning and across all sectors of the energy industry. Various approaches to IEP emphasise different aspects of the strategy (3), but most emphasise and are based on end-use analysis (4).
This planning process has been promoted by EDRC's project EPRET and I selectively quote some of it's proposed objectives as described by Eberhard (1994b) concerning end-use: equity in access to affordable and sufficient energy supplies; development goals such as meeting basic needs of the poor or income redistribution; and increasing the energy security of the poor.

IEP has potential benefits for end-users in their capacity as empowered participants in IEP, to obtain the satisfaction of their end-use requirements.

(3) The Beijer Institutes's integrated energy planning project in Kenya tried to link energy planning to development goals and employed an energy end-use perspective.
(O'Keefe, et al, (eds) 1984)

(4) Energy end-use or demand analysis is described as one of the processes of integrated energy planning: Past and present energy demand (dis-aggregated by end-use) is analyzed - relative to prices, incomes, level of economic activity, supply constraints, stock of energy using equipment and other relevant variables - in order to project future demand.
(Eberhard 1994b)

1.2.6 END-USE MODELLING

Local policy and planning debates about energy end-use of poor households have focused in particular on the characteristics of energy (fuel) transitions and user choices as important determinants and variables used to model future energy demand projections (Eberhard 1994b). Linear models that suggest a hierarchy of fuel-use choices have been questioned: Models of linear, progressive socio-economic development that suggest steadily improving living levels for poor household units, have been associated with the concept of the predictability of hierarchical transitions in domestic fuel use. However, in practice, fuel switching, especially in the informal urban context, is not seen to always follow a pattern of transition from less to more sophisticated fuels. (1)

Although Viljoen (1990) uses these models himself, he describes some of the ambiguous findings that indicate that the use of simple economic models for research and data analysis are not suited to the contexts of informal or marginalised societies. (2)

The assumptions, firstly about the economic upward mobility of users in this sector and secondly about the predictability of user choices, that supported the use of the above mentioned models, need to be re-investigated. Quantitative energy studies that have been made about marginalised societies often fail to consider the peculiarities of their socio-economic context, which by virtue of their peripheral nature, differ in essential characteristics from the mainstream, in which most models for quantitative energy research is based (3). I extend this argument to the South African situation where the economic dynamics operating in the mainstream society differ from those in very poor communities.

(1) Phil O'Keefe (Appropriate Technology 1993) discusses the doubt about the use of a commonly used research model, imaged as an energy ladder as follows: "The notion of an 'energy ladder' to describe household energy use in the South is more than misleading - it is usually false. In most developing countries, it is impossible to undertake useful energy analysis using the underlying assumption of moving up an energy ladder, following income. The reality of the South is one where income is rarely assured at a household level, and consequently energy, and other basic needs, remain inelastic."

(2) "Whether the existing high level of urbanisation and economic development in south Africa will alow rapid modernisation and consequently rapid domestic energy transition remains to be seen . This presupposes a shift from informal to formal dwellings and sectors whereas the opposite is occurring in the metropolitan areas" (Viljoen, 1990).

(3) Condoni, problematises the transfer of planning strategies: "Differing economic and social realities mean that lessons or methodologies cannot be transferred in a mechanistic manner" (Eberhard and Theron 1992:1).

1.2.7. QUALITATIVE STUDIES OF USER REQUIREMENTS.

A distinction should be made between useful studies of end-use, conducted in very poor communities, that are quantitative and those that are qualitative. Existing surveys of energy end-use have focused on quantities of overall and useful fuel consumption and the enumeration of appliances. Trollip (1994) also notes that such supply data offers very little information on the patterns of consumption in poor households and provides few pointers to why or how these can be altered.
An understanding of these complexities of end-use can be enhanced by extending information on the dynamics of end-use (2). Such qualitative data renders information on usage patterns, circumstantial determinants of energy use as well as subjective preferences of users.

It is my opinion that contextual information from qualitative studies is required in order to describe the requirements of end users and to understand the dynamics of energy use in these communities. Information obtained from the recording of existing end-use practices must be broadened to include qualitative descriptions of verbally expressed requirements and aspirations in order to establish energy demand and user requirements
A understanding of user requirements could be used to ameliorate some of the inequitable aspects of the existing energy provision system, such as the disparities between the services offered by existing energy supply networks and actual requirements of end user.
It is necessary to obtain more detailed information on particular household energy services and the appropriate functioning of appliances.

1.3. SELECTING AN AREA OF RESEARCH .

1.3.1 MY VIEWS AND INTERESTS

I have looked at some contemporary ideas concerning socio-economic and cultural transition and energy planning. The following describes my application of these to research in energy end-use:

1.'Development', urbanisation and cultural change in Third World societies raise questions about the comparative values of juxtaposed lifestyles encountered in new cities. The accommodation of different lifestyles in one society is highlighted in debates on cultural

(1)Information on end-use of fuels has had to be extrapolated from available data on appliance ownership and engineering estimates of fuel use per appliance (Trollip, 1994). This data could presumably have been applied in generalised estimates of future fuel and appliance use.

(2) Eberhard (1992b:13).. in the household sector energy consumption is often a function of a host of not easily quantifiable variables. Data collection and analysis should try to incorporate qualitative information which could facilitate a better understanding of factors which influence energy demand".

modernisation. In trying to understand the integration of disparate lifestyles in new urban settlements, I find the description of changes in the culture of societies through a syncretic collage of different lifestyles and traditions, appropriate to the evidence in local urban settlements of random adoption of lifestyles and survival strategies, rather than any predictable patterns of progress.

2. A democratic approach is needed to the equal sharing of, and control over, energy as a national resource. This requires that all the sectors of production and consumption are empowered to represent their various interests. Such an inclusive system could benefit from relations of co-operation rather than competition between, for instance, supply and consumption sectors in the energy system.

3. Contemporary research contexts:
Current anthropological and social research trends emphasise information processing that leads to empowerment for the people under review. Presenting the values and requirements of the individual users could contribute to prioritising user requirements in appliance production and energy systems currently biased towards supply requirements or elite consumer markets.

4. Presenting a subjective viewpoint.
I set my objective as 'research into user requirements for energy end-use appliances'. In terms of the research methodology this required a shifting of the 'authorial eye' that describes the research facts on which decision making is based; Instead of looking at end-use per se, I tried to take up the position of end-users who are looking at systems of energy generation, supply and a myriad of contingent factors and evaluating these in terms of how well they meet end-use requirements.

5. My personal interests in the design of appliances informed my selection of end-use as research area. Training in appropriate design emphasises the discipline of outlining user requirements for a project, as well as the limitations of constraints of available resources. Technological solutions and creative resources are then used to meet these design requirements (1).

(1) The appropriateness of an appliance is measured against the service and handling requirements of the users. (Papanec, 1972).

1.3.2 DEFINING A RESEARCH TOPIC

1.3.2.1 INFORMAL URBAN AREAS

My initial interest was with energy users who are confronted with technological, lifestyle and income changes. My attention was drawn to sites such as informal urban areas where many urban migrants find themselves.(1) These urban areas house people who are economically marginalised and have poor access to energy provision systems. This is an appropriate site for the investigation of end-use with the view to improve the inequities in access to energy for the poorest urban population sector.

1.3.2.2 DOMESTIC END-USE

The engagement of the end-user with energy is in the use of appliances. The end-user has a tangible experience of the appropriateness of appliance performance to energy service requirements. The evaluations of the user, illustrated from her own viewpoint are most likely to describe end-use requirements.
In practice my research focused on a group of energy end-users that can be defined by the facts that they are people who house themselves, possibly fall into the lowest or no income sector of the population, are peripheral to the 'mainstream' economic activity in the country and are temporary or permanent or roving urbanites.

1.3.2.3 QUALITATIVE PRIMARY DATA AND FIELD WORK

I decided to gather qualitative data for the following reasons: There is an urgent requirement for qualitative primary research in peripheralised communities in order to contextualise the available quantitative data. Further, my research focus on subjective aspects of user requirements meant that data obtained should be qualitative rather than quantitative. My objective of getting the end-users of energy to speak for themselves required direct interaction through fieldwork. The description of the nature of physical and other contexts of energy use as well as the diverse and subjective viewpoints are best represented in qualitative text.

(1) Some household units intend their urban stay to be temporary and maintain a rural base elsewhere. Local studies of urbanisation indicate that the growth of informal metropolitan areas stems from intra city population migrations between formal and informal areas as well as in-migration from rural areas or small towns.

1.3.2.4 CHANGING FOCUS

My initial selection of dissertation topic read:

User requirements for domestic energy appliances, households in transition

This changed as my research focus shifted in the course of doing field work. The investigation of appliance-use was broadened to include contextual issues on which end use is contingent: Access to fuels through both informal 'micro' and supply side managed energy distribution networks, as well as access to appliances, featured as important contextual issues. The relationship between energy use and household dynamics required that I focus on the context of the household. The awareness that information about household energy services and use-habits had to precede investigations into appliance efficiencies changed the way I directed interview questioning. The possibilities of the permanence of informal settlement became apparent and I thus changed the dissertation title to be more descriptive of it's contents:

User requirements for domestic energy applications, households in informal urban settings.

1.4. PARALLEL INVESTIGATIONS

As a secondary focus to my dissertation, I informed myself of the procedures followed in planning offices of local agents involved in the field of energy supply to semi- and informal settlements. I also informed myself of research on migratory behaviour of people in informal settlements done by the Urban Problems Research Unit (UPRU), in the Cape Town metropolitan area. Simultaneously I enquired about the subjective views of households on the transitions involved in settling in an informal house in an informal area.

The approaches of local authorities and planning consultants to the provision of infrastructure to informal areas was informative in investigating the impact of infrastructure on the opportunity for energy choice by household units. Thus at various, and sometimes late, stages of the development of my dissertation I was influenced by concurrent research projects. The most important of these were:

Cross C., Bekker S.,Bomberger N (1992). **Rural Poverty in South Africa. A 1992 study using secondary sources.** University of Natal.

Ross, F 1993. **Assessment of the impact of fuel use on residents of an informal settlement.**

Annecke Wendy J(1992). **We are so Poor. An Investigation into the lives of ten women living in an informal area in the Durban functional region with particular reference to the role of domestic fuels.** University of Natal.

Please refer to the list of literary references at the end of the dissertation for further titles.

CHAPTER 2 RESEARCH APPROACH AND FIELDWORK METHODOLOGY

2.1 RESEARCH APPROACH

My research approach is anchored in the position that user requirements should inform the design of systems for domestic energy applications and provision and that these subjective requirements constitute a vitally important point of departure from which to evaluate the efficacy of energy support services.
The aim of the research is to **give a picture** of user requirements **in context.** The description of user requirements within the perspective of the context of the economic and domestic activities of users became a specific aim of the research work. Thus, the objective of representing the viewpoint of users about their energy requirements, as well as the specific location of the fieldwork, informed both the methods of obtaining and representing of research information. I recorded the statements of interviewees whilst giving a verbal description of their family and housing situation. I have taken an intuitive approach to fieldwork methods. The approach is explorative, in order to reveal opportunities for further more focused follow-up investigations.

In order to represent as clearly as possible the requirements of the energy end-users interviewed, I tried to avoid the obscuration of findings by clearly revealing the methods and processes involved in the fieldwork.

2.1.1 EMIC VIEWPOINT

The terms 'etic' and 'emic' are used in anthropological sciences to distinguish the viewpoints of the outside observer and the observer native to the community situation that is being observed.
The emic view is seen to take into account the socio-cultural context of observations and to illustrate the subjective valuations of the inside viewpoint. On the other hand; "Etic

operations have as their hallmark the elevation of observers to the status of ultimate judges of the categories and concepts used in descriptions and analysis" (Harris, 1980).

The real needs of the energy end-users are best described by themselves. My need to represent a view from the inside of the household informed the choice to do personal interviews with users in their homes. In the field work, my efforts were directed at obtaining and recording the personal and subjective opinions of interviewees about their requirements, experiences and the circumstantial pressures prevalent at the point of daily energy end-use. Further, once I had entered a house, I endeavoured to record a subjective view of external factors that impinge on the household unit. Where the possibility that my status as outside observer imposed etic viewpoints on the research information could not be avoided, I tried to give a reflexive view of my approach and methodology.

In as much as this kind of research engenders information that can be reflected back to the users to empower them in articulating user demands, it is sympathetic to participatory research and development initiatives that normally originate from inside the community. Community requests for the satisfaction of the requirements of users need to be substantiated with information on their collective interests.

My efforts to obtain an emic viewpoint of user requirements were limited by the extent to which my outsider status prevented the understanding and perception of issues as a person native to the community would perceive them. In order to present as accurately the requirements of interviewees I have chosen to present my primary data in as immediate a way as possible and to render transparent the processes of obtaining and interpreting the data that could have influenced the observations.

2.1.2 REFLEXIVE DESCRIPTION OF BIASES

The reflexive description of research biases and fieldwork methods is essential in accounting for the specific selection of accumulated and represented information. Descriptions of ideas that have influenced the selection of information gathered, and of methods that may have predetermined the outcome of research, are discussed here to accompany the presentation of research findings.

These 'biases' that influence research findings, commonly result from research polarities such as the difference in concerns of users and suppliers, from research suppositions that

the physical conditions of the housing and urban fabric. The electrification drives that were initiated by local and national authorities at the time of my fieldwork focused my attention on the potential for changes in energy sources used in informal settlements, and the attitudes of users to these opportunities.

The research assumption that user requirements should inform the design of systems for domestic energy applications and that the efficacy of energy support services should be evaluated from a users' perspective, directed this investigation to the site of domestic end-use where the *subjective requirements* of users are most readily revealed. This supposition informed fieldwork enquiries concerning the appropriateness of appliances and supply networks in terms of practical application, accessability and the quality of the energy services rendered.

2.1.5 FIELDWORK FOCUS

Although the research approach was of a broadly investigative nature, incisive limitations were exercised on the content and extent of field information obtained through selective focus on specific issues. This focus was in part a response to experiences in the field and in part due to the limitations of research time, funding and the make up of the research team. For instance, in the course of doing the fieldwork, the disparities between practical choices people make and the notion that user-choices are informed simply by an ideal energy service requirement, drew my attention to the impact of circumstantial pressures on user behaviour. As a result, the emphasis of what I listened for in interviews was altered and my research focus shifted.

2.2 FIELDWORK METHODOLOGY

INTRODUCTION

I have taken an intuitive approach in structuring fieldwork methods. The following section describes in more detail the methods I have used, giving a reflexive review of how incidental events as well as what I undertook to do, determined the outcome of the investigation. I personally conducted 26 interviews, with the aid of oral translators, with households living in informal settlements in the Cape Town Metropolitan area.

For the purpose of investigating the social context of energy end use I have relied on social and anthropological research methods.(1)

My choice of a 'naive' approach to research was founded in my fieldwork discovery of the fact that the 'Third World' social context in which I was doing the investigation on energy use was dissimilar to the research contexts for which orthodox energy research methods have been established and that basic suppositions underlying the research design needed to be questioned.(2)

2.2.1 SAMPLING

2.2.1.1 SELECTION OF RESEARCH SUBJECT

My decision to locate fieldwork for this study in urban informal settlements was initially based on the notion that I would encounter people in transition in terms of their ostensibly temporary housing structures and that I would encounter rural-urban migrants experiencing socio-economic and lifestyle changes. This notion was confirmed by the fact that studies regarding intra-urban as well as urban-rural migrations were located in these areas (UPRU 1993).

These informal settlements house people who are peripheral to the dominant socio-economic culture and consequently marginalised in terms of the energy supply system.

The need for research in this area was supported by the predictions of contemporary urban theorists that the larger percentage of the global population will in the future agglomerate in peripheralised and poverty stricken urban informal settlements. (Correa 1986)(1).

(1)Three major different styles of approach and methodology are identified in the introduction to the book 'Social Research Principles and Procedures', edited by Binner and Stribbley (1979), namely Interpretive, Experimental and Survey Investigation. These approaches are seen to form a continuum of investigation. The second style emphasises rigorous testing of hypotheses and the third style emphasises reliability of data collection and statistical control of variables. The interpretive style is described in the above mentioned introduction as relying for explanation on the interpretations people themselves put on the reasons lying behind their actions. This ethnographic emphasises naturalistic observation of phenomena in the field and seeks insights into social behaviour gained from data which is as unadulterated as possible by the procedures the researcher employs and the preconception he brings with him. Issues that concern him particularly are the accuracy of the information he collects, the problem of the role he has to adopt in collecting it and the generalizability of his findings outside the particular research setting.

(2)In the foreword (pxi) to their book 'Human Enquiry, A sourcebook of New Paradigm Research' Rowan and Reason outline new paradigm research as a synthesis of naive enquiry and orthodox research, as objectively subjective. Naive enquiry questions the specific choices of information for research projects and the use of such data to build up impressions of the world. This kind of enquiry is described as 'involved, committed, relevant, intuitive and alive' with negative aspects such as 'subjectivity and error'. On the other hand orthodox enquiry is described as inadequate in it's extreme objectivity and lack of interest in real social context and is further seen as statistically significant but humanly insignificant.

2.2.1.2 SELECTION OF LOCAL URBAN SETTINGS FOR FIELDWORK

I chose to do work in the informal settlements in the Cape Town Metropolitan area, mainly for reasons of proximity and the relevance of local research to EDRC, where I was based at the University of Cape Town.

The identification of the areas that house the people I chose to interview was facilitated by my personal familiarity with the so-called squatter areas and the selection of areas with self made, temporary domestic structures, and the lack of urban infrastructural services. The selection of these specific urban areas was premised on the desire to inform myself of the impact of detailed differences in the nature of urban fabric and service infrastructure on domestic energy use. Areas were selected with both informal housing structures and informal site lay-outs as well as areas with similar informally self-built structures on 'planned' serviced sites. Areas on the metropolitan periphery were selected as well as sites more centrally located on unused open land within the existing formal urban fabric. Areas subject to in situ upgrades from informal to semiformal as well as communities undergoing relocations from informal to formal sites were selected. One obvious omission of informal settlement type was that of households living in 'backyard shacks' in formal urban areas.

In order to explore differences in energy and appliance requirements of users living in formal housing, a control group of household interviews were conducted in urban areas with permanent housing structures and some degree of urban servicing.

The accessibility of urban areas for research further determined the selection of interview sites. Considerations were: the welcome by the community of researchers; the ease of access facilitated by specific fieldwork introductions; as well as the safety from violence for researchers. As there seems to be a trend for people who live in informal settlements to form identifiable communities I took care to seek formal introductions to the communities.

Readily available contacts through organisations such as DAG, SPP and UPRU (1) as well as through individual mediators, led to introductions to communities.
The negotiations with community representatives that preceded interview arrangements with individual households are described in the interview transcriptions. Not all negotiations led to interviews.

The following areas were selected as the fieldwork progressed: Khayelitsha 'PJS' sites B and C, S-block, and the formal area known as I-block; Philippi East; Macassar and Harare; Guguletu and Thambo square; 'New site 5' in Noordhoek; and Wallacedene in Kraaifontein. The appendix in chapter 6 maps the location of these areas.

(1) DAG: Development Action Group. based in Cape Town; SPP: Surplus Peoples Project; UPRU: Urban Problems Research Unit: based at the University of Cape Town.

Development and human rights organisations such as DAG and SPP have done extensive work in local urban settlements around human rights and landrights issues and more recently offer assistance in obtaining urban services upgrades in squatter settlements. Current UPRU research projects focus on urban migration (UPRU 1992).

2.2.1.3 HOUSEHOLDS AS UNITS OF RESEARCH

Characterising the units selected for research.

The household, as defined for this research, is firstly characterised by it's urban and infrastructural context. Secondly, the household is defined as a functional unit for, and as a fixed locus of, domestic energy consumption. Thus the concept of household has here been strongly linked to that of housing structure as the locus of energy consumption, encapsulating domestic energy services as well as the thermal performance of the house structure. It is also a convenient point of energy supply from both commercial and public infrastructures. Guide questions used in interviews were structured to obtain descriptions of these aspects from individual households.

This characterisation of the household is essentially a pragmatic one which facilitated the investigative and qualitative nature of the research. However I by no means wish to ignore the complexity of the range of characteristics that define households: other definitions of the household focus on aspects such as it's functioning as a socio-economic unit, it's demographic composition, it's geographical integrity and location. (see for example Cross & Bekker (1992) and Ross (1993)(2).

(2) The baseline household statistical report 'South Africans Rich and Poor, 1994' uses classifications of households by race, location, monthly income, services expenditures, head of household, etc.

My definition of the household should not be confused with that of the household as a discreet economic or familial unit. I take cognisance of the fact that such units function across disparate locations, as well of the implications this has for energy roles and the choice of appliances and fuels.(1)

Other energy studies have used selected household characteristics to formulate categories suitable for comparative analysis. Characteristics typically used are cash income levels (2), dominant energy/fuel source used, age and gender identity of head of household, formal employment of members, poverty profile etcetera.

By virtue of the qualitative nature of my study it describes specific household characteristics and may provide indications for defining new household categories for this research field.

2.2.1.4 HOUSEHOLD SELECTION

The selection of households within identified areas was fairly ad hoc, as access was determined by introductions to households through community representative committees and development organisations as well as a chain of connections through persons encountered in the field. These ad hoc selections were nevertheless done within the parameters of selected urban areas. An effort was also made to select households to represent broad variations in household demographics, income and occupational and employment profiles. The process of selection, which was done mainly at the discretion of individual fieldwork mediators, is described in the introductions to each group of interview transcripts in chapter four. These selections were at times more or less successful in producing a varied profile of households (3).

The interviews were all conducted on weekdays and did not allow for the selection of households that could not be interviewed at those times.

(1) Described for example Ross (1993).

(2) My investigation revealed that the convenient concept of aggregate household income is in fact problematic and misleading.

(3) Some field work contacts lead to a chain of similar households - for instance the single male households in the New Site 5.

2.2.1.5 SELECTION OF INTERVIEWEES

Personal interviews were conducted with one member of the household and my preference was for the main user of appliances to speak. This was explained to the community representative (or the household members themselves) during pre-interview arrangements made by myself or the fieldwork mediators. The actual choice of interviewee was made by the household. In some instances the head of household was interviewed even though that person may not have been the main or only user of appliances. The identities of the interviewees were recorded.

2.2.2 NATURE AND CONTENT OF THE INTERVIEWS

2.2.2.1 STRUCTURING INTERVIEWS

Open-endedness

Initially I undertook two open-ended pilot interviews and these were essential in suggesting areas of inquiry and approaches to interviews.

At the outset of the fieldwork I was aware of the fact that in order to get the appliance users' views, they have to speak directly. I decided to lead the interviews minimally through open-ended questions. This method requires immediate responses to overt cues and subtle remarks which lead to relevant but often hidden issues, in order to pursue these at a later stage. Apparently ambiguous and contradictory responses were taken as leads to uncover obscured information. Often the most valuable information seemed to come from incidental remarks and discussions rather than in response to direct questions.
Accurate and direct immediate oral language interpretation by fieldwork facilitators mediated this process but also required a thorough understanding on behalf of the interpreter of the need to represent the interviewee's words as accurately as possible.

Reformat and refocus

While doing the fieldwork, I was continually probing for information on the research interests and assumptions that initially informed the research.

The leading questions were originally structured around requirements related directly to energy services and appliance use. However as the interviews progressed I shifted the focus of questions in the interviews in response to incoming information. By doing the fieldwork I realised more and more that user requirements for appliances are dependent on the context of their use, such as the internal dynamics of the household and the broader context of social support systems and urban infrastructure.

I focused in particular on the internal household dynamics that influenced income and expenditure patterns. The dynamics of the specific urban environment, where households seem to rely on a combination of formal and informal support networks, are not well known and there seems to be a lack of data or appropriate models for it's analysis. This led to the most important shift in my perceptions and the consequent approach to interviews. Instead of focusing on the physical attributes of appliances I probed for information on the lifestyle patterns that inform their use.

In addition to this, the focus of the various sets of interviews shifted according to the importance of issues particular to each group of interviewees.

Interview Pattern

An interview pattern developed around the key questions. Interviews usually started with a housing history of the interviewee and household and a brief analysis of the household demography and it's income opportunities. Thereafter questions focused on appliance use, acquisition and maintenance, fuel acquisition and transport and the energy services required for cooking, water heating and space heating.

2.2.2.2 CONDUCTING INTERVIEWS

Nature of the interviews

It is important to note that the interviews were pleasant experiences, facilitating communication.

Once individual interviewees had been engaged, personal, in-depth interviews were held in the house of the interviewee. At times there were interested bystanders and family members present who contributed to the interviews. In many cases mundane domestic routines continued during our visits. We looked at appliances in the household and discussed some of their features. I took brief notes of events and conversations during the interviews and, in some instances, photographed the appliances as well as the house structure. The interviews generally had a duration of one to two and a half hours.

Practical setting up

Most of the interviews were pre-arranged in consultation with community representatives. Two to three appointments would be arranged per day. The team travelled to settlements by car to interview people in their homes.

The interview team consisted in all cases of myself and a facilitator/translator. These field workers facilitated introductions and oral translation. In most cases the interviews in each set of interviews was done by the same interview team although different persons were involved as facilitators in the various sets of interviews. Detailed information on the persons who participated in the research as interview facilitators is given at the beginning of each set of interviews.

Financing fieldwork costs.

Translators and mediators were remunerated at an hourly rate. The transport costs and photographic material were paid from a fieldwork allowance funded by EDRC and at a later stage, an ESKOM study grant. The content of the interviews was not dictated or influenced by the funders.

Translation and mediation

Where language interpretation was required there would be a three way conversation between myself as interviewer, the oral interpreter and the interviewee. Accurate and direct immediate oral language interpretation was essential in facilitating this responsive process. Field workers who participated in a number of interviews, familiarised themselves with the lists of key questions beforehand and contributed to the questioning. It proved to be very important that field facilitators understood the importance of translating all answers and incidental remarks. Fieldworkers were not all equally perceptive in mediating the translation of subtle references communicated in colloquial expressions or ironic comments. At times there was a danger of field workers prompting interviewees to give preconceived responses. The team endeavoured to be aware of their own interpretations or selective translation. Our skills improved as we progressed with the fieldwork.

Notating Fieldwork

I took field notes during the course of interviews and in some cases also photographs. The field notes were transcribed to interview records on the same or following day. This allowed me to write down immediate recollections of events and impressions. Photographs of appliances and house structures were useful in reconstructing facts and events during the notation. It also served as visual documentation useful in the long term analyses of the fieldwork.

The process used in the pilot interviews, of taking photographs with the assistance of community photographers, proved too costly and time consuming. In further field work I took a limited number of photographs myself and in one or two cases made audio recordings of the interview. This was also abandoned as it proved too cumbersome and distracting. Visual documentation that could have enhanced this dissertation, is not presented, mainly for reasons of time and cost constraints.

2.2.2.3 CONTENT OF THE INTERVIEWS

The following describes the actual information content of the interviews which coincided to a large degree with the type of information I had set out to obtain.

Synchronic Perspective

The information obtained from selected households is limited by the fact that the synchronic view reflects only the household status quo of the moment. Other than recounting brief housing and appliance histories, changes over time were not followed up. The interviews were all conducted on weekdays and do not reflect information that can only be picked up at other times of the day and week.

Emic viewpoints

In the discussion of contextual and energy issues most interviewees naturally gave priority value to their personal and the subjective interests of the household. Some interviewees focused on community political concerns. Most of the perceptions recorded were thus seen from the viewpoint of the research community. From this viewpoint the interests of the household become priority values. Factors contingent on the context, such as urban infrastructure and institutions, income opportunities, and access networks for appliances and fuels, that impinge upon the household, were seen as external to it, allowing an insight into the real effects of these factors on the household.

Households and house structures.

Information on households as functional units and on their energy requirements as these relate to location and structure of houses was obtained through questions. These were largely guided by the specific attributes of households as considered in the characterisation of households as research units for this project.

Issues discussed in the interviews:

The same core issues followed up in most interviews according to the interview pattern and descriptions of the context focused on relevant aspects. This core content was diversified and enriched in the course of individual interviews. The flow of information was influenced by the occurrence of mundane domestic events, the personal attitudes of interviewees, the contributions of bystanders and fieldwork facilitators. The following issues were emphasised at various stages of the research:

1. Domestic routine, especially around cooking, water heating and space heating was investigated until a pattern of typical lifestyle was identified. Unusual practices of energy use around special occasions could be set off against these patterns.
2. The initial emphasis on actual appliances and fuels shifted to that of contextual information. Household budgets and informal socio-economic support networks became important issues of investigation.
3. In the Noordhoek interviews, house structures and their fragility became prominent objects of observation.
4. In the later interviews the growing possibilities for the electrification of informal houses focused attention on attitudes to electrification.

CHAPTER 3 REPRESENTATION AND ANALYSIS OF RESEARCH INFORMATION

The bulk of this dissertation consists of my recounts of fieldwork events. This is presented as 'primary data'. A secondary parallel text presents a limited analysis and interpretation of the primary text in the form of notes and comments anchored to the primary text.

3.1 RE-PRESENTATION

3.1.1 PRIMARY DATA

The decision to present the interview material as primary data was taken firstly because it is qualitative and descriptive in nature. There is a scarcity of available qualitative primary data and the recounts proved a fertile source of diverse information.

Secondly, because of the investigative nature of the fieldwork the study contains multiple leads for further research. The scope of my dissertation does not allow for a full investigation of these. The presentation of the primary data provides a source for others to extend the analysis (search for trends) and allows for other interpretations of the facts represented in the text to those represented in my analysis.

Thirdly, for those who have had little direct exposure to informal settlements, the primary data offers the opportunity to hear the voice of informal households and help present a more immediate picture of their situation.

3.1.2 TRANSCRIPTION

The Primary data is presented in the form of transcripts which are largely narrations of fieldwork conversations and events. This was combined with information gleaned from photographs taken in the field as well as background information to contribute to the description of contextual information.

I endeavoured to minimise the distortions of primary data through re-presentation and to make these transparent by presenting a reflexive view of research methods in the previous chapter. In order to minimise this transfiguration of the research information, the recounts are presented as originally transcribed from fieldwork notes, with minimal editorial interference. Distortions of information gathered in the fieldwork are inherent to our methods of oral communication and on site translation (described in the previous chapter), as well as our personal responses.

I have presented as written text some contextual information gained visually as well as my subjective experiences of events.

3.2 STRUCTURING THE TRANSCRIPT DOCUMENT

3.2.1 SETS OF INTERVIEWS

The interviews are presented in this document in the following series of geographical groupings:

1. Pilot interviews in Guguletu and Thambo Square

2. Interviews in Khayelitsha

3. Further interviews in Thambo Square

4. Interviews in Macassar and Harare

5. Further interviews in Guguletu

6. Interviews in Noordhoek

7. Interview in Wallacedene

Chronological order

The pilot interviews were done in June 1992 and the remainder over a period of six months between September 1992 and February 1993. The chronological order of fieldwork interviews coincides to a large extent with the list of geographical groupings set out above. The interviews are numbered in chronological order with the result that the numbering in the geographical groups do not follow in numerical sequence.

3.2.2 CONTEXTUAL INFORMATION

Each group of interview transcriptions located in the same informal urban area is introduced by a description of the specific urban fabric. Each individual transcription is accompanied by contextual information specific to it.

3.2.3 STRUCTURING INDIVIDUAL INTERVIEW TRANSCRIPTS

To some extent the loose interview pattern that developed in the fieldwork practice was used to format transcripts. However accommodating, not all interviews lent themselves to transcription in that format and the format was freely adapted to specific transcript requirements.

Identifying individual interviews

Individual interview transcriptions are identified by the place, the date and time at which they were conducted together with the name of the interviewee.

3.3 PRIMARY AND PARALLEL TEXT

The accounts of fieldwork interviews are presented as primary text which sustains the voice of energy end-users. In a sense this allows them to speak for themselves in this documentation of their requirements.

The interpretive text is presented in parallel to the primary text using notes and comments that are juxtaposed to the primary text it refers to. In doing so I try to avoid the situation where research data and primary information is used only to substantiate the researcher's interpretations. The latter are rather presented as secondary text.

The parallel second text illustrates various responses to the fieldwork and points to, or interprets, trends or issues apparent in the primary text. The juxtaposition of texts helps to make interpretation transparent, opening it up to immediate critical review. In this way I can enter into conversation in writing with the reader about the primary data, instead of presenting the interpretation as a *'fait accompli'*. The parallel text is also used to present further contextual or research information from other studies. The collation of the text to side notes in parallel lay-out facilitates referencing.

The parallel text presented here is minimal and does not highlight every repetition of trends noted in the fieldwork. Most of the parallel notes and comments are discussed in the concluding chapter to the dissertation. However, due to the limited scope of the dissertation, not all notes and comments are reviewed as separate issues, though they may support other central ideas.

In the same way side notes to chapters one, two, three, and five of the dissertation are used to accommodate quotations and secondary information.

CHAPTER 4 FIELDWORK TRANSCRIPTS AND COMMENTS

INDEX TO INTERVIEW TRANSCRIPTS

SETS OF INTERVIEWS

6. INTERVIEWS IN NOORDHOEK 157

INT. NO 18 Virginia Gumede 'New Site', Noordhoek.
12th January 1993, Bonela Biyonga - interpreter

INT. NO 19 Nokuthembeka Nogqala 'New Site', Noordhoek.
12th January 1993, Bonela Biyonga - interpreter

INT. NO 20 Elliot Dulase 'New Site', Noordhoek.
14th January 1993, Bonela Biyonga - interpreter

INT. NO 21 Thayemile Saba 'New Site', Noordhoek.
14th January 1993, Bonela Biyonga - interpreter

INT. NO 22 Jones Gquzo 'New Site', Noordhoek.
18th January 1993, Vuyo Qangule - interpreter

INT. NO 23 Winnie Tsotso 'New Site', Noordhoek.
20th January 1993 - Vuyo Qangule - interpreter

INT. NO 24 Orumpia Nkwadla 'New Site', Noordhoek.
21st January 1993 Vuyo Qangule - interpreter

INT. NO 25 Susan Nomhle Jafta 'New Site' Noordhoek.
27th January 1993 - Vuyo Qangule - interpreter

7. INTERVIEW IN WALLACEDENE 220

INT. NO 26 Eunice Boniswa Msaba. Wallacedene Kraaifontein.
2nd February 1993, Vuyo Qangule - interpreter

SET OF INTERVIEWS: 1. PILOT INTERVIEWS IN GUGULETU AND THAMBO SQUARE.

FIELDWORK

INTRODUCTION

These first two interviews in Guguletu provided me with indications of how to structure the interviews that followed. The experiment of working with the photographic ethnographers from the community that I initiated here, proved to be too expensive and I made the decision not to pursue this methodology. The focus of the content of interviews changed after doing these two interviews. I have retained the original transcript organisation even though later transcripts are more consistently formatted.

GUGULETU
Guguletu is an old established formal residential area with serviced infrastructure. The housing is standard state provided low-cost row housing.

THAMBO SQUARE
Thambo Square consists of a pocket of informal urban fabric with in the established formal residential area of Guguletu. The area is spatially limited and has grown to a high density. Houses are self made light weight structures. Emergency facilities for water and sanitation consist of communal tap points and temporary public toilets. There is a strong community identity. The community is currently involved in a negotiated relocation to a serviced site. This is a CPA project with their consultants "Macro plan" and with community involvement underscored by community work-shopping by DAG.

LIST OF INTERVIEWS

INT. NO 1
Mrs Mtandeki snr. Guguletu.
Photographers Talakumeni and Mtandeki.

INT. NO 2
Sarah. Thambo Square.
Photographers Talakumeni and Mtandeki.

INTERVIEW NO 1, PILOT INTERVIEW
DATE: **June 26, 1992**
LOCATION: **Guguletu**
INTERVIEWEE: **Mrs Mtandeki senior.**

INTERVIEW MATERIAL

INTERVIEW SITUATION

Interviewee: Mrs Mtandeki is the mother of Mavis Mtandeki who acted as facilitator for this interview. Mavis lives in the adjacent 'squatter' area, Thambo square.
Present: Mavis Mtandeki and Primrose Talakumeni as photographers and Xhosa language interpreters. Incidently the interviewee was fluent in Afrikaans and the interviews were conducted using both Afrikaans and Xhosa (the latter translated verbally to the medium of English). Maria van Gass as field researcher (I speak Afrikaans and English). We walked over from Thambo Square to the formal section of Guguletu to do the interview. Mavis who had organised the interview did the introductions.

URBAN STATUS AND HOUSING STOCK

The interviewee has been living in Guguletu for the past 21 years and prior to that on Brown's Farm. The Guguletu house is one of a formal housing scheme of row-houses, built in brick with tin roof, steel windows, timber doors.

ELECTRICITY

The house had been **electrified** in 1982 at a cost of R700 (not including the laying of the cable). I suspect it was done by a private contractor. Electrical outlets observed: plug points -one in each of 4 rooms, additional stove connection in kitchen-room below distribution box. Centrally fitted ceiling lights with various glass and chrome light-shades. Outside light at front door.

NOTES AND COMMENTS

Electricity use

Comments by the interviewee who is the mother of the household addressed the following issues: The availability of electricity is very unpredictable and cut-offs occur without notice to the users. This requires that standby equipment be at the ready at all times; i.e. paraffin stove and candles.(In the kitchen there was a primus with coffee pot placed on top of the electrical stove - the electricity supply being cut at the time of the interview). Her daughter Mavis who is involved as a community representative with the workshops organised by the Development Action Group (DAG) with inhabitants to be relocated in the Thambo Square upgrade project, comments that electrical failures and setting off of trip switches occurred because users were not informed in advance about what capacity their connections delivered and how many and which appliances could simultaneously be in use.

Responding to questions about the cost of electricity, Mrs Mtandeki senior commented that it is very unpredictable (op en af) varying between R100 and R44 per month. She suspects that the meter readers don't do readings but make estimations of units used. She would prefer to use the card-system with 'prepay' meters so as to have better control of what she uses. However she states that changing to a prepaid system "is not easy", although she believes it to be possible.

This description of electricity use, points to dis-empowerment in terms of notification and lack of technical information that the user experiences. The users see the system malfunctioning as it is unreliable.
The particular in-house electricity service seems to be inappropriate in terms of the particular end-use requirements. There is an expressed requirement for a system offering closer control over energy expenditure by the user.

LIST OF APPLIANCES

1. T.V. (mains electricity only)
2. Hi Fi set (battery powered)
3. Electric steam-iron
4. 2-plate electric hotplate (This was acquired when the electric stove became faulty)
5. Large electric stove with 4 hotplates and oven. (Oven now out of commission and I suspect some stove plates)
6. Washing machine, single tub cold water unit with spinning facility. (The user comments that it has never broken down in the 5 years that she has owned it).
7. Paraffin stove
8. Candles
9. Electric kettle
10. Electric fridge (upright)

APPLIANCE USE

There is one plug point available in the kitchen for the use of all appliances.

Reticulation ill matched to actual requirement for appliances in use.

Usage descriptions

Hot water for bathing, using a 'skottel' or portable tub, is heated in a large aluminium pot on the primus stove. Hot water for dish-washing is heated in the electric kettle.

Food is rewarmed by placing it over boiling water on the hot-plate. (The eaters do it themselves). Only the warming drawer of the oven is used for heating food. (This contradiction was not clarified, but may be explained by disrepair of the oven).

The **oven** was used for baking and roasting when it was still working. The interviewee said she needed the oven to make scones when receiving guests, and also "as ek alleen is maak ek scones".

Samp is consumed every day and requires a cooking time of 'about a day long', using up to 2 bottles of paraffin in the 'primus' stove on which it is cooked. It was commented that rice on the other hand had a shorter cooking time (but it appears not to be used as extensively as samp).

Energy Service Requirement:
The impact of the type of dish, the cooking method, the choice of appliance and fuel, the availability of, and preference for, specific foodstuffs, and how often it is consumed, on the energy consumption is illustrated by this comment.
This is an indicator of the need for research of all these issues in order to make appropriate appliances and energy sources available.

Vegetables have a relatively short cooking time and can be bought once a week on Saturdays when a marketing lorry sells in the area. She commented that potatoes are made to last long. (I assumed that this remark was related to 'shelflife').

The **fridge** is used to store a month's food stock bought once a month and consisting of eggs, butter, meat and a daily supply of milk. (verbal information was not 'cross checked' by looking in the fridge.)

A one month supply could require a large refrigerated storage space.

The household used to have a **paraffin heater** but it has been taken over by one of the children.

A preference for the **electric iron** was motivated by describing the difficulties of continually reheating a solid iron and cleaning off the soot deposited by the paraffin flame used for heating.

FUEL AND APPLIANCE ACQUISITION;

The electric stove was bought secondhand through a personal connection with an employer of one of the family members.
The kettle was bought from a shop in Claremont.
The paraffin stove is available from the K.T.C. general dealer.
Paraffin is bought locally from township mini outlets by the bottle and the user supplies her own bottles.
The cost is 85 cents per bottle of paraffin, and 5 are bought at a time.

After electrification, old appliances had been passed on to relatives in the Transkei.

APPLIANCE FIXING

The stove has been out of commission for some time but the user does not trust local repairers to fix it and trusted and skilled repairers have not been enlisted. When using the oven the trip switch is set off and thus it is no longer used.
The broken ironing board had not been repaired or replaced.
The outside light at the front door had been vandalised (cover and globe removed) and the bulb replacement was now exposed without a cover.

There seems to be no effective action taken to get repairs done. This suggests a need for investigation into the lack user motivation retain these broken appliances, as well as into appropriate access to repairs and appropriateness of using a technically unsupported energy service.

Location of appliances in the house.
Living room with dining seating around table (no 'lounge' seating) accommodated the TV set and Hi Fi set, and the table there was used to do the ironing on. (Ironing board reported to be 'broken')
A portable radio set played in the bedroom at time of visit.

The kitchen room with fitted sink and running water, accommodated the following appliances: electrical Stove, hotplate, kettle, paraffin stove, washing machine and fridge. The appliances were arranged along the walls and left a small central standing space which would seem to indicate a functional (task oriented) use for food cooking and clothes washing. (I omitted to ask whether the room, because or despite of, the fact that it contained these appliances, served any other function such as for eating or gathering, warming peoples' bodies, family private space as opposed to formal living room).

End of interview record

INTERVIEW NO 2
DATE: June 26, 1992
LOCATION: Thambo Square, Guguletu
INTERVIEWEE: Sarah

INTERVIEW MATERIAL

NOTES AND COMMENTS

INTERVIEW SITUATION

Interviewee: This young woman was introduced to me only as Sarah. She is the mother in a household with children.

Present: Mavis Mtandeki and Primrose Talakumeni as photographers and Xhosa language interpreters. Co-incidentally the interviewee was also fluent in Afrikaans and the interviews were conducted using both Afrikaans and Xhosa (the latter translated verbally to the medium of English). Maria van Gass as field researcher. (I speak Afrikaans and English) Mavis Mtandeki did the introductions.

URBAN STATUS AND HOUSING STOCK.

Thambo square is an informal settlement on an open space within Guguletu township. The house is a tin and timber shack with four internal spaces and an entrance porch, the floor is earth, covered with pieces of linoleum and carpeting, fitted and glazed windows and doors. Sarah has been living in Thambo Square for 6 years and previously in another 'pondokkie' (shack) for 7 years. Sarah's household is participating in the community resettling scheme at Thambo Square and will thus obtain housing supported with formal infrastructures, possibly including household electricity. The community members are waiting for this project to be realised, and Sarah noted that she had expected to have been re-housed by this time (the project has been running for longer than she anticipated).

HOUSEHOLD INCOME

This was described as variable, ('soos die geld inkom' translated: as the money comes in.) Later, when asked about selling things from home for an income, Sarah commented that people did not like home-baked bread, but that she sold broken biscuits and sweets, and that she might learn to sew. (She did not seem keen on the latter).

This description of income illustrates the typical disparity between the researcher's expectations and the interviewee's response on household income - which is not easily described

APPLIANCES LIST

1. Gas stove with three cooking rings, an oven and warming drawer. The 9 kilogram gas bottle was located next to the stove.
2. Small paraffin stove (make 'Sileni') spoken of as the 'Flame'. It was stored away and taken out to show me.
3. Four paraffin lamps with metal oil holders and glass flame shields.
4. Small T.V. set powered with batteries.
5. Electrical wall clock powered off the T.V. batteries.
6. Solid Iron, heated on the gas stove.

APPLIANCE USAGE DESCRIPTIONS;

Gas stove

Sarah has been using the same gas stove for six years and is very happy with it, commenting that it is fine to use. One just has to be careful; she takes the precaution of turning off the gas both at the point of use and at the supply bottle.
The oven is used on a regular basis to bake the bread for daily consumption (for school children's sandwiches). Food is warmed in the warming drawer.

The choice to bake bread rather than buy it needs to be investigated. Is it cheaper or does it fit in better with the budgeting procedure or is it a preferred use habit?

Paraffin stove

Sarah commented that paraffin was cheaper for cooking 'stampmielies' (samp) on, and she uses the Sileni paraffin wick stove to cook it on. This little paraffin stove is also used as a heater and for that purpose it is placed on the floor in the lounge.

Lighting

There are 4 school-going children in the household who do homework every day, mostly in the daytime but otherwise are dependant on the paraffin lighting, which Sarah found to be sufficient.

Water

This was a sunny day and Sarah was doing **laundry**, using various tubs, hands, and cold water. When queried about the desirability of using hot water for the laundry, she said that switching from hot to cold water gave her arthritis and it was best to stick to cold water all the way. Laundry is done 3 days a week.
For bathing **hot water** is prepared on the gas stove every morning and evening.

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For bathing **hot water** is prepared on the gas stove every morning and evening.

Ironing
The iron is heated on the gas stove, and it was pointed out that the 'Flame' smoked too much to use for this. Sarah said she would continue using the solid iron when she moved to an electrified house, but after some reflection said she would probably buy any electric iron that is cheap. 'Enige elektriese yster wat cheap is.'

Cooking descriptions illustrated the following:
Samp is cooked on a daily basis. Other dishes include cabbage stew, fried chicken pieces (in a pot or pan), carrot stew and 'stew.' Samp could be obtained from 'Swaei se winkel', (Swaei's shop) locally, or at Rylands. Vegetables were obtainable once a week on a Saturday from the market lorry. Meat is bought at the butcher's 'soos jy wil'.

Once a year in December the family gathers at her house for a braai which is held outside. On prompting from me she said that they missed the coal stove that her mother used and that heated everything.

There is no **fridge** and she said it was needed in warmer weather. She would have one if the money was available.

FUEL USE AND APPLIANCE ACQUISITION.

Gas is bought in a small (9kg) bottle, once a week, when money is in short supply, but there is a large (14kg) bottle available in the kitchen which is refilled when it can be afforded. The gas bottle in use is set up next to the stove. (I noticed the uneven floor surface, probably earth).

The **Sileni paraffin cooker** had been bought at the Rylands grocery store. **Paraffin** was bought at the local shop ('Swaei se winkel', A 3m square kiosk) at a rate of 2 to 3 bottles per day.

Regarding the relocation to new housing and the **availability of electricity**, the following comments were noted: electricity will be taken up if it is available (and affordable which in this case is a value judgement left to the community members); the present gas stove in use will be taken to the new house to use there - an electric stove will only be bought

Cost of appliance is cited as the overriding deciding factor when a fuel switch becomes possible.

when it can be afforded (no clarification was given of imagined financing schemes for such a purchase except that she had working sons who would hopefully pay for it).

Batteries are recharged every 4 to 7 days. Sarah attributes the variations to the level of charging: ' nie altyd ewe vol gelaai nie'. The batteries are hand carted to the point of supply and for this the family borrows a 'waentjie' (cart) from a neighbour.

This is a typical description of an energy service obtained from rechargeable batteries.

FIXING AND MAINTENANCE

It was noted by Sarah that the gas stove had been damaged in the previous house move (but apparently restored). The stove is manufactured to stand on an even floor surface, but in this house floors are of uneven earth. The gas stove has never broken down. (My observation was that the gas stove was maintained in pristine condition, and set spatially apart from other furniture in the kitchen room.)

The maintenance of paraffin equipment seemed to revolve around replacing wicks and glass shades, and was under control.

End of interview record

SET OF INTERVIEWS: 2. INTERVIEWS IN KHAYELITSHA

FIELDWORK

INTRODUCTION

KAHYELITSHA is a township which was created to house the African population in Cape Town after the failure of influx control. The initial development provided core housing and full urban services. Current developments provide sites and services. The following is a summary description based on a conversation with the office of the Cape Provincial Administration (CPA) on site and service development. This particular project is IDT financed through subsidies subvented to contractors for the provision of infrastructure. The cost per plot (average size 150 and 160 m sq.) of R7500 included: earthworks, water supply, sewerage, high-mast lighting and conveyancing (not allowing for electrical services). At this point in time some sites have been occupied and ownership is provided at no cost as there is a full IDT subsidy. Transfers of ownership are completed as sites are occupied.
This scheme has been processed with a high degree of community involvement under the auspices of the Western Cape United Squatters Association (WCUSA). The roads were surfaced and the township area was laid out in a conventional planning scheme. Electricity was at that stage made available only to non residential sites with business rights.

NATURE OF THE INTERVIEWS
Interviews lasting up to 1.75 hours were conducted in various households. Photographs were taken. A series of six interviews were conducted in informal and site and service settlements with the assistance of Lizo Ntloko. (Refer to the introduction to interview no 3.) These interviews were mostly conducted in Xhosa with me, Maria asking questions and responding to information, while Lizo Ntloko introduced the team to the household, gave information on our backgrounds to facilitate the acceptance of foreigners in the home. Lizo did oral translation from Xhosa to English and visa versa. Lizo had met most of the interviewees before and knew the urban areas very well. I sometimes thought that transmittance of information contained some of his own ideas and progressively worked at avoiding this by double checking so that the working relationship improved as we got to know each other's requirements.

LIST OF INTERVIEWS

INT. NO 3
Mrs Joqu. PJS site B Khayelitsha.
15th October 1992, Lizo Ntloko - interpreter

INT. NO 5
Cynthia Tolo. I-block Khayelitsha
15th October 1992, Lizo Ntloko - interpreter

INT. NO 6
Angela Sipaca. PJS site B Khayelitsha.
18th September 1992, Lizo Ntloko - interpreter

INT. NO 7
Nowongile Yevu. PJS site B Khayelitsha.
18th September 1992, Lizo Ntloko - interpreter

INT. NO 8
Julia Ntsanga. S-block Khayelitsha
24th September 1992, Lizo Ntloko - interpreter

INT. NO 14 Shadrack Mketshana S-block Khayelithsa.
28th October 1992, Lizo Ntlolo - interpreter

Lizo Ntloko is a field worker who has worked on various research projects in the urban areas around Cape town. Lizo is Xhosa speaking and well versed in oral translation into English and is well connected to people living in the informal areas.

INTERVIEW NO 3
DATE: **October 15, 1992**
LOCATION: **Site B Khayelitsha**
INTERVIEWEE: **Mrs Joqu.**

INTERVIEW MATERIAL

NOTES AND COMMENTS

INTERVIEW SITUATION
Interviewee: Mrs Joqu is a young married woman.

Present were Maria van Gass as interviewer, Lizo Ntloko as language interpreter and facilitator arranging introductions to people and situations familiar to him, Mrs Joqu as interviewee, and several female visitors who dropped in later as the interview was in progress.
The interview had been arranged the day before by Maria and Lizo, with Mrs Joqu's husband. At 9 am when we entered Mrs Joqu was in bed with flu but conducted the interview from there.

URBAN FABRIC

PJS SITE B KHAYELITSHA. It is an example of an informal settlement set within the boundaries of an existing serviced township. In this informal area there are no services or electricity to individual houses, and no set-out sites. However shared toilet facilities and water taps have been provided. Shacks are built to high density informal lay-outs with pedestrian access only, to most homes. The area is lit with high mast lighting.

HOUSE STRUCTURE

The shack (PJS 443) is of timber structure with ply-board covering and no insulation. The floor is earth covered with pieces of vinyl. The home consists of a single room (2.5 x 4.5m approximately) with one window (0.8x1m) and timber door. There are no internal divisions. The room is furnished with two single beds, a few loose benches, a table with kitchen equipment, loose equipment, a makeshift cupboard, and a few chairs.

The house is located in very close proximity to others all round - set apart only approximately 400 mm at some points. Outside conversation can be heard through the

walls. The surrounding ground is white sand. This house is located at a 2 shacks deep setback away from a surfaced township road.
The communal toilet facilities and a water tap are located about 100 meters from the house.

HOUSING HISTORY

Mrs Joqu has been living in the house with her husband for one and a half years. They bought the house from the previous owner. Before that she had been living in the Transkei with her parents at Mount Fletcher, where she was born. Her husband has been living in Cape Town for the past 5 years. There are no plans afoot for moving to another house.

Description of a rural urban migration.

HOUSEHOLD DEMOGRAPHICS

Mrs Joqu and her husband are the only permanent residents of the house. Their two children live in the Transkei with their grandparents. The children come here during the school holidays. They have no problem with accommodating the children during the holidays.

Rural - urban family split.

HOUSEHOLD BUDGET

By the time we got round to income issues several visitors had arrived and Lizo advised that it would be insensitive to expect Mrs Joqu to give detailed information at this time. Her husband is employed at the Regional Services Council, and brings home a regular income on a fortnightly basis. For additional income Mrs Joqu sells beers from her house, mostly at weekends. She could not say how much she earned in this way because of the mode of household expenditure where she used money as it came in. In the period between fortnightly incomes, while she is waiting and needing money, she earns money from selling beers.

Two sources of income that differ in nature.
There is no real measure of income as cash flow is too fast (Like water).

The beer business consists of buying about 8 cases of beer per week at R22 per case (24 bottles per case) and selling at R2.50 per bottle. She recoups these purchasing costs from her husband's regular income.
About R200 per month is sent to the Transkei for the keep of their children. The budget for groceries was stated to be about R50 per week. Later, when discussing the

comparative ease of fuel acquisition in the city and country, she commented that as a city housewife she could assist her husband in getting money by buying and selling things as there were more ways to make money.

LIST OF APPLIANCES

Paraffin Flame cooker (one)
Paraffin lamp (one)
Portable radio

Cooking appliances
A 'Flame' paraffin stove is used. There are no other cooking facilities.

'Flame' is the name used in the Cape Town area for a small single plate paraffin wick stove. It has a full length metal casing around the stove. The cost here is about R25. The burners are replaceable.

Foodstuff
The following dishes were reported to be generally cooked: steambread, rice and meat, mealies (samp), 'stywe' pap, vegetables, spinach and cabbage.
Food is bought in bulk at the bazaar in Greenpoint (urban area near D F Malan Airport). Smaller items are obtained at the local spaza shop but it is too expensive to buy food there.

Research lead:
What are the cooking times and typical fuel consumption used for processing these dishes. Does it vary from household to household and which factors determine variations?

Food Storage
There are no storage facilities such as a cupboard, or cold storage such as a fridge, in the house. Food is kept in the retail packaging in cardboard boxes under the table in the corner of the room. When asked about cold storage Mrs Joqu replied that she needed it but that there is no way to get it.

Cooking
Samp is put in a pot with water on the flame and 'boiled and boiled and boiled'. The cooking time is 3 to 4 hours. This is eaten at lunch time with beans or meat. The task of cooking is shared between the husband and wife: 'they help each other'.
Wood fires are occasionally made outside when it is cold or to roast meat on.

Incident of fuelwood use.

Desired cooking facilities Mrs Joqu commented that she would very much like a bigger space to work in. She would like to have an oven but has never had one before. She has done baking on the 'Flame' and on an open fire. This kind of baking is done in a pot on the stove to make bread and 'vetkoek'.

Relationship between foodstuff, food preparation, familiar dishes and appliances.

Heating Water
Mrs Joqu fetches water twice a day herself at the shared water tap at the toilet facility about 100 m from the house. The water is available free of charge. For clothes washing she fetches three containers full.
Water is heated for cooking and bathing. Clothes are washed in cold water. The aluminium stove-top kettle (1 litre) is used on the paraffin 'Flame' to heat water for tea and washing.

Research lead:
How much of the fuel consumption goes toward food preparation and how much toward water heating.

Space Heating
The house consists of a single room. The 'Flame' cooker is used as a heater when it is not in use for cooking.

Description of the high intensity use required of the appliance.

Clothes drying
Clothes are dried outside on a communal washing line.

Refrigeration
On a question on the desirability of a fridge she responded that it was needed for cool drinks and meat and 'other things'.
On the previous day when we visited the house to arrange the interview Mr Joqu sent out a friend to buy 2 litres of cooled Coca Cola from the local shop - an operation that took less than 5 minutes.

The network of local small shops seems to provide the luxury of some refrigeration services.

Lighting
One paraffin lamp is used. Candles are seen to be too dangerous and are not used.
The lamp is used for general lighting from dusk until they go to bed at about 9 at night. Cooking is sometimes done at night, sometimes in the day time.
The day was clear and between the hours of 9 and 10.30 am the interior of the house, was very dimly lit (only from the window through a lace curtain) in comparison to the outside light level. Eyesight adapted to these conditions and as the door was closed there was little disturbance from differences in lighting levels.
On a question from me about the need for light when venturing outside at night, Mrs Joqu replied that the high-mast lighting was sufficient for trips to the toilet and that she liked the high-mast lighting.

Highmast lighting and safety.

Ironing
She uses a (defunct) gas iron, borrowed from the neighbour which is heated on the 'Flame'. The bed is used as an ironing surface.
Preferred appliances
Her interest is to have electric appliances, but there is a perception that electricity can only be had in a 'formal house'. 'Because we are not in formal houses we don't talk about it'. She also said that they would definitely have it if they could afford it.
Mrs Joqu would like to have a TV but money is a problem.
She would like to have a fridge to cool her beers for selling.

Electricity associated with a 'formal' house and economic activity.

Space
All household activities are accommodated in one space. Lizo suggested we ask Mrs Joqu's opinion on this, she said that there was a problem when visitors slept on the floor and one had to walk over them to do cooking activities in the morning.
She said she would like to have separate spaces for cooking and living.

Fixing of appliances
Both the 'Flame' stove and the paraffin lamp were seen as irreparable items. The stove wick is a fixture and failure means the end of it's life. The wick in the lamp is changed by Mrs Joqu herself and she finds it an easy task.

FUEL ACCESS AND USE

Paraffin is obtained from the spaza shop about 50 meters from the house. Fuel consumption for both the flame and lamp amounts to about 10 litres per week. A 5 litre supply, at a cost of R5.00, is bought in that quantity and thereafter fuel is bought per bottle at one rand per bottle.

Fuel acquisition changes as the budget runs out.

Gas
I asked if she would like to use gas and she responded that, 'yes, she would like a stove and a lamp'. She had never used it before and did not know what it would cost.

About the rate of fuel expenditure it was commented that 'we only spend a lot when we heat up the house in winter with the paraffin 'Flame'.

Change of life style;

I asked Mrs Joqu about her cooking habits when she was living in the Transkei with her parents. There was no paraffin but wood was used as a cooking fuel and special three legged pots were used on an open fire. She made it clear that she preferred cooking on paraffin rather than wood. She said that the same foodstuffs were consumed and described the difference in food as in the taste of woodsmoke given to food prepared on a wood fire.

The quality of the dish prepared is cited as reason for fuel switch (not appliance, or fuel-use, cost or accessability).

On a question about the availability of paraffin at her home in the Transkei and the reasons for not using it, she responded that paraffin was available in a shop there at the nearest town which was a long way away and further, that it was too expensive to use. Answering my question as to whether being in town changed the cash access to fuel she responded that as a city housewife she could assist her husband in getting money by buying and selling things as there were more ways to make money.

Lack of cash as barrier to use of specific fuel.

End of interview record

INTERVIEW NO 5
DATE: **September 15, 1992** AT 12.30 pm
LOCATION: **no 38, I-block Khayelitsha**
INTERVIEWEE: **Mrs Cynthia Tolo.**

INTERVIEW MATERIAL

INTRODUCTION
This interview of a household living in an recently established township provided with standard housing was done to inform myself of the comparative situations of households with access to urban facilities and housing.

INTERVIEW SITUATION
Interviewee: Mrs Cynthia Tolo, widow and head of an extended household.

This interview was pre-arranged by Lizo Ntloko. Lizo knows the family fairly well as they belong to the same clan.
The interview was conducted mainly in Xhosa, but with many English interjections as well as some question and answering that could be conducted largely in English as both Cynthia and her daughter speak English fairly well.

Mrs Cynthia Tolo received us in the big room which contained a large double bed and other smaller items of furniture such as a bench and a chair. The grandchildren (toddlers) were in and out of the house. Her daughter who has full time employment, was busy in the kitchen and participated in the interview when we moved there. She served us coffee. Another of her grown up daughters dropped in for a while, but apart from a few social pleasantries did not participate in the interview.

URBAN FABRIC

Khayelitsha is a new township and this area was opened for occupation after 1986. The urban erf lay-out is formal with full services such as surfaced access roads, waterborne sewerage, a conventional water connection to each plot, refuse removal, high-mast street lighting. There is as yet (at the time of this interview) no electricity supply to the 'core' houses. Plots are sold with a starter core-house built in brick and roofed with asbestos-cement sheeting.

NOTES AND COMMENTS

HOUSE STRUCTURE

This three roomed masonry core-house has one large room, a bathroom with bath and toilet and cold water on tap, plus a room with a kitchen sink with cold water on tap.
There is no ceiling to the asbestos cement roof and the kitchen roof has been blackened by paraffin smoke.
The floor is concrete, not covered, except with loose pieces of vinyl.
The rooms are closed off by internal doors, there is a front and a back door. There is one steel frame window to each room.

There are two timber shacks in the backyard each consisting of a single room. These looked like the locally manufactured timber units with horizontal cladding slats spoken of as 'bungalows' These are free standing and are used as additional bed/living accommodation by two of the adult household members.

HOUSING HISTORY

The family have been living in this house since October 1985. Before this they were lodging from 1968 to 1985 in a single room, housing the whole family, in someone else's house in Guguletu.

Promises by authorities that their present core houses would be extended have never materialised.

This house is rented at a rate of R24 per month which is said to include all service costs.

HOUSEHOLD DEMOGRAPHICS

Mrs Cynthia Tolo is a widow and head of the household. Two of her own grown up daughters and one grown up son live there; each with a toddler of her own. There are also two school-going daughters of her own living there. Mrs Tolo looks after her grandchildren daily.

The description of the payments as 'rent' by urban dwellers who are confronted with various complex tenure agreements, previously formulated to exclude ownership, may not reflect the true situation. It was my experience that the word is used to refer to bond repayments, tax or service rates, rent, etc.

HOUSEHOLD BUDGET

The total 'income' of the household (composed of the various income components contributed by household members) was estimated at R1700 per month.
However Cynthia said that two of the grown-up children regularly fail to contribute towards household expenses. She manages to extract money from her son (for her work of looking after his child, as there is no mother) through his employer. One of her daughters has steady employment and contributes regularly. Priscilla emphasised that her children did not have to pay rent even for the outside rooms - it is 'not done', and money contributions are not paid off against access to the household benefits. All of these family members share in the household activities and eat from the same kitchen. At the time of the interview Priscilla had just come back from two months of being away and said she was in the process of taking control of the household budget again.

LIST OF APPLIANCES

Small black and White TV powered off car batteries.
Hi-Fi set powered off the same batteries
Paraffin heater (600 x 400)
Battery powered wall clock
4 Paraffin lamps
One paraffin fridge
Two-plate gas stove
'Flame ' paraffin stove
3 broken paraffin stoves (1 'Flame', 2 'Primus')
1 solid iron

The complexities regulating contributions to the household income, as described here, indicate that a simplified addition of nominal earnings (often used in data collection surveys) may misinform on the actual status of the incomes and expenditure from the household budget.

APPLIANCE ACQUISITION

The appliances were all bought new for this house. There were no gifts. Some were bought for cash and some secondhand goods were accessed through hire purchases at Ellerines.
The fridge was delivered by the shop to the house. The pots and pans as well as the iron were all bought for cash. These appliances were acquired over time.

This description of appliance acquisition points to the possible connections between the nature of household income (in this case fairly secure) and appliance acquisition patterns.

APPLIANCE USE

Comparison between gas and paraffin stoves for cooking;
On prompting from me Cynthia said that gas was better for frying than paraffin because the 'Flame' stove was not adjustable enough.
Queried on the differences between cooking on gas and on paraffin, Cynthia said that the gas stove is more easily adjustable than the paraffin stove, and that the paraffin stove gave food a specific taste from the smelly fumes.

Batteries
Of the two batteries in the house, one was out of commission so that both TV and Hi Fi were powered from the same battery - however she said that she would prefer to have a separate battery for each. When both appliances are powered from the same battery it has to be charged every four days, if only the TV, the battery charge lasts for one week. Batteries are charged at the college about 1.5 km from the house, and the charge is R3.50 a time. The wall clock is run off small dry cell batteries.

Research lead:
It could be that the labour involved in recharging or the unexpected interruptions of service inform the decision to stretch time between charges. It could also be that the benefits of TV and Hi-Fi are enjoyed by different members of the household and that this results in a need for separate battery costs.

Lighting
The house has a higher daylight level than some of the informal houses I have seen. Priscilla said that absolutely no candles are used in the house as the death of her husband had resulted from a candle sourced fire. However, I saw one candle stored under the kitchen table next to the sink.
Paraffin lamps are allocated one per living room; also one each to the outside rooms.

Ironing
There is one iron which is heated on the 'Flame' or the gas stove when that is working. There is an ironing board. Clothes are ironed for daily wear to work and school.

Paraffin heater
The omni-directional burner is housed in a 600 x 2400 metal casing. The plate carrying the tradename was missing. Cynthia also used this to dry clothes and nappies over. It takes three bottles of paraffin to fill it and it then lasts one week.
On a question from me, Cynthia said that the kitchen was not warmed by the cooking and that one needed an oven for that. There is a couch in the kitchen. There is no lounge furniture elsewhere in the house.

Paraffin fridge.
Trade name: West Point International
approximately 750 deep, 600 wide 1500 high.

The fridge does not work at the moment and it has been out of commission for the past 10 months. Before that it functioned without problems for 6 years.
Responding to my questioning, Cynthia said that she does not know of a repairs-man who would come to the house to check it out, although that would be very convenient. When I asked why it was not being repaired, she said that transport was a problem and that it would be costly to repair.
Cynthia expressed the desire to exchange it for a deepfreeze.
The fridge is empty at the moment and is not used for other storage. When in use, she stored food for the children (she looks after 3 toddlers) and made ices to sell to kids on the street.

Research lead: Is there any correlation between multiple functioning of rooms and energy use for ambient heating. From a user perspective the question would be: is there any requirement for the provision of multiple functioning spaces that correlates with energy use for space heating?

Paraffin stove
Several paraffin stoves had failed recently (see above) and the Flame in use was borrowed. As the gas plates are also presently out of commission, all the cooking, for nine people, is done on the Flame.

Cooking
The whole household eats from the one kitchen. Cynthia, the mother and head of household, cooks on weekdays and other household members cook at the weekends.
Foodstuff:
Dishes made on a regular basis:
Morning : porridge, boiled or scrambled eggs.
Lunch: squash, rice, potatoes and carrots.
Supper: samp and beans for the adults, meat, chicken pieces, stew,
vetkoek, steam bread with meat, (pot bread, at times).
Rooibos tea, consumed all day, also by small children.
Full meals are had at noon or in the evenings.
Access to food: Bread is bought from the local shop, but there are no vegetables available close by. A lorry with cheap vegetables used to come daily but that man had died and the other lorry which came daily was too expensive. Cynthia sometimes buys fresh spinach there.

Heating food
Plates of food are heated by putting them on a dish of warm water with a lid over, and this is done by the eater himself. The babies' food is heated in the same way.

Water
There is cold water on tap at the kitchen sink as well as in the bathroom. (The latter was used to fill a very large container while I was there - to me it seemed more convenient for this, as the kitchen tap was very low over the sink). I was asked not to take a photograph of the sink because it had unwashed dishes in it.
There is also an outside tap. At the time of the visit an elderly tap repairs man was sitting in the yard where he was repairing water pipes.
Water is heated on the 'Flame' and on the gas stove only when it is not used for cooking (cooking preference to gas stove).

I was struck by the fragility of domestic systems that are difficult to maintain in a context of poverty. This may have important implications for the setting up of normative patterns of energy use for this user group. This may also indicate a requirement for the flexibility of energy systems to suit user requirements for adaptation to variations in circumstances.

Research lead:
The large range of water heating service requirements that is here met by the use of different procedures and appliances requires further investigation. How can these energy requirements be improved or simplified, without the energy wastage associated with electrical storage geysers.

Tea water is heated in the kettle on the stove, and water for bathing in a big pot, taking a long time. This is seen to be expensive. The children and all adults bathe daily and this requires bringing the big pot to the boil 8 times per day. (A photograph was taken showing the big pot stored on the top shelf).

Water for washing dishes is heated in a large pot on the stove.
The small sized bath is used by mixing cold water from the tap with water heated in a 'skottel', (washing bowl). There is a flush toilet.
Water is paid with the rent.

APPLIANCE FIXING AND MAINTENANCE

There was a big joke going about the man who was doing repairs to the water pipe at the time of my visit. It was said that he was probably expecting a cup of coffee for his work, and so I asked about remuneration and costs, and Priscilla the daughter said that in fact he was a friend and not paid, but that she in any case intended buying him a packet of cigarettes.

Paraffin stove
Over the time they have lived in this house, 4 paraffin stoves have been discarded (2 Primus; 2 Flames) The two Primuses were lost within 6 months. The faults were described as follows: the stove smokes excessively, the tops were renewed (burners, available at the shop) but the problem persisted. Cynthia tried using clean burning paraffin, but it made no difference. She believes the problem to be in the design inside the stove.
Another problem mentioned, was that of the nipple getting blocked or enlarged, so that it burnt out of control. (I looked at the items and they seemed pretty flimsy, as the top potholder plates had disintegrated.) These 'Primus' models (pressurised) cost R37 each. They are now defunct and stored under the kitchen sink.

There is a need for improved design of paraffin appliances.

The 'Flame' (wick stove) currently used was borrowed and also tended to smoke when ignited.

The **two plate gas stove** is also out of commission and has been for the past 2 to 4 months. It has to be taken to the hardware shop for repairs. In the meantime a borrowed Flame is used, but it smokes.

When in use the gas stove uses a 6.4kg bottle of gas in 3 weeks. The cost of a refill is R11.50 at the local shopping centre.

ELECTRICITY

The following was said: we still don't know, but hear that electricity will come, we don't know when. Nobody has come to talk about it again. The 'Civics' (representative on the local street committee) had asked about electricity earlier this year. (I gather that a survey may have been done).
Early on in the interview she said that the cost of electricity could be shared by all in the household which could make it affordable. (I wonder if this comment was suggested by Lizo?)

End of interview record

INTERVIEW NO 6

DATE: **September 18, 1993 at 10am.**
LOCATION: **PJS site B Khayelitsha**
INTERVIEWEE: **Mrs Angela Sipaca.**

INTERVIEW MATERIAL

NOTES AND COMMENTS

INTRODUCTION
It was at this point in the progress of interviews that I became more aware of the varying values attached to selfbuilt housing. I describe this in the introduction to this set of interviews.

INTERVIEW SITUATION
Interviewee: Mrs Angela Sipaca a housewife of 23.

On our previous visit to the area Lizo Ntloko and I had requested an interview with Angela personally, but did not set a time.
When we entered Angela was bathing her child of one and a half years in a plastic bath on the kitchen floor (photograph was taken).

Present were myself, Maria as interviewer, Lizo Ntloko as Xhosa language interpreter, Angela Sipaca, her naked toddler cradled on her back. (She clothed him half way through the interview and he then entertained us with his antics).

This interview was largely conducted in English with assistance from Lizo with explanations in Xhosa when communications failed.

URBAN FABRIC

PJS SITE B KHAYELITSHA. It is an example of an informal settlement set within the boundaries of an existing serviced township. In this informal area there are no individual services, and no set-out sites. However shared toilet facilities and water taps have been provided. Shacks are built to high density informal lay-outs with pedestrian access only, to most homes. The area is lit with high mast lighting.

HOUSE STRUCTURE

Angela's husband had built this house in two days with the help of friends. It consists of a sturdily constructed timber roof and walls and single layers of external cladding with no insulation. The floors are concrete slabs, some covered with pieces of carpeting and matting. The windows and front door are various re-assembled secondhand units, well fitted. There are no internal doors between the three rooms, but a net cloth divider to the bedroom. This is one of the bigger houses in the vicinity, with approximate dimensions; kitchen 2.25 x 5.5m ; lounge 3.5 x 2.5m; Bedroom 3.5 x 2.25m. There is a demarcated private outdoor area at the front door.
The house is located in close proximity to surrounding houses, and it is set in the fourth layer of houses from nearest street access.

Space-heating requirements will be influenced by lack of internal doors and size of internal spaces.

This type of density of urban fabric has repercussions for fire-spread hazards, light and heat penetration from sun orientation and lack of household privacy.

The lounge is furnished with a couch, chairs and TV, Hi-Fi.
The kitchen is furnished sparsely with an ironing board, kitchen dresser and two kitchen tables bearing the appliances. There is enough free space for storing loose objects.

HOUSING HISTORY

Angela grew up with her grandfather, brothers and sisters, and aunties and uncles in Guguletu, where they lived in an electrified house. She left that household in 1986, when she got married. She moved to Langa where she and her husband lived in a single roomed backyard shack with electricity. (There were three shacks). Here they operated as a separate household.
In 1989 she moved briefly to her grandfather's house while her husband built their new house, where they have now been living for the past three years.

HOUSEHOLD DEMOGRAPHY

The household consists of Angela, her husband and small child.

HOUSEHOLD BUDGET

Angela's husband has been employed at Golden Arrow for 3 to 4 years. They do have a monthly budget. Lizo assisted here and there was a little pressure for Angela to give the figures in monthly rates, whilst she seemed more comfortable with weekly figures.
There are monthly instalments to be paid on jewellery, bedroom furnishings, the Hi fi and clothes to three different creditors. The amounts are respectively R68; R95 and R50.
Her final estimate of expenses amounted to about R1000.

The weekly budget for food is R80 - about R320 per month.
Fuel costs are R20 for paraffin and R25 for gas; This amounts to R45 per week. Paraffin is bought on a weekly basis.
Angela and her husband save about R200 per month at the bank for unforeseen things such as funerals and for a new house.
She and her husband each have R50 per week in pocket money.
At the moment her husband is participating in a work strike and she sells skipper t-shirts to supplement their income.

LIST OF APPLIANCES

List of present appliances:
Gas stove with oven - table top combination
Black and white TV
Hi Fi
Paraffin heater
Paraffin stove 'Flame'
Thermos Flasks 2
Paraffin lamps 2
Electric toaster (stored)

Research lead:
This practical exercise, in trying to fit household income and expenditure patterns into a budgeting model, again raised questions for me about the appropriateness of such models for the understanding of household budgets in a context of poverty. The correlations between income periodicies and fuel expenditure patterns defy any budget overview. The interviewee's method of budget management may be different to the interviewer's analysis.

APPLIANCE ACQUISITION

Langa appliances previously used in electrified shack;
There they had the following electrical appliances: iron, kettle, toaster, 2 plate stove, a ceiling- and a bed-light.
Electricity was supplied with a lead from the main house (They paid R15 per month **minimum** for this electricity, irrespective of consumption which was not metered). They used adaptors to the lead plug. Angela was then still at school and studying at night.
They used the Hi Fi set off batteries in Langa as they had a battery from before and did not want the battery to deteriorate.

Change of Appliances:
When they moved to PJS, where they do not have electricity, they kept the same iron, she said it was adapted to use on the stove, as it had 'no holes'.
They still keep the toaster.
They sold the kettle and got a new one for the stove. The light fittings were left in the shack, and the plugs and lead were given to her father.

Energy transition - not in an hierarchical ascent to more convenient or efficient fuels, but a change in energy use subject to housing needs and housing priorities.

Appliances were adapted to the new situation and retained.

APPLIANCE USE

Two-plate gas stove and oven combination, **table model.**
This was bought new on terms over six months for R360. The price included a 9kg gas bottle.
The gas bottle is refilled at the clinic 1.5 km from the house. Angela takes it there in a wheelbarrow. Angela had been away for 3 days and the gas had run out; she was going to fill it the next day. (There was a joke about her husband being too lazy to go and fill it). In the mean time she used the Flame.
The oven had been out of commission for the past three months and she said it does not 'take the flame'. She will have to take it to the hardware store where she bought it. She will transport it on the wheelbarrow and intends to do it so that it will be fixed before Christmas when she will do special cooking.

She estimated that the repairs will cost R85. (This may be a flat rate).
Gas consumption is about 9kg for 5 weeks (even when the oven works) and it costs her R24 for a refill.

This form of purchase relates to the household's particular income patterns - her husband has a stable salaried job and she buys other domestic items on HP.

Extra effort and money allocated for special occasions such as Christmas.
The long term for which the appliance is out of action, may be the result of the lack of adequate maintenance systems to support the use of such appliances in this community.

She likes the gas stove because it does not smoke. The setting of the flame works well even on 'small.' Samp on it is OK (easy to cook).
Angela says she likes the gas cooker better than the electric plates because she can see the flame. Angela was speaking in English and took her time to express herself - at this point Lizo became agitated and prompted her with reasons for her likes and dislikes, she however persisted with her initial sentence about the visible flame. She also thinks that electricity costs more than gas.

I interpreted this remark as a user requirement for practical control of heat settings of appliances. The invisibility of electricity makes it difficult to assess performance.

The black and white TV was bought second hand for cash and it is powered off batteries. Angela says that it uses more power than the Hi-Fi.

'Secondhand for cash' - this seems to be a convenient way of obtaining appliances - that could indicate the compatibility of this procedure with the nature of the household budget and a dependence on local informal commercial networking.

Batteries
There are three batteries on the floor next to the TV table of which two are in use, one for the TV and one for the Hi-Fi, The one is a truck battery, the other a car battery.
The TV was brought along in the move from Langa.

Heating food
While the oven is out of commission Angela cannot use it for heating food and she heats food over a bowl of water on the stove. This is also done to heat baby food.

Cooking
Samp is soaked for 4 hours before cooking it - the cooking time is 2.5 hours.
For most of the dishes she makes she basically needs to heat two pots simultaneously.

Foodstuff
Samp: the Xhosa word was taught to me: Umugqusho
Mealie-meal is used for a breakfast porridge.
'Stywe pap' made with maize meal is used in the evening and for a dinner dish with 'Bisto', otherwise with potatoes and cabbage or with shesheba (an accompanying sauce sometimes with vegetables as ingredients).
African Salad, (in Xhosa umugushu) is eaten with sour milk for supper.
Sometimes 'krummelpap' is made.

Research lead
Research into the dishes commonly prepared and then into the energy services required for their preparation.

At midday the meal is usually bread with something like eggs. Bread is obtained from the shop. Sometimes steam bread is baked at home.
When the oven is working, Angela makes scones in it.

Rice is eaten with chicken pieces or red meat and vegetables. This means that there are separate pots for the rice, the meat, the vegetables, unless the latter is combined in a stew. In practice Angela reheats the rice on water when she is dishing.

On Sundays she sometimes makes a fresh salad.

Making amurewu (this is a home brewed drink)
A maize meal porridge is made and cooled off and then the skin is removed. Yeast sugar and flour is now mixed in, and the dish left to stand for 24 hours, after which it is strained. It is a drink that can be cooled in the fridge.

Heating water
Water is heated in the kettle on the stove: in the mornings for tea, then one kettle full for dishes, then half a kettle for the baby's bath. For daily bathing two kettles full of water is boiled.
Otherwise water for cooking is heated in pots.

Refrigeration
Angela described the following method used to cool drinks when there is no fridge: A hole is dug in the ground outside and the goods put in it overnight. This is what they used to do at KTC squatter settlement.
Angela said she would very much like a **fridge** to put drinks, sweets and fresh and sour milk and amurewu in. She would also put meat and vegetables in the fridge. She uses powdered milk and there is fresh milk available at the spaza shops. Lizo confirmed that the spaza shops have gas or paraffin fridges. I asked whether these shops offered a refrigeration service for the private use of households in the area and the response was no, that the shops are too busy. It was mentioned that there is a house in the vicinity where someone has a fridge.

I asked her why she has not got a fridge at the moment and she replied that she does not like a gas fridge because it is not 'strong', it does not work well and is warm from behind.
She has experience of this from her father's business, and thinks that a paraffin fridge could be better. She said that if she had a better place to live she would want an electric fridge. You can see the flame behind the others and she is afraid of both, so she would rather wait until she had electricity.
I asked her how she managed with **new appliances** and she said that the shop showed you how to use them, or there is a booklet with the appliance.

End of interview record

The fuel use pattern in the household becomes a barrier to appliance use. This may be described as a suppressed demand.

Housing type associated with sophisticated appliances.

INTERVIEW NO 7
DATE: **September 18, 1992**
LOCATION: **PJS Khayelitsha**
INTERVIEWEE: **Nowongile Jevu**

INTERVIEW MATERIAL

INTERVIEW SITUATION
Interviewee: Nowongile Jevu.

Mrs Jevu is a widow and aged around 65 years. She is illiterate, she speaks Xhosa only. The interview proceeded with a three way translation and many lengthy explanations. This was the second interview of the day. The interview took place in the middle room of the house while a number of clients (about 5) were drinking and playing cards in the front shebeen - the spaces are linked by a door and a lot of noise and talking was transmitted both ways. Once a client came in to buy more drink from the back room. This interview was recorded on tape, to which Mrs Jevu had no objection, however there was such noise that my questions are barely audible on the tape, though other voices are more than clear.

Mrs Jevu's two grandchildren sat around us and there was some pleasant interaction with them. Photographs were taken for which Mrs Jevu smartened up her dress and toilet, and photographing in the shebeen was accompanied by posing and merriment.

URBAN FABRIC

PJS SITE B, KHAYELITSHA. This is an example of an informal settlement set within the boundaries of an existing serviced township. In this informal area there are no individual services, and no set-out sites. However shared toilet facilities and water taps have been provided. Shacks are built to high density informal lay-outs with pedestrian access only, to most homes. The area is lit with high mast lighting.

NOTES AND COMMENTS

HOUSE STRUCTURE

Mrs Jevu lives in a house she built for herself: it is a single skin, single storey timber structure of unusual height. The floor is earth, covered with pieces of linoleum and wood. The interior is exceptionally dark and during our visit we sat in the second room from the front which has internal doors leading off to three more rooms. There are no windows (possibility of security measure). One of these rooms is linked to the shebeen with a hatch through which bottled beer (her daughter's business) is sold. The entrance room is used as a shebeen. There is also an external room attached to the house in which her daughter lives.

HOUSING HISTORY

Mrs Jevu has been in Cape town for the past 5 years.

HOUSEHOLD DEMOGRAPHICS

She lives with her daughter and the latter's three children, as well as two other grandchildren (total of 7 people).

HOUSEHOLD BUDGET

Mrs Jevu earns her income from selling *Umgqomdhothi* (a mealie meal brew) and, previously, also from cooking and selling 'skaapkop' (sheepshead). After a long struggle she has managed to access her pension. We inspected her pay-out slips and there seems to have been a bulk back-pay of around R1000 plus monthly payments of R295.
Her daughter does not contribute to household expenses but she shares in the household kitchen.

LIST OF APPLIANCES

Flame paraffin cooker
One paraffin lamp
Candles (at times)
Large metal drums and half-drums on the open wood fire.
Imbawula for space heating - (a tin drum with holes, fired with wood).
She has no TV or radio

APPLIANCE USE

Cooking
A paraffin Flame is used for the family cooking.

Water
Water is fetched from 'across the road' by the grandchildren, once they come back from school. The use for the house is about 20 litres per day and extra for brewing. Household water is heated on the Flame, in the same pot that is used for cooking food, except for tea water which is boiled in a tin (the photograph shows a kettle). She uses cold water to wash her clothes.

The quantities quoted reflect information given in response to direct questions, sometimes cross-checked by subsequent questions or looking at the vessels. In this situation of difficult communication the concept of everyday use may have excluded information on periodically performed tasks such as bathing and laundry.

Skaapkop (A Dish of roasted sheepshead, commonly prepared for commercial purposes in the informal sector).
She used to prepare skaapkop to sell but cannot find sheepshead any more. This she sold to customers in the area. This is cooked in a large half drum on the open fire. The heads are cut in half to sell and eaten 'on its own ' here, but 'at home' it used to be eaten with other things.

Space heating
In the shebeen she uses the imbawula with firewood for her customers' comfort.

Lighting
The interior of the house is extremely dark as there are no windows.
She uses the paraffin lamp for her customers in the shebeen which is housed in the front room of her house. In the back of the house the family uses candles.

There are unresolved questions around the dark interiors commonly found in self made houses: are these purposely designed and the lighting levels acceptable, or are there other factors informing this occurrence. How do these lighting levels affect the execution and timing of domestic activities?

Foodstuff
The household of seven all eat together from the same kitchen.
The foodstuffs mainly prepared are the following:
'Stamp mealies' for main meals.
'Stywepap' and vegetables. (Less frequently it is eaten with meat and vegetables.)
'Mealie pap' (maize porridge) for 'African-salad'.

The transitions involved in rural urban migration have an effect on domestic lifestyle and energy use. The question of migration to an urban situation where poverty combined with an increased reliance on commoditised energy leads to energy poverty, needs to be investigated.

Umgqomdhothi

This is a maize brew that Mrs Jevu prepares twice a week to sell in her shebeen.

Making the brew:

She goes out to chop the wood in the nearby bush (in the lapa I saw bundles of long brush wood). This takes about 3 hours. However when she has a chest problem her business has to stop because she cannot chop wood.

She heats a large, half-full drum of water on the fire. She positions the drum on a tripod of three motorcar wheel-rims, on the ground in front of her house and makes a fire under it.

In a second container, a large tin vessel, she stirs 5kg of mealie meal into water. She brings this to the boil and then adds the mix to the large drum of water, stirring it until it boils - this takes about 2 hours. The drum is then taken off the heat and left to cool for 24 hours.

At this stage 4 packets of Ntombomela (a yeast substance) is stirred in and the brewing process starts up within three hours. When the brewing is completed the beer is strained and ready for consumption.

The beer is stored in containers (large plastic pails) in the shebeen room. This stock lasts about 2 days.

Economies: From each pail of beer she makes about R20. The 'mealiemeal' and additives cost about R26 per brew. The total income per brew is about R40.

(Lizo and I calculated an income above cost of ingredients of about R14, which does not include costs for labour or wood). The cost of wood when she has to buy it is R15 (5 bundles at a cost of R3 each).

The small profit margin of this labour intensive enterprise raised questions for me around the motivations for undertaking it and also around the validity of the evaluation of the undertaking in terms of economic models used in the mainstream economy. There could be agendas of tradition or social exchanges involved that are not obvious. It could also be that, in this context of poverty, the need for cash is so great that to access it is a vital survival strategy.

The cost of wood makes the purchase of it uneconomical in terms of this economic enterprise. Cash becomes a barrier to the access of energy. The commodification of energy may well put energy out of reach of the very poor.

The question that came to mind in view of the economics of the brewing business, is whether electricity or any other commercial energy source can be used as a tool to access cash income for the very poor. It is clear that the convenience of electricity would be of great advantage if appliances suitable for beer brewing are available. (It is doubtful that the appliance packages currently promoted in the electrification drive will be at all suitable).

The accessible and manipulable nature of woodfire technology puts it within reach of the user. The access networks accompanying more 'sophisticated' technologies may act as barriers to the very poor.

FUEL USE

Mrs Jevu buys a 20 litre drum of paraffin at a time for which she pays R24. She hires children to fetch it for her from the shop.

Wood is used for the beer brewing and skaapkop preparation which is done in the open space in front of her house. She usually collects wood herself from the nearby bush (free) but when she has to buy wood it costs R3 for a 'small bundle' of which she uses 5 per brewing. She is at times unable to collect wood because she gets a chest affliction that incapacitates her.
She could imagine that the use of gas or electricity would save her the trouble of chopping wood for her brewing.

ELECTRICITY

We asked about the desirability of electricity in the house and she responded positively. She said that a stove would help her if she could brew her beer on it, for which she would need a very big pot.

End of interview record

INTERVIEW NO 8

DATE: **September 23, 1992** AT: 10.30 am
LOCATION: **S-block site C, Khayelitsha**
INTERVIEWEE: **Julia Ntsanga**

INTERVIEW MATERIAL **NOTES AND COMMENTS**

INTERVIEW SITUATION

Interviewee:
Julia Ntsanga is a young single parent and head of household.

We had made an appointment with Julia on a previous visit for 9 am. We were late in arriving. Julia told us she had been up early to prepare, clean the house and get dressed, but did not seem at all put out by our lateness. Her daughter Lisa came into the lounge to be introduced and then disappeared to a back room to read. She later made us coffee and served it. Her mother described her as a student and avid reader. Once during the interview a client came into the adjacent room to buy beer and was served by Lisa.
Lizo, who set up the interview, and Julia have been very close friends for many years.
The interview was conducted mainly in English with occasional interpretive help from Lizo when expression was difficult. Julia speaks English well, she speaks a little Afrikaans, a little Sotho and her home language is Xhosa.

URBAN FABRIC

The house is situated in S-block, site C in Khayelithsa. This is a very poor, older, informal settlement. The houses are all self-built from waste and second-hand materials, with an informal site lay out. Many of the houses are very small single roomed units. There is car access amongst the houses in some parts. The ground consists of sandy flats. There are no individual services and toilets and water taps are shared. Local spaza shops provide very convenient access to some community facilities such as fresh milk, vegetables, paraffin and small household items, as well as facilities for repairs and other services. The nearest supermarkets are in the adjacent formal areas. There is a lot of pedestrian movement amongst the houses. Taxis did not enter while we were there, but were passing at the nearest formal road about 500 meters from Julia's house.

HOUSING

The house building was started in 1987. Julia bought all the materials herself and enlisted various people to do different building jobs. She made all the lay out plans herself. She had just been divorced and had very little money, so that she could not afford formal housing. She had heard through a colleague living in this area that there was an open site (no YB501) and took the opportunity to build here. She knew nobody else in the area. At first she put up a bungalow. (The structure looks like a prefab Wendy-house and still makes out part of the house, roof and all.) She lived in this dwelling without her children (who were staying with their father) until she had built on, within the same year.
The first addition she made was a room to accommodate her hair perming business (She already had a good business reputation from working in the trade before). Then came the kitchen, and then a further extension for the business, and so forth. The house, as it stands, has a side entrance to the lobby and kitchen, a lounge, a room with external door used for the hair salon and beer shebeen, a multi purpose room (maybe the children sleep there) and a bedroom (previously the bungalow). This is one of the bigger houses in the immediate vicinity.

The whole structure appears to be fairly low in height (about 2,3m). The walls are single skin timber structures with flat sheet-metal cladding, the roof is IBR sheet metal. There is no ceiling or internal doors. The internal partitions are hardboard. The floor is cast concrete with scattered carpet and linoleum pieces. The complete size is about 7 x 6 x 2.5m high. The house is pleasant to be in. It is fairly well lit by daylight penetration.

Cost:
The bungalow cost R1200. Other material cost R500, the windows, (about 5) cost R80 each and building work between R1000 and R1500.

HOUSING HISTORY

Julia had lived in New Crossroads in a brick house with no electricity between 1980 and 1984. She then lived in Khayelitsha in a core-house without electricity between 1984 and 1987. After her divorce she moved to S-Block in 1987.

Julia said she liked living here (this was said without us putting the question). She said she did not have to pay much as there were no rentals and she did not have to buy new furniture. Lizo started enumerating all the bad aspects of the area, wondering whether she liked it despite all that and she responded that those things were not good. Bad aspects mentioned were the fact that the area was flooded when it rained, the inconvenience of not having toilets, water and electricity in the house. Julia continued her explanation of the fact that she liked it there by saying that she and her daughter Lisa were used to fetching the water, that she could fix things like the roof herself and that the place or people did not suffer from being in a 'high class'.

HOUSEHOLD DEMOGRAPHICS

Julia Ntshanga is a divorcee of 34, living with her daughter Lisa aged 13 and her son Augustin aged 11. She runs a business from home as a hair dresser and sells beer. She runs her house in between doing business.

HOUSEHOLD BUDGET

Julia gets all her income from her businesses of hair-dressing and beer-selling.
The household consists of herself and her children, and the household supports no one else, except visitors, like her boyfriend, who have meals there occasionally.
Her two children are both at school and Lisa goes to a 'non-racial' school which results in more costs. She is at times assisted in her business by her sister, and Lisa also does some of the assistant work.
The food budget is R100 per month plus small expenses which she finds hard to calculate. She spends R50 per month paying off their clothes account, and R150 paying off a furniture account.
The income from hair-dressing and beer-selling is very 'seasonal'.

This gives a clear description of the multiple components of the household budget where there is direct cash generation from a home business. The income varies over time (seasonal) and is occasional. There seems to be a direct relationship between her good skills and her income.

Hair-dressing:
For hair-dressing she has an 'out of season' turnover of about 5 persons per day which in summer increases to about 10 per day. Weekends and school holidays bring about peaks in workload, and Christmas is a very busy season when she works till late at night.

Her services include braiding, perming and setting. She had already built up a reputation for her good work when she worked in Site B in Khayelitsha in 1985, and still has customers coming from there.
Braiding takes up to two days to complete when she works on her own and one day when her sister assists. The braid lasts about 6 months. She charges R90 for braiding.
Perming takes about 30 minutes to do, it lasts for 3 months and she charges R25 per perm. The process is done in three stages, each requiring a hair-wash using lots of hot water. She heats the water on the paraffin flame, transferring it to a special plastic basin on a stand and draining water from the basin to a container which is emptied outside on the street (sand).

In order to speed up the work in peak times she has to use gas to heat the water. Hair-drying requires the use of many towels which she hangs outside to dry. With the use of an electric hairdryer the process should take about 15 minutes, but the way she does it with towels and rubbing takes less time. She would find it useful to have an electric hood-dryer. Lisa at times assists her with the washing and drying. She plans to train Lisa properly in the coming season by letting her do perms for a smaller fee for her own customers.
Julia does not seem to find the costs of shampoo and lotions excessive. She pays R11 per bottle of lotion, used for 4 customers, from which she makes a R100. The shampoo cost R3 per bottle and serves about 10 heads. She can also make bulk buys at R35 for 5 litres. She does her buying in Wynberg.

Temporary fuel switch from paraffin to gas.
Is the normal practice, using paraffin, based on fuel economics or secondary factors such as ease of fuel access or appliance availability?

The day-lighting in the salon-room is not really adequate, especially when she has to work late. During December when she has to work at night she uses the gas lamp.

She uses the same room for beer sales and a sit-in shebeen as for the hair-dressing. When she has many customers the space is too small and she uses the lounge to spill over. Customers either take away or drink their beer there.

Beer sales.
This income is also variable. She sells about ten cases of beer during the week, and another ten cases over the weekend. In winter the beers are sold at room temperature, but in summer she uses the fridge to cool them. She buys the beers in Michell's Plain. She hires a bakkie at R10 per trip, or gets a store delivery at the same price. The transport costs come to about R20 per week.

The weekday beer income is R20 to R30. At the weekends she makes about R300. At this time of the year most of her income is from beers.
During school holidays she makes about R300 per week from perms.

There is no other support for the children.
Julia makes long and short term savings from her income.

LIST OF APPLIANCES

Gas fridge
Gas stove with oven
Gas lamp
Paraffin stove 'Flame'
Paraffin lamps (2 large ones)
Paraffin heater
Black and white TV powered off a car battery
Radio powered off car battery (Willard model no 360)

APPLIANCE ACQUISITION

The floor standing gas stove and oven combination was bought in 1988, secondhand for R250 cash, from another person. At the same time she bought a new gas bottle for R45. Before this she had owned a two plate gas stove, which she gave away to her sister when she got a new appliance.
The black and white TV was bought second-hand from a friend for R350 cash, two years back. The radio had been a gift from her father that she 'had always had'.

The paraffin 'flame' stove is seen as quite cheap at about R20, but needs to be renewed on a yearly basis (after a year it is disfunctioning).
(Most of the 'flame' stoves that I have seen in the my research here, have metal structures that are badly worn where exposed to heat.)
The gas fridge was bought in 1990, second-hand from a friend in Michell's Plain, for R400 cash.

In this household where cash is generated and available for purchases this seems to be preferred to credit arrangements. There are questions about access to credit facilities for a person who does not earn a fixed income in the formal sector.

The importance of personal connections in access to second-hand goods.

APPLIANCE MAINTENANCE

She owned a Hi Fi that has been broken since 1990 and which she had then given to her brother to fix for himself.
Julia says that the oven can probably be fixed but that she would rather trade it in on a new one in December. As a secondhand appliance she does not think she will get much for it from the local people because they don't have money. She thinks she will do better to use it as a trade in at 'Harmony' shop where she shops and where she would get it on account with a guarantee. The shop will transport the stove for her.

APPLIANCE USE

Before getting a gas stove she had been using a paraffin stove exclusively. At present she used the latter only as a substitute when she had problems with the gas, or as it later transpired, for special cooking applications.
The kitchen space is no more than a very functional working galley with appliances and work surfaces lined up on two sides.

Cooking:
She does not bake in the **oven** at the moment because it goes 'wwwooof' when she tries to light it. She says that she had worked as a housekeeper before where she learnt to do baking etc. She bakes pies and does roasts and grills when the oven works (It is at present out of commission).
She likes cooking on the **gas stove** and finds it better than paraffin because it is quicker. When Lizo prompted her, she agreed that the gas had an advantage over the paraffin as it was not so likely to smell of smoke. She does not like to spend longer that 30 minutes to an hour cooking in the evenings and uses all the stove plates simultaneously.

She prefers to cook samp and steambread on the paraffin Flame as both have long cooking times and it is thus cheaper to cook on the Flame.

Research lead:
New appliance design needs to meet user requirement for different cooking procedures.

Foodstuff:
Dishes generally consumed:
Vegetables and meat and rice is made for the evening meal.
Samp (mugushu) is a favourite of the children when they come back from school, but it is not made every day - only about once or twice a week.
Steambread is also a favourite, baked twice a week and at weekends and school holidays when it is convenient to have, as her business keeps her too busy to cook. This can be kept in a bread-bin and is eaten with a spread.
African Salad (Mpokoqo) is made now and again. This is a maize meal dish that resembles 'krummel pap' and is eaten with sourmilk (amass).
Fresh meat dishes are weekend specials made up as stew, curry or plain salted boiled meat, (the latter she described as an 'African delicacy').

Later in the interview she described less often used dishes: Chicken bought at the local street stands and which one usually had to slaughter oneself. This is a delicacy that was quite expensive at R16 per chicken. It is eaten with vegetables and rice or stywe pap. The left overs are refrigerated for later use. The cleaning of the bird required the use of a lot of very hot water. Cheaper chickens, slaughtered or live, could be bought at the farm in Lansdown Road which is a considerable distance away.

Water heating:
Water for **bathing** is warmed on the gas stove in a big pot, using about 2 pots for each person per day (6 pots). The bathing is done in a big metal bath and a small basin for facials. Warm water for **dishes** is heated in the big pot at about 2 pots per wash - twice a day.
For **clothes washing** she uses cold water when the weather is warm and hot water when it is cold. This is a hand-wash operation.
Coffee water is heated in a kettle on the gas stove.
Water for use in the **hair salon** is normally heated on the paraffin flame. She uses a lot of hot water for perming in her business.
She washes the glasses used in the **shebeen** in cold water.
She would like to use a gas geyser but needs pressurised water on tap for that.

Energy and other services. The absence of water connections suitable for commercially available geysers could be a barrier to energy service upgrades.

Other appliance use:

Gas Fridge

She has had this since 1990. The cost of gas is R35 for a big bottle and this lasts for one month. She sends kids from the street to the big shop in the formal area (about 700 meters away) to refill the cylinder.

She uses the fridge to keep cheese (for the children's lunch boxes), fruit, and especially left-overs. She does not use it to stock up on meat as that is a weekend special. She does, however, keep the left-overs of meat dishes in the fridge.

Ironing

The once weekly ironing session lasts about 4 hours. She heats the iron on the paraffin stove as the gas is too expensive. She does this herself and uses a wet towel next to the stove so that she moves from flame, to wiping it clean, to ironing. For this operation she uses about 2 bottles of paraffin.

Julia's preference for heating the iron on the paraffin rather than a gas flame seems to contradict preferences expressed by other interviewees. How are the comparative advantages of paraffin and gas use experienced subjectively by the users and what are the factors, other than economic, pertaining to this energy service that inform their choices?

Lighting

The household uses two big paraffin lamps as well as a gas lamp, all at the same time. They often go to bed only at 12 midnight after watching TV. When the TV is on that provides enough light in the lounge. Paraffin light is used elsewhere. Lisa studies at night for an hour or two, using the gas lamp (She is often busy in the daytime with African dance and drama classes). When they need light in the early morning the gas lamp is usually used.

The paraffin lamps are the bigger model and Julia says they seem to work only when the fuel-holder is full so that she keeps a good stock of paraffin for that purpose. The lamps use two 5-litre cans per week at a total cost of R12. She uses the same grade of paraffin for lights and stove.

Gas heater

Julia does not use the gas heater any more because the fuel cost is too high. It uses 9kg of gas over three days, costing R29. Instead she uses the 'Flame' with a perforated metal plate on top (*nkcenkce*). This consumes about one bottle of paraffin per night costing 95 cents. The flame is put in the lounge when they watch TV. I asked her about the danger of touching the hot plate and she said one had to be careful

The user requirement here seems to be for clear information on the running costs of space heating appliances. There seems to be a design requirement for an appliance appropriate in terms of fuel type, running costs and heat emission for this market.

The cost of an additional space heating appliance may be prohibitive for some users who currently adapt their paraffin stoves to serve as space heaters.

FUEL USE AND ACQUISITION

Fuel use
Julia usually buys 4 bottles of paraffin per week for the 'Flame' and if unforeseen use requires more, she buys it per bottle at 95 cents per litre.
The gas stove uses 9kg of gas over 2 months at R29 per refill.
Batteries:
She said that there was a problem in charging the car batteries at the local garage in that you never knew how long the charge would last - sometimes it seemed 'full' but went down quickly. On average she got 3 days of black and white TV viewing out of the car battery that she used for that. The charging cost was R3.50 . Charge up time at the garage was 24 hours, and though she could see that it was tested to be full, that still was no guarantee of it lasting. Julia said one had a better chance of getting a reliable charge at the garage 'in town'. She said it is 'quite a job' to get the batteries charged. It is very inconvenient when batteries fail during viewing.

She used a separate car battery for the radio and that lasted for a month per charge. There was also a defunct battery in the house. She found battery life span to be about 2 years. Julia said that she bought only new batteries when she had to replace, because second hand ones are too unreliable.

ELECTRICITY
When I asked her opinion about household electricity she said that she would like it, and on Lizo's prompt of it being cheaper she agreed, saying that gas prices were shooting up all the time and that in comparison she thought electric appliances would be cheaper to run. She had had good experience of working with electricity when she worked as a housekeeper. Asked what her priorities for acquisition of electric appliances would be she said definitely TV first (not because she was keen on colour) because she enjoyed it greatly (she has only had her own set for the past two years) and could not think of going 'back ' without it. Secondly she would choose a stove, then a fridge.
We did not speak about a geyser then but when I asked her about it, after we had had a discussion about her business, she said that a storage geyser would be good for her business but that she had no idea what it would cost.

End of interview record

Evaluating an energy service:
This talk about the batteries gives a good description of some of the components of an energy service package. In making choices users compare energy service packages comprising components such as purchase- labour- and time- costs, as well as the appropriateness and efficiency of fuels and appliances, and other qualitative user requirements.
Research lead: Research models that single out aspects of an energy service packet for comparative evaluations, do not take into consideration the complexity of interrelated user requirements, nor the multiple variables that inform user choices of energy services and the way users optimise available resources.

Note again the use of different battery sources for TV and the radio.

INTERVIEW NO 14
DATE: **October 28, 1992**
LOCATION: **S - block Khayelitsha**
INTERVIEWEE: **Mr. Shadrack Mkhetshana**
INTERVIEW MATERIAL

NOTES AND COMMENTS

INTERVIEW SITUATION.

Interviewee

Mr. Shadrack Mkhetshana is a single parent and head of household.

This interview had been set up by Lizo and myself on a previous visit to the area. Lizo had introduced me to Mr Mkhetshana from a point of interest, as he ran a woodworking business. I then requested an interview because Mr Mkhetshana ran a business dependent on electrical tools in an informal area where no grid electricity is available.
Present were myself, Maria as interviewer, Lizo Ntloko as interpreter, Mr Mkhetshana as interviewee, Yaw Afrane-orkese (a fellow student at EDRC as observer) and a few household members as non-participating observers. The female household members with friends and children were sitting in a back room where ironing was being done.
Mr Mkhetshana has an accurate sense of measures, not encountered with previous interviewees. Yaw commented on this to the interviewee after the interview, asking what his level of education was, and complimenting him on this extraordinary facility.

URBAN FABRIC

S - block, Khayelitsha.
This is an informal settlement on an open of piece land within the Khayelitsha urban area. Water taps and toilet facilities are shared by the settlement dwellers and situated on the periphery of the area. Amongst the houses there is limited vehicular access on dirt roads, but otherwise only narrow pedestrian routes on sand. The area is bounded by tarred serviced roads. Access to commercial networks include local spaza shops and shops in the nearby formal areas. The housing fabric is densely spaced.

HOUSEHOLD DEMOGRAPHICS

All in all, 8 people live in the house: Mr Mkhetshana himself, his brother with his wife and two nephews, two more children, as well as another sister-in-law.

HOUSING HISTORY

Mr Mkhetshana had worked in Aliwal North before, subcontracting as a carpenter. He moved to Cape Town, to Old Cross Roads, in 1984. In 1986 he moved to Khayelitsha and built this house where he now lives. He started his current carpentry business in 1987.

HOUSEHOLD BUDGET

The money for financing his household expenses comes from his carpentry business. The income from the business varies between R150 and R300 per week.
He runs his business from home and has a workshop for woodwork at the back of the house. Mr Mkhetshana makes cabinets and other furniture. He uses pre-made moulded timber elements. He does some wood turning in his workshop, as well as all the cutting and fitting required. He uses a generator for electrical supply to both his workshop and his house.
He started his woodworking business at his house in 1987. He has a brother who sometimes helps him. People come to his house to buy items. He also makes items to order and does repairs to furniture. He said that most of the money came from making new furniture.

LIST OF APPLIANCES

3 Paraffin stoves (2 'Primus', 1 'Flame')
Electric lighting
Paraffin lamps (4)
TV
Hi-Fi
Thermos flask

WORKSHOP APPLIANCES
Generator (Kawasaki, petrol)
Band-saw
Vibrating sander
Electric drill
Router (There was some doubt about this, and I did not pursue it)

APPLIANCE USE

Fridge.
He has no fridge but would prefer a gas one.

Stoves.
He would prefer a gas stove to a paraffin stove. At present the household uses a **one plate primus stove.**
The nipple on the primus needs to be replaced every 4 to 5 months and costs 50 to 60 cents. It is easy to put in. He does it himself.
The burners last about 6 weeks and cost R1.20 to replace.
The Primus itself lasts 8 to 9 months and costs R34.60.
The 'Flame' lasts about 3 months and costs about R 16.00 at 'Gold Star'.
Mr Mkhetshana says that one can cook faster on the 'Primus' than on the 'Flame'. The 'Primus' is preferred for general cooking and the 'Flame' is used for cooking samp.

Cooking
In the mornings all household members have porridge and milk. At lunch time they have rice and chicken. In the evening they eat Umvubo (a maize meal dish) with thick or sour milk. This last dish takes only an half an hour to prepare and steam.

Generally they don't eat shop **bread** but sometimes pot and steam bread.
Tea and coffee is made in the morning and (only once a day water is boiled) the rest of the day water is used from the thermos flask. The kettle holds about one litre of water.

Hot water
Hot water for **bathing** is made in a big pot (The volume is 10 to 11 litres) on the stove. It takes about half an hour to heat the water on the stove. Seven of these potfuls are used and mixed with cold water. Water for **dishes** is heated 3 times per day, using the same big pot.
Clothes are washed in cold water.
To my question about the desirability of a hot water geyser he responded that a 150 litre cylinder would be best.

Ironing
This is done by heating a solid iron on a Primus stove (photograph taken). His sister-in-law does the ironing twice a week. The operation takes about 2 to 3 hours.

Lighting
The household uses two hours of electric lighting per week which is run directly off the petrol generator. There is one light bulb in each room.
The children are not at school yet and do not need lighting for studies.
In the kitchen a paraffin lamp is used. The other paraffin lamps are for the dining room and two for the bedrooms and one for the workshop.

TV and HI-fi
The black and white TV and HI-Fi is powered off batteries that he charges himself.

This description of the intensive use of the stove for heating water seems to be common to many users and would point to a requirement of durability and robustness of the stoves.

he reckons the cost to be about R1.50 per charge. This is done about once a week when the batteries have 'gone down'. The same battery is used for both TV and Hi-Fi. TV is watched every evening from about 6 to 9pm.

ELECTRICITY USE

Rudimentary surface wiring had been laid on in the house. There are plug outlets. Mr Mkhetshana had done the wiring himself.
He charged his own batteries from the generator for use with the Hi-FI and TV.
Lights worked directly from the generator. He works in the workshop in the evening, normally requiring electric lighting only for about one hour per week. Otherwise he brings his work into the house where he uses electric lighting on two nights a week for about one hour per occasion.
I asked about the availability of grid electricity for S-Block houses. Possible access to it had been mentioned by local community representatives, but nothing had been said about cost.
Mr Mkhetshana said that he preferred the credit account system for electricity.

End of interview record

The rumours about the availability of electricity take on mythical proportions in these communities. The residents have no access to real information and it seems beyond their social and political empowerment to negotiate for access to urban support services.

SET OF INTERVIEWS: 3. FURTHER INTERVIEWS IN THAMBO SQUARE

FIELDWORK

INTRODUCTION

THAMBO SQUARE

Thambo Square consists of a pocket of informal urban fabric within the established formal residential area of Guguletu. The area is spatially limited and has grown to a high density. Houses are self made light weight structures. Emergency facilities for water and sanitation consist of communal tap points and temporary public toilets. There is a strong community identity. The community is currently involved in a negotiated relocation to a serviced site. This is a CPA project with their consultants "Macro plan" and with community involvement underscored by community work-shopping by DAG.

INTERPRETER

Mavis Mtandeki is an active community member in Thambo square. She has trained as a community photographer with the Community Arts Project. I was introduced to her in this capacity when we did the initial pilot interviews for this study together. Mavis is fluent in Xhosa, English and Afrikaans.

LIST OF INTERVIEWS

INT. NO 9 Dinah Mpondo. Thambo Square.
26th October 1992, Mavis Mtandeki - interpreter

INT. NO 10 Salina Yonga. Thambo Square
26th October 1992, Mavis Mtandeki - interpreter

INTERVIEW NO 9
DATE: **October 26, 1992** AT 9.30 am
LOCATION: **Thambo Square, Guguletu.**
INTERVIEWEE: **Mrs Dinah Mpondo**

INTERVIEW MATERIAL

NOTES AND COMMENTS

INTRODUCTION

The interview was set up by Mavis Mtandeki, who is a member of the local community representative committee for Thambo Square. Mavis and I had previously consulted on the type of household I wanted to interview, and had done pilot studies together in the same area, for which she acted as photographer/interpreter.

Mavis at times seemed to be a bit bored and tended not to interpret all communications, but as we progressed we reached a reasonable working method. Mavis insisted on not translating all words when she thought I ought to follow some such as food names and shop names (all of this I felt enhanced the interview and my Xhosa - she had a healthy interest in me not appearing to be stupid).

Thambo Square is situated on open land in an old urban area between Guguletu and Langa. The residents moved here from KTC squatter area, after the big fires there destroyed housing.

INTERVIEW SITUATION

Interviewee:

Dinah Mpondo is a middle aged divorcee.

Present: Mrs Mpondo, a three year old child in her care, Mavis Mtandeki as language interpreter and public relations person, me, Maria, as interviewer. Mrs Mpondo's schoolgoing daughter came in while we were busy and was called upon to answer some questions on prices by her mother, which she answered from behind a curtain to the next room where she remained with the child.

The child had attended Mavis's Creche and recited a song she had been taught (with Mavis helping her along). The child was now permanently in her grandmothers's care because there was not enough money for her to go to creche.

The person next on the interview list came in to attend half way through the interview.

URBAN FABRIC

There is an informal housing lay-out, with pedestrian access to the houses. The houses are self-made structures comprising rather poor materials such as well rusted sheet-metal and rough timber. Communal taps and toilet facilities are set at the edge of the settlement. There is no vehicle access to the centre of the settlement. The sandy ground between houses is often flooded by waste-water and rain-water.

HOUSING

The house is in the middle of the informal settlement and set very closely (900mm) to other houses all round. The floor is earth. The structure is a timber frame with sheet metal outer panelling and lined with cardboard. The house consists of one kitchen - lounge - entrance room (furnished with two tables, a kitchen dresser, a chair and two long benches and one bedroom with three beds, shared by all). I did not see the bedroom as it was curtained off.

Attached to this is the room, built on in March 1991, which is occupied by Beauty and accommodates her sleeping, living and cooking activities separately from Dinah's. The window to the kitchen room is now blocked of by Beauty's room.

HOUSING HISTORY

Dinah originally came from Lady Frere in the Transkei and moved to Cape Town in 1947. During 1978-9 she lived in a brick house in Guguletu (There was no electricity and she used paraffin to cook on).
She thereafter lived in Guguletu as a lodger in a formal house (brick built). This house had been electrified. She lived there after her divorce and stayed for a long time. She shared her room with her children and had the use of the kitchen with its electric stove, kettle and iron.
She had lived in KTC since 1983 and moved to Thambo Square at the same time as the mass of residents in 1987, after the big fire. She at first lived in another house in Thambo Square but it was burnt down when a paraffin stove exploded. She built her present house in 1989 with the help of material donated by her brother's daughter's husband.

Dinah had had a sewing business before and then used two electric sewing machines powered from a petrol generator. This was a big business and she combined it with work as a laundry collector, taking peoples' laundry to the dry cleaner and redistributing it again. She said that the money 'was there', that business was better then. She found that her present situation was not encouraging, she did not have a good machine (the present one is hand driven). She thinks if she had electricity she could work much harder. Asked about having an electric sewing machine in the house at the new site, she said that maybe if she had the money she would get one.

LIST OF APPLIANCES

'Primus' paraffin stove
Three paraffin lamps
Paraffin heater (not in use)
Black and white TV, battery powered.
Hand operated sewing machine.
(Beauty operating next door had her own gas and paraffin stoves)

APPLIANCE USE

Cooking

The Primus stove with pump is used for all cooking. When I asked which she preferred, she said that the Flame type was too dangerous, it had been a 'Flame' that caused the fire of her first Thambo Square house. She said one had to watch the Flame all the time.

The stove had recently been out of commission and a new burner was bought for R13. She asked an acquaintance to put this new top on the stove. More questioning revealed that the top has to be replaced about once a month.

Other **regular maintenance replacements** include the valve of the pump. This can be bought for R1.99 from the local spaza shop. The nipple on the stove also has to be replaced from time to time. Her son does these maintenance tasks for her.

Subjective requirements that result from bad experiences with the fire hazard of paraffin stove. Cooking with an appliance that is not seen as safe demanded constant surveillance of the process.

Space heating
The paraffin 'Primus' is also used for heating the space and is as such used with a metal flame spreader. She said she used it most of the winter except when she doesn't have paraffin. I asked about the months of use and she said it was used from May to August. It is set up either in the kitchen-room or bedroom, depending on where people were sitting.
The paraffin heater (omnidirectional) is not in use, and has been broken since September 1991 when her son returning from Robben Island had gone to 'The Bush' with it.

Barriers to the use of space-heating appliances are cited as that of access to fuel and repairs. Both could be financial or through lack of service infrastructure.

Ironing
A small solid iron is heated on the paraffin stove. Ironing is done 2 to 3 times a week for school uniforms. She uses about half a bottle of paraffin per ironing. When I asked whether she thought it was a good way to do it she said it was good because there is no other way. I asked her if gas was not better and she responded that it was better in as much as it did not make the black smoke, but it was too expensive. I asked how many irons she used and the reply was 'one, because the other had been lost in the house fire'.

The expression 'It was good because there is no other way' indicates an attitude of the user that may make it difficult to asses what really is desirable. It can be seen to hide real demand.

Lighting
There are three paraffin lamps but only two glass shields as the third had broken a few months ago. Although she would like to use 3 she did not have the money to buy a shield for R3.00. The lamps use about three quarters of a bottle of paraffin per night. One lamp is left to burn, set on dim, all through the night as they don't like the complete dark. Bed time is about 10pm.
Candles are not used for fear of fire. She had trouble with her eyes in seeing at night and said that the paraffin lamp was 'too dark' for work to be done at night.
The children studied at the kitchen table at night sitting together working in the light of one paraffin lamp.

Lack of access to repairs and maintenance becomes a barrier to the use of such appliances.

A description of lifestyle and activities that require night time lighting.

TV
There is a black and white TV. The battery for it is charged at the supermarket hardware shop costing R4 per charge that lasts one week. The battery is carried to the shop by the children and it takes a day to be charged - it can usually be fetched the next morning. At present there is a second-hand battery that was bought for R75 in March of this year.

The TV had 'broken' and had been taken away to be fixed two months ago. It was first bought in 1991, new at OK bazaars and paid for in cash to the amount of R320. There was some discussion about the procedures of buying. It was said that if bought on terms, the price would have been R299. Mrs Mpondo said it was the fuse that needed replacement and that the repairs charge is set at R60. These repairs are done by a local person working from his house in NY28.
The household also used a small radio with a PM9 dry-cell battery which cost R6 and lasted for 2 weeks.

Hot water
Water is collected in plastic drums and buckets from the communal water tap at the edge of the settlement, about 100m away from the house.

Bathing water is heated in the morning and evening. One kettle per person makes for four kettlefuls at a time. This water is then transferred to a large pot (40 mm diameter) before it is poured into the washing basin. Dinah said that the large pot would overbalance on the small paraffin 'primus', so she could not heat the water directly in it.
For bathing, water is just warmed not boiled.

For dish washing, water is heated in that same kettle 3 times a day after meals.
Tea and coffee water is boiled in the small kettle (actually a small pot used for this purpose). This happens 3 times a day at meal times, but also when Dinah is alone.
The large kettle holds about 3.75 litres, the small 'kettle' (pot) holds about 1 litre.
The cooking vessels further counted were 5 average aluminium pots plus a very large pot.

Clothes are washed in cold water as it is too expensive to heat water for this. Washing is done 3 times a week.

Cooking
Dishes generally cooked are:
Umgushu (samp and beans) for the evening meal.
Breakfast consists sometimes of porridge when there is mealie meal, but otherwise bread from the spaza shop with tea. Lunch consists of bread and tea. (Bread is never toasted).
Mpoquqo - dry stywe pap eaten with milk or sourmilk.
Cabbage, with rice or carrots. (Rice is said to be easy to cook but is not eaten every day).

The discrepancy in pricing was not explained.

Here again is a description of the long periods of redundancy of appliances that need repair.

INTERVIEW NO 10
DATE:**October 26, 1992** AT 11 am
LOCATION:**Thambo Square, Guguletu.**
INTERVIEWEE: **Salina Yonga**

INTERVIEW MATERIAL

NOTES AND COMMENTS

INTERVIEW SITUATION

Interviewee:
Salina Yonga is a pensioner living with her husband.
Mavis had set up the interview after consultations with me (as for the first interview, above).

At first Mrs Yonga requested that the interview be held in the house of Mrs Mpondo because her husband, Mr Yonga was not well. When it transpired that we needed to look at the household appliances and house, she took us to her house to conduct the interview there, asking that it should not take too long. I had put no pressure on her and was a little surprised at the change, but maybe there were other reasons (of shyness perhaps) contributing to the initial reluctance, that were cleared while she sat in on the interview in Mrs Mpondo's house.
Present were myself, Maria, Mavis Mtandeki as interpreter, Mrs Yonga and her husband and Mrs Mpondo, who had given us the previous interview. Mr Yonga did not participate at all and was not introduced, but sat reading a magazine at the door. Indeed he had a great frailty of age about him.

This situation reminded me of how fragile the social fabric is into which new technology is to be introduced. Familiarity with the known situation may be a reason for resistance to new technology.

URBAN FABRIC

Thambo Square is situated on open land in an old urban area between Guguletu and Langa. The residents moved here from KTC squatter area after the big fires there destroyed housing. There is an informal housing lay-out, with pedestrian access to the houses. The houses are self made structures comprising rather poor materials such as well rusted sheet-metal and rough timber. Communal taps and toilet facilities are set at the edge of the settlement. There is no vehicle access to the centre of the settlement. The sandy ground between houses is often flooded by waste-water and rain-water.

HOUSING

The house consisted of a single room, with a door and small window set to one side of the door. The structure measures about 3 x 3 meters. The timber structure was sturdy and the sheet-metal cladding, which was quite rusted on the outside, was very neatly card-boarded and papered on the inside walls. The ceiling was not insulated and it was already quite hot inside the house at 11 am when we conducted the interview.
The roof was partly covered with sheet metal and partly with a tarpaulin. The floor was sand with loose coverings of vinyl and carpeting. The house was made with the help of the young man from next door.

HOUSING HISTORY

The couple have lived here since the move from KTC squatter area after the big fire there in 1987. Mrs Yonga's house had twice burnt down in KTC.
Before that the family, then consisting of herself, her husband, her son and grandson, had lived as lodgers in a brick house in Guguletu. There had been no electricity.
Mrs Yonga had originally grown up in Lady Frere in the Transkei and had moved to Cape Town in 1977.

HOUSEHOLD DEMOGRAPHICS

Salina Yonga is an old age pensioner living only with her husband.

HOUSEHOLD BUDGET

Both Mrs and Mr Yonga receive old age pensions to the amount of R300 each per month.

The tradition followed here, of cladding the inside of houses with cardboard and papering it over with either newspaper or reject factory runs of packaging paper, illustrates the use of **found objects and rejects** from the formal industrial sector. This seems characteristic of informal sector housing. As for housing, the provision of improved energy systems that require access through participation in the formal economy may be inaccessible to the very poor. In order to improve the abilities of very poor energy users to access energy, detailed information on the available resources and the routes of access that are used, is required.

LIST OF APPLIANCES

2 Stoves; a paraffin 'Flame ' and a paraffin 'Primus', (both in working order).
One paraffin lamp (stored in the cupboard)
Hot water flask (half litre)
(The radio was burnt in the big fire in KTC and there is no TV as they cannot afford it.)

APPLIANCE USE

The Flame was said to be better than the Primus because the former did not require pumping. It is also used as a heater.
Paraffin is collected by Mrs Yonga herself at the local Guguletu supermarket (Yona) in a container equalling 5 bottles. Sometimes an additional bottle is bought. The paraffin lasts about one week.

Cooking

The following dishes are prepared:

Umugushu
Rice
Vegetables (cooked in a separate pot) such as cabbage and carrots which are bought from the truck that sells in the area on Saturdays.
Meat, (chicken or any other). This is cooked by first boiling then frying it in its own fat.

Mrs Yonga has two stoves so that she can cook on two plates simultaneously. The meat is done separately from the rice or samp and beans.

Hot water

This is heated in a pot as there is no kettle (it was lost in the KTC fire). A big pot is used for making hot water once a day for bathing.
Clothes are cold water washed.
Tea-water is kept warm in the flask.

There is no replacement of lost appliances. The phenomenon, often encountered in the fieldwork, of dead appliances that are kept, may be explained partly by the fact that they are capital assets to be held on to. The launching of technologies that require the use and maintenance of expensive appliances from the mainstream economy into such a vacuum of poverty should be carefully considered.

Space heating
The house is quite small and not cross ventilated; it was already hot early in the day when we were there. She said she cooled the room by opening the window next to the door. I asked about their health and room temperature controls and she said that her husband has a chest affliction, but that was not a major problem. The room is heated by putting on the 'flame ' when it is cold.

Lighting
Mr Yonga was reading in the daylight at the door.
With the door open enough daylight penetrated into the room in order to go about daily domestic activities.

End off interview material

SET OF INTERVIEWS: 4. INTERVIEWS IN MACASSAR AND HARARE AND PHILIPPI

FIELDWORK

INTRODUCTION: SETTING UP INTERVIEWS WITH LIZO NTLOKO.

22nd October 1992. We spent two hours driving around the townships, in areas where I wanted to do interviews. We had chance encounters with prospective interviewees.

PHILIPPI: Interviews set up here had a definite bias towards informal business persons as Lizo suggested we stop at two Shebeens. I assume that un-announced entrance here is easier for him than to a private house. The two domestic situations we entered into in Philippi combined living with trading although the shebeen aspect overshadowed the housing characteristics of the buildings. This differed from previous home enterprises where we interviewed households in that the emphasis was reversed. The one building we visited attracted our attention firstly because of an obvious electrical connection. I had sought interviews in this area (a site and services development) because it offered singular examples of informal, self-built houses being electrified. Lizo said he was reluctant to drive at random because he did not know the area. Previously he had spoken about connecting with the community leaders he had known before. However when I questioned him about this, he suggested that the contacts would not be of use. Previously Lizo had selected interviewees from a reservoir of people he had met before and knew the background of. The selection of households was based on criteria set by me in terms of size of household, income levels and characterisation, urban status, housing characteristics and welcome access.

MACASSAR AND HARARE.

These are typical site and service residential developments situated at the very outskirts of the Cape Metropolitan Area. Many houses had been built at the time of my interviews. The settlements had a desolate air, unlike the busy settlements closer to the city centre.

INTERPRETER

Lizo Ntloko is a fieldworker who has worked on various research projects in the urban areas around Cape town. Lizo is Xhosa speaking and well versed in oral translation into English and is well connected to people living in the informal areas.

LIST OF INTERVIEWS

INT. NO 11 Victoria Tolo. Philippi.
27th October 1992, Lizo Ntloko - interpreter

INT. NO 12
William Mtwini. Harare.
27th October 1992, Lizo Ntloko - interpreter

INT. NO 13 Nothinini Tika. Harare.
27th October 1992, Lizo Ntloko - interpreter

INT. NO 4
Priscilla Seyisi. Macassar.
15th October 1992, Lizo Ntloko - interpreter

NEW PERCEPTIONS ON HOUSING

At this stage of the interview process I became more aware of the different attitudes of people to the value of self-built houses and at the time noted the following:

I am beginning to realise that people don't describe all self-built informal houses as 'shacks', but I have not yet discerned the distinctions. Houses, semi prefabricated locally in the informal sector, are referred to as 'bungalows'. Some interviewees living in self-made houses were clearly very house-proud. Are these houses seen as temporary, or as not proper? Lizo Ntloko was surprised at my enthusiasm for the electrification of informally built houses in a site and services area in Philippi. He said that the African tradition of congregated extended families where children stayed with their parents until they were in a position to take the responsibility for their own household, was being undermined by the availability of easily accessible housing in the cities. 'Independent' youngsters cannot respond appropriately to their housing environment and he thinks that this leads to gangsterism. He would like to see more masonry core-houses made available.

INTERVIEW NO 11
DATE: October 26, 1993 AT 9 am
LOCATION: Philippi
INTERVIEWEE: Victoria Tolo

INTERVIEW MATERIAL

NOTES AND COMMENTS

INTERVIEW SITUATION

Interviewee
Victoria Tolo is a young housewife who holds a permanent job and assists in the home-run business.

Lizo and I had set up the interview on a previous visit, (22 October) with Mr Tolo. We met Victoria now for the first time. She had to go out to work after our interview. We had arrived a bit earlier than arranged and she was still doing her toilet, however we waited in the Shebeen. She gave the interview still casually clothed.

URBAN FABRIC

Philippi is a Site and Services settlement with self-made houses. Most of the houses are roughly built. The roads are tarred but serve as pedestrian and public spaces, as few cars drive along them. Erven are sandy flats, most of them are fenced with delicate wooden fences. There is high mast lighting. There are new overhead electrical reticulation cables on timber poles in some sections of the urban area and certain residential erven will be serviced.
An enormous power line with pylons passes through and over the urban fabric. The indiscreet intrusion of the main power line and the local overhead reticulation systems into the urban fabric is very apparent.

backyard shack (They had electricity there which she now misses). Her husband had moved to Cape Town from the Ciskei in the early seventies.

HOUSEHOLD DEMOGRAPHICS

The family consists of Victoria and her husband and two sons of 12 and 15 years who attend school.

HOUSEHOLD BUDGET

Victoria works in a hotel in Parow and her husband at the Libertas hospital from which sources they have steady monthly incomes of R950 and R750 respectively. They run the Shebeen business in the evenings for additional income. The average profit from this seems to be about R500 per month. The shebeen business is financed from their regular incomes. Provisions are delivered directly to the shebeen. Their sons tend to any business they get in the afternoons.
In addition to this Victoria has a gas braai skottel which she sets up at the beach and similar venues, to sell hot dogs and fried meat. Business is good on holidays, over Christmas, New Year and Good Friday.

APPLIANCES LIST

Horizontal gas fridge.
Gas Skottelbraai
Two-plate gas stove
7 kg gas burner.
Hi-Fi powered off battery, (no TV).
Two paraffin lamps.

APPLIANCE USE

Gas freezer: This is used mainly to cool drinks sold in the shebeen. It is also used to store food (meat) for Victoria's braai-ing business.
The freezer is used at a **temperature suitable for cooling** items such as milk, butter and meat for domestic consumption. The freezer is fuelled from a 9kg Lpg bottle.

The household has an income made up of both regular consistent amounts as well as variable and ad hoc components.

Hot water
There is a private water tap at the toilet-outhouse at the edge of the erf. Here the family have installed an enamelled bathroom bath in the open which is used to do the laundry. Water is carried into the house from the outside tap in buckets. It is heated on the gas stove in big pots. This is brought to boiling point, so that only one potful is required in the morning and one in the afternoon. The boiling water is mixed with cold water for use.
Hot water for tea and coffee is made only for the family, not for the shebeen.

Lighting
Victoria said that the shebeen is only dimly lit at night and one paraffin lamp is sufficient for this. In the day time it is lit by a roof light, which at night allows light from the high-mast lighting in. This light, from the high mast, also penetrates the window in the shebeen and this is seen to be convenient.
The kitchen is situated on the other side of the building (away from the highmast light) and has no skylight - Victoria says that she needs to use two lamps in this big room (It is 3m x 6m) and that she needs even more light in the kitchen area itself which is located at one end of the household living space.
The school children use a paraffin lamp when they study.

Ironing
The little gas burner is used to heat the iron. Ironing is done once a week and a little in between. Victoria had used a steam iron in Guguletu where she had electricity.

TV
She does not have TV at the moment because she cannot afford it. She would like to have TV. The Hi-fi is used to provide constant background music in the shebeen. The battery that powers it was bought for R195, second hand. The cost of recharging it is R2,50 and it lasts for 2 weeks.

Space heating
The skylight in the ceiling of the Shebeen adds to the daytime heating of the room.

Type of water connection influences the domestic use and heating procedures.

INTERVIEW NO 11
DATE: **October 26, 1993** AT **9 am**
LOCATION: **Philippi**
INTERVIEWEE: **Victoria Tolo**

INTERVIEW MATERIAL **NOTES AND COMMENTS**

INTERVIEW SITUATION

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APPLIANCE USE

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The freezer is used at a **temperature suitable for cooling** items such as milk, butter and meat for domestic consumption. The freezer is fuelled from a 9kg Lpg bottle.

The household has an income made up of both regular consistent amounts as well as variable and ad hoc components.

Gas stove The two plate stove is fuelled off a separate 19kg bottle. Victoria uses both plates simultaneously. There is also a small 7 kg gas burner. The skottel braai is mounted on its own gas cylinder.

Cooking
Victoria prepares a variety of foodstuffs on a regular basis for family consumption (she does not do food catering for the Shebeen).

Regular dishes include:
Samp, rice and curry, rice with beans and fish and umvubu (sourmilk African salad). The umvubu is quick to make - it takes about 20 minutes and is therefore used at lunch time.
On a less regular basis steambread and meat fried with onions is also made.
Breakfast consists of maize meal porridge with fried eggs and bread. (A small pan is used on the stove, not the braai-skottel)
Steam- and pot-bread is sometimes made. Victoria said this is better than shop bread as the latter is sometimes old and, although it tastes OK, she does not like it. (Lizo commented that the shop bread was too light and not nourishing.) Victoria also said that the shop-bread was expensive at R1.83 and that it was cheaper to buy flour and make bread at home.

The gas 'skottel braai' is used to cook family food such as mushrooms and eggs, this is done inside the house. On special entertaining occasions she also does potatoes on it for which purpose it is usually taken outside.
When the gas skottel braai is used for business or entertaining guests, she cooks meat and mealies on the cob on it.

Warming food
Victoria simply adds a bit of water to the pot of left-over food and places it on direct heat.

Description of commonly used foodstuffs and the subjective values around these.

Hot water
There is a private water tap at the toilet-outhouse at the edge of the erf. Here the family have installed an enamelled bathroom bath in the open which is used to do the laundry. Water is carried into the house from the outside tap in buckets. It is heated on the gas stove in big pots. This is brought to boiling point, so that only one potful is required in the morning and one in the afternoon. The boiling water is mixed with cold water for use.
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Victoria said that the shebeen is only dimly lit at night and one paraffin lamp is sufficient for this. In the day time it is lit by a roof light, which at night allows light from the high-mast lighting in. This light, from the high mast, also penetrates the window in the shebeen and this is seen to be convenient.
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The school children use a paraffin lamp when they study.

Ironing
The little gas burner is used to heat the iron. Ironing is done once a week and a little in between. Victoria had used a steam iron in Guguletu where she had electricity.

TV
She does not have TV at the moment because she cannot afford it. She would like to have TV. The Hi-fi is used to provide constant background music in the shebeen. The battery that powers it was bought for R195, second hand. The cost of recharging it is R2,50 and it lasts for 2 weeks.

Space heating
The skylight in the ceiling of the Shebeen adds to the daytime heating of the room.

Type of water connection influences the domestic use and heating procedures.

FUEL ACCESS AND USE

The gas bill for the various appliances was calculated as follows:
R48 per month for the stove; R28 per month for the fridge; R8.50 per month for the ironing; plus-minus R20 for the skottel braai depending on the use. Gas is bought from a local shop close by and the bottles are taken there on a hand cart. (R104 per month is my calculation of the total fuel expenditure.)

Different gas cylinders are used with each appliance and the fuel costing is split following this division. The user has an accurate sense of the cost of each energy service.

ELECTRICITY

We spoke about electricity and the possibilities of connection. She had had the use of electricity when living in Guguletu.

Victoria stated that she would like to have electricity, that she thinks it is the easiest way for everything. Here she also mentioned how important it was to have a phone. She said that electricity does not spoil the house and it is safe.

If she obtained electricity she would sell all the appliances except the skotttelbraai, and buy electrical equipment. However when I asked about having an electrical storage geyser she said she did not want it as it would be too expensive. I asked how she would handle the hot water situation, once she had incorporated the outside bath into the house and she said that she would continue to heat water in a pot to add to the bath water.

Hot water, electricity and energy expenditure.

She said that she would prefer to be billed on a monthly credit basis rather than using the card system. She said that with the card system she would be stranded without electricity should she have a cash flow problem during the month, whereas with the credit system she could pay with her monthly income. (Note that she has a regular income in the form of a **monthly salary**)

The regular income is a stabilising factor in the household budget where cash flows are subject to unpredictable demands that could throw domestic operations into crises such as electricity cuts.

She said that new appliances would be bought 'on account'.

End of interview material

INTERVIEW NO 12
DATE: **October 27, 1993** AT **1.30 pm**
LOCATION: **Harare**
INTERVIEWEE: **Mr William Mtwini**

INTERVIEW MATERIAL

NOTES AND COMMENTS

INTERVIEW SITUATION

Interviewee
Mr William Mtwini is a middle aged man at the head of a family split between Cape Town and the Transkei.

The interview had been arranged with one of the female members of the family on a previous visit by myself and Lizo. I was not aware that Mr Mtwini would be present for the interview. We were very late as we had arranged to do the interview at about 11 am. However, we were very cordially received. Some other adult members of the family sat in on the interview but did not participate. A few visitors wandered in casually.

The whole household atmosphere was very casual and I personally sensed an atmosphere of depression, without boundaries between people. Even so our presence certainly evoked some interest. There was a small child present who had a contrasting alertness. Mr Mtwini himself seemed keen of mind but despairing of opportunities to get money. There was a general passivity which made it difficult to follow up on questions.

This was my subjective perception of the mood of pessimism. Later in the interview frustration at the failure to get a money income was expressed. I sensed that the family was irrevocably trapped in poverty and that the infrastructures of the urban setting where they live demanded their participation in the money economy, but was not conducive to their participation.

At one point I thought the adults were afflicted by illness. At another point they were chewing something like cane. The one adult son was hand-hemming a pair of trousers and fitting them (as if there were no strangers in the house) while listening to the interview proceedings.

Present were myself and Lizo. The interview was mostly conducted in Afrikaans directly, between myself and Mr Mtwini. Some explanations were made in Xhosa - mainly for the benefit of the other adults listening in.

Dinah had had a sewing business before and then used two electric sewing machines powered from a petrol generator. This was a big business and she combined it with work as a laundry collector, taking peoples' laundry to the dry cleaner and redistributing it again. She said that the money 'was there', that business was better then. She found that her present situation was not encouraging, she did not have a good machine (the present one is hand driven). She thinks if she had electricity she could work much harder. Asked about having an electric sewing machine in the house at the new site, she said that maybe if she had the money she would get one.

LIST OF APPLIANCES

'Primus' paraffin stove
Three paraffin lamps
Paraffin heater (not in use)
Black and white TV, battery powered.
Hand operated sewing machine.
(Beauty operating next door had her own gas and paraffin stoves)

APPLIANCE USE

Cooking

The Primus stove with pump is used for all cooking. When I asked which she preferred, she said that the Flame type was too dangerous, it had been a 'Flame' that caused the fire of her first Thambo Square house. She said one had to watch the Flame all the time.

The stove had recently been out of commission and a new burner was bought for R13. She asked an acquaintance to put this new top on the stove. More questioning revealed that the top has to be replaced about once a month.

Other **regular maintenance replacements** include the valve of the pump. This can be bought for R1.99 from the local spaza shop. The nipple on the stove also has to be replaced from time to time. Her son does these maintenance tasks for her.

Subjective requirements that result from bad experiences with the fire hazard of paraffin stove. Cooking with an appliance that is not seen as safe demanded constant surveillance of the process.

Space heating
The paraffin 'Primus' is also used for heating the space and is as such used with a metal flame spreader. She said she used it most of the winter except when she doesn't have paraffin. I asked about the months of use and she said it was used from May to August. It is set up either in the kitchen-room or bedroom, depending on where people were sitting.
The paraffin heater (omnidirectional) is not in use, and has been broken since September 1991 when her son returning from Robben Island had gone to 'The Bush' with it.

Barriers to the use of space-heating appliances are cited as that of access to fuel and repairs. Both could be financial or through lack of service infrastructure.

Ironing
A small solid iron is heated on the paraffin stove. Ironing is done 2 to 3 times a week for school uniforms. She uses about half a bottle of paraffin per ironing. When I asked whether she thought it was a good way to do it she said it was good because there is no other way. I asked her if gas was not better and she responded that it was better in as much as it did not make the black smoke, but it was too expensive. I asked how many irons she used and the reply was 'one, because the other had been lost in the house fire'.

The expression 'It was good because there is no other way' indicates an attitude of the user that may make it difficult to asses what really is desirable. It can be seen to hide real demand.

Lighting
There are three paraffin lamps but only two glass shields as the third had broken a few months ago. Although she would like to use 3 she did not have the money to buy a shield for R3.00. The lamps use about three quarters of a bottle of paraffin per night. One lamp is left to burn, set on dim, all through the night as they don't like the complete dark. Bed time is about 10pm.
Candles are not used for fear of fire. She had trouble with her eyes in seeing at night and said that the paraffin lamp was 'too dark' for work to be done at night.
The children studied at the kitchen table at night sitting together working in the light of one paraffin lamp.

Lack of access to repairs and maintenance becomes a barrier to the use of such appliances.

A description of lifestyle and activities that require night time lighting.

TV
There is a black and white TV. The battery for it is charged at the supermarket hardware shop costing R4 per charge that lasts one week. The battery is carried to the shop by the children and it takes a day to be charged - it can usually be fetched the next morning. At present there is a second-hand battery that was bought for R75 in March of this year.

The TV had 'broken' and had been taken away to be fixed two months ago. It was first bought in 1991, new at OK bazaars and paid for in cash to the amount of R320. There was some discussion about the procedures of buying. It was said that if bought on terms, the price would have been R299. Mrs Mpondo said it was the fuse that needed replacement and that the repairs charge is set at R60. These repairs are done by a local person working from his house in NY28.
The household also used a small radio with a PM9 dry-cell battery which cost R6 and lasted for 2 weeks.

Hot water
Water is collected in plastic drums and buckets from the communal water tap at the edge of the settlement, about 100m away from the house.

Bathing water is heated in the morning and evening. One kettle per person makes for four kettlefuls at a time. This water is then transferred to a large pot (40 mm diameter) before it is poured into the washing basin. Dinah said that the large pot would overbalance on the small paraffin 'primus', so she could not heat the water directly in it.
For bathing, water is just warmed not boiled.

For dish washing, water is heated in that same kettle 3 times a day after meals.
Tea and coffee water is boiled in the small kettle (actually a small pot used for this purpose). This happens 3 times a day at meal times, but also when Dinah is alone.
The large kettle holds about 3.75 litres, the small 'kettle' (pot) holds about 1 litre.
The cooking vessels further counted were 5 average aluminium pots plus a very large pot.

Clothes are washed in cold water as it is too expensive to heat water for this. Washing is done 3 times a week.

Cooking
Dishes generally cooked are:
Umgushu (samp and beans) for the evening meal.
Breakfast consists sometimes of porridge when there is mealie meal, but otherwise bread from the spaza shop with tea. Lunch consists of bread and tea. (Bread is never toasted).
Mpoquqo - dry stywe pap eaten with milk or sourmilk.
Cabbage, with rice or carrots. (Rice is said to be easy to cook but is not eaten every day).

The discrepancy in pricing was not explained.

Here again is a description of the long periods of redundancy of appliances that need repair.

Viariations in food depend on the availability of money.
Vegetables are bought close by, from a truck on Saturday mornings. This is only to cook on that day or on Sunday because it cannot be stored for a longer period.
The use of vegetables also depends on the availability of money.
Mrs Mpondo makes up a mix of beans and samp that is dry stored in a container to be cooked regularly. This dish is prepared by adding 3 cups of water to a pot of the food and boiling it for 3 hours or more. For the evening meal this process has to be started at about one o'clock in the day. The mix is never stirred but water has to be added from time to time.
Meat is bought from a stand in Nyanga East and is purchased when money is available.
In response to my question it was stated that no special cooking is done for special occasions.

The variations in diet depend on the availability of money and would in turn influence the energy requirement. Is a use habit in cooking style a stabilising influence in changing situations, or are changes determined by available cooking appliances, fuel and foodstuff?

Surveillance of long term cooking procedures.

FUEL ACQUISITION

Paraffin is bought in a 20 litre drum, costing R18 and lasts for about 2 weeks. Fuel is bought at the shopping centre in Guguletu where her schoolgoing son collects it. When money for buying the 20 litre drum is short, she buys per bottle at 85 cents at the spaza shop. At the moment she does not do this as much as in winter.

Some form of bulk fuel buying supplemented with small purchases. There seems to be an unpredictability of the amount of fuel that will be used. Is the bulk buying related to a fixed cycle of income or to controlling fuel use over a fixed period?

ELECTRICITY

The household will move to the new site and services area that is being developed in collaboration with the community and with the assistance of DAG. The possibilities of the availability of electricity have been discussed with the community as regards affordability and services priorities. At this point it is not yet absolutely clear whether electricity will be supplied to households.
I questioned Mrs Mpondo about her preferences for appliances, should electricity be available in her new house.

She responded that firstly she would get a new bed and then a stove. When I asked what stove, she said one with three plates, then amended her statement saying 'if it is affordable' and that she would even take a two plate stove. She would really like a stove with an oven that stands on its own.

I asked what she expected to get for lights and Mavis explained my question. She responded that lamp shades would be too expensive but that globes alone would be OK. She continued by saying she would want plugs for a kettle and an iron.
She answered yes to my question as to whether she would get an electric space heater. She already owns a TV and thought it would be 'OK' on grid electricity.

I asked her what she thought she would have to spend on electricity and she responded that she would pay about R50 on a prepay card at first and maybe, *'pezulu'* (a little bit higher).

I asked about the desirability of a hot water storage cylinder. Mavis intimated to her that a cylinder would not be affordable. However she said that she would like to have a cylinder and two taps. Otherwise, if that was not feasible she would use a pot on the stove.

End of interview material

The move to the new housing seems to liberate the possibilities for renewal in many areas. What is the reality of this improvement myth in a context of extreme poverty. What are the associations between 'proper' formal housing and expected energy services?

What are the implications for the household in terms of cost and in terms of technical skills of the switch to electricity?

The perceptions of the new housing and electrification seems to be rife with uncertainties. Does the implementation of the development plan allow for experimentation and testing new ground and is there sufficient information available to allow the users to make informed choices?

INTERVIEW NO 10

DATE:**October 26, 1992** AT 11 am

LOCATION:**Thambo Square, Guguletu.**

INTERVIEWEE: **Salina Yonga**

INTERVIEW MATERIAL

NOTES AND COMMENTS

INTERVIEW SITUATION

Interviewee:
Salina Yonga is a pensioner living with her husband.
Mavis had set up the interview after consultations with me (as for the first interview, above).

At first Mrs Yonga requested that the interview be held in the house of Mrs Mpondo because her husband, Mr Yonga was not well. When it transpired that we needed to look at the household appliances and house, she took us to her house to conduct the interview there, asking that it should not take too long. I had put no pressure on her and was a little surprised at the change, but maybe there were other reasons (of shyness perhaps) contributing to the initial reluctance, that were cleared while she sat in on the interview in Mrs Mpondo's house.
Present were myself, Maria, Mavis Mtandeki as interpreter, Mrs Yonga and her husband and Mrs Mpondo, who had given us the previous interview. Mr Yonga did not participate at all and was not introduced, but sat reading a magazine at the door. Indeed he had a great frailty of age about him.

This situation reminded me of how fragile the social fabric is into which new technology is to be introduced. Familiarity with the known situation may be a reason for resistance to new technology.

URBAN FABRIC

Thambo Square is situated on open land in an old urban area between Guguletu and Langa. The residents moved here from KTC squatter area after the big fires there destroyed housing. There is an informal housing lay-out, with pedestrian access to the houses. The houses are self made structures comprising rather poor materials such as well rusted sheet-metal and rough timber. Communal taps and toilet facilities are set at the edge of the settlement. There is no vehicle access to the centre of the settlement. The sandy ground between houses is often flooded by waste-water and rain-water.

HOUSING

The house consisted of a single room, with a door and small window set to one side of the door. The structure measures about 3 x 3 meters. The timber structure was sturdy and the sheet-metal cladding, which was quite rusted on the outside, was very neatly card-boarded and papered on the inside walls. The ceiling was not insulated and it was already quite hot inside the house at 11 am when we conducted the interview.
The roof was partly covered with sheet metal and partly with a tarpaulin. The floor was sand with loose coverings of vinyl and carpeting. The house was made with the help of the young man from next door.

HOUSING HISTORY

The couple have lived here since the move from KTC squatter area after the big fire there in 1987. Mrs Yonga's house had twice burnt down in KTC.
Before that the family, then consisting of herself, her husband, her son and grandson, had lived as lodgers in a brick house in Guguletu. There had been no electricity.
Mrs Yonga had originally grown up in Lady Frere in the Transkei and had moved to Cape Town in 1977.

HOUSEHOLD DEMOGRAPHICS

Salina Yonga is an old age pensioner living only with her husband.

HOUSEHOLD BUDGET

Both Mrs and Mr Yonga receive old age pensions to the amount of R300 each per month.

The tradition followed here, of cladding the inside of houses with cardboard and papering it over with either newspaper or reject factory runs of packaging paper, illustrates the use of **found objects and rejects** from the formal industrial sector. This seems characteristic of informal sector housing. As for housing, the provision of improved energy systems that require access through participation in the formal economy may be inaccessible to the very poor. In order to improve the abilities of very poor energy users to access energy, detailed information on the available resources and the routes of access that are used, is required.

LIST OF APPLIANCES

2 Stoves; a paraffin 'Flame ' and a paraffin 'Primus', (both in working order).
One paraffin lamp (stored in the cupboard)
Hot water flask (half litre)
(The radio was burnt in the big fire in KTC and there is no TV as they cannot afford it.)

APPLIANCE USE

The Flame was said to be better than the Primus because the former did not require pumping. It is also used as a heater.
Paraffin is collected by Mrs Yonga herself at the local Guguletu supermarket (Yona) in a container equalling 5 bottles. Sometimes an additional bottle is bought. The paraffin lasts about one week.

Cooking

The following dishes are prepared:
- Umugushu
- Rice
- Vegetables (cooked in a separate pot) such as cabbage and carrots which are bought from the truck that sells in the area on Saturdays.
- Meat, (chicken or any other). This is cooked by first boiling then frying it in its own fat.

Mrs Yonga has two stoves so that she can cook on two plates simultaneously. The meat is done separately from the rice or samp and beans.

Hot water

This is heated in a pot as there is no kettle (it was lost in the KTC fire). A big pot is used for making hot water once a day for bathing.
Clothes are cold water washed.
Tea-water is kept warm in the flask.

There is no replacement of lost appliances. The phenomenon, often encountered in the fieldwork, of dead appliances that are kept, may be explained partly by the fact that they are capital assets to be held on to. The launching of technologies that require the use and maintenance of expensive appliances from the mainstream economy into such a vacuum of poverty should be carefully considered.

Space heating
The house is quite small and not cross ventilated; it was already hot early in the day when we were there. She said she cooled the room by opening the window next to the door. I asked about their health and room temperature controls and she said that her husband has a chest affliction, but that was not a major problem. The room is heated by putting on the 'flame ' when it is cold.

Lighting
Mr Yonga was reading in the daylight at the door.
With the door open enough daylight penetrated into the room in order to go about daily domestic activities.

End off interview material

SET OF INTERVIEWS: 4. INTERVIEWS IN MACASSAR AND HARARE AND PHILIPPI

FIELDWORK

INTRODUCTION: SETTING UP INTERVIEWS WITH LIZO NTLOKO.

22nd October 1992. We spent two hours driving around the townships, in areas where I wanted to do interviews. We had chance encounters with prospective interviewees.

PHILIPPI: Interviews set up here had a definite bias towards informal business persons as Lizo suggested we stop at two Shebeens. I assume that un-announced entrance here is easier for him than to a private house. The two domestic situations we entered into in Philippi combined living with trading although the shebeen aspect overshadowed the housing characteristics of the buildings. This differed from previous home enterprises where we interviewed households in that the emphasis was reversed. The one building we visited attracted our attention firstly because of an obvious electrical connection. I had sought interviews in this area (a site and services development) because it offered singular examples of informal, self-built houses being electrified. Lizo said he was reluctant to drive at random because he did not know the area. Previously he had spoken about connecting with the community leaders he had known before. However when I questioned him about this, he suggested that the contacts would not be of use. Previously Lizo had selected interviewees from a reservoir of people he had met before and knew the background of. The selection of households was based on criteria set by me in terms of size of household, income levels and characterisation, urban status, housing characteristics and welcome access.

MACASSAR AND HARARE.

These are typical site and service residential developments situated at the very outskirts of the Cape Metropolitan Area. Many houses had been built at the time of my interviews. The settlements had a desolate air, unlike the busy settlements closer to the city centre.

INTERPRETER

Lizo Ntloko is a fieldworker who has worked on various research projects in the urban areas around Cape town. Lizo is Xhosa speaking and well versed in oral translation into English and is well connected to people living in the informal areas.

LIST OF INTERVIEWS

INT. NO 11 Victoria Tolo. Philippi.
27th October 1992, Lizo Ntloko - interpreter

INT. NO 12
William Mtwini. Harare.
27th October 1992, Lizo Ntloko - interpreter

INT. NO 13 Nothinini Tika. Harare.
27th October 1992, Lizo Ntloko - interpreter

INT. NO 4
Priscilla Seyisi. Macassar.
15th October 1992, Lizo Ntloko - interpreter

NEW PERCEPTIONS ON HOUSING

At this stage of the interview process I became more aware of the different attitudes of people to the value of self-built houses and at the time noted the following:

I am beginning to realise that people don't describe all self-built informal houses as 'shacks', but I have not yet discerned the distinctions. Houses, semi prefabricated locally in the informal sector, are referred to as 'bungalows'. Some interviewees living in self-made houses were clearly very house-proud. Are these houses seen as temporary, or as not proper? Lizo Ntloko was surprised at my enthusiasm for the electrification of informally built houses in a site and services area in Philippi. He said that the African tradition of congregated extended families where children stayed with their parents until they were in a position to take the responsibility for their own household, was being undermined by the availability of easily accessible housing in the cities. 'Independent' youngsters cannot respond appropriately to their housing environment and he thinks that this leads to gangsterism. He would like to see more masonry core-houses made available.

INTERVIEW NO 11
DATE: October 26, 1993 AT 9 am
LOCATION: Philippi
INTERVIEWEE: Victoria Tolo

INTERVIEW MATERIAL

NOTES AND COMMENTS

INTERVIEW SITUATION

Interviewee
Victoria Tolo is a young housewife who holds a permanent job and assists in the home-run business.

Lizo and I had set up the interview on a previous visit, (22 October) with Mr Tolo. We met Victoria now for the first time. She had to go out to work after our interview. We had arrived a bit earlier than arranged and she was still doing her toilet, however we waited in the Shebeen. She gave the interview still casually clothed.

URBAN FABRIC

Philippi is a Site and Services settlement with self-made houses. Most of the houses are roughly built. The roads are tarred but serve as pedestrian and public spaces, as few cars drive along them. Erven are sandy flats, most of them are fenced with delicate wooden fences. There is high mast lighting. There are new overhead electrical reticulation cables on timber poles in some sections of the urban area and certain residential erven will be serviced.
An enormous power line with pylons passes through and over the urban fabric. The indiscreet intrusion of the main power line and the local overhead reticulation systems into the urban fabric is very apparent.

HOUSING

This particular house is located, on the periphery of the settlement, on a large undeveloped site. The building is bigger than the norm for the area. It houses a large well furnished shebeen in half the building and the household accommodation in the other half. Total area 6m x 6.5m, divided into two long rectangular rooms.
Externally the building is exceptionally neatly faced with S-profile sheet-metal, painted uniformly green. The floors are cast concrete covered with loose pieces of lino, carpet etc, The household room accommodates the kitchen at one end and sleeping mattresses that have to be stacked in the daytime, at the other end. The building was started in 1991 when they acquired the new plot. The house is made of pre-fabricated panels which were clad by the owners. The family hired someone to do the building. The front section, now the shebeen, which was first built, cost R870. This was then extended and the back section cost R1200 (She estimated the roof to have cost R480 and additional panels R500).

Victoria said that they had plans to extend the house up to the erf boundary so as to include the toilet and water facility (provided as part of the site services). This extension would include a separate kitchen and family sitting room. The present household 'home' room would then become a store for the shebeen.
I asked her how she planned to do the future extensions to the house and she said that it would be done in wood structure with panels as before and not in brick. She explained that the 'municipality' had promised that brick houses would be built on the sites so that she could not (or would not) make her own brick house herself. She did not know when the promised building would materialise, but mentioned March next year as a possibility. She did not know what a brick house would cost.
The Shebeen is wall-papered with travelling and other posters, pictures and decorative paraphernalia common to drinking places. The seating is trendy and the bar counter decorated. Next to the bar counter hangs an art work brought from the Transkei - it is a wooden musket gun with spear attached.

HOUSING HISTORY

They had lived in the Philippi informal settlement for a year prior to moving here. Before that she had lived in Guguletu with her own family. They then occupied a separate

Housing transitions:
The uncertainties around obtaining formal brick housing and the permanence of self-built housing, add to a confusion of values and expectations regarding the improvement of lifestyle in the informal and semi-formal settlements.

backyard shack (They had electricity there which she now misses). Her husband had moved to Cape Town from the Ciskei in the early seventies.

HOUSEHOLD DEMOGRAPHICS

The family consists of Victoria and her husband and two sons of 12 and 15 years who attend school.

HOUSEHOLD BUDGET

Victoria works in a hotel in Parow and her husband at the Libertas hospital from which sources they have steady monthly incomes of R950 and R750 respectively. They run the Shebeen business in the evenings for additional income. The average profit from this seems to be about R500 per month. The shebeen business is financed from their regular incomes. Provisions are delivered directly to the shebeen. Their sons tend to any business they get in the afternoons.
In addition to this Victoria has a gas braai skottel which she sets up at the beach and similar venues, to sell hot dogs and fried meat. Business is good on holidays, over Christmas, New Year and Good Friday.

APPLIANCES LIST

Horizontal gas fridge.
Gas Skottelbraai
Two-plate gas stove
7 kg gas burner.
Hi-Fi powered off battery, (no TV).
Two paraffin lamps.

APPLIANCE USE

Gas freezer: This is used mainly to cool drinks sold in the shebeen. It is also used to store food (meat) for Victoria's braai-ing business.
The freezer is used at a **temperature suitable for cooling** items such as milk, butter and meat for domestic consumption. The freezer is fuelled from a 9kg Lpg bottle.

The household has an income made up of both regular consistent amounts as well as variable and ad hoc components.

Gas stove The two plate stove is fuelled off a separate 19kg bottle. Victoria uses both plates simultaneously. There is also a small 7 kg gas burner. The skottel braai is mounted on its own gas cylinder.

Cooking
Victoria prepares a variety of foodstuffs on a regular basis for family consumption (she does not do food catering for the Shebeen).

Regular dishes include:
Samp, rice and curry, rice with beans and fish and umvubu (sourmilk African salad). The umvubu is quick to make - it takes about 20 minutes and is therefore used at lunch time.
On a less regular basis steambread and meat fried with onions is also made.
Breakfast consists of maize meal porridge with fried eggs and bread. (A small pan is used on the stove, not the braai-skottel)
Steam- and pot-bread is sometimes made. Victoria said this is better than shop bread as the latter is sometimes old and, although it tastes OK, she does not like it. (Lizo commented that the shop bread was too light and not nourishing.) Victoria also said that the shop-bread was expensive at R1.83 and that it was cheaper to buy flour and make bread at home.

The gas 'skottel braai' is used to cook family food such as mushrooms and eggs, this is done inside the house. On special entertaining occasions she also does potatoes on it for which purpose it is usually taken outside.
When the gas skottel braai is used for business or entertaining guests, she cooks meat and mealies on the cob on it.

Warming food
Victoria simply adds a bit of water to the pot of left-over food and places it on direct heat.

Description of commonly used foodstuffs and the subjective values around these.

Hot water
There is a private water tap at the toilet-outhouse at the edge of the erf. Here the family have installed an enamelled bathroom bath in the open which is used to do the laundry. Water is carried into the house from the outside tap in buckets. It is heated on the gas stove in big pots. This is brought to boiling point, so that only one potful is required in the morning and one in the afternoon. The boiling water is mixed with cold water for use.
Hot water for tea and coffee is made only for the family, not for the shebeen.

Lighting
Victoria said that the shebeen is only dimly lit at night and one paraffin lamp is sufficient for this. In the day time it is lit by a roof light, which at night allows light from the high-mast lighting in. This light, from the high mast, also penetrates the window in the shebeen and this is seen to be convenient.
The kitchen is situated on the other side of the building (away from the highmast light) and has no skylight - Victoria says that she needs to use two lamps in this big room (It is 3m x 6m) and that she needs even more light in the kitchen area itself which is located at one end of the household living space.
The school children use a paraffin lamp when they study.

Ironing
The little gas burner is used to heat the iron. Ironing is done once a week and a little in between. Victoria had used a steam iron in Guguletu where she had electricity.

TV
She does not have TV at the moment because she cannot afford it. She would like to have TV. The Hi-fi is used to provide constant background music in the shebeen. The battery that powers it was bought for R195, second hand. The cost of recharging it is R2,50 and it lasts for 2 weeks.

Space heating
The skylight in the ceiling of the Shebeen adds to the daytime heating of the room.

Type of water connection influences the domestic use and heating procedures.

FUEL ACCESS AND USE

The gas bill for the various appliances was calculated as follows:
R48 per month for the stove; R28 per month for the fridge; R8.50 per month for the ironing; plus-minus R20 for the skottel braai depending on the use. Gas is bought from a local shop close by and the bottles are taken there on a hand cart. (R104 per month is my calculation of the total fuel expenditure.)

Different gas cylinders are used with each appliance and the fuel costing is split following this division. The user has an accurate sense of the cost of each energy service.

ELECTRICITY

We spoke about electricity and the possibilities of connection. She had had the use of electricity when living in Guguletu.

Victoria stated that she would like to have electricity, that she thinks it is the easiest way for everything. Here she also mentioned how important it was to have a phone. She said that electricity does not spoil the house and it is safe.

If she obtained electricity she would sell all the appliances except the skotttelbraai, and buy electrical equipment. However when I asked about having an electrical storage geyser she said she did not want it as it would be too expensive. I asked how she would handle the hot water situation, once she had incorporated the outside bath into the house and she said that she would continue to heat water in a pot to add to the bath water.

Hot water, electricity and energy expenditure.

She said that she would prefer to be billed on a monthly credit basis rather than using the card system. She said that with the card system she would be stranded without electricity should she have a cash flow problem during the month, whereas with the credit system she could pay with her monthly income. (Note that she has a regular income in the form of a **monthly salary**)

The regular income is a stabilising factor in the household budget where cash flows are subject to unpredictable demands that could throw domestic operations into crises such as electricity cuts.

She said that new appliances would be bought 'on account'.

End of interview material

INTERVIEW NO 12
DATE: **October 27, 1993** AT **1.30 pm**
LOCATION: **Harare**
INTERVIEWEE: **Mr William Mtwini**

INTERVIEW MATERIAL

NOTES AND COMMENTS

INTERVIEW SITUATION

Interviewee
Mr William Mtwini is a middle aged man at the head of a family split between Cape Town and the Transkei.

The interview had been arranged with one of the female members of the family on a previous visit by myself and Lizo. I was not aware that Mr Mtwini would be present for the interview. We were very late as we had arranged to do the interview at about 11 am. However, we were very cordially received. Some other adult members of the family sat in on the interview but did not participate. A few visitors wandered in casually.

The whole household atmosphere was very casual and I personally sensed an atmosphere of depression, without boundaries between people. Even so our presence certainly evoked some interest. There was a small child present who had a contrasting alertness. Mr Mtwini himself seemed keen of mind but despairing of opportunities to get money. There was a general passivity which made it difficult to follow up on questions.

This was my subjective perception of the mood of pessimism. Later in the interview frustration at the failure to get a money income was expressed. I sensed that the family was irrevocably trapped in poverty and that the infrastructures of the urban setting where they live demanded their participation in the money economy, but was not conducive to their participation.

At one point I thought the adults were afflicted by illness. At another point they were chewing something like cane. The one adult son was hand-hemming a pair of trousers and fitting them (as if there were no strangers in the house) while listening to the interview proceedings.

Present were myself and Lizo. The interview was mostly conducted in Afrikaans directly, between myself and Mr Mtwini. Some explanations were made in Xhosa - mainly for the benefit of the other adults listening in.

URBAN FABRIC

The house is in Harare, a site and service suburb. The site has an outhouse with waterborne sewerage and a private water tap. The access roads are tarred. The land is sandy dunes. Harare is one of the furthest outlying suburbs of Cape Town, near the False Bay coast. The plots are fairly big. The urban landscape has a feeling of desolation.

HOUSE STRUCTURE

The house is informally self-built. The structure is a timber rectangle, clad with sheet metal. The inside of the walls are partially lined with brown cardboard. The front room with central doorway serves as a living room and has a beer brewing off-set at the one end and a bed and bench at the other. The other rooms, set further back, were very dimly lit and contained the kitchen facilities and sleeping facilities. The floor is sand with loose coverings over it.
The house has broken walls and is not well maintained.

HOUSING HISTORY

Mr Mtwini has another home in the Transkei near Butterworth as well.
Later when I asked about the transfer of appliances between the two households, Mr Mtwini was amused by the thought that he brought things from the Transkei to Cape Town and made it very clear that the transfer was only the other way around. He intends to go and live in the Transkei when he is old. He added the comment here that there is no money here in Cape Town (Daar is nie ponde hier nie).

When I asked him what he would do with his household appliances when he moved to the Transkei he said he would either take them along or leave them in Cape Town for his sons to use. He has a brother living in Centane.

Prior to moving to Harare they had lived on a small farm in Kuilsriver where he had worked for Fisons. However the site was taken over for the development of a new residential area and the house he had lived in was demolished. The household had to move away. They moved to a squatter settlement in Kuilsrivier for some time.

I assume that Mr Mtwini came to Cape Town to earn money to send home to the Transkei. Despite his admitted failure in this undertaking he is still here, surviving in abject poverty. The transitions involved in rural-urban migration are pertinent in domestic lifestyle and energy use. Assuming that access to the money economy is one of the motivations in this transition, **urban poverty spells out the failure of this manoeuvre.**

HOUSEHOLD DEMOGRAPHICS

The household, geographically split, consists of Mr Mtwini, his wife, three grown-up children and 4 grandchildren.
There is pattern of migration between the home they have in the Transkei, where his wife and two children aged 5 and 8 reside with an aunt, and the house in Harare, Cape Town. There are also two grandchildren (from his daughters) in the Transkei household.

HOUSEHOLD BUDGET

Mr Mtwini does 'loose' work at the moment. His wife is at present in the Transkei and is not working. One of his daughters living in this household runs a business selling vegetables from the house (there is a stand in front of the house). Mr Mtwini says that this brings in just enough money for paraffin (daar is fokol sente').
His two sons have fixed jobs but spend their earnings on their own families.
His daughter-in-law brews Umugushu and sells it from this house, but the income is sent to her children in the Transkei.
Two of his sons are single and have established jobs so that they bring money into the household. The sense of desperation about the lack of money made it difficult to talk of anything but extreme lack and no figures were forthcoming.

The earnings of various household members are designated for other households. The cash dearth for local household expenses seemed to me extreme.

LIST OF APPLIANCES

paraffin stove (one 'primus' with pump)
2 pots and one kettle
One commercially manufactured paraffin lamp (plus one home made one)

APPLIANCE USE

Hot water

Bathing water is heated in the pot if there is money available for paraffin.
On average Mr Mtwini estimated that the household uses 5 litres of hot water in the morning and 5 litres in the evening for the functions of washing, making coffee and food cooking.

Household energy services are terminated when there is no cash for fuel.

Food
The foodstuff generally prepared is samp and beans.
At breakfast time no food is eaten.
At lunch time a dish called Mifino is consumed. It is made from vegetables and maize meal and salt, all prepared in one pot.
In the evening samp and beans is eaten.
Bread from the shop is rarely consumed and pot or steambread is not made.

Space Heating
No space heating is used, although it does become very cold. When I mentioned that the cardboard-box lining of the walls could help with insulation, he responded that the box linings were put in to shield against the penetration of wind through the holes in the sheet metal cladding.

Lighting
Lamps are made from tins with wicks made from pieces of cloth. These burn without a glass shield. This is done both in the Transkei and in Cape Town. When I asked him to show me such a lamp he searched the house but could not find one.
There was a single (commercially available) paraffin lamp with glass shield in the house.
The household goes to bed at about 9 at night.
Candles are also used in the Cape Town household, but not in the Transkei because there is no money there (daar is mos nie pond nie).

FUEL ACCESS AND USE

The household does not use **wood** at present (*'die bos is ver'* 'The bush is far away.') In fact the area around Harare has little vegetation from which firewood can be harvested. Nobody sells wood in the area.

In the Kuilsriver house they had used **electricity.**
When they moved to 'Die Hokkies' (The squatter set-up in Kuilsriver) they used **wood** because it was available from the veld. They did not use paraffin when living in 'Die Hokkies'.
The **paraffin** stove they presently use was bought in Kuilsriver. The paraffin is bought from a lorry that comes around to sell. The household buys a big container-full if they have money, otherwise they buy per bottle. (The words "we do as we can" are often used to explain choices and behaviour.)

In the Transkei the household uses **wood** to cook. Special 3 legged pots are used to cook in the Transkei. The daughters grew up in the Transkei. Mr Mtwini made it very clear that he would take things from Cape Town to the Transkei but never from there to Cape Town.

Gas is never used.

End of interview material.

In Harare the family find themselves in a situation where there is no free fuel such as wood and they go without fuel at times.
Circumstance seems to dictate the lifestyle.

Cooking on wood fires with three legged pots in the Transkei means switching between different cooking styles when moving between the two houses.

INTERVIEW NO 13
DATE: **October 27, 1993**
LOCATION:**Harare**
INTERVIEWEE: **Mrs Nothinini Thika**

INTERVIEW MATERIAL

INTERVIEW SITUATION

Interviewee: Mrs Nothinini Thika is a widow aged seventy and is the head of a household consisting of herself, her son and her daughter-in-law.

Present were myself as interviewer, Lizo Ntloko as language interpreter and the household members. The interview had previously been arranged by Lizo and myself. We arrived late but Mrs Nothinini seemed not to have been put out by it. She was sitting in the front room working at the sewing machine when we arrived.

The house was very neat and well ordered. We were formally introduced to herself and her daughter in law, and later (when we went to see the kitchen), to her son. During the interview we were offered tea, but Lizo suggested we buy cool-drink instead. I paid for it and the daughter-in-law was sent out to buy it. We were also offered bread with the drink. Mrs Thika shared this with us. At a later stage a visitor entered to use the sewing machine and Mrs Thika moved to another chair to continue with the interview. Near the end of the interview she spotted someone at the doorway and ululated to attract their attention.

The interview was mainly conducted in Xhosa although Mrs Thika did understand and respond a little in English.

URBAN FABRIC

Harare, near Macassar, is situated far away from commercial centres and positioned at the urban periphery. It is a site and services area with self-built houses. Each plot has an outhouse with waterborne sewerage and a water tap at the street boundary.

The streets are tarred and the ground is sandy flats.

NOTES AND COMMENTS

HOUSE STRUCTURE

The house was built by her son.
The house is exceptionally large and has a sloping roof with central ridge which is uncommon in the self-built areas. The trusses are made of wattle cut from the bush. The rooms are divided by cardboard partitions and are not ceilinged so that walls end at door height. The house has a spacious feeling. The timber framework is clad with sheet-metal and internally the walls are lined with cardboard and neatly pasted over with reject factory runs of wrapping paper. The walls are decorated with strips of silky drapery, made by her son on the sewing machine.
The floors are sand, covered with bits and pieces of carpeting and plastic. There are 5 rooms in the house: A front room; a dining room; a kitchen; and two bedrooms.
The kitchen is a very functional room, housing only the kitchen appliances.

HOUSING HISTORY

This is the second year that they have lived in Harare. Since 1987 they have lived in Greenpoint Khayelitsha, for one year, and in Lower Greenpoint for 2 years.
Previous to that Mrs Thika had lived in Nyanga Bush, which was the first place where she lived in Cape Town after their arrival here in 1983 from Lady Frere in the Transkei. The reason for their migration to Cape Town was her son's ill health. Now they have no money to go back.

HOUSEHOLD DEMOGRAPHICS

She had lived alone with her son for many years. He recently married and his wife now lives with them in the house.

This statement seems to express a preference to be in the rural area and a sense of entrapment in the urban. I assume that the urban lifestyle of poverty is not preferred. My impression was that even within these circumstances Mrs Nothinini felt personally empowered to employ every opportunity to contribute towards the wellbeing of the household.

Lighting
The sewing machine was set up close to the front door for good lighting. Natural lighting from the front door opening is used for sewing at the machine and Mrs Thika says she cannot work when it is cloudy or late in the day or evening because there is not enough light. The household uses a paraffin lamp with a glass shade, bought from the local spaza shop. They also use candles.

Radio and TV
When I asked about these, she said that they did not have it because there was no money. I saw a Hi-fi set in the dining room, but she said it belonged to the umfaan (her son) and that it was given to him by a friend when it was already broken and that he does not worry about it.

'He does not worry about it'. The Hi-fi is retained even though it is out of commission. Is it a monetary asset in the household or a symbol of wealth, or are there hopes to ever use it again in future?

Space heating
The imbawula is used with fire-wood bought at R1.50 per lot. It takes one lot of wood to fire up the imbawula and after about an hour another lot is added, this then lasts for that day. She prays for the cold to go.
When asked about the smoke from the imbawula she said that it does smoke and that this is a problem because the smoke darkens the wallpaper. (The wall paper was there for aesthetic reasons.)

Water
There is water on tap at the outhouse. I saw that she had a hose pipe and I asked whether she used it to bring water into the house, but she said it was used to water the cabbage garden only. They use a pail to bring the water into the house.

Water for bathing is heated in a big pot on the paraffin 'Flame'. They use one bucket per person (they are three) and it takes about three quarters of an hour to heat up one pot. This is done twice a day by the 'young people' although she only does it every second day. This uses one bottle of paraffin each time.

Water for tea is boiled only in the mornings and the evening unless guests arrive (like us). I asked whether water is kept warm in any way and the reply was 'no'.

Energy service package; Warm bathing water
The preparation of bathing water requires a lot of time and effort. Where time is available this may not be a problem. It seems to be a priority service and it could be instructive to investigate the prioritising of energy use for this over other services such as cooking or space heating.

Research lead: The water heating service package using the paraffin stove should be compared to water heating service packages using other technologies. For instance, the impact on electricity use peaks of this energy service, used morning and evening, could be investigated.

FUEL ACCESS AND USE

Paraffin is bought from the local spaza shop in 25 litre quantities. It is used for the lamp and the cooking on the 'Flame' and lasts for about one and a half months. Later on it was mentioned that warming water for bathing used one bottle of paraffin each time, and I was not sure whether additional quantities to the above 25 litre quantity were bought per bottle.

ELECTRICITY

She has never had the use of electricity before. To my query she responded positively yes, that she would like to have it. I asked her whether she would prefer the card system or the monthly credit account system of paying for electricity, however, she did not know these systems. Lizo explained the differences in the systems and she said she preferred the credit account system. I asked why and she said that if one ran out of money during the month you would be left without electricity with the card system, whereas with the credit system, you would have money at the end of the month.
She thought electricity would be cheaper and knew that she wanted all energy facilities to be electrical.

End of interview material

Long-term planning and day-to-day planning are both elements of the household budget around energy access.
The acquisition of bulk quantities of fuel may also be related to measures securing against the possibility of running out of cash during the month. It is also possible that fuel is bought separately by individuals for their personal ablutions.

Security in monthly payments for electricity.
She does not have enough control over household expenses to know that she will not run out of money for energy during the month.

INTERVIEW NO 4

DATE: 15 September 1992.
LOCATION: erf no 40515 Macassar,
INTERVIEWEE: Ms Priscilla Seyisi.

INTERVIEW MATERIAL

NOTES AND COMMENTS

INTERVIEW SITUATION

Interviewee: Ms Priscilla Seyisi, the mother of two young children and head of household. She is a personal friend of Lizo Ntloko.

This interview was conducted at 10.45 am. The interview had been arranged the day before with Lydia, a household member and niece of Priscilla's. When we arrived for the interview Priscilla was present with her two toddlers and Lydia arrived a little later to take care of the children outside the house. Present were Priscilla, myself Maria, and Lizo. We sat inside the house and talked while Priscilla often busied herself at the kitchen table, feeding the children and making us tea. Lydia was sent out to buy fresh milk, for which Lizo paid.

URBAN FABRIC

This is a site and services area, where people acquire a plot of land serviced by surfaced roads, with a concrete prefab toilet outhouse with waterborne sewerage, situated on the street front and one water tap located on the outside of the toilet building. The area is lighted with high mast lighting.
The land is sandy flats. The plots seem to be larger than in other urban areas. The plot layout is rectilinear and formal.
Most individual plots have been demarcated by their occupants with sparse wooden fences, some of which are decorative. None of the fences that I saw were visual barriers or impenetrable.
There are as yet no school or creche facilities on land zoned for this use.
Macassar is situated at the metropolitan periphery about 40km from central Cape Town. Commuting to urban facilities is expensive and larger local commercial facilities are non existent. There are spaza shops spread throughout the suburban fabric. Local spaza shops serve as extensions of household facilities by providing, for instance, cold storage for consumables and also convenient access to smaller commercial items. There are local spaza shops 30 to 40 meters away from Priscilla's house. At the time of our visit one street vendor passed, selling foodstuff.

HOUSE STRUCTURE

The house is a timber lightweight structure measuring about 3m x 6m, with a single layer of timber covering the structure and no insulation or internal cladding. This house was assembled in situ and is of uniform structure. Priscilla bought the materials and had the house built herself. A cloth divider suspended from the ceiling provides a space in which there is a double bed. Furniture further comprised a freestanding wardrobe, a kitchen table, several chairs, a wall dresser, several bankies and another bed (single). The house was well lit with daylight and was very neat and ordered. Priscilla seems to be the owner of the plot, but I could not establish whether she had payed for it. She did not pay the service fees due.

HOUSING HISTORY

Priscilla moved from King Williams Town, where she grew up, to Cape Town in 1968. Here she lived as a lodger in the squatter area called Site B. She came on her own to look for work, which was very scarce in King. Priscilla had thereafter been resident for two and a half years in the informal PJS area, living in a timber makeshift house with two rooms. She has been living in Macassar for the past ten months. When I asked her why she had moved to Macassar she mentioned the following factors: The former informal area was not healthy for her children. This new Macassar area is more comfortable because of the lower density and the toilet facilities, the big yard and availability of water.
However the long distance it is away from the city is seen as a drawback. Some important trips were too long for walking- ie. to the shops in Mitchell's Plain. Commuting is done by bus and taxi, also to the nearest train station.

She mentioned the possibility of moving to Kraaifontein in the hope of getting access to electricity.Research lead:

HOUSEHOLD DEMOGRAPHICS

Priscilla lives as a single parent with her two small daughters and her niece Lydia. Priscilla's brother shares in some household privileges.

Typical local house construction:
Some self built houses are put together from partly prefabricated panels manufactured by side walk entrepreneurs, others are assembled piecemeal utilising a variety of materials and construction methods.

Monthly payments towards housing are often undefined and households do not seem to distinguish between rates, rents, service fees or bond payments.

What are the effects of the lower urban density on viability of spaza shops and their fuel supply services to residents? How does the long distance to bigger commercial outlets influence fuel acquisition patterns?

HOUSEHOLD BUDGET

Until a month before Priscilla had held a job for 6 months in Sea Point, earning a monthly salary of R270 plus work-week accommodation. From this she had managed to make some savings. She is at the moment unemployed.
When I asked how she was managing, she was reluctant to answer but said she could make ends meet. Lizo expressed faith in her creative abilities to earn a living. Later, during a tea break, a discussion between her and Lizo centred around the possibility of her moving to Kraaifontein informal sector as there are rumours of households getting access to electricity there and she would be able to start a business enterprise, selling packs of meat.
Here in Macassar she had been selling paraffin and vegetables from her house but had stopped because business was not so good. People were not coming to buy. Lizo commented that he thought people preferred to go to a shop offering various items in order to simplify shopping trips. Priscilla said she was fond of selling but on a query from me said she would manufacture things if she could sell them. She could sew, but did not have a machine.

Wallacedene, situated in Kraaifontein, is a site and service township where access to domestic electricity for informal housing was becoming available.

The household income was not supplemented with rental from her brother, nor was Lydia (her aunt's daughter) working. Her brother did sometimes contribute to 'buying things'. Priscilla said she, like other households in the area, did not pay the service fees of R29.37 for water, sewerage facilities and rubbish removal.

For households who live in poverty, any payments are extremely difficult to make.

LIST OF APPLIANCES

One Primus paraffin stove.
Two solid irons.
Two paraffin lamps (strictly no candles).
Car radio (with batteries borrowed from the neighbour, never self charged).

APPLIANCE ACQUISITION

Desirable appliances

Priscilla said she would like more stove plates, and imagined having a **gas stove** with two plates would be good. She would like to have an **oven** as she is fond of baking. When

queried she guessed that a gas stove would cost about R400. She knows that gas is locally available, close by.
Questioned on the desirability of a **fridge,** she said that it would be good for drink, food, milk, and it could be cheaper to buy in bulk, if one had the storage facility. She used fresh milk.

She would like to have a **TV,** but does not do any viewing at present because she does not like to watch with somebody else.

APPLIANCE USE

Priscilla said that the Primus is adjustable which is good, but she would like more cooking plates.

Cooking

The following dishes were reported generally prepared: Potatoes, rice, vegetables, samp and beans, pot baked bread, samp with salt and 'vet' (fat).

The pot bread is made of bread-flour, water, sugar, salt and dry yeast and baked for 30 to 45 minutes on a medium flame evened out by placing a perforated metal plate over the top of the primus.

Samp, with salt and fat, is cooked for 3 hours on a medium flame on the primus. (On my query I was informed that it is never eaten sweet - that does not taste good)

Priscilla mentioned the difficulty of cooking various foodstuff for the same meal on one plate: she could not keep all things warm and had to transfer food from cooking vessels to others.

The warming of left-over food is difficult- she says she cannot do it; only by mixing all together again in a pot for reheating on the stove.

She makes a wood fire only for 'braaing' (barbecue) when there is a party.

Inadequate facilities are available for the cooking service required. The problem of simultaneously heating all dishes when serving a warm meal was often mentioned by interviewees.

Heating water
Water is available on tap outside at the outhouse. She carries water for household use into the house using a 5 litre container (I saw a 25 litre container and it is possible that the wrong size was quoted). Water for bathing is heated in the kettle on the Primus stove. Tea water is boiled in the same kettle.
Clothes are washed in cold water.

Lighting
The household used one paraffin lamp in the evenings until about 10 o'clock.
In the early morning household activity usually starts when there is daylight. Preparations to go out to work very early sometimes require use of the lamp.

Ironing
The irons are heated on the primus and have to be continually cleaned by wiping off the soot deposit. Two irons are used simultaneously to avoid wasting time waiting for heating. The extra one is borrowed from a neighbour.

Space heating
The primus is placed centrally on the floor with a metal flame spreader over. This is done on cold days only and mostly at night.

FUEL ACCESS AND USE

Fuel use
Paraffin is bought at the local spaza shop at a rate of about 7 bottles per week. She also mentioned that she used a 5 litre container. She said that when she has money she buys 25 litres at a time but when she doesn't have money she buys single bottles. The cost per bottle was 95 cents and she used her own bottle. The cost per 5 litre container was cited as R5.45.

A good description of piecemeal incomes and piecemeal fuel expenditures.

She had no problems with the maintenance of the primus. She thought it worked well in providing heat but did not like the fact that it stinks and affects the chest.

Access to food and fuel

Furniture and appliances were usually bought from a secondhand shop (because it is seen as much cheaper), the nearest being in Mitchell's Plain and Lansdown road. She says the shop closer by in Greenpoint has not got many good things.

Gas and paraffin is available closer by. The local Spaza shop is 30 to 50 meters away, from where fuel, small items and bread and milk is available. Priscilla goes to shop in Mitchell's Plain twice a month, travelling by taxi.

End of interview material

SET OF INTERVIEWS: 5. FURTHER INTERVIEWS IN GUGULETU

FIELDWORK

INTRODUCTION

The choice of urban area was determined by the need to compare interviews in other urban situations with these, situated in a very old urban area with formal housing where electricity has been available for many years.

These interviews were arranged and set up by Primrose Talakumeni who had been one of the photographers who assisted with the first pilot studies in Thambo Square and Guguletu.

Primrose also acted as language interpreter, however all the interviewees were long-standing urbanites and fairly fluent in English. There were times when Primrose had to clarify questions and answers. I found Primrose to be a good field assistant and interpreter as she seemed to understand the requirements of direct representation of the interviewee's view points, as well as the issues at stake. She often reminded me of points I had to pursue. The households interviewed are living in neighbouring houses a few hundred metres from Primrose's own house.

GUGULETU
Guguletu is an old established formal residential area with serviced infrastructure. The housing is standard state provided low-cost row housing.

INTERPRETER
Primrose Talakumeni is a photographer who has trained with the Community Arts Project and focuses on ethnographic work in her own community. She is a long-standing resident of Guguletu and mother of a household. She is Xhosa speaking and also fluent in English.

LIST OF INTERVIEWS

INT. NO 15 Violet Damane. Guguletu.
6th November 1992, Primrose Talakumeni - interpreter

INT. NO 16 Ruth Keke. Guguletu.
6th November 1992, Primrose Talakumeni - interpreter

INT. NO 17 Venus Gantsho. Guguletu.
6th November 1992, Primrose Talakumeni - interpreter

INTERVIEW NO 15
DATE: **November 6, 1992**
LOCATION: **Guguletu**
INTERVIEWEE: **Violet Damane**

INTERVIEW MATERIAL

INTERVIEW SITUATION

Interviewee: Violet Damane is a middle aged widow, head of household and living with her are her young adult children. Her husband died in 1982.

Present, myself Maria as interviewer, Primrose Talakumeni as language interpreter and field worker, Violet Damane as interviewee. This interview was conducted in the early morning. The interview had previously been set up by Primrose.

URBAN FABRIC

Guguletu is an old urban area. Streets are tarred. Electricity is available to private households. The plots are fairly big. Formal commercial premises have been developed. There are spaza shops scattered in the urban fabric.

The brick houses are semi-detached standard designs and are set close to the street boundary. Many houses have lightweight construction shacks in the backyard. Outhouses built in brick are situated on the back boundaries and provide waterborne sewerage and a bathroom. All houses have water on tap in the kitchen.

HOUSING STRUCTURE

Violet Damane's house is a brick house with concrete floors and masonry internal walls. The house has a kitchen, with fitted cupboards and sink with cold water on tap, an outhouse with bath and toilet and running water; a sitting room and two bedrooms. There are ceilings in all the rooms except the kitchen. There are lightweight self-constructed shacks in the backyard which Mrs Damane said was used by the children or herself to sit in.

NOTES AND COMMENTS

HOUSING HISTORY

Mrs Damane has lived in Guguletu since 1968. At that stage the house was not electrified although other houses in the area had already been electrified. The house was electrified in 1983 at a cost of R764, providing lights and a stove point.
Prior to this she had lived with her husband in Kensington near Mutual Station from 1957. In 1959 they moved to Guguletu (house Ny 27). In neither of these urban houses did they have electricity. She had come to Cape Town as a young girl with her mother, and they had then lived in Athlone (no electricity).

HOUSEHOLD DEMOGRAPHICS

The household consists of Violet herself, as head of household, two grandchildren aged 8 and 9 who attend school in Guguletu, a young adult boy (the son of her sister), the school-going daughter of her sister-in-law, the young adult child of her husband (the child is a job-seeker) and two of her own sons (the one is working, the other is unemployed). Furthermore, another of her sons stays here during his holidays.
There are two adult daughters who teach in other cities and come home at the end of each month. There was a big photograph displayed in the sitting room of the one who works in Mossel Bay and who has contributed several commodities to the household.
All in all there are 8 permanent household members and 3 household members staying there intermittently.

HOUSEHOLD BUDGET

Violet retired from her job one year ago. She had been employed at the same restaurant in Claremont for 18 years. She had worked Monday to Sunday from 8.30 to 6.00 and received a regular salary of R600 per month. She receives no pension benefits from her previous employer, but did get money from an unemployment fund for 5 months (amounts ranged from R500 to R95 as last payment). Mrs Damane said that she would like to get a light job for herself now - one that did not involve children and washing.

Her one son brings money into the household on an irregular basis. The amounts varying between R50 and R100 and are contributed at month ends. When I queried her about the average amount per month that comes into the household she said that it was hard to say as contributions were varied and spent as they came in.

A steady monthly income over a long period of time is what the household had been accustomed to.

The irregular contributions of other household members may be dependent on informal intra-household agreements. Where there is no regular income at all there is no access to (capital) expensive appliances.
Is this an indication of a split between the enjoyment of household benefits and contributions to the household budget.
Contributions other than money may be involved.
The mother is the one seen to 'take responsibility for the household money'.

She has two daughters working in Mossel Bay and Plettenberg Bay respectively, who come home at the end of each month. The daughter working in Mossel Bay has purchased the pots and 'wonder lid' that are in the house.

Later in the interview when we were talking about the possibility of acquiring a fridge, she said that it was unlikely she would now be able to get one because she was no longer employed, she added that school and college fees cost much (I conclude that extra money went that way). She would like to get a 2 or 3 day-a-week job.

During the interview, while she was speaking about the possible waste in using a geyser, she mentioned that the adult children in her household did not contribute towards electricity costs as they use their money for beer etc. She added that you can never trust children. She takes responsibility for the household money.
She said that she would buy the house if she could. At the moment she still pays rent of about R20, which includes the cost of water. (It was not clear what she meant by 'if she could', as it could refer to her household's financial capacities or to the availability of the housing stock for purchase by the inhabitants).

LIST OF APPLIANCES

Electric steam iron.
Electric water kettle (2 litre).
Electric two-plate stove.
Electric lighting in each room.
TV (black and white).
Hi-fi set.
Wall clock (small dry cell battery).
Electrical one bar heater.
'Wonder ' lid (heat-conserving pot cover).

APPLIANCE ACQUISITION

The lights were installed as part of the wiring contract.
The iron was the first appliance acquired, the second was the two plate stove (in 1990), the third was the kettle.

Mrs Damane emphasised that she did not yet have an electrical stove and that she did not see the two plate stove as a permanent substitute for it. When I queried her about what she wanted in a stove, she said she wanted 4 plates and an oven and that it must be a big floor standing model. To my question she replied that she would never want a table model stove and oven.

User's perceptions of a 'proper electrical stove'

The iron and kettle were bought new and are still in working order. The two plate stove was bought at a later stage because at first there was not enough money to buy one.

APPLIANCE USE

Ironing

All household members do their own ironing.
A steam iron is preferred to one without steam because the former eliminates the hassle of splashing washing with water while the ironing is in progress.

This is a good description of a clothes ironing service requirement.

Before getting an electrical iron, ironing was done on the primus. They had used only one iron at a time which meant that there were waiting periods during which it was reheated. She said the electrical ironing is quicker and the heat setting better.
Mrs Damane said that the electrical iron was better than using a solid iron on the primus as the latter makes a black soot so that one continuously has to wipe the iron on a cloth while ironing.

Two plate stove

Mrs Damane said that she did not perceive the use of the two-plate stove to have increased the electricity consumption (above consumption prior to its acquisition).
Since getting the electrical 2-plate stove, she has been using only that. In an emergency, when the electricity is off, she borrows a paraffin stove from a neighbour, as she had the night before our interview.

Paraffin stove

Before acquiring the 2-plate stove she had used a single Primus stove with a pump facility. She liked the pump Primus. When I queried her about this she responded by recounting why the Flame model of stove (the other most widely used stove in the area) was inferior: The Flame gives a lot of trouble, if food spills onto the burner it creates a big flame, whereas the primus with pump does not do that.
The pumping facility on the Primus is used to cook faster - the pump is worked until the appropriate flame intensity is reached, it then maintains that level of burning for about 5 minutes after which it has to be pumped again. She finds that she has a good control over the heat setting; 'it works well'. She said that if one looks after the Primus stove well it lasts for about a year. The burners need to be replaced roughly about every six months when they get holes. The burner replacement can be screwed in very easily.

The valves and nipple also require replacement from time to time when it is' not burning nicely'. These stove parts last 'quite a while'.
There were beautiful stainless steel pots set out on top of the kitchen cupboards and Mrs Damane informed us that they were bought by her daughter who works in Mossel Bay.

Cooking

The first reply to what she cooks was 'umugush', although she added that this is cooked only about twice a week - with and without beans. It is eaten as an evening meal.

She uses two pots to cook rice or 'stywe pap' at the same time as tripe, or bones, or potatoes, or chicken pieces. When she used to do this on the single plate primus, she did the stew first, and the 'stywe pap' or rice last as it is difficult to warm the latter up again, and easier to heat up the stew again.
For the big meal on Sundays, she cooks the vegetables first and the rice last.

When food needs to be **heated** it is done in the cooking vessels - that is the quickest way. She remarked that she has not got a colander to steam rice. She said it is better to have more pots to keep food warm in. If cold cooked food has to be re-heated later, it is all put together into the same pot.

Comparison of user experience between wick and pressure paraffin stoves.

The **vegetables** used with rice are cabbage, carrots and potatoes combined with 'vet' or 'stock'
Breakfast consists of a maize-meal porridge eaten with a sprinkling of tartaric acid, and tea. At lunchtime 'anything' is eaten: bread and tea or egg and tea. On Wednesday nights mpokoko is made. 'African salad' is also made because it is a light food.

Bread
The shop bread is seen to be good. I asked about toasting it and she said that toast was a favourite, that she liked it very much. They did at one time have a toaster, but they don't have it any longer, now they never toast.
At the weekend she sometimes makes steam bread and 'vetkoek'.

Hot Water
There is cold water on tap available at the kitchen sink. Household members make their own hot water in the electrical kettle. All water heating is done in the kettle. No thermal flask is used to conserve hot water.

Previously hot water for bathing was heated in a big pot on the primus (also by other individuals in the household) There are two baths available - one a fixture in the outhouse-bathroom and one portable bath.

Laundry is washed in cold water to which one kettle full of hot water is added for hand comfort. All members of household do their own laundry.
I asked the hypothetical question about having a geyser. She responded that she 'both liked it and did not like it'. She explained that the children would waste it because they are big (grown-up). They don't contribute towards electricity costs.

The adult family members do not contribute directly to energy costs. The mother who is responsible for paying the bills decides not to have expensive energy systems or systems that are not easy to control such as a hot water geyser.

Refrigeration
Mrs Damane said she would like a fridge, but as she was no longer employed, she could not buy one. She does store food such as meat, sausage and butter (not milk), at the neighbour who has a fridge. I asked whether she stored vegetables in the fridge as well and she said that she stored it in her own house.

Lighting
There are ceiling lights in all the rooms. The outside light at the back door has been out of commission since about 1988, (for four years) but the one at the front door is still working.
The school-going daughter studies in the bedroom. When the electricity is off, candles are used and they don't have a paraffin lamp at all.

TV and HI-fi
The TV was a present from her employer, received in 1984.
The Hi-fi was bought second hand by her husbands son. The record player is out of commission but the Hi-Fi works satisfactorily.

The acquisition of costly items such as the hi-fi is contracted outside of the household budget.

Space heating
Mrs Damane said she used the electrical heater 'often' when it feels cold. The heater had been a present to the household.
I had asked her if they ever sat in the kitchen because it is warm there. She replied that the kitchen was sometimes cold because there is a gap under the door.

Wonder lid
I initially asked about the 'wonder box' and Mrs Damane said she knows about the 'wonder box' but has never used it. She told me about the wonder lid that they have and that was brought into the household by her daughter who works in Mossel Bay. The Lid, repacked in its box, was fetched from the bedroom. We all looked at it with great interest and discussed its merits such as the fact that it provides a cut down on cooking time. However I am unsure of its daily use in this situation. None the less in response to my request for examples of improved cooking procedures, samp was mentioned as having a shorter cooking time when using the 'lid.'

These energy saving devices are not in use.

ELECTRICITY

The **electricity supply** is seen by Mrs Damane to be 'good'. Few interruptions occur - the electricity has been off for a day or so at a time (The longest period being 3 days). These power failures don't occur very often , 'not even once a month'.
The electricity is paid for on a monthly credit account which varies between R40 to R50 and R100. Mrs Damane does not know why it sometimes is higher. (I queried at this

point whether she had understood my question and the reply through the interpreter Primrose was that she had well understood my question but did not know the answer.)

The electrical **wiring and connection** had been a present from her work. Her son does **fixing** in the fuse box and also fixes the stove. He also does repairs for other people. I asked her opinion about the **card system for paying** for electricity, but she did not know the card system. Primrose explained the card system to her in Xhosa. She then said that it sounded better than the account system because she could control it by taking out the card, as the children tended to use electricity up to one or two o clock at night.

End of interview material

Major expenses towards electrification were not financed from the household budget.

The need for the head of household to control electricity expenses.

INTERVIEW NO 16
DATE: **November 6, 1992**
LOCATION: **Guguletu**
INTERVIEWEE: **Ruth Keke**

INTERVIEW MATERIAL

NOTES AND COMMENTS

INTERVIEW SITUATION

Interviewee: Mrs Ruth Keke, is a middle-aged single woman, heading her household.

Present were Primrose Talakumeni as interpreter and Mrs Keke and her daughter who came in from time to time.
I was extremely tired when I did this interview. I felt unreceptive and without energy.

URBAN FABRIC

Guguletu is an old urban area. Streets are tarred. Electricity is available to private households. The plots are fairly big. Formal commercial premises have been developed. There are spaza shops scattered in the urban fabric.

The brick houses are semi-detached standard designs and are set close to the street boundary. Many houses have shacks of lightweight construction in the backyard. Outhouses built in brick are situated on the back boundaries and provide waterborne sewerage and a bathroom. All houses have water on tap in the kitchen.

HOUSE STRUCTURE

This is a brick house with concrete floors. There are 4 rooms including a kitchen with water on tap at the sink. The other rooms are used as dining room, living room, and bedroom. There is also an outhouse with bathroom and wc. There is an outside room which her son uses. There are ceilings in all the rooms except the kitchen.
The kitchen is uncluttered and functional, The underside of the roof sheeting is blackened by earlier use of a paraffin stove.

HOUSING HISTORY

Not recorded.

HOUSEHOLD DEMOGRAPHICS

Ruth lives with her son who is neither working nor at school, and her daughter who is still at school. There are thus 3 persons in the household.

HOUSEHOLD BUDGET

Ruth works as an assistant at Nursing Services. The salary is varied, depending on the contract hours for the month, but is paid monthly. The average is about R800 per month. She commented that it is a job but she would not mind doing something else. She has had a big setback with her telephone bill which is over a R1000. She suspects it was tapped into but cannot get Telkom to investigate properly. She commented that now everything (in her budget) is set backwards. She remarked that she felt fairly confident about dealing with the variations in her electricity account.

Technology out of her control. A setback like this is disastrous in the context of relative poverty.

LIST OF APPLIANCES

TV colour set (bought second hand for cash). It has been out of commission for 2 years. It is in place in the lounge.
TV colour set (second set, kept in bedroom) It is in working order.
Hi-fi set (bought on terms from a shop at cost of about R400).
Electric stove with oven, model 'Univa'.
Electric heater.
Electric steam iron.

The phenomenon where appliances that are out of commission for indefinite periods pending repairs, are retained in the household requires further investigation. I assume that it would have been in use if systems for repairs accessible to these users existed locally.
Does it serve as a necessary piece of furniture, or is there no where else to store it? Is there hope for its re-institution in the long term and is it an asset that cannot profitably be traded in the community? How does the wastage of such 'dead capital' influence the household and the household budget?

APPLIANCE USE

Mrs Keke does not know what is wrong with the large TV set. A friend had promised to have it fixed for her. The cost of fixing was thought to be R185 and the cost of a new TV R480.

Space heating
She uses an electrical heater in the evening in winter.

Oven and stove
She has a four plate stove with oven. She seldom uses the oven although she does bake. She does not use the warmer for heating food, and commented that they just cook and (immediately) dish. One of the stove plates has been out of commission for about a year, but she said that 3 plates are enough 'otherwise' (as things stand?).

Refrigeration
She does not have a fridge but would like to have one, even a secondhand one. At present she cannot afford one.

Ironing
She has had an electrical steam iron for the past two years, which replaced a similar one she had before.

Electrical kettle
The kettle broke 3 days ago and she has taken it to be fixed. She commented that it was an old one and that she did not know what was wrong with it. At present she makes hot water in a pot on the stove and keeps it in a thermos flask.

Hot water
For bathing Mrs Keke's son uses cold water and has a bath outside at the back where there is a shack. She and her daughter heat water inside and use the same water.

Cooking
Mrs Keke uses three of the stove plates, but seldom uses the oven.
For breakfast she makes porridge if she is at home.
At lunch time they eat sandwiches.
For supper they sometimes have samp, (about once of week) and at other times potatoes and viennas and vegetables.
Before getting an electric stove, Mrs Keke used a 2-plate paraffin stove known as a Beatrice. She gave this appliance to other people when she got electricity..

Where does space heating rank in terms of expenditure on energy services?

Lighting
There is no electrical light in the outhouse (toilet and bath). The electrical light at the front door has been broken for the past 2 years.

Laundry
This is done in the outside bathroom where there is cold water on tap

ELECTRICITY
She has had electricity for the past 8 to 10 years (maybe longer, her teenage daughter thought that they had had electricity when she was born.)
There are ceiling lights in each room and one plug per room and two plugs in the kitchen.
A lead is taken out to the extra room in the back yard for her son.
Mrs Keke does not know the pre-pay card system for electricity purchase.

End of interview material

INTERVIEW NO 17
DATE: November 6, 1992
LOCATION: Guguletu
INTERVIEWEE: Venus Gantsho

INTERVIEW MATERIAL

INTERVIEW SITUATION

Interviewee: Venus Gantsho, a widow and head of household.

Present were myself, Maria as interviewer, Primrose Talakumeni as language interpreter and field contact, Mrs Venus Gantsho as interviewee.
Primrose had set up the interviews beforehand. Mrs Gantsho is a near neighbour of Primrose's. The interview was mainly conducted in English.
I felt very comfortable in this situation. Mrs Gantsho was brewing 'umkomoti' because she was expecting guests for the following day. After the main part of the interview had been completed and we were looking at the kitchen, I asked to taste the brew. She specially strained some for me and presented it in a big jug for me to drink from, as I have seen it drunk locally.

URBAN FABRIC

Guguletu is an old urban area. Streets are tarred. Electricity is available to private households. The plots are fairly big. Formal commercial premises have been developed. There are spaza shops scattered in the urban fabric.

The brick houses are semi-detached standard designs and are set close to the street boundary. Many houses have lightweight construction shacks in the backyard. Outhouses built in brick are situated on the back boundaries and provide waterborne sewerage and a bathroom. All houses have water on tap in the kitchen.

NOTES AND COMMENTS

HOUSE STRUCTURE

This is a brick house with concrete floors. There are 4 rooms including a kitchen with water on tap at the sink. The other rooms are used as a living room, and bedrooms. There is also an outhouse with bathroom and wc. There are two shacks in the backyard that are used for the storage of things Mrs Gantsho does not use, and sometimes to sleep in.

In the kitchen the underside of the roof was blackened by smoke and I asked whether this was the reason that she did not put in a ceiling. She said that the reason was that she did not have the money to put in a ceiling. (The rest of the house has ceilings.)
The house in not electrified although it is in an urban area where electricity has long been available. (An attempt at electrification of the house had been made but left uncompleted.)
In the fairly big backyard she had a few fruit bearing banana trees and also tobacco plants.

HOUSING HISTORY

Mrs Gantsho has been living in this house (No 87 NY) since 1960. Before that she lived in Kensington. She had come to the Cape from the Ciskei in 1951 as a young woman.

Mrs Gantsho is a long-established urbanite.

HOUSEHOLD DEMOGRAPHICS

Mrs Gantsho was widowed in 1980. There are 6 people all in all living in the house. The household consists of three young boys, (two are her own children and one is a grandchild), two girls (one works and one is at school in Langa) and Mrs Gantsho herself.

HOUSEHOLD BUDGET

Mrs Gantsho gets a pension of R290 per month. Mrs Gantsho also works two days a week for which she receives a monthly payment of R260. She sells some banana and tobacco crops from her back yard to someone in town. Her working daughter does not bring money into the household budget.
Rent paid for the house is R20 per month. One of the boys has been at school all year but cannot afford it this term.

Not all incomes go into the household budget: The assumption underlying the data collection practice of adding together the incomes of various members to calculate the household income, stems from the inappropriate projection of an expected code of behaviour. Research is required into the internal mechanisms of the household budget.

LIST OF APPLIANCES

Paraffin stoves: one Primus with pump and one Flame wick burning stove. (There was another Primus no longer in use.)
3 Paraffin lamps.
Three legged pot for use on an open fire.
Battery powered wall clock.
Thermos flask.
TV and radio (both broken).
Abandoned electrical stove (it has been in the backyard for 5 years and is not working).

APPLIANCE ACQUISITION

On my query about how she would acquire electrical appliances once she had the house wired, she replied that she would get easy things that they could do, such as a two plate stove or a secondhand stove. (I assume she meant easily accessible appliances.)
She would like to get a steam iron. She thinks that the provision of lights would be included in the electrical wiring work.

APPLIANCE USE

Electrification

When the wiring of her house was interrupted, Mrs Gantsho had not yet bought any electrical appliances. She is still using her other appliances.

Cooking

Mrs Gantsho uses both paraffin stoves for cooking. She cooks 'umugushu' on the Flame and boils water on the Primus. She uses the Primus for quick cooking.
She makes porridge and meat (if she has got any) on the Primus.
When she is not in a hurry she uses the Flame because the Primus uses more paraffin.
She cleans the nipple and burner of the stoves with methylated spirits.

Differentiated uses of pressure and wick paraffin stoves.

User perception of the fuel economics of paraffin stoves.

For special occasions she uses the iron three-legged pot on a wood fire in the backyard. This is done with special dishes such as meat. She also uses this fairly large pot on the fire to cook samp in if there are many people. She said that this did not happen very often.

A special occasion such as the gathering of a large number of people who are provided with food, requires special cooking and energy facilities.

Foodstuff
At breakfast time, if they are 'at home' they have porridge and bread and tea, and if she has got, eggs for the children.
At lunch time they have 'anything' not cooked.
At supper time they have samp or 'stywe pap' with cabbage or potatoes or rice.
Once or twice a week she makes pot or steam bread. The steam bread is made on the Flame because it requires a slow heat. She can also make 'mpokoko' like this.

The time available for food preparation differs on various days. This influences the choice of foodstuff as well as energy service requirements.
Research lead: Data on food preparation procedures should inform energy requirements for these services.

Space heating
She uses the Primus with a piece of iron placed on top of the pot holder, for space heating. She does not use the Flame for this because it smokes too much, even though the Primus uses more paraffin.

Research lead:
This practice of using a paraffin stove with a home-made perforated sheet-metal plate on top as a space heater could be analyzed in terms of its appropriateness as a energy service package. This could render information for appliance design as well as demand side management investigations into efficient energy use.

Lighting
There are three paraffin lamps in the house. She does not use candles and does not like them because it 'burns' too easily, which is not safe with the children. The children study using the paraffin lighting, but she says it is not enough. Further a fourth lamp is needed for the fourth room. She does use a lamp in the early mornings when required. She could not comment on a possible preference for gas lighting. I asked whether the paraffin lamp gave enough light to work in the kitchen and she responded that it has to, because they have nothing else.

This is a good description of lighting requirements.

There is a limited perception of the nature of other lighting options. Attitudes adopted in coping with practical realities of limited options seem to dim value judgements of other possibilities for lighting.

Hot water
She heats water on the Primus in a pot. She does not have a kettle, but uses bigger and smaller pots. She sometimes uses the thermos flask to store hot water when she is at home.
Clothes are washed in cold water.

Research lead:
Water heating practices; Design solutions of 'multipurpose' stoves and vessels should be weighed against the adaptability and efficiency of specialised items.

Ironing
The ironing is done on the Flame or the Primus and the iron used is a converted old electrical iron.

TV and radio
These are out of commission and Mrs Gantsho does not have the money to repair them..

Brewing
She brews for herself and for visitors and uses a big drum set on a wood fire in the back yard.
Wonder box
She uses it to prepare samp and rice and stew.

I investigated the origin of the wonder box. The distribution through non profit organisations seems a viable strategy within this context of poverty. Information below.

ELECTRICITY

The house remains un-electrified although most of the neighbouring houses have been electrified for a long time. Mrs Gantsho says that she cannot afford to have the connection and wiring, which had been started in July 1990, completed. She had then paid someone R700 to do the wiring - the conduits had been put in the walls. The contractor then disappeared. There was another R300 to the cost not yet paid to the man who was doing the work. I asked whether the R700 had included connection fees, but she did not know at all whether there were such to be paid.
She said that when and if she had money she would get the electricity. In the short term future, Christmas and schooling will take all the money.

'Fees due': The vagueness around this issue disempowers the users who have no hold on contract fulfilment or knowledge of the consequences of non-payment.

FUELS ACQUISITION AND USE

The paraffin that she uses is bought per bottle and she uses about 6 bottles over a few days. (The cost is 80 cents per bottle.) She buys this from the supermarket close by. She buys in quantities of 2, 3, 4 or 6 bottles at a time, depending on the money available. She uses the Flame stove (when she has time) in preference to the Primus in an effort to save on fuel expenses.

Wood
Wood for the three-legged-pot and for the large drum used in brewing, is purchased from someone in the area, or at the supermarket.

WONDER BOX FROM 'COMPASSION' TEL 689 3689
Barnyard street, near St Giles and Red Cross hospital. Compassion is a non-profit organisation. They advertise once a year and otherwise by word of mouth. They are not sponsored. They involve themselves in producing the wonder box as well as in training programmes on how to use the wonder box. A second product is a metal oven (23x23x19mm) that is used on top of a primus stove. This is used for baking and adapted as a smoker for fish and meat. Other projects of Compassion include paper briquette making as fuel wood substitute and disseminating information on food and nutrition.

End of interview material

SET OF INTERVIEWS: 6. INTERVIEWS IN NOORDHOEK, NEW SITE 5

FIELDWORK

INTRODUCTION

THE NEW SITE 5

This site, which has not yet been named is known to local residents as 'The New Site' or in some cases as the 'New Site 5', referring to the previously existing informal settlement on the same land. This site and services township has been developed by the CPA with community participation supported by the NGO's Development Action Group and Surplus Peoples Project. Households living in the squatter communities Greenpoint and Site 5 have relocated to allocated sites here.
The township provides a low density erf lay-out in a grid pattern with tarred roads, street-front lighting, urban electrical reticulation allowing for future domestic connections. There are water supply taps, waterborne sewerage and toilets to each site.

Residents started moving on to the sites in December 1992 and there are still households arriving at present. Shacks were de-constructed on previous sites and transported together with household goods and outdoor plants to the new sites. The township is bustling with building activity; many houses are habitable but are still being extended and external work such as fencing and gardening is being completed. Household spaza shops were transplanted to the new township. Old neighbours have been separated in the new spatial arrangements.

LIST OF INTERVIEWS

INT. NO 18 Virginia Gumede 'New Site', Noordhoek.
12th January 1993, Bonela Biyonga - interpreter

INT. NO 19 Nokuthembeka Nogqala 'New Site', Noordhoek.
12th January 1993, Bonela Biyonga - interpreter

INT. NO 20 Elliot Dulase 'New Site', Noordhoek.
14th January 1993, Bonela Biyonga - interpreter

INT. NO 21 Thayemile Saba 'New Site', Noordhoek.
14th January 1993, Bonela Biyonga - interpreter

INT. NO 22 Jones Gquzo 'New Site', Noordhoek.
18th January 1993, Vuyo Qangule - interpreter

INT. NO 23 Winnie Tsotso 'New Site', Noordhoek.
20th January 1993 - Vuyo Qangule - interpreter

INT. NO 24 Orumpia Nkwadla 'New Site', Noordhoek.
21st January 1993 Vuyo Qangule - interpreter

INT. NO 25 Susan Nomhle Jafta 'New Site' Noordhoek.
27th January 1993 - Vuyo Qangule - interpreter

FAILURE OF INTERVIEW ARRANGEMENTS

Nearly all advance arrangements for interviews in Noordhoek failed. When I reviewed the situation I thought it may have resulted partly from the fact that the community was in flux and everybody disrupted by the relocation. Nonetheless I think that the research was enhanced by the spontaneity. I did not get the impression that interviewees were not able and willing to participate fully.

INTERPRETERS AND FIELD ASSISTANTS

Bonela Biyonga is a university student, and did the work on a part time basis. This was a welcome introduction for her to the energy-related field-work. Bonela is familiar with the necessary social etiquette and language to act as interpreter.

Vuyo Qangule is an anthropology graduate from the University of Cape Town and is well skilled in observational fieldwork and interpretation. She is not familiar with all the local informal settlements but is familiar with the language skills to act as an interpreter. I found her contributions to the fieldwork particularly informative.

INTERVIEW NO 18
DATE:January 12, 1993 AT: mid-morning
LOCATION: 'Old Site 5, Noordhoek
INTERVIEWEE: Virginia Gumede

INTERVIEW MATERIAL

NOTES AND COMMENTS

INTRODUCTION
Location: Old Site 5, on the Kommetjie side of the new site and services area.
A new plot, no 1406 has been allocated to this household, but has not yet been occupied.

INTERVIEW SITUATION
Interviewee: Virginia Gumede recently married her husband who is well established here.

This interview was set up at the last minute by Winnie Tsotso, who is one of the local community leaders and serves on the representative committee. (The interviewee we had arranged to meet at this time was not at home.)
We sat in a back room of the house, next to the shop and were aware of the shop activities throughout the interview. Once during the interview, Virginia had to attend to a delivery. One of the shop assistants occasionally passed through the room. The interview was pleasant and easy. As we departed Virginia came running out of the house with a Coke and a packet of chips for each of us.

URBAN FABRIC

The household is established in the old informal squatter area of Site 5 in the Noordhoek-Kommetjie valley. The urban fabric is of medium density with enough space to accommodate rural domestic practices such as the keeping of chickens and cows, and is characterised by the landscape of wattle-bush amongst which houses are set.
The central spine road is sand. There are about ten communal toilets set up in a row to one side of the road, and shared water taps.

Site 5 is now on the periphery of the newly developed site and services area (which has been developed to accommodate the residents of Site 5 as well as households relocated from the squatter area known as Greenpoint). There are still households in the old Site 5 who have not occupied their allocated new plots, or who are waiting for new plots to be made available.

Transition from an informal site with minimal facilities, to a semi-formal site with basic services infrastructure. The old informal site allowed for some subsistence strategies to be employed by residents (woodcutting, cows, chickens, gardens).

HOUSE STRUCTURE

The self built house is of lightweight construction typically used by squatters in the area. The framework of timber is clad with IBR sheet-metal on the walls and roof and lined on the inside with cardboard pasted over with factory runs of packaging paper. The floors are concrete slabs, covered with loose bits of lino and carpeting.
The front building consists of a spaza shop with a hatch to the kitchen cum shop, as well as a bedroom used by the husband and wife, and a sitting room with separate side entrance. At the back of this building there is a large building accommodating a shebeen and other service rooms used for some kitchen functions and sleeping accommodation for four workers employed in the household business.
The domestic yard is extensive and accommodates the chicken-run between the two buildings, a nighttime cattle pen for 26 cattle, an open-air generator station, a yard space for vehicles and deliveries, stashes of wood etc. This yard borders on a uninhabited bush area.

HOUSING HISTORY

Virginia herself arrived in Noordhoek on the 27th of December 1992 from Willowvale in the Transkei. Her husband is well established in Noordhoek; he had before been employed as a fisherman in Hout Bay. At the moment he runs his own business as sole source of income.
The household has a site in the new site and services area and will rebuild their house and shop there. New building material has been acquired for that purpose (I wonder whether the new site will accommodate all the outside areas used in the present set-up as the site, no 1406 is just an ordinary domestic site.)

HOUSEHOLD DEMOGRAPHICS

The household consists of Virginia and her husband as well as four young adult workers employed to work in the shop and to look after the cattle. Virginia cooks for all members of the household, as her husband prefers her cooking. She has the assistance of the employees.

In order to follow up the changes in lifestyle and farming activities likely to result from the move, a follow-up interview should be conducted. The subsistence survival (and the self-supported business enterprises dependent on similar free assets) may not be feasible in the new urban setting.

HOUSEHOLD BUDGET

The household income is generated by the shop and shebeen. There is quite a large shebeen at the back of the house in a separate building. There is a cowherd of about 26 animals, tended by one of the employees. Milk from the cows (especially sourmilk) is sold from the shop, however most of the fresh milk sold is delivered daily to the shop by commercial suppliers.
Live chickens from their own stock are sometimes sold in the shop. Eggs are not collected and are bought for re-sale in the shop from the wholesaler in Philippi.

Bread is sold in the shop and the bakery in Lakeside delivers a daily order of 40 white and 10 brown loaves of bread, except on a Sunday when her husband collects bread from a hyperette. The bread is a fast seller and does not need to be refrigerated.
The deepfreeze is used to cool milk, cool drinks, beer and chicken-pieces.
Virginia said that the business generates an income of about R1000 per day (This may be the turnover figure).
Virginia's husband has a bakkie and uses it in the business. The household has a telephone. The workers are paid salaries. Her husband does not want accounts to pay and everything is paid for in cash. He operates a savings account.

LIST OF APPLIANCES

Petrol generator .
Horizontal deepfreeze (AEG electrical, large - 2000 x 600 x counter height).
Electrical kettle.
Electrical 2-bar heater.
7 electrical light globes inside, 3 globes outside.
5 paraffin lamps
4kg Cadac gas cooker (single plate mounted on cylinder).
Primus paraffin stove.
No TV and no batteries.

The business actively flourishes. Cash is generated and capital investments made in appliances that make more business enterprises possible.

APPLIANCE USE

COOKING
Virginia has been on a cooking course in Goodwood at a training centre. She completed this 3-week course in September 1992 and has a certificate to show for it. At the training centre cooking was done with electricity, and there was a six plate stove. To my queries she responded that cooking on the Cadac gas burner works as well, but that she prefers the electricity as it is difficult to control the heat of the gas burner. Using only one plate she finds the simultaneous heating of dishes difficult. Virginia's cooking is different to that of her helpers in as much as she fries food in 'bisto and soup' and they cook it in water.

Dishes generally made:
Breakfast consists of egg and 'bisto'. The bisto is made by frying onion and tomato with sugar and salt. Bread and coffee is also eaten. The bread is home-made steam bread.

Steambread: Instant yeast is prepared with a spoon of flour and sugar - this takes 5 minutes to be ready. This is then mixed with a spoon into 4 cups of white bread flour and salt. This mix is covered and set aside to rise for 30 minutes, it is then once more mixed and put in a buttered dish. This dish is put in a big pot of water with the lid on and heated on the stove. Virginia adds a cup of water every time the water has boiled away (steamed off) and repeats this six times. At this point in the procedure she knows that the bread is ready. Neither duration or surveillance of the procedures seem to be a problem - at my request she estimated the duration of the procedure to be just less than one hour. The dish with bread is taken out of the pot to cool with a clean cloth over it. This bread lasts the family 2 days. Steam bread is made just for the family (not sold). Virginia said that shop bread tasted 'boring'.

Rice, potatoes and chicken pieces from the shop are prepared at lunch time.
Live chickens from their own stock are also used for household consumption and some are sold live to shop customers.

The kitchen appliances are unsophisticated in comparison to the equipment used in the business. In other interviews (such as with Julia Ntsanga), where kitchens were better equipped the person who was the main user of kitchen appliances was also the income earner. Virginia was new to this household and it would be interesting to follow the changes occurring in the future.

ELECTRICITY USE

Petrol for the generator costs R20 for two days of use.
The electrical lights are run off the generator until 10 at night when the shop closes. The wiring was done by her husband. Underground cables lead from the generator and internally, two-core flex wiring extends to the ceiling lights. Virginia does not know who does the fixing if anything electrical needs repairs.

The freezer is electrical and run off the generator. There is an old upright fridge in the house but it is not in use as the freezer provides adequate service. Virginia said that they did not intend to get rid of the old fridge.
Virginia was not sure whether they would get electricity on the new site but thought it would be supplied by the council.

End of interview material

INTERVIEW NO 19
DATE: **January 12, 1993**
LOCATION: **'New Site 5' Noordhoek**
INTERVIEWEE: **Nokuthembeka Nogqala**

INTERVIEW MATERIAL

NOTES AND COMMENTS

INTERVIEW SITUATION

Interviewee: Nokuthembeka Nogqala. She is a young wife who runs the household and shop on a fulltime basis.

This interview was set up on site at the last minute because other previous arrangements for interviews had collapsed. Winnie Tsotso who is on the committee representing the community and who has been assisting me with arrangements during the past few weeks, arranged this interview. Nokuthembeka is a near neighbour of hers.

Present were myself as interviewer, Bonela Biyongo as interpreter, Nokuthembeka as interviewee. Two children of the household were round and about, serving the spaza customers. The interview was held outside in the screened-off area in front of the house and shop. From here surveillance of the shop hatch and front door is possible. We sat in the sun on wooden benches.

URBAN FABRIC

Residents have relocated from other sites to this new site and services township known as 'New Site 5'. The house is one of the recently re-erected structures. Relocation and building is still in process.

HOUSE STRUCTURE

The new self-built house is of lightweight construction typically used by squatters in the area. The framework of timber is clad with sheet-metal and lined on the inside with cardboard, pasted over with factory runs of packaging paper. The floors are concrete surface beds, except in the stocks-store room where it is sand. The front patio, which will be extended to become the shebeen, is paved with hard brick on sand.

Wellington built the house himself and it took him two days. Some of the building materials were brought from Greenpoint and some were bought, secondhand form a friend called Margaret.

HOUSING HISTORY

The household moved to the new plot before Christmas 1992. Before that they had lived in Greenpoint for a year and a few months, and prior to that Wellington had lived in Cape Point after moving to the Cape in 1989 from the Ciskei. Nokuthembeka had previously lived in Nyanga after moving to Cape Town from Fort Beaufort in 1985. The couple were married in June 1992.

TRANSITION

I asked Nokuthembeka what she thought of the move from Greenpoint to the 'New Site'. She responded that 'here' was better than at Greenpoint because of the water supply to the plot and the improved toilet facilities. She also likes the street lighting.
I asked how much they paid for the plot and she replied that she did not know as they were not told to pay for the plots.

I asked whether she regarded this as a permanent location and she replied that she did. She substantiated this by saying that they were told that they could build brick houses if they wanted to, which indicates permanence to her. She reaffirmed that she liked this place. She said that money was a problem in building a brick house, but that it is desirable to have one.

The move of the house itself was managed by putting up the roof on the first day. On the second day the household moved to the site and put up the walls. The house was finished while they were living here.

I asked her if she knew her neighbours and she replied that some were new and that she likes it and that it all seems to be much like before. I asked her whether neighbours helped each other and she replied that they used to, previously when they were living in Greenpoint, but that they do not do it now as they have not known each other for a long time.

Electricity

I asked her if they would get electricity and she replied that she did not think so because nothing has been said. (I assume that this refers to information given to the community by the authorities or local representatives.)
She said she would like to have electricity because the Coca Cola company would then provide the shop with a fridge.

HOUSEHOLD DEMOGRAPHICS

The household consists of Nokuthembeka and her husband Wellington, her brother Velelo, her husbands two young brothers Sidima and Simon and a new comer, an adult male, who has just arrived. Nokuthembeka cooks for all six these persons. She has a child of three years who lives in the Ciskei.

HOUSEHOLD BUDGET

None of the household members have a regular salaried income. Money for the household comes from the business in the spaza shop and her husband's transport business that he undertakes with his 'bakkie'. The shop was previously operated as a home business in Greenpoint as well. Income from the shop varies between R150 to R200 per day and is never less than R100 per day. The weekends bring in more money than the weekdays. Stocks are bought on a Monday and Friday and profits are calculated on the weekend making it difficult to establish what the daily profit would be.
There is a gas fridge used in the shop to cool beer, cooldrink and chicken pieces. Long-life milk is used.

LIST OF APPLIANCES

Flame single plate paraffin stove.
4 paraffin lamps.
1 paraffin heater.
Solid iron used on the Flame.

The uncertainty around the access to domestic electricity is remarkable in this community where the community have managed to negotiate resettlement through their representative committee. I perceived that generally in the townships very little correct information seemed to filter through to residents themselves from community representative committees, development organisations and local authorities. This particular situation proved to result from the fact that there was uncertainty as to which supply authority (Cape Town city council and Eskom were contenders) would undertake the service.

APPLIANCE USE

Nokuthembeka is responsible for the household work and is at home every day.

Heating water

Water is brought into the house, from the tap at the toilet, in a bucket (a distance of about 4 meters) She affirmed again that this is what she liked about the new site; the tap and toilet on site.

For bathing one big pot full is heated once a day on the paraffin stove. Water for drinking is also heated on the Flame. I asked if the Flame heated up fast enough and she replied that she is used to it, the way it works.

Flame paraffin stove

Nokuthembeka said she did not like the Flame because it smokes and stains the pots and is unhealthy. She said that the Flame model was OK for cooking . She had used a Primus stove in Greenpoint, but thought it dangerous as it causes a fire - it sometimes just bursts into flames.

Foodstuff

For **breakfast** she generally makes egg and 'bisto' or bread, otherwise soup and bread and sometimes they have porridge, buttered bread, tea and coffee.
The bread is sometimes shop bread and sometimes steambread. She also makes 'vetkoeks' for bread.

At **lunchtimes** the meals consist of sausage and potatoes or samp and beans with chicken or mutton. Sometimes they have bread only. She mentioned that her husband likes the shop bread.

The main meal of the day is eaten at **supper** time. It consists of samp, meat and vegetables such as cabbage, carrots and potatoes.
Maize meal is seldom used although she sometimes, not often, makes mpoqoqo.
A special meal is cooked on Sundays when she makes salads and rice and braai-ed (grilled) meat. This is done on the Flame in a pot (not an open fire).

Cooking

Nokuthembeka says she manages with one stove plate because she starts cooking early, working through the day. She heats the samp again when it is time to eat.

FUEL ACCESS AND USE

Wood

I asked whether she used a woodfire at all and she replied that she would not use it here but that she did use it in the Transkei. She said that it was OK to use in the Transkei because it also served as a heater.

ELECTRICITY

Nokuthembeka did not think that they could get electricity because she had not been informed otherwise.
She mentioned that she would like electricity because the Coke Company would then provide the shop with a fridge and further that she would very much like it for her own use. She would use electricity for lights, a fridge and a stove. I asked her about the heating of water, and she replied that she would do it on the paraffin stove. I then asked her about the desirability of a geyser, to which she replied that she would like one and that she did not know what it would cost.
The pre-pay card system is not known to her but she knows the credit bill system from Nyanga. The Ready Board reticulation system is not known to her either but she knows the main switchboard from Nyanga.

I asked what appliances she would want if she did get electricity. She named them in the following order: Kettle, stove, fridge, iron, lights. I asked how she would heat water and she said that the kettle would be too small but that she would refill it repeatedly. I asked her whether she would want a geyser and she replied that she would want one if it was supplied and it was fairly cheap. Nokuthembeka said she would buy new appliances one by one from the income from the shop.
I asked whether she would like to have an oven with her new stove and she said yes she would use it to keep the food warm and added (on my further questioning), for baking.

End of interview material

It is known through the planners and construction companies that full urban reticulation, providing for domestic connections, has already been installed. The Cape Town City Council is in line to provide the service but in early January were still reluctant to give any information on dates of access, costs and procedures.

INTERVIEWS NO 20, 21.
INTRODUCTION

I had previously set up interviews with the assistance of Winnie Tsotso who acts as a community representative. However when I arrived she had gone out to cut wood with which to do extensions to her house. Other members of her household tried to get hold of a list of house numbers of households where she had set up interviews. In the end the help of Aron Mjoli was called in. He is a member of the community representative committee and works at the CPA office on site. He was busy helping with transport round about the settlement. Aron introduced the two household heads with whom we conducted these interviews (no 20 and 21).

INTERVIEW NO 20
DATE: January 14, 1993 **AT Early morning**
LOCATION: 'New Site 5' Noordhoek
INTERVIEWEE: Elliot Dulase.

INTERVIEW MATERIAL
INTRODUCTION

I had previously set up interviews for the day with the assistance of Winnie Tsotso who acts as a community representative. However when I arrived she had gone out to cut wood with which to do extensions to her house. Other members of her household tried to get hold of a list of house numbers of households where she had set up interviews. In the end the help of Aron Mjoli was called in. He is a member of the community representative committee and works at the CPA office on site. He was busy helping with transport round about the settlement. Aron introduced the two household heads with whom we conducted the following interviews.

INTERVIEW SITUATION
Interviewee: Elliot Dulase who lives on his own (house no 1799).

Present were myself as interviewer, Bonela Biyonga as Xhosa language interpreter , Elliot Dulase as interviewee. We were introduced by Aron Mjoli who had previously made contact with a number of households for interviews in conjunction with Winnie Tsotso. The interview appointments had not been fixed and he now approached Elliot without prior notice. Aron came back after a while to sit in on part of the interview.

The interview was pleasant and easy. At one point Bonela mentioned that she thought Elliot was reluctant to speak about his business, so I tried to communicate reassurance of the fact that this was not an investigation that could be used against him.

The interview was recorded on audio tape. This is a presentation of field notes and not of the audio tape.

NOTES AND COMMENTS

URBAN FABRIC

Residents have relocated from other sites to this new site and services township known as New Site 5. The house is one of the recently re-erected structures. Relocation and building is still in process. Elliot commented that rubbish is not removed.

HOUSING HISTORY

Elliot had previously lived for 4 years in the old 'Site 5' in a house that he owned and shared with six other people. The house was a self-made shack. Before that he lived in 'Site B' in Khayelitsha to where he moved in 1981, having come from Johannesburg and Virginia. He had lived in a hostel in Virginia on the Highveld.

HOUSING STRUCTURE

Elliot had built the new house himself within a week. He had used the material from his house in 'Site 5', but did get new paper to do the internal papering. The structure is typical of self-made houses in the area.
There is a small sitting room at the entrance with a hatch to the room behind which is used as a shop. There is also a bedroom and a separate kitchen. The kitchen is a large room where domestic things are stored and the cooking facilities take up only a small part of it. (Photographs were taken.) The kitchen room has not yet been completed and needs more external cladding sheets and work to be done to the roof and walls.

Elliot described the way in which the **walls are papered**; a paste is made of flour and mixed with water. This is then boiled until it has gelled. Newspaper or factory runs of packaging paper is then pasted onto the cardboard lining of the walls. I asked what the function of the paper was and he replied that it was to make the walls attractive and to prevent the wind from blowing through the walls. Corrugated cardboard (boxes that have been opened out) are nailed to the inside of the timber structure.

The house has **sand floors**. Elliot commented that he would like to have concrete floors but that it is too expensive, and that he would do it later. I asked whether water did not come in from the earth below the floor coverings and he said that it does not. (It has only rained on one occasion since the move.)

In the **yard** there is a chicken run. When we arrived Elliot was busy preparing a vegetable patch in the front garden for spinach and cabbage.

HOUSEHOLD DEMOGRAPHICS

Elliot said that he would be living alone in the house and that he had no intention of taking in tenants. It later transpired that he did have a wife and child of 5 years, called Monwabisi, who live in the Transkei. He has a notice board out on the front of the house saying 'Monwabisi shop'.

HOUSEHOLD BUDGET

Elliot is not working at the moment, although he did have a job a year ago. He earns his income from the business he does from the small shop he runs from his house.

Later, as we departed, he said that he was looking for someone to recommend him so that he could buy a car on terms - he said it could be an old one that would 'last a year.' Elliot was reluctant to say much about his business.

This internal lining is used in all self made houses that I visited. Keeping the Cape south easter wind out is not only a measure to enhance the thermal performance of the buildings but essential for the safe and efficient use of open flame stoves. The effectiveness of this layer of paper and cardboard as a barrier to control thermal flow in and out of the structure cannot be very great but merits investigation. The creative use of available discards from the mainstream industrial economy is an important economic aspect of this practice.

TRANSITION

Elliot said that it is better to live here than in the old Site 5. Here he has a bigger site and also water and a toilet. In the old 'Site 5' they used the bush for toiletting.

He likes the street lights. Elliot said that he owned this plot and that it was given to him. To my question he responded that there were no monthly payments to be made. I asked whether he had any papers for the plot. He said that cards were given to the residents but that these had been taken back by the office. (There is a CPA office set up on the site.)

LIST OF APPLIANCES

Paraffin stove (Primus with pump, not a good model) There was second broken stove.
2 Paraffin lamps.
Portable radio with PM10 batteries.

APPLIANCE USE

Paraffin Stove

Elliot prefers the Primus stove to the Flame because says he, the Flame is dangerous as it has a tendency to just burst into flames. There was a second Primus stored under the table in the kitchen which was broken and needed a new burner. Elliot thinks this will cost about R13. He will fix it himself.
He never uses the stove as a heater.

Cooking

He does his own cooking. He also cooked separately for himself in the house in 'Site 5'. His new house has a separate kitchen. Elliot cooks 3 time a day.

In the **morning** he has porridge or bread and tea. It takes him about 15 minutes to make the porridge. I asked if the paraffin stove was good for this. He replied that an electrical stove would be better explaining that the paraffin is expensive and that electricity is quicker.

Danger of paraffin stoves.
The perceptions around the tendency for specific stove types to just burst out in flames vary and are contradictory - some interviewees say the wick stoves are more dangerous and others say the pressure stoves are more dangerous. The choice usually is to use the other type of stove.

At **lunch** time he makes rice with potatoes or Saldanha fish, or chicken pieces. He cooks the chicken in water on the stove. He mentioned only 10 minutes preparation time and explained that the longer the chicken was frozen before cooking, the more quickly it cooked. Elliot has no refrigeration in his house and buys the chicken meat from Pick and Pay when he needs it - not daily.

In the **evening** he has bread and tea, or bread and eggs (he has a chicken run in the yard). I asked what bread he eats and he said shop bread. Although he knows how to make steam bread, he seldom does.

Elliot makes **hot water** in a big pot on the paraffin stove.
He never uses wood for cooking. He buys paraffin in a 5 litre container. (He does not sell paraffin from his shop).

Lighting
Elliot uses the paraffin lamps but perceives them to be expensive. He uses light in the room with the shop, the bedroom and kitchen. He says the light from the paraffin lamp is enough for the kitchen because it is not a very big room. I asked him if he uses a lamp to go to the outside toilet at night and he said that the streetlight helps. (He has laid out a gravel path to the toilet door.)

ELECTRICITY

Elliot said that he wants to have electricity. He does not know when it will become available but he looks forward to it. He also does not know what it will cost. He does not know whether it will be the contractors on site (civil and electrical works), or the council who will provide the electricity service.

He said he would like to have the following **appliances:** A fridge, a stove and lights. He is not sure about a heater and said that it depends on the plugs in the house. The first thing he would get is a fridge for the business.

The **Ready Board** is known to him from his time in the hostel in Virginia. I asked whether he thought the ready board would be sufficient as a wiring system and he said it would be because the house is small. From experience in Virginia he knows that the Ready Board' kicks out' (the switch trips) often for some unknown reason. He said that a bigger house would need more separate plugs.

Elliot thinks electricity to be better for **lighting** because the paraffin lamps waste paraffin - it will be cheaper. I asked about the sufficiency of the quality of light from the paraffin lamps but he did not respond to this.
Elliot said he would do the **wiring** for lights himself.

End of interview material

Meeting the real requirements of users.
Interviewees often mention that they 'make do' with what is available or affordable, 'using a heater only if there happens to be a plug-point'. This practice may determine what can be perceived as a preferred or instituted lifestyle. There is a danger in reproducing these practices, that may not reflect the real requirements of users. A finely tuned forum is needed in which the real requirements of users can be voiced.
Maximising the options (user choices) available within a framework of affordability would allow users to make best choices.

INTERVIEW NO 21
DATE: **January 14, 1993**
LOCATION: **New Site 5 Noordhoek**
INTERVIEWEE: ***Thayimile Saba.***

INTERVIEW MATERIAL
INTERVIEW SITUATION

Interviewee: Thayimile Saba. He is a young man living with his child (a toddler) and an adult male friend.

Present were myself as interviewer, Bonela Biyonga as Xhosa language interpreter and Thayimile as interviewee. We were introduced by Aron Mjoli who had previously made arrangements with a number of households for interviews - the times had not been fixed and he now approached Thayimile without prior notice. Aron sat in on the interview. The other adult occupant of the house lay sleeping on a bed in the large living room where the interview was held. Several other persons (male) came and went as the interview proceeded and some people were there all the time. The child came in to his father and Thayimile looked at some blemish on his face with great care.
Near the end of the interview Thayimile asked me why I was asking all these questions. I responded that I was gathering information for my research and that I hoped the information will inform appliance manufacturers about the requirements of the users.

HOUSEHOLD DEMOGRAPHICS

Thayimile, his toddler son, his friend (adult male).
His son stays at home and does not attend creche.

HOUSEHOLD INCOME

Thayimile does not have employment but does short term work on a Saturday.

URBAN FABRIC

Residents have relocated from other sites this new site and services township known as 'New Site 5'. The house is one of the recently re-erected structures. Relocation and building is still in process.

NOTES AND COMMENTS

HOUSE STRUCTURE

The house is a lightweight timber structure with external sheet metal and other odd pieces of cladding. Internally it is clad with cardboard sheeting, typical of the squatter houses in the area. This house seemed to have been made of particulary poor materials. These were the same materials used in his previous house in the old Site 5, that were transported to the new plot. He re-erected the house himself.

I asked how he made the house to keep it cool and he said that he put in windows. I asked about the cardboard and he said that it prevented the heat form entering through the walls. The cardboard otherwise keeps the wind out. The cardboard is fixed with bottle-tops, several sheets held together at one point joining corners, or otherwise fixed to the timber structure. The internal walls of the house have not been papered but Thayimile said that he intends to still do it. He would get paper from the offices or from some of the big houses and do it in newspaper. He did not know of anybody selling paper in the area.
There is a very neat gravel path with brick edging from the front gate to the front door and to the toilet outside. He made it himself and said that it kept the sand out of the house when it rained or the wind blew.
I asked him about building a brick house and he said it would be much better. I asked if he would stay in his present house for a long time. He said if he did, maybe he would build a 'house'. I asked whether there are different Xhosa words for his present house and a brick house. He said that the word for a 'zinc' house like his is 'Tyotyombe' and I asked Bonela what this word meant: it means 'not perfect' or 'temporary'. The word for a house built in brick is simply 'house'.

HOUSING HISTORY

Thayimile moved to the new site recently, just before Christmas in 1992. He had lived in the old Site 5 for 7 years prior to the move and before that lived in a brick house in Langa (Since 1974) where he had grown up with his father. There they had used electricity until it was suspended.
He said that he intended staying here in Noordhoek permanently.

Thayemile's clear preference for a brick house and his association of permanence with a solidly built house is reflected in many other interviews. The use of the Xhosa word 'tyotyombe' for self built houses of light weight construction typically used in the informal settlements is significant in this respect. The sense of impermanence associated with these instant homes may be a legacy from living under threat of eviction from 'illegal' settlements. Their status of poverty may force very poor households to live permanently or for long terms, in self-made houses of lightweight construction.

LIST OF APPLIANCES

Paraffin stove (Primus).
Imbawula.
Paraffin lamp - one.
Candles.
Portable radio.

APPLIANCE USE

Thayimile does not like using the **imbawula** but has to because it is all he has for **space heating.**

I asked how he maintained the **paraffin stove** (pressure) and he said that it is working and gives no trouble but he knew it sometimes needed a new burner. He did not save up to buy this but just bought it for about R14 when he needed it. He said that the pump hardly ever was damaged but that the valves needed replacing after a very long time. I asked him about the safety of the stove for the child and he said that the child knows that it is dangerous.

The **paraffin lamps** last 'long' and so do the wicks for them - he also thinks that the paraffin lasts long. He buys paraffin per bottle when he needs it, from a local 'Sirhoxo' (small shop that sells paraffin, bread, soap, sugar etc). A shop that sells only beer is known locally as a 'smokkel'.

He fetches water from the tap when he needs it during the day - walking to the outside tap often. Only at night he collects water in a bigger container. He warms water on the stove and does not use a thermos flask.

Cooking

Thayimile cooks on the primus stove. He prepares porridge, rice and mpoqoqo. Meat is boiled on the stove even though it takes more paraffin to boil it rather than fry it. The meat cooking requires surveillance but it does not take a long time. In the afternoon he eats bread and coffee. The main cooking is done in the evening.

ELECTRICITY

When I asked whether he would like to have electricity, he responded that he would like to have it in the kitchen and that he thinks that a Ready Board, with which he is familiar, would be sufficient for the kitchen.
He said he would like the following appliances; he would first get a fridge, then a stove and then a TV. He said he would use the fridge to store meat and other things.

He said that he would not get an electrical kettle, but would heat the water on the stove. He said he would like to have a three plate stove. I asked if he wanted an oven and he responded that it would be nice but is expensive.

He would like to have lights, and when I asked whether he would like to have them outside, he said that the street lights are enough.

I asked how he would go about buying his new appliances. He said he would buy them one by one. He does not know yet where or how or at what cost.

Later on Thayimile asked me when the electricity will be available and I said that I had spoken to someone at the council who had said that the committee members will first have a meeting with the council to decide when the electricity will be supplied and at what cost. Thayimile said that he was in a hurry to get electricity but that on the other hand his house was nor ready yet. I asked if anybody had spoken to him about electricity. He said that the community representatives had taken a list of names of people who would like electricity. Apart from that nobody else spoke about it. He said that many people want it and this was confirmed by Aron (a committee member) who was sitting in on the interview.

TRANSITION

I asked Thayimile whether he thought this site was better than the old Site 5 and he said it was better because of the water tap and the toilet facility and also because it is bigger.

End of interview record

INTERVIEW NO 22
DATE: January 18, 1993 AT : Early morning.
LOCATION: 'New Site 5' Noordhoek
INTERVIEWEE: Jones Gquzo.

INTERVIEW MATERIAL

INTERVIEW SITUATION

Interviewee Jones Gquzo. Jones is a man of young middle-age. He is a member of the community representative committee.

It had not been possible to hold pre-arranged interviews for this date. On the off chance of arranging alternative interviews I approached Orumpia who is a member of the community representative committee and with whom I had negotiated about these issues before. She advised me to ask Jones for an interview and together with Vuyo as language interpreter, we approached Jones. He agreed to do the interview there and then.

We were not introduced to his wife. I did not ask to interview Jone's wife about the domestic appliances, as I felt that the interview with himself would render important secondary information relevant to the local energy issues.
There were many other men gathered in the large sitting room, some drinking beer and others just chatting. It later transpired that most of them worked together at Serina (Serina kaolin mine in the Noordhoek valley) and also originally came from the area around Mt Fletcher in the Transkei. At one point the conversation in the rest of the room became so loud that we could hardly hear the questions and answers. As the interview progressed the listeners-in became more willing to participate.

Present were myself as interviewer, Vuyo Qangule as Xhosa language interpreter, Jones Gquso as interviewee, a group of about 6 to 8 male visitors some of whom participated in the interview, as well as the children of the household.
The interview was conducted in a corner of the large sitting room. I did not inspect the rest of the house, but could see that there was a hatch to the house shop from where customers were served.

NOTES AND COMMENTS

The interviewee and the large audience were all men.

During the interview I was aware that all the Xhosa spoken was not translated. Vuyo and I discussed this and decided that all information, at times especially that which is not in direct response to my questioning, should be recorded. After the interview Vuyo and I discussed the issues that were not immediately recorded.

URBAN FABRIC

Jones Gquzo and his family have recently moved to 'New Site 5' a newly established site and service settlement.
The township is bustling with building activity; many houses are habitable but are still being extended and external work such as fencing and gardening is being completed. Household spaza shops were transplanted to the new township. Old neighbours have been separated in the new spatial arrangements.

Residents have relocated from other sites this new site and services township known as 'New Site 5'. The house is one of the recently re-erected structures. Relocation and building is still in process.

HOUSING STRUCTURE

The present house is of lightweight timber construction, partly clad with metal sheeting and partly with canvass and plastic sheeting. The floor is sand covered with pieces of linoleum and carpeting. Jones rebuilt the house here himself. The house is built from the materials dismantled from the house at Greenpoint. The plastic tarpaulins on the roof are new as the ones used in Greenpoint had become perished. The internal walls have been repapered in brightly coloured new paper.
Although the floors are earth (local sandy soil kept in situ and levelled) at the moment, he intends to eventually put concrete floors down in this house. He explained that he would only do that when he could afford carpeting to lay on the concrete floors as they are very cold and not healthy.

Mashiqa interjected with the following comment: The concrete gives a level floor which is a prerequisite for a fridge; if the fridge is not level it does not work properly.

Thermal performance of concrete floors. The fact that body heat is conducted away and the floor 'feels' cold requires a insulatory covering. With earth floors the body experience of cold would probably not be so remarkable, but other factors such as keeping down dust and sand require the floor-coverings commonly found in these self-made houses.
Preference for concrete floors In talking about upgrading houses, concrete slabs were the only alternatives ever mentioned by the interviewees. This preference requires further investigation. Apart form aspects of durability, practical housekeeping, positioning furniture etc, aspects of subjective value such as concepts of permanence and proprietary should also be investigated.

HOUSEHOLD HISTORY

The household moved to this site in December 1992. They had lived in Greenpoint before. Jones himself has lived in the Noordhoek area since his bachelor days. He had lived in Greenpoint (the squatter settlement on the lagoon site in the Noordhoek valley) since 1969. He said that at that time the land (he used the term bush) was owned by the council; he had a history of being evicted off the land and moving back several times. Later on the settlement at Greenpoint was formalised. He then got married and lived there with his wife.

A history of a continued battle to find a place to live.

TRANSITIONS

Relocation.

I asked him whether he preferred the new site or the old Greenpoint. He explained that the community had negotiated with the CPA for a permanent site and had chosen this particular one and that therefore he liked it. Jones likes it better than Greenpoint.
I asked whether the availability of the toilet and water facilities had anything to do with his preference and he responded that he did not think much about it. What is important for him is that the CPA negotiations and contract with the community goes well.

The relationship between the community and government departments (like the CPA) is described here. Jones seems to express a desire for an integration of interests so that the civic organisations can provide what the community requires. There appears to be a disassociation of interests where the benefits regulated by the authorities are seen to be withheld from the community.

Jones further commented on the CPA negotiating process. He said that the offer of the CPA for electricity that would enable people to have fridges did not go well and that he is not yet entirely happy. The fact that the CPA is not building proper houses for the residents also contributes to his unease.

In negotiating for services the consumers engaged themselves not as individuals but as a community

Plot ownership and housing.
I asked whether he owns the site and whether there were any payments in connection with this that have to be paid. He responded that he owns the plot. He thinks that any payment (rent) for the site or water would be unfair because proper houses have not been built. Rent should only be payable when proper houses such as in other townships were built.

He also added that any expenses toward 'rents' would be difficult to pay at the moment as they were 'living decently' for the first time and the cost of re-erecting housing is as much as they can manage.

He further motivated his demand for better housing, saying that the house structures (self made, lightweight structures) were vulnerable to fire. He said that although the susceptibility to fire at the new site was less than at Greenpoint, there had already been 3 house burnings and that last night at two o clock, another house had been on fire. He said that for this reason the housing is insecure and that the CPA should build brick houses
I asked if he, under these circumstances, sees his present house as permanent. He responded saying that he was still negotiating with the CPA for brick housing. The present housing cannot be permanent as it is too dangerous. He said that the ongoing negotiations were not positive and if it failed he would try to get finance for proper housing through a bank or some organisation.

I asked what the Xhosa word for his present house is; he said it is an 'ihokkie', (derived from the Afrikaans work 'hokkie' for a small cage or pen.) I asked if there was not another word and he gave 'tyotyombe'. A brick house is known as 'indlu' which is simply the word for house.

HOUSEHOLD DEMOGRAPHICS

Jones Gquzo is the owner of the house. He is married and lives here with his wife and three children, twins aged 6 and another child of 4. There are two of his children aged 11 and 8 who live in the Transkei with his brother at Mount Fletcher. The two children come to visit here during the June holidays together with their uncle. During December holidays Jones and the family visit the children in the Transkei.

The sense of desperation continues through the lack of communication and disempowerment. The desired permanence remains elusive.
Services and infrastructure linked to the provision of 'decent' housing. This may be strategically correct within their negotiations for housing, not to accept a contract of halfmeasures by paying for infrastructure. For subsistence households, in order to survive, all services and infrastructure may have to be free, even if only initially.

HOUSEHOLD BUDGET

Jones works with the Serina Mining Company. He as been with the firm for the past seven years. He works shifts. Payment is in weekly wages of R200 per week. There is also a house shop that has an income of about R100 per week. The shop is a sort of 'rhoxo', as it is supplementary to other shopping facilities and serves people after work hours.

Later, in conversation with Vuyo it transpired that the following comments had been made during that interview, that were not recorded immediately: While speaking on the budgeting to buy big items Jones had responded to her question on whether he budgeted on a yearly basis or long term, by saying no, that he does not have the power, and that if he did have the ability he would be doing things in a different order. This has much to do which the fact that the CPA is not prepared to provide proper houses.

To me this comment seems to indicate that disempowerment through poverty, has much to do with a lifestyle based on day to day decision-making.

He said that planned budgeting on a long term is not desirable because it only leads to frustration; you plan but you cannot pay bills. Unexpected expenditures ruins the budget. The breakdown in payments is then not due to not wanting to pay, but not being able to pay.

He used the word 'amandla' in this context of empowerment. Vuyo later looked up the word in the dictionary, finding meanings such as 'energy' and 'power'.

ELECTRICITY

Expectations

I asked what he thought of the forthcoming electrical supply to houses. He responded that he foresees no problems. The arrangements were that the electricity would be sufficient to supply to stoves and fridges for the houses and that people would not be paying for electricity that they do not use.

Important user requirements for electricity:
The supply must be able to support stoves and fridges, and the users must not have to pay for what they do not use.

He is not familiar with the Ready Board (used instead of conventional domestic wiring). On the subject of payment systems he commented that he prefers to buy (pay) beforehand and not on account. The explanation about the payment given here was as follows; if you budget for account payments it often happens that interim and unforseen items absorb all the available money and you end up not being able to pay the account or deferring payment until the amount to be paid is so big that you cannot possibly pay it.

Unexpected expenditure ruins the budget.

Jones commented that he is not familiar with electricity because he is used to 'candles' It is my opinion that this word use may be symbolic for the whole alternative lifestyle of the community. He said that the people have been living 'in the bush' and that they know nothing about electricity.

The Noordhoek squatter sites have been located in the wattle bush typical of the area. As squatters the residents have been excluded from all formal urban support and service-structures. Residents of the new site still harvest timber from the bush to build their houses and there is a household in old Site 5 which has cows grazing in the bush.

I later asked whether he thinks it will be of use to get information on the use of electrical appliances and the installation of house wiring. Jones responded that this is very much needed. He does not know who should supply this information but he thinks that the electricity department should do it. He said that there is a perception amongst the people that electricity is dangerous (lethal). People need to be informed about all aspects of it.

I asked what his opinion was of the idea that specialist officers are trained to inform the community about electricity. He then suggested that 2 persons are trained to instruct the rest of the community. I asked whether there are any persons in the community who already have some knowledge of electricity. He said that there are people who know a bit because they work with electricity. He added that the CPA should train them so that they could get a job that way. He added that the CPA should also train people to do street cleaning and maintenance in order to create work opportunities for the local residents as many people were unemployed.

Electrical appliance preferences
Jones named appliances he would acquire in the following order: an iron; a fridge; a machine for woodwork.

I asked about a **stove** and he responded that he cannot afford it now. He also added that there still was no electricity and he does not know when it is coming and that makes it difficult to know what to do. He does not know what to do to get electricity.
Later I asked how many stove plates he prefers and he said 4 and that he would like an oven.

I asked whether he would get **electrical lights** and he said that he would when he knows how it will operate. I asked if he would get any outside light fittings and he affirmed that he would get one for the front door. I asked where the lights should be located and he said he would want one in the centre ceiling of each room. I asked if he would like to have a plug point in each room as well and he responded that he would. One of the visitors, Mashiqa, interjected saying one should have 3 plugs in the lounge to accommodate TV requirements, etc.

Jones at present has a **TV** that he runs off batteries that he will switch to mains.

When I asked whether the preference would be for a steam **iron** or not, Jones responded that it is not his department and he cannot speak for his wife. He knows that she is in a big hurry to get an electrical iron, and that she wants just an ordinary, not a steam iron.

I asked if he was preplanning or saving up for any appliances and he replied that without electricity they would only be ornaments.

On my question about the cost and acquisition of new appliances he said the following: the various shops offer different services. The likely option of deposit and instalments would be difficult because he has a small salary and many children. I asked if he knew the lay-by system. Vuyo explained about it. Jones responded that he did not know it and did not approve of it, for as long as the item was in the shop you could not use it, there is no interest on your money and you have no motivation to pay it. On the credit system you could use the item while you are paying for it.

I asked which was more important a fridge or a stove, and he responded that both are important.

Refrigeration

I asked what a fridge would be used for. Jones said that it would benefit the children the most. Meat, milk and cool drinks would then always be available. A fridge would enable him to do bulk buying and he would not have to go to town so often. He added that it would be cheaper because you could buy for a long time and you don't have to buy when you don't have the money. Jones likes to buy monthly but at present he runs out of goods two times a month. Food spoils in the heat. With a fridge it would last a month.

I asked if the fridge would be useful in the house shop and he said yes. He would keep chicken pieces and 'Coca Cola' in it. This is convenient for buyers who have to shop after hours when Pick and Pay is not open. It makes sense to him to have a fridge in the shop.

I asked how big the fridge should be. Jones said that it should be big, especially the freezer. In June, when the family and children come to visit, he needs a big freezer.

I asked whether he wants an upright or a chest fridge and he responded that he wanted a chest freezer.

On my question of where the fridge should be located he responded with the following: He is busy adding on to the house. At the moment he is paying instalments to a certain white man who is making concrete bricks for his house so that he can build on two rooms. (he does not have the money to build the house in one go) When this is done, the fridge will be put into one of the new rooms and he hopes that the electricity will be ready by then.

If electricity comes now he will change his plan and the order of doing things. His expenditure capacity allows him to do only one thing at a time and I understood that he would shift the payment of instalments, to paying for the fridge. He added that the lack of electricity contributes to poverty as food rots, so he will buy a fridge before extending the house.

I asked if he presently has a paraffin or gas fridge. He said that he did not want a paraffin fridge because of the children in the house. He has similar feelings about a gas fridge. He added that with an electrical fridge he knows when it is on or off and he can operate it as he chooses.

Balancing expenditures on energy:
Fuel costs of transport to go to town 'often' weighed up against the costs and benefits of accessing refrigeration services.

Food preservation as a measure to alleviate poverty.

Cooling
At the moment he gets ice from Pick and Pay and puts it in the ice box to keep things cool.

Hot water
To my question on how he would heat water once he has electricity he responded that he will sort it out together with the brick house when he will have a geyser. He said that the roof of the present house cannot hold a geyser.

Paying for electricity
I asked what cost units he would like to buy the prepay cards in. Jones replied that it depends on how long they last but that he guesses it would be R40 or R20 units depending on how long these lasted.

To my question of 'where,' at a shop or an office, and 'when' the cards must be on sale he responded that the cards should be available from either shop or office, but that it must be available after hours when people come home from work because it is difficult for them to shop during shopping hours.
Mashiqa interjected again, saying that the Guguletu system of accounts was not good because if your budget is tight the payments get beyond your means. The Khayelitsha system (prepay) is preferable because you are able to control your consumption and to budget.

With a 'tight budget' large payments get beyond your means.

Fixing and maintenance
Jones said that the office on site selling the cards should give maintenance and repairs services. (He was referring to the CPA offices currently situated on the site.)

Connection Fees
I asked if he had any idea of what the amount for connection fees will be. Jones said that he did not know but that he expects the price will be set according to the income levels in the community.
I suggested that the connection fee may be a big amount of money, and asked whether it would be desirable to pay that off in instalments. Jones said that he would prefer to pay the connection fee at once and the consumed units as he uses them. He added that it may be fine with the community to pay off the installation fee but that he would prefer to do it in one go.

A user's perspective of pricing and affordability.

Pay for what you get without 'hidden' costs.

A preference not to be burdened with down payments.

He asked me if I knew when electricity will be installed and I said no. I told him that I have spoken to a representative of the City Council, that will most likely be supplying electricity. This representative had told me that electricity will be made available on the request of the community representative committee. Jones responded that he did not think that the whole community needs to be consulted when 'shopping' for electricity. He said he thinks it is up to the individual who wants electricity to sign a contract. The committee should not speak for them.

The individual is seen here to be responsible for obtaining his own services - in contrast to the housing package negotiations described above.

CONVENTIONAL INTERVIEW RESUMED

LIST OF PRESENT APPLIANCES

Two paraffin 'Flame' single plate stoves.
5 paraffin lamps.
TV set powered off batteries.

APPLIANCE USE
At one point during the interview he pointed out that you could smell the **paraffin stove** which indeed we could, and that it stings the eyes, which indeed it did.

I asked how good the **light quality** from the paraffin lamps is. Jones fetched a lamp and demonstrated that the light was not good as you could not find something on the floor because as you hold it in your hand it casts a shadow on the floor.

At the moment his paraffin consumption amounts to two bottles per night for lamps at a cost of R1,40 per bottle.
He uses about the same volume of paraffin for the stove per day.
He however does not buy paraffin in bottles but in a large drum (10 gallon). He emphasised that he knew the volumes he uses in bottle units.

I asked if anybody in the community used wood for cooking as there are people, (one was present at this interview), who make a living as woodcutters, selling braaiwood cut from the wattle bush to passers-by. Jones said that people did not use wood for everyday cooking but that on special occasions of celebration or ritual when they have to cook for many people they would do it on a wood fire.

I asked Jones if he had anything more he would like to say. He said that he had no more to say. He said he is wondering about all the questions I asked and if I could offer them any help. I replied that I would make enquiries about the training of technical information officers.

Jones asked me what I thought better; a lay-by system of buying or a credit system with instalments. I replied that if he has a regular income it would be better to buy on credit. He said that he intends buying his big appliances in this way.

I asked if he would mind if I came for a follow-up interview, and he said I would be welcome, explaining that he worked shifts and that I could also phone him at work to make an appointment. One of his fellow workers came forward to give me the numbers.

End of interview material

Research lead into energy service:
The use of wood fuel on special occasions. Is this habit linked to traditional cooking styles or to the large quantities of food to be cooked for which domestic appliances are not suitable.

INTERVIEW NO 23
\DATE: **January 20, 1993** AT: **Mid morning**
LOCATION: **'New Site 5' Noordhoek**
INTERVIEWEE: Winnie Tsotso.

INTERVIEW MATERIAL

NOTES AND COMMENTS

INTRODUCTION
This was the third time we had tried to get together for the interview as at each pervious occasion Winnie had been called away unexpectedly to deal with community matters or personal matters arising from the relocation of the community.

INTERVIEW SITUATION
Interviewee: Winnie Tsotso is a middle-aged mother of a large family and active member of the community representative committee.

Present were myself, Maria, as interviewer, and Vuyo Qangule as Xhosa language interpreter. The interview was partly conducted in English, partly in Xhosa and Winnie seemed more at home in Xhosa than with English. Winnie mentioned that she was 'coloured' and did not know all the Xhosa practices such as the 'Stokvels'.

The sister of her man-friend busied herself with cooking and washing and serving of customers while we were doing the interview. A female friend of the interviewee, who was visiting, sat in on the interview and commented from time to time on issues discussed.

The interview had been pre-arranged. However, when we arrived Winnie was not available as she had been called out to assist with supervision of the moving of the creche from the old Site 5. The shipping containers that are used as classrooms were being relocated to the new site by a container truck equipped with a crane. We observed part of this relocation as the new creche site is situated opposite Winnie's house. After a while Winnie came to her house to do the interview.

Later during the interview Winnie was called upon to attend to matters concerning the new school with Mrs. Pabst and Aron Mjoli (They discussed arrangements whereby the 150 schoolchildren (80 more than the expected 70) could be taught in relays by a single

teacher). This discussion was held at the other end of the same room. It was raining and while they were talking water dripped in from the roof onto their heads. After about 10 minutes Winnie rejoined us.

URBAN FABRIC

Refer to the introduction to this group of interviews.
Residents have relocated from other sites this new site and services township known as 'New Site 5'. The house is one of the recently re-erected structures. Relocation and building is still in process.

HOUSEHOLD DEMOGRAPHICS

Winnie, a divorcee, is the head of household. There are 9 children in the household: Three of her own children live here and a fourth comes home from Guguletu at the weekends; four of her boyfriend's children live here. There are three adults in the household; herself, her boyfriend and his sister.

HOUSEHOLD INCOME

None of the adults in the family are at present employed. Winnie had received a disability grant in the past but no longer gets it. There is no contribution for the children from her former husband. Winnie has at times worked as a domestic worker. Her boyfriend does contract work when it is available.

Winnie runs a soup and food kitchen from her home and sells to children and other community members. The soup sales bring in about R60 per week. The Catholic mission workers assist her with the soup kitchen by providing vegetables and prepared soya mince from 'Manna' ('Manna' is a charity organisation). The kitchen is equipped with a three plate gas cooker and 19kg gas cylinder provided by the Catholic workers, who also deliver gas to her house for which Winnie herself pays. She supplies the rice and fish meal used, herself. The Catholic workers also supply wholemeal biscuits that she sells from her kitchen. Customers sit down in the sitting cum kitchen room to have their meals.

Most customers come in the evenings, and some children during the day. She provides rice and stew, and soup.

Winnie said that her contact with the Catholic workers came about through her position as a community representative. She had run the soup kitchen business when she lived in Greenpoint.

When the building that is being constructed across the road from her house, is complete she will move her soup kitchen there and take the gas appliances there. I asked if there was any possibility of using electricity in the new building and she said she did not know of electricity there.

Winnie works very actively and is always in demand to deal with community matters and outside organisations.

Winnie said that the household income is from the kitchen and from employment when they have it.

HOUSING HISTORY

Winnie moved here with her household at the end of November 1992, from 'Greenpoint' in the Noordhoek valley, where she had lived for 5 years. Prior to that, since 1962, she had lived in the bush in Noordhoek.I asked whether she preferred living here or in Greenpoint. She prefers living here mainly because of the availability of water. She said there had been no water in Greenpoint and 'it was like jail, they were struggling.'

Winnie had originally come to Cape Town from Springbok in Namaqualand.

HOUSING STRUCTURE
(house no 1553)

Winnie's house is of typical local timber construction, externally clad with pieces of sheet metal and boarding. The roof timbers are mostly rough poles cut from the surrounding bush. This roof structure is covered with plastic sheeting and sacking. The floors are earth covered with bits of vinyl and carpeting.

Later on during the interview it transpired that she does not regard this present structure as permanent. This house is temporary and will be reconstructed. She calls it a 'tyotyombe' because it does not even have a separate bedroom. Winnie has been cutting poles from the bush and this will be used to extend the house with bedrooms and final renovations. I asked about materials other than the poles. She responded that these would be bought from people who sell it in Retreat and from Amahesini, (seconds from white peoples houses).

Temporary housing - What makes the housing temporary in this case seems to be not so much the choice of structure but the incomplete accommodation, due to a lack of money.

I asked if she was saving money for the house additions and she said she was not and that is the reason why she does not finish the house.

I assume this meant that she could not put together large enough sums to even do the piecemeal increments and improvements she envisions.

LIST OF APPLIANCES

Paraffin stoves: one 'Primus' and one 'Flame'.
Gas burners (commercial modeL) consisting of three plates in a linked set for use on a worktop.
Coal stove. New and not yet in use.
TV run off batteries.
2 Paraffin lamps.
Candles.
Iron - solid heated on 'Flame'.
No heater (she is looking forward to have coal stove as heater).

APPLIANCE USE

Lighting

Candles are used in the kitchen and living room. When she does night time cooking she uses up to 4 candles to get enough light. The paraffin lamps are used in the bedrooms when they go to bed.

Hot water

The 'Flame' paraffin stove is used to make hot water for dish-washing in a large aluminium pot - a process that is on-going through the day as customers require clean plates. The water is heated 3 to 4 times a day.

Stoves

The **paraffin Flame** is used mostly to make hot water for dish-washing. It is used to cook rice only when there is no other facility available. Winnie said the 'Flame' does not last long and after 5 months it gives trouble; one has to take up the wick and push it up and down, and then it never works well. You leave it, thinking that the food is cooking but it fails and does not stay as you put it. To my question she responded that the 'Flame' works satisfactorily for samp, but this can be done as well on gas.

While we were talking the **Primus paraffin stove** was in constant use:- preparing new food and warming food for customers. Winnie's sister was working with it, pumping it and refilling it. The flame leaked from the stem of the burner. Once the sister exclaimed about something and Winnie immediately spun around to check the Primus stove.

The **gas burners** are preferred to the paraffin appliances. Winnie will take the table model gas burners to the new building across the road to where her soup kitchen will be relocated when the building is ready. (It is a building complex comprising the creche). The paraffin appliances are only used if there is no gas. This was the situation when we did the interview on a Wednesday.

I asked about the ease of adjusting the gas flame levels and she said it was easily done and that she likes it. It is far better than the primus. She added that the Flame is a 'gemors' -waste- in this sense.

The **coal stove** is new, 'secondhand ' and was given to her by someone. It is not yet in use. A man from St John's will come to install it for her. The chimney has to be put up. This person will show her how to do it. She is not sure of the exact date but expects it to be in the next week. The stove will be a fixture in her house. She looks forward to using it as a space heater in winter. She said coal can be bought at 'Pick and Pay' but that there are no domestic coal deliveries in the area. When I asked whether she is familiar with working with a coal stove, she responded that she had had a wood-stove, 'Welcome Dover' before when living in Greenpoint. She had used wood from the surrounding bush. She had later given the stove to her mother. I asked if she would replace it with another and she responded by asking me if I had one to give her.

This intensive use of stoves enhanced the awareness of defects that other users mentioned but seemed to accept living with. There seems to be a constant danger of the stoves burning out of control. The construction of the stoves is too flimsy to handle the intensive use or long term use.

Hot box
Winnie has two hot boxes. At the moment they are not in use because they need to be repaired (sewn up again.) She plans to fix them. Winnie uses them to cook samp. She preheats it and leaves it overnight to complete the cooking process. She also uses it to keep the soup warm and to cook food that requires simmering.

Fuel acquisition
There was no gas when we did the interview on a Wednesday. The 19kg gas bottle would be refilled on the following Tuesday by the people from 'Manna', who do the refills on a Tuesday in response to her request. The 19Kg gas cylinder lasts between one and two weeks.

Paraffin for lighting and the stoves costs up to R12 per day. Winnie buys paraffin per bottle at R1.50 from the local spaza shops. Winnie feels that the paraffin is expensive compared to gas, and says; 'once you have used it you have cooked less.' She emphasised that when the three gas burners are in use the paraffin is hardly touched at all.

TV. There is a TV set that is run off batteries but which is currently not in use because the batteries are flat. Winnie thinks that switching it to electricity will eliminate the constant hassle with the charging of batteries.

Space heating
I asked how the house is warmed - if papering the walls help. Winnie responded that the paper helps to keep the wind out but does not keep the cold out. I asked if the cold comes in through the earth floor and she said no, it comes in through the walls. It was raining at this point in time and the roof was leaking in the sitting room where we were. The roof covering over this area consisted of small pieces of plastic sheeting and sacking. There was no metal sheeting in the cladding.

Foodstuff
The family food consists of samp, at times, or rice and meat. In the morning porridge with sugar, (no milk) is eaten, though there is a preference for bread. At lunch time and in the evening samp or rice is eaten, or sometimes steamed bread and meat. Winnie makes steamed bread twice a week on the gas stove or paraffin stove. (She stated again that the gas is always better.) Lunch sometimes consists of 'bisto' and bread.

The family like beans and samp ('it is popular') but it is not eaten daily. Rice is easier to cook than samp and beans.
I asked if shop bread is liked. She said that they do not object to it but that steambread is preferred. Two shop breads per day are used for the children.

APPLIANCE FIXING

I asked Winnie what she did when her appliances needed repairs. She responded that she took the gas appliances to the Catholic workers for repairs, but that the paraffin appliances were a problem. She said she has to take the latter to Langa if she needs repairs and that this is a problem.

ELECTRICITY

I asked if she intends getting electricity. Winnie said she did but did not know how or when it would be installed. She had last heard information about it when she spoke to a representative from DAG some months ago.

This person from DAG informed her about the **prepay system,** with which you can see what amounts you are consuming and estimate the consumption. She does not know how it operates. Nobody showed her what the 'Ready Board' looks like. She understands that you can install the electricity and choose when you want to use it.

Winnie said that no information was given about the **cost of connections,** and she does not know how much it will be .

I asked Winnie where she would want the prepay meter to be located in the house. She said she would like to have it in the kitchen in the permanent house.
She added that she wishes for electricity in her house. She would use it for the TV which is currently run off batteries.

APPLIANCE ACQUISITION

Electrical appliances required
Kettle, iron, stove, fridge, lights and plugs.

She would use electrical **lights.** I asked if she would have an electrical **stove.** She responded that she does not own one. She does not know what it will cost but she thinks she may get one second hand. She would like four stove plates. On my prompting she added 'with an oven'.

To my questioning she answered that she would like an electrical **iron and kettle.**

Winnie said she would also like to have a **fridge.** It must be a deepfreeze. She would use it for the storage of meat bought in bulk which she will cook to sell. I asked how she intended to buy a fridge and she responded that she would save in bits. On prompting from Vuyo she said she would buy on account and pay instalments. I asked from which shop she would get it, but she does not know.

I asked if there are any **financing assistance** organisations in the community. She said that there is not anything yet but that the Catholic workers were talking about some saving system which they still have to inform the community about.

At this point Winnie asked me how one goes about buying a fridge, and then asked me what I am doing the interviews for. I responded that buying a fridge can be done on hire purchase. I tried to explain that the information I gather from the community could inform the makers of appliances about what the people want.

She said that it must be known that the people want electrical lights, not candles.
She said she would like more information about fridges and stoves.

Vuyo asked if there are any burial societies in the community and Winnie answered that they are trying for one. I asked if there are any organisations like the 'stokvels' and she said she does not know the stokvels - it may be some Xhosa practice that is not known to her. The lady sitting in on the interview responded that she knew the stokvels and would like it. There then followed a discussion between this lady and Vuyo about how

the stokvels which involve money and goods like food are different to the 'Umkahlelo' which deals only with the rotation of money.

I asked if electricity will help the food business and she replied that she would be using less of the expensive gas for which she pays R20 per 19kg refill.

The Catholic workers have not spoken about the forthcoming electricity.

I asked Winnie what she thought of the safety of electricity, and she responded that she is more scared of gas. She is familiar with electricity as she has used it where she did charing jobs. She added that the rural people may be scared of electricity.

I suggested that I could bring a picture of what a 'Ready Board' looks like and she agreed that it would be a good idea.

The visitor interjected at the end of the interview saying that she did not want electricity in her house because she is unemployed and that is trouble enough.

End of interview material

INTERVIEW NO 24
DATE: **January 21, 1993** AT : **Mid morning**
LOCATION: **'New Site 5' Noordhoek**
INTERVIEWEE: **Orumpia Nkwadla**

INTERVIEW MATERIAL

NOTES AND COMMENTS

INTERVIEW SITUATION

Interviewee: Orumpia is married, a mother and a prominent community leader serving on the community representative committee. I had made contact with her previously, while negotiating permission to conduct interviews in the settlement.

Present were myself as interviewer, Vuyo Qangule as language interpreter and Orumpia as interviewee. Other household members were elsewhere in the house but did not participate in the interview. Two small girls required some of Orumpia's attention during the course of the interview.

HOUSEHOLD DEMOGRAPHICS

Orumpia and her husband live in the house with their 4 children, aged two and a half, nine, thirteen and seventeen.

HOUSEHOLD BUDGET

Orumpia's husband works fulltime at the Serina mine and earns a weekly wage of R200 which he supplements by working overtime. He has had this steady employment for the past 8 years. Orumpia mentioned that it is often difficult to estimate how much overtime pay he gets as it varies.

Orumpia worked for a Catholic welfare organisation (CWD) until the end of last year (1992). At the CWD she earned R850 per month of which she saved R500 with the Catholic organisation's savings system. She worked there for two and a half years as a community field-worker. She was a member of the community representative committee at the same time, until she found that her responsibilities to community and welfare organisation clashed.

Orumpia presently has savings amounting to more than R6000. (She spent some R4000 in the previous year.) She is using her savings to buy materials for the brick house that she intends to build on her plot here in the 'New Site'.

Orumpia is busy applying for a new job to start on the 1st of February. She would be running a service for the aged in the community and hopes to be employed by the S A National council for the Aged. This service will be housed at the school until a site becomes available.

Orumpia's son of 17 works at Cape Point and earns a weekly salary of R180. He contributes to the household-income.

They have a house shop that operates all day and in the evening. It brings in most money over the weekends when it earns about R100 per day. They sell groceries and also beers and cool-drinks. The cooling of the latter is done by putting ice in a defunct chest freezer. They had the house shop as business in Greenpoint before as well.

Orumpia does sewing as a hobby as well as to sell, but she says it does not pay well to sell in the community because people are poor and buy on credit and often cannot pay back their dues.

At the end of the interview, while we were talking about her house building plans, Orumpia gave her opinions about **budgeting.** She says that people don't save with banks but keep their money themselves. She now prefers to keep her money herself and buys building materials with it progressively. I asked her what kind of income was best; a regular income or an ad hoc income. She replied that regular money is the best because you know how much you get and can decide how to use it. Vuyo asked her if she has a budget and she replied that she does not budget, that she has never tried it and does not do it.

Even with a steady income 'budgeting' is not seen as viable.

I asked her if there is any problem with getting money on a weekly basis and spending it in monthly cycles. She responded that she bought some things weekly and some things monthly and stored them away. She buys small things all the time. She does not always wait till the month end to buy things.

HOUSING HISTORY

Orumpia grew up in Guguletu in Cape Town. Her husband had worked on the Noordhoek side of the mountain and she moved here when they got married in 1972. They have since lived in various places: She had a job in Noordhoek where she could 'sleep in'; while her husband was doing farmwork they lived together on the farm; they joined the Silvermine squatter community where Xhosa and 'Coloured' people lived together. They built their own shack in the bush and lived in secrecy, taking care not to tread footpaths, fetching water only after dark, trying to avoid the inspectors; they lived at the place that is now developed as 'Capri village'; they lived in Dassenberg; they moved back to Khayelitsha and after the fourth removal there they came to the Greenpoint settlement where they lived in tents (The 'green' denoting the green tents).

They started negotiating for land in 1985, at first with the assistance of the Black Sash and later SPP (The Surplus Peoples Project) and DAG (Development Action Group). They were assisted on marches by the ANC group with Sandy Liebenberg. Orumpia has been serving on the community representative committee during the negotiations that have lead to the establishment of the community at the 'New Site 5'.

HOUSING

Aspirations

Orumpia said that the community was not happy about the housing - other people have obtained brick housing from the local authorities and they wanted the same.

In the present situation, she said, it is better to build one's own house because it is too expensive to buy a house on the market. Her estimated cost for owner building a brick house was R5 000. Orumpia said she knows of a lot of people who want to build their own houses. She estimated that there were about 10 people who are in a hurry to build. I asked if any assistance had been offered to the community and she responded that a brick work contractor who had done work in the area had offered help, but she does not know the name of the company. Help had not been offered by the CPA or through DAG.

This is a good description of continued intra-urban migration.

Present housing structure

Orumpia herself is at present living in a 'temporary house' made from the materials used in their Greenpoint house, set up on the plot that officially belongs to her son. This is situated next door to her own plot where she has started laying the foundations and floor-slab for her own brick house.

The house she presently inhabits is a typical lightweight timber construction clad with sheet-metal, but lined and subdivided with building board. The floor is earth covered with pieces of lino and carpeting. I asked her if she thought concrete floors better and she said yes, and that if they are cold you put carpets over.
The house is exceptionally well equipped in comparison to other households that I have visited in the area.
Orumpia's husband and two helpers built the house in two weeks. Orumpia emphasised that this is seen only as a temporary structure.

Planned new structure

She and her husband had been making their own bricks for the building even while still at Greenpoint. They intend to start up the brick making here again. She mentioned that it is very hard work and that they make bricks only for their own use and not to sell. They do not yet have the 'slab' necessary for them to make the bricks on. She invests money in cement and sand. I asked her where she would acquire the windows and doors and she replied that she had already started collecting those over a long time.
When the house is finished she will move there herself. She would then in the meantime use this 'second' place as a reception area for visitors (probably for the house shop/shebeen) because they tend to make her own house dirty.
I asked when they intend starting the actual building work and she said that she did not have an exact date but that she thought the builder was due to arrive in the next week.
In the long term they plan to build a smaller place on this plot for her son. She said that they would start building on the plot next year. She emphasised that the present structure had no future - 'there is no future for this place.'

The temporary lightweight structure was erected in two weeks. Meanwhile, the household is also, by labour intensive and lengthy process, building their own permanent brick house next door.

TRANSITION

Orumpia is emphatic about the fact that the house they presently live in has no future and is temporary. (She has obviously been planning to build a brick house for some time in the knowledge that residence rights at the 'New Site' would secure a permanent site.)

I asked whether she preferred living here at the New Site to living at Greenpoint. Orumpia responded that it is better at the New Site because it is closer to transport, being on the road to Kommetjie and near the intersection of roads to Vishoek and Simon's Town.

She thinks that everybody is happy about the move from Greenpoint to the new site: At Greenpoint they were 'temporary' and here they are residents and 'permanent.' Other positive factors are that they have better transport, toilets, street lights and water facilities. This is also a clean space.

I asked her if she still had the same neighbours now that she had in Greenpoint and she responded that they could and did choose to live next door to some neighbours from Greenpoint in the New Site. (Her plot is next door to that of her son)

The community for the first time is getting a local primary school this year. Children are also going to the 'white' secondary school in Sun Valley.

I asked if she knew whether the woodcutters in the Greenpoint community have benefited from the move to the new site or not. She replied that she did not know. She said that the woodcutters sell their wood both on the highway and locally to the residents. Woodcutters operate in the bush below Silvermine, where they set up cutting benches and sales points in the road reserve. I have also observed sellers of ready cut wood on the Kommetjie road close to the entrance to the 'New Site'.

Later, when we spoke about house building, she commented that she is not sure about electricity in these 'temporary' houses. She is not sure if it is good. She mentioned the following practical problems: Can electrical wiring be put in a house without a ceiling? - many of these houses have only canvass or plastic sheet roofing. The wind often rips up the plastic and then the wiring would be exposed and dangerous. She doubts that one can have electricity without hard walls and a hard ceiling. Where the walls (as most are) are made of cardboard - (linings to outside walls and entire interior partitions are often of corrugated cardboard) The walls would be too soft. How would one be able to put a plug against a soft wall? (In her own house she used a hard Rhino board.) Orumpia herself is familiar with the old wiring systems she knew in her mother's house in Guguletu.

Ready board

Orumpia says she knows about it in as much as she was told that it is a cheap system. For this reason the Ready Board will be good. She also says that if you don't have money you can just leave it.

She asked me if I thought the Ready Board is dangerous and I said I did not think so. I explained that the Ready Board gives plug-points and that the house owners do their own extensions with leads. She thought this sounded OK.

Orumpia has heard through a friend who has a Ready Board that it is advisable to apply for electricity to Eskom as that is cheaper than the City Council. She however does not know who will bring electricity here.

She said that a connection fee of about R300 was mentioned to the committee by DAG. I asked if she thought that the people in the community could afford this sum. She said 'not all together'. I asked whether paying off that amount on terms would make it accessible to people and she said yes.

I was again asked what I could tell her about domestic electricity supply. I offered to get information on the differences between full house wiring and the Ready Board system and to show members of the community a picture of the Ready Board.

This gives a good description of a user's perspective of electricity in a temporary light weight structure.

Personal requirements for electricity.

Orumpia grew up in Guguletu where her mother had used electrical appliances. Orumpia wants to use electricity.

She would get a **fridge** first of all, then a **stove** and **lights.**
The **fridge** is important because you can cook a lot of food and then preserve it. She sees this as being a health advantage. I crosschecked the need for food preservation and she confirmed that she was talking about refrigerating leftovers. She added that the fridge would also be used to store eggs, milk and bulk-buys of meat. She will also store tomatoes and vegetables. I asked her about the outlets for vegetables in the area and she said that a lorry does sell in the area regularly once a week on a Saturday. Vegetables and fruit are sold from it.

Orumpia said she would like to have a **chest freezer** - quite a strong one. She added that she thought the chest type was quite 'strong' (I gather she means that it can store a lot of food at a low temperature.) I suggested the use of both a cooler and a freezer and she agreed that it would serve her needs better.
She does not have a freezer at the moment but would like to use one in the shop as well. She would store milk and meat - products that people regularly buy locally. At present she buys meat at the meat market in Salt River. The meat then lasts for only one day. The house shop serves cold beer and cool-drinks. She gets ice and stacks it into the defunct chest freezer in the shop.

Stove and oven
Orumpia would like a 4 plate stove and an oven. I asked her if she knew which model she wants and where she would get it. She responded that she has seen a Defy she likes at the furniture shop where she has an account. She plans to buy both the stove and freezer on account there.

Iron
She would like to have a steam iron.

Kettle
She would use an electrical kettle I asked how she would make hot water once she has electricity and she said she would continue to use the paraffin flame in order to save.

Orumpia said she would like to have a hot water geyser and that it would go with a brick house next door.

Lights

I asked if she knew both fluorescent tubes and incandescent bulbs. She said she only knows the bulbs with shades, such as the three-bulb shade in her mother's house in Guguletu. In her own house she would like to have central ceiling light fittings.

I told her that fluorescent tubes are supposed to give cheaper lighting and that the light from it appeared white as opposed to the yellow light from the incandescent bulbs.

End of interview material

INTERVIEW NO 25
DATE: 27 January 1993
LOCATION: New Site 5
INTERVIEWEE: **Susan Nomhle Jafta**

INTERVIEW MATERIAL

INTERVIEW SITUATION
Interviewee: Susan Nomhle Jafta a middle-aged wife and mother.

This interview was not pre-arranged. I had previously stopped by at this house and made arrangements with the owner-builder, Kobus, to document the building progress. I was taking photographs of this house (no 1516) and, as Susan was at home, asked if she would grant us an interview there and then. The house building seemed to take longer than other house building operations I had encountered and I thought it would be interesting to know how she is coping in the interim.

The interview was conducted in the shelter of the partly built house at 11 am.
Present was myself as interviewer, Vuyo Qangule as Xhosa language interpreter, Susan Jafta as interviewee. The interview was largely conducted in Afrikaans with some translation from Xhosa. English was used only as a medium between me and Vuyo. Susan is at home in Afrikaans although Xhosa is her mother tongue.

URBAN FABRIC
Refer to the introduction to this group of interviews.

Residents have relocated from other sites this new site and services township known as 'New Site 5'. The house is one of the recently re-erected structures. Relocation and building is still in process.

HOUSEHOLD DEMOGRAPHICS

Kobus Jack and Susan Jafta are at present living in a small shack on the site. When the larger structure has been completed the rest of the household will join them: their daughter Priscilla with her child, and their son Gilbert. (I did not assess where they were at the time.)

NOTES AND COMMENTS

HOUSEHOLD INCOME

Kobus works as a carpenter for Mr Ken in Noordhoek, on an ad hoc basis, and earns R60 per day. He usually gets work for four days per week.
Susan had had a permanent full-time charing job in Noordhoek for 4 years which offered a sleep-in facility. She only went home on weekends. This year she is employed only on a tuesday and is desperately looking for work for the other days of the week.
When she was working three days a week she earned R360 per month and now that she works one day a week she earns R40 per day (R160 per month).

See also her account of appliance acquisition below for a description of cash flow.

She said she had worked in a restaurant as well at some stage but that the job is no longer available. She said that one of her previous employers was helping her to look for a job and also that she might put an advertisement in the paper for a job.
At the moment Kobus uses two busses to get to work; he pays a daily fare of four times R1.50.
Later when I asked Susan about appliance acquisitions, she explained that while she had a fulltime job she had saved, but that at present she does not save. When we were talking about fuel consumption Susan said that they were not earning incomes during the holidays in December and that they were short of money to buy fuel in large quantities. When I asked her if she wanted a TV she said that she would think about it once she had a job again. At the moment she and Kobus are helping each other to complete and get the house ready. (I assumed she meant that all money is prioritised for that use.)

This is a good description of periodicity, variability and unpredictability of income, where various components of the household income are subject to different variables.

The changing nature of income security impacts clearly on appliance and fuel expenditure.

HOUSING HISTORY

Susan comes from Graaff Reinette where she lived with her mother in the 'Buiteplekke'. She still visits her family during holidays and she has just spent some time there during the December holiday.

Prior experience of a different lifestyle and use of different energy technologies is described. It seems likely that she is barred from continuing that lifestyle by determinants outside her control, or that she prioritises other aspects of her life over the possible improvements to the quality of her housing and energy services.

Later on during the interview we were discussing TV and she said that her mother has TV at the house in Graaff Reinette. She says that she often goes home and stays there for some time. Her mother lives in a brick house. I asked her if she considers moving back there and she said that she only goes to visit, that she is used to being here on this side and that she is now established here.

Before moving to the 'New Site' she lived in Greenpoint for 4 years. Susan only came home on weekends.
table
Susan said that the move to the 'New Site' had been advanced as it had originally been planned for February 1993 but was actually initiated in December 1992. She said that the change was due to the fact that the owner of the Greenpoint land wanted them to evacuate the land at an earlier date. Susan arrived back from her holiday at home to find that everybody had moved to the 'New Site'.

The house they had in Greenpoint was bigger than the present 'hokkie' that they live in while completing the new structure. They were able to put up the 'hokkie' from the materials used at Greenpoint that were still good. They could not re-use everything and they are still busy looking for material for the bigger house.

HOUSE STRUCTURE

Present shelter

There is presently a small single roomed shack on the new plot which Kobus constructed himself. This 'hokkie' is about 3m x 2m with a very low roof and contains a single bed, a kitchen work space set up on a table, a cupboard and stacks of suitcases and packing boxes. When I entered the 'hokkie' to take photographs of the appliances it was about 12.30 noon and it was very hot and stuffy inside.

New structure

Kobus was busy building the larger house using the typical construction methods used in the area. The timber structure will be clad in sheeting of plastic, wood, sheet metal and cardboard.
Kobus is a carpenter by trade and works as such in Noordhoek. He was building the house on his own after hours. Susan says that he hopes to make better progress with the house next week when he will have more free time.
They are trying to get more materials for the completion of the larger timber structure. Kobus intends to buy hardboard sheets at 'Timber City' .

Households in this transition situation find themselves at the mercy of factors outside of their control that make major demands on the household economy and their coping skills.

Susan said that the 'houthokkies' (timber structures) burn very easily. She said that in Greenpoint many houses burnt and that 'they ignite each other (slaan mekaar aan). You can come home in the evening after work and find that your house is gone.' I asked if the conditions in the 'New Site' were improved by comparison and she responded that it is ten times better with the large plots and the greater distance between houses.

The loss of housing stock in fires means a loss to the household budget of assets gained from labour and cash. Shelter overrides other expenditure priorities in the household economy.

Later during the interview when we were looking at the present condition of the **floors,** she explained that Kobus still had to level out the earth floors because the site itself sloped slightly. I asked her if she wanted concrete floors and she responded that one cannot have earth. She said that they would replace these, one by one, with cement floors.

Incremental home improvements match the piecemeal income structure.
Comparative thermal performance of earth and concrete floors need to be offset against user preferences for other qualities related to the flooring.

'Permanent housing'
I asked Susan if she wanted a **brick house** and she replied that she must first hear about the money to see if it will be **cheap.**
When she made the point about buying materials she added that the community still have to decide about brick houses at a meeting. They must decide whether they can afford payments on brick houses. The chairperson of the community representative committee, Orumpia, is the person that they rely on for information, as she is the one most informed about what is happening.

Unfamiliarity with formal urban economy structures.
This apparent unwillingness to express requirements in the face of cost barriers is not uncommon.
I suspect that this comment is related to the procedures followed by some NGO's working in the community. The affordability of infrastructure and housing is discussed in community workshops as a precursor to taking steps to obtain access to resources

I asked Susan if she knew when the brick houses would be built if people wanted them. She replied that she did not know. She affirmed that they will only decide once the cost of the houses are known, whether they want a brick house; they will be able to see how much money there is and then they can plan.

This is a good example of the juggling of variables that seems to be prohibitive of pre-planning.

APPLIANCE LIST

Susan has two paraffin 'Primus' stoves.
Candles are used for lighting.
There was an imbawhula in the yard, inside the new house structure.
In Greenpoint where the house was bigger than the present 'hokkie', she used a paraffin lamp as well. The glass is now broken and she has to replace it.

Note the influence of perception of impermanence and the scale of the interior on lighting appliances use. Informal housing varies greatly in size of interior space.

There is an electrical TV 'braai' stored in the room and Susan said that it is in working order and that she will keep it.

APPLIANCES USE

Clear description of use preferences and perceptions of appliance features.

Paraffin stoves

Susan showed me the two Primus stoves. When I pointed out that they were not exactly similar in model she explained that the one is called 'raaskop' and the other 'silence'. She explained that 'raaskop' (noisy head) had a coarse flame (a lot of flame) whereas 'silence' had a finer flame. She showed me the 'siffie' (flame spreader) on the latter which had fine perforations. Susan said that they cost the same but that she preferred 'silence'. She said that they both cooked at the same rate and that you had to pump both to get the flames up to speed up the cooking.

User perception of equal benefit from wick and pressure stoves.

I asked her if she knows the 'Flame' model paraffin stove that one does not have to pump; she responded that she thought it worked equally well as the pump 'Primus'.

Cooking

Susan uses both her stoves at the same time (at the time of my visit the 'rooster' (plate on top to put the pot on) for the one stove was missing.
While I was asking Susan about fuel use, she mentioned that she had to refill the primus stove half way through the samp cooking procedure; this led to the following information:

Appliance not suited to cooking procedure of commonly used dish.

Foodstuff

I asked her what the preferences for eating and making rice or samp were. She responded that rice is quicker to cook. I asked if the one was more expensive than the other; she said that both were cheap and that shop prices varied. She said that samp is tasty (lekker) and that she made it when she felt like it. She added that Kobus is very fond of samp. We laughed and I asked if he knew it was more difficult to cook. She said that Kobus helped with the cooking. She later re-emphasised that he was not lazy to cook and that he helped her.
Susan said that she makes a **big meal** at lunch time on Sundays when she prepares meat and vegetables.

I think my remark about Kobus and the cooking of samp vexed her and she explained about him that he was not lazy, that he is very sociable and likes children and also that he was jealous of her time, that he always wanted to accompany her.

I asked if she had a time constraint with cooking during the week. She said that she had other duties like clothes washing and cleaning the yard and that there was not much time for cooking.

Space heating
Susan said that they did use the **Primus** stove as a **space heater** by placing a piece of perforated sheet metal over the top. This is cut from the top of a tin paraffin drum.

The paraffin stove doubles as space heater. There is an economy in double use of appliance. This could be an energy inefficient and uneconomical use-habit.

The **imbawhula** is made from a 10 litre paraffin drum. It is also called a Gelie (Gallie?), a name derived from the gallon drum it is cut from. A wire handle is made to put over the top. The imbawhula is fired up with wood outside the house and taken inside once the flames have died.

Fuel switch from paraffin to wood for space heating where there is cash free access to wood and a home-made fashioned appliance.

APPLIANCE FIXING AND MAINTENANCE

I asked what her experience with **maintenance and fixing** is; She responded that the cost of replacing the whole paraffin stove is about R15 to R24, and that from time to time the burners had to be replaced or that the 'siffie' cracked. The latter could be replaced at a cost of about R2.

FUEL ACCESS AND USE

The fall in household income impacts on the fuel expenditure patterns.

At the moment they are buying paraffin per bottle. After the holidays they don't have money to buy it in the 10 litre drum as they usually do.
She uses approximately 2 bottles to cook a meal, depending on whether it is a light or a heavy meal. A meal of for instance egg and tomato requires less fuel in its preparation than for instance a meal of samp. When she cooks samp she has to refill the stove halfway through the procedure. (She does not make samp every day.)

ELECTRICITY

User perceptions show a mixture of misinformation and assumptions based on some factual knowledge of the services provision in process.

I asked her what she knew about the provision of electricity to houses in the near future, and also if they would like to have it in their house. She responded that Kobus wants electricity. She knows that there are pegs to each site for electrical connections - I asked if she was talking about the pvc pipes surfacing at plot boundaries and she affirmed this. She said that this helped to bring the cost of accessing electricity down.

She said that the **street lights** were already functioning. She said that once the house has been completed they could draw electricity for lights. I asked whether she meant lights for the timber-structured house. She said that if they are going to get brick houses she would rather wait until she has one, otherwise it could mean that they would have to break down the electrical installation and put it in again.
At this point in the interview she stated again that this place is much better than where they had been before.
I asked Susan if she knows what the **Ready Board** looks like. She asked if I was talking about the 'Kassie'(box) with the main switch and I said that this was not the usual distribution board. She said that she had not been shown what the Ready Board looks like. She added that she is familiar with electricity as she has often worked at places with electricity and that she knows how to reset the trip switch.

I asked her if she thought electricity will be better than the fuel that she is presently using. She laughed for a while and then said that **electricity is quick** and that she could make tea quickly and also do ironing quickly.
I asked her opinion about the advantages of an electrical stove. She said that it is better than the paraffin with which one has to struggle; the flame does not burn as desired and it gives trouble, one has to adjust it, it is a hassle when there is a draft or the wind blows. She said that when the wind was blowing last week it lifted the cover-sheeting off a number of houses.
When I asked if she would have an oven with her electrical stove she said that that depends on the cost. I asked if she baked anything on the primus and she asked whether I was talking about 'potbrood' (steambread). She does not make it. She added that when she was 'sleeping in' at her charing job, she used to make her own food in the electrified kitchen there. She can do baking.

She said that the same advantages could be had with an electrical kettle. It's the same story; one can quickly make tea if you have guests.

This is an illustration of the web of interdependent considerations that could inform user choices of energy use (perceptions, preferences, availability, affordability to name a few).

This description of desired electrical energy services is not matched by enough knowledge on what electricity services would be available from supply options currently considered for poor households.

The problems with wind-proofing self built structures in the Cape Town area impact on use of open flame appliances.

Food preparation habits and skills for her own domestic use depend on the available appliances and fuels.

I asked her if she would like to have **piped hot water with a geyser.** She answered that she would like to have a bathroom with a bath but that that depends on the cost. She said that she could have a geyser that she can switch on and off to be used for bathing, and that if the price is right she would have a geyser.
She added here that she will have to hear all these things from the community representative committee; 'one says what it is that you would like to have and they tell you how much it will cost.'

Current infrastructure providing single outside tap would have to be upgraded in order to upgrade the water-heating energy services.

I asked if she would like to have a TV. She replied that she would look into that in the future when she has a job again. She watches TV at her mother's place in Graaff Reinette.

APPLIANCE ACQUISITION

Electrical appliance acquisition
I asked Susan how she would go about buying a stove and other appliances.
She said that there is a **second hand shop** in Fish Hoek that is not too expensive on stoves and fridges. One can buy these on a **lay-by** system; you pay as you have money, and you exert yourself to pay off. Some months when you are struggling you don't pay. She said that you are given 3 months to do all the down payments. I asked if these payments are done on an ad hoc basis or monthly. She said that one pays whenever one has a little money.
I asked her if the lay-by system is better than buying on 'account'. She responded that when you **buy on terms** it is a lot of money that is owed, she remarked that if you looked carefully you will see that the 'tax' is more than the down payment, and it all becomes more than the original price.
I asked what the dangers of repossession were with this system .She said that not all shops are the same. If you miss a month and go and explain to the manager he will give you some time - you must go and explain and try to get the money. Some shops repossess after you have missed payments for 3 months.

This describes some of the risks consumers have to take in acquiring appliances on down-payments schemes.

I asked her about **repairs.** She said that if something you bought from the shop breaks down they will exchange it for you. The shop does deliveries to customers. Susan could

not recall the name of the shop in Vishoek but she gave me directions on how to get there. She added that there are similar shops in Main road, Retreat.

I asked her if she was saving to buy appliances. She answered that the move to the new site had come a bit suddenly. She added that she had had some savings which were used over the Christmas period to fund her visit to the family and some celebrations there.

She said that because they know that the shop is there they don't have to save.

She said that they would wait until the house had been completed and then they would go to buy the household goods. They have no new furniture now.

TRANSITION

When I asked Susan about the fire hazards in the 'New Site' she said that it was less hazardous than in Greenpoint because of the lower density of houses. She added that the large plots are an advantage because it is possible to make a 'yard' and to fence in the area. She said that this is done for safety and that the increased privacy meant that not just any person could enter the area.

Susan added that the 'New Site' has an improved water supply system with the taps on site. In Greenpoint water was trucked in once daily at first. Later on a row of communal taps were installed. They had to struggle for water.

Susan said that the 'New Site' is better located for access to transport. There are more busses that can be accessed. This all improves access to job opportunities. (Previously they often had to walk from Greenpoint to Fish Hoek.)

She said that the soil here is of a better quality for planting. She intends to do more planting and at the moment has some plants temporarily earthed and sheltered within the bounds of the new house structure (roses and other flowers, some brought over from Greenpoint). Susan pointed out the recently planted maize patch in a neighbour's yard to illustrate how good the soil is. She intends to plant potatoes, beetroot, pumpkin (that grows well here), tomatoes and onions. She will also plant more flowers and a lawn with a nice path to the front door.

End of interview material

I interpreted this to mean that if the shop continued to provide lay-by facilities she would not have to save up the 'capital'.

Budgeting seems less concerned with comprehensive planning than with step by step consideration over time.

SET OF INTERVIEWS: 7. INTERVIEW IN WALLACEDENE

FIELDWORK

INTRODUCTION

WALLACEDENE

This is a typical site and services settlement with a fast growing population. The site is situated far from the metropolitan centre. Development of the site was initiated in response to the needs of a small 'squatter' community, but has since grown far beyond its original scope.

The houses are typical of the semi-formal urban fabric around Cape Town. This is one of the first settlements with informal housing that offers households the opportunity of domestic electrical connection (pre-pay meters with single electricity dispenser)

INTERPRETER

Vuyo Qangule is an anthropology graduate from the University of Cape Town and is well skilled in observational fieldwork and interpretation. She is not familiar with all the local informal settlements but is familiar with the language skills to act as an interpreter. I found her contributions to the fieldwork particularly informative.

LIST OF INTERVIEWS

INT. NO 26 Eunice Boniswa Msaba. Wallacedene Kraaifontein.
2nd February 1993, Vuyo Qangule - interpreter

INTERVIEW NO 26
DATE: **February 2, 1993**
LOCATION: **Wallacedene, Kraaifontein**
INTERVIEWEE: **Eunice Boniswa Msaba**

INTERVIEW MATERIAL

INTRODUCTION
Wallacedene is a recently developed site and service area. The township was originally planned for the settlement of about 60 squatter families at Uitkyk, however it has now twice been extended to provide a growing number of serviced plots The plots number 1500 at present with Cape Provincial Administration (CPA) willing to extend on available land. The civil engineering infrastructure was provided by the CPA and provides waterborne sewerage and an out-house toilet facility; water on tap to each plot as well as high mast lighting and tarred roads. The electrical reticulation providing for domestic connections to each site has been provided by the CPA. (Despite this Eskom still charges the full S1 tariff.) Electricity is supplied to sites by Eskom.

INTERVIEW SITUATION

Interviewee: Eunice Boniswa Msaba She is a widow running her own sewing business from home.

Eunice had been introduced to us by Louis Frouws of Eskom while on a site visit here the previous week. We then arranged to do the interview.
Present were myself as interviewer, Vuyo Gangule as language interpreter and Eunice Msaba as interviewee. A neighbour with his child sat in on the first part of the interview. Vuyo did the initial introductions. I spoke English, explaining the reason for the interview and Vuyo translated where necessary. The rest of the interview was done with translations from Xhosa into English and vice-versa where necessary.

At the end of the interview Eunice again asked what I was doing the interviews for. I said that I intend to write up all the information from the interviews that I have done in a book form that will be for my work at the university. I added that the information is put together so that people who make appliances and install electricity will know what the people (users) want.

NOTES AND COMMENTS

Eunice then offered to introduce us to people in the area who use electricity, once she had spoken to them. She invited us to come and see her house once she has completed it. I gave her my telephone numbers.

URBAN FABRIC

Wallacedene is a recently developed site and service area.
Houses are 'self built' and most of them are typical of the Cape Town informal housing stock; a timber framework is clad with sheet metal and plastic sheeting and internally lined with corrugated cardboard, pasted over with newsprint or factory runs of packaging paper. There are some houses that have been partially constructed in brick or in prefabricated concrete panels.

HOUSEHOLD DEMOGRAPHICS

Eunice who has recently moved to Wallacedene lives alone in the house with her boyfriend Elliot. Eunice has two children of ages five and ten who live with their paternal grandmother in the Transkei near Butterworth. The children come to visit during holidays and in December Eunice visits them in the Transkei.

HOUSEHOLD BUDGET

The household income is only from Eunice's business. She had had the business where she was living previously. One of the reasons mentioned later in the interview for Eunice's move to Wallacedene is that she could get domestic electricity to run her sewing machines on. She says that this gives a big saving on the petrol expenses she had when she ran her sewing machines off a petrol generator.
At present she sometimes works alone and sometimes has people to help her. She did not train the seamstresses but instructs them on the patterning of clothes. She makes both mens and ladies garments.

When I asked her what her average income is she responded that it is difficult to say as it varies and she supplements the manufacturing income by buying and selling ready-made clothes.

Access to electricity for a home based sewing business as a reason for relocating to Wallacedene.

The cash flows within her business budget are not regulated and she is not sure how much she will earn over shorter and longer periods.

Eunice sells her clothes on a credit system where people take clothing and pay on account. She collects money on Fridays and Saturdays and the average end of week income is R500 to R800. At the end of a week that coincides with the end of month she collects between R1500 and R1800.

Eunice uses her own car (Ford Cortina) for deliveries of clothes and for money collections. Once she is at her destination she moves around on foot.
Eunice knows her customers who mostly live in Hermanus and The Strand. The people at Wallacedene are getting to know her and she is gaining more local customers.
Eunice recoups more than the transport cost of R50 to Hermanus by regularly giving 4 persons a lift there at a price of R20 each and by transporting three other people back at a price of R20 each. She travels to Cape Town city centre (Harrington Street) on Mondays to buy fabrics and on Wednesdays to buy clothes. On these occasions she gives a friend a lift from Khayelithsa at a price of R10, whilst the trip costs her R20.

Eunice said she sends money to the Transkei for her children all the time. She has a contact on the Blueline bus who takes money to the value of R100 and groceries to the value of R80 plus three chickens at a cost of R10 each to the Transkei homestead each Sunday.
I asked Eunice whether she had any credit accounts and she said she used to have but that she has none at the moment. She operates a savings account at the bank.

A large portion of the household income is sent to her small children in the Transkei.

HOUSE STRUCTURE

The house has a fine timber structure, clad with IBR sheet-metal on the roof and walls. The internal partitioning and internal cladding to external walls is made of new hardboard sheeting. The ceiling is clad in 3mm pressboard and there are some areas still without ceiling. The floors are concrete covered with whole sheets of vinyl and carpeting.
There are four rooms; a sewing room with an additional bed; a lounge with suite and wall furniture for the TV etc (the clothes are also displayed here); a kitchen with dressers and work surfaces, containing the kitchen appliances; a well furnished bedroom.
The brick outhouse with water tap that is provided with the plot is accessible via the back door but is not attached to the house. Water is carried into the house with a pail.

Define 'self-built': work done by owners or community members who are usually laymen in the building trade, or by community building experts who have gained knowledge in this particular trade. The houses are built of found materials such as discarded secondhand metal sheeting, doors and windows, cardboard sheeting (often boxes), newspaper or factory runs of packaging paper, etc. These materials are sometimes networked through local commercial undertakings. In Khayelitsha small sidewall businesses specialise in the manufacture of panels prefabricated to form walls.

The house has large windows in the lounge and bedroom. The kitchen has only an external door and the workroom a medium sized window. In daytime when we were there the general lighting level in the house was high relative to other housing I have seen.

I asked Eunice whether the ceiling board and cladding helped for the heat and she said that the roof is hot without a ceiling. I asked what was done to stop the cold from coming in. Eunice said that there is no way a tyotyombe can be warm. She used the following expression that Vuyo translated: *'sobe singahlali nqobu sesihleli ke'*

There is grid electricity supplied to the house, with a Ready Board and pre-pay meter. Later on in the interview, when we were discussing the electrical wiring, Eunice mentioned that they intend to encase the wiring and I then asked whether she considered building a brick house. Eunice responded that she would build a brick house but not now, because she does not have money for that. I asked if she new how much a brick house would cost and she said that she had no idea of the cost.

Eunice had hired people to build the present house and lay the floor. She said that the present house was expensive to put up: The IBR sheeting had cost R25 for each of 30 sheets; The concrete floors cost R100 to have done; the windows were obtained at site B in Khayelitsha at a cost of R188 without glazing, The internal cladding cost R200 plus R100; The framing timber cost R300 per load times 3; nails were extra. (These costs alone amount to R2238.)

Eunice mentioned that she was constantly thinking about a brick house: She would possibly make it this year. It would be a brick or a slab house (I assumed that she was talking about houses made of precast concrete fencing slabs, of which I had seen several in the area).

HOUSING HISTORY

Eunice grew up in Guguletu, Cape Town. (NY149 no 17). In 1976 when she was 17 she moved to 'Old Cross Roads' where she lived in a temporary house. In 1980 her family and parents were amongst the first people to move to New Cross Roads where they lived in a five roomed brick house with electricity.

There is no way a tyotyombe can be warm.

A brick house is desirable but thought to be too expensive even though she has no idea of what it will cost. Even for Eunice with her business acumen, this is a problem.

The gap between needs and need fulfilment.
Within the average lifestyle of the poor I note the gap between what is seen to be accessible within the framework of their household budgets, and the ability to realise the kind of enterprise required to access brick housing in the context of contemporary urban economics. It is within this gap that demand lies unexpressed.

In 1979 she married and moved with her husband to the Transkei. Her husband died in 1985. Eunice then came to live with her parents in their New Cross Roads home. Thereafter she lived temporarily in Site B, Khayelitsha and moved to Wallacedene in 1992.

Eunice said that she moved to Wallacdene for several reasons. She likes the street lights, the tarred roads and the water facilities. She moved to get access to electricity. She said that the streets in Khayelitsha are not good as pools of water are left standing after rain; that does not happen here. Eunice said that there is a lot of violence in Khayelitsha and one has to go away. She said that it is better in Wallacedene because the violence does not happen here and it is better for having a business. She emphasised that this was one of the main reasons that she moved, 'the 'Balaclavas" don't come to rob you here'.

Access to electricity for a home based sewing business coupled to an escape from violence of money robbers, as a reason for relocating to Wallacedene.

Later in the discussion Eunice mentioned some of the appliances used in the Transkei and I asked if she owns the house where her children live. She said that she is included in the *'miza'* homestead system.

miza - homestead system.

ENERGY USE TRANSITION

Khayelitsha business

Eunice used a petrol generator for electricity to her sewing machines. She also powered her TV, iron and lights off the generator.
The daytime petrol consumption was 5 litres plus 2 pints of oil. When she was sewing in the evening the consumption was between 7 and 10 litres.

Wallacedene electricity

The domestic electrical appliances are a TV, iron, kettle and lights.
Eunice's household consumption is increased by one to two units per day when she sews.
She uses two electrical sewing machines and two manual ones.
She buys electricity units to the value of R20 (89 units) and this lasts about 2 months.
She says that this is nothing compared to the petrol costs for the generator.
Eunice says she does not check electricity consumption on daily basis. She did know that recently the unit count dropped from 97 to 96 on her meter.

LIST OF APPLIANCES

Domestic appliances
4 plate gas cooker with 19kg cylinder.
Cadac gas burner on its own 2kg cylinder.
Paraffin heater (National OS 2000 R).
Paraffin lamp (for the workroom where there is no electrical ceiling light).
Electrical iron.
Electrical lights (3 ceiling mounted) .
TV and HI-fi powered off mains electricity.
Electrical kettle.

Eunice works with a four-plate gas cooker.
The 19kg gas bottle refill costs R50.41 and lasts for 3 months. She finds that this cooking is not expensive. The stove was bought in 1987 before she had electricity. She could not remember the cost because she had bought it at the same time as a room divider and for the two together she payed about R300. It was bought for cash at a secondhand shop in Landsdowne. (She has also bought her furniture from this shop.)

She has not yet cooked on electricity and does not know what the costs will be.
(Eunice responded to a question about other people using electrical stoves that she has a friend who uses one and likes it because it is better than the paraffin she used before.)

Eunice said emphatically that she does not use paraffin because she does not like it. There is a large paraffin heater displayed in the bedroom which she says she hardly uses because she does not like it and intends buying an electrical heater.
The paraffin lamp in the workroom was standing next to the spare bed on a chair.

Eunice does not have a fridge. She is planning to buy one at Ellerines.I asked her when she would buy one and she said she does not know, but added that she would do it next month. She wants to buy the fridge, separate freezer combination in an upright model.

Eunice has a wash-char who does the clothes washing by hand with cold water.
I asked if she would like to get a washing machine and she said that she will get one when the baby comes (she is pregnant.)

I asked her about collecting water and heating it for bathing. She said she used a steel bath tub and uses the kettle to heat water for bathing. She said she would like to have a bathroom and that she used to have one in Khayelitsha.

I asked if she would like to have hot water on tap from a geyser. Eunice said that she is hoping to get a sink and a tub and would then like to have hot water on tap. She said she would do it when she has the money. At the moment she fetches the water in a pail from the tap at the outhouse, 3m away from door.

ELECTRICITY

The **wiring** was done by Eunice's boyfriend. She said that the wires are not yet in conduits but that they intend to do that one day. There is timber reinforcing to the wall onto which the Ready Board is fixed.

I asked Eunice what **electrical heater** she would buy and she responded that she would buy any one she could afford. She does not want a complicated one, it could have two bars or one. She said she knows that one bar uses less electricity. I asked if she had friends in Wallacedene with electrical heaters and she responded that she did not have many friends here as most of her friends lived in Khayelitsha. Before moving here she always used the paraffin heater but in the Transkei she used a gas heater.

Eunice says she sometimes brings her **sewing work** into the lounge. I noticed that there was no electrical ceiling light in the workroom. The lounge has two large windows allowing in a lot of daylight. The general day lighting level in the house is good.
I asked what light she used to sew by at night and she said she used the globe fitted to the sewing machine itself.

I asked her who fixes electrical connections and appliances. She responded that she has had no problems but that she thinks the people from Eskom would do the fixing.

End of interview material

CHAPTER 5 RESEARCH OBSERVATIONS AND CONCLUSIONS

5.1 INTRODUCTION

5.1.1 SOME REFLEXIVE OBSERVATIONS ON THE RESEARCH EXPERIENCE

In order to represent the interests of users of energy end-use appliances, I had set out in this investigation to take an emic view of user requirements. However while doing research, I found myself thinking in two distinct modes; on the one hand recording the subjective experiences and opinions of users (in a reflexive (1) mode) and on the other, looking objectively at issues and events with an awareness of dynamics and facts about energy use that sometimes are hidden from the user's perspective. I do not think that by constantly shifting between these two modes of thinking I compromised my research ethic to represent the interests of users.

5.1.2 THE INTERPRETATION OF PRIMARY DATA.

The main body of this dissertation consists of the fieldwork transcripts, presented as 'primary data' to be used as a resource for analysis and multiple interpretation. The data from the fieldwork is qualitative and open to subjective interpretation, so that what I present as findings are my interpretations of trends that I have observed.

My own limited interpretation is presented by means of the notes and comments in the related parallel text collated to the transcripts as well as in a brief review of findings in this chapter.

5.1.3 LEVELS OF INFORMATION.

In order to draw useful conclusions from the fieldwork I have categorised different kinds of information as follows:

1. Descriptions of actual use requirements, for example for appliances, energy services and access systems.
2. Information on factors that influence these requirements, such as the contexts of poverty and urban informal settlement.

The term reflexive is recognised as a specialised social research term and has a history in dialectics and hermeneutics. Esterson (p 167, Rowan and Reason 1981) describes dialectical science as 'the study of reciprocities of persons and groups of persons' which leads to the notion of reflexivity. Bannister (p192, Rowan and Reason 1981) describes reflexive theory as one that accounts for it's own construction, and further states; (p195) ' An acceptance of the need for reflexivity is intrinsically a denial of the doctrine that scientists think and are purposive while their subjects are mechanical and determined.'

3. Suggestions for research applications to improve information resources on user requirements.
4. Information indicating that there are overall patterns and underlying principles specific to this context of energy end-use.
5. Suggestions for energy practises that would indirectly benefit use requirements.

5.1.4 SELECTIVE REVIEW OF OBSERVED TRENDS AND PATTERNS

During the course of the fieldwork the focus of my observations shifted from actual use requirements to the contextual factors that influence these. I have chosen to limit my discussion of fieldwork findings to the thematic focus of this dissertation, predicated by the fieldwork focus, namely the specificity of user requirements fashioned by the contextual pre-conditions of poverty and instability. I will outline only, some of the salient contextual factors and look in greater depth at the dynamics of household economies as an important informant of use requirements. The fieldwork rendered rich information on actual use requirements, but I will only present these in outline. I will incorporate some suggestions for research applications in the discussions of contextual factors and use requirements. The last section in this chapter contains a discussion of broader conclusions and general suggestions for research.

5.2. CONTEXTUAL FACTORS

In this chapter section I will expand on the following broad conclusions and my observations of the contextual influences on energy end use. The requirements of users for energy services are particular to the context of end-use. Poverty, informal settlement and the dynamics of the informal economy are the elements of a 'New Landscape' (1) within which energy end-use requirements differ in important ways from those of the households of the dominant culture and formal economy.(2) Within this context new approaches to research are needed in order to support development planning policies which are appropriate to meeting user requirements for energy services. There is an inter-relatedness of the aspects that influence energy use which is shaped by the lack of security in the settlements. Energy service planning will have to be integrated into planning for a range of other household needs.

(1) Refer to Chapter section 1.1.3.
"I would like to present a perspective of the urban environment experienced by the very poor. The description 'Self help city' was coined decades back by urban planners and used to describe informal settlement in large cities. 'Self help' describes way the city works for poor urban dwellers who use the urban environment as a resource base from which to fulfil their basic needs. Self built housing is an important feature of this landscape" (Van Gass 1994).

(2)"Domestic energy use in the context of this urban resource base straddles the difficult divide between formal and informal economies, between domestic subsistence strategies and a treacherous dependence on centralised and alienated systems of energy provision" (Van Gass 1994).

5.2.1 INFORMAL SETTLEMENT AND HOUSING

The urban fabric of settlements

I did fieldwork in various types of informal and semi-formal residential areas. (These are described in the side notes (3), and also in the fieldwork transcripts in chapter four). The differences in characteristics of the various areas depend on the spatial location of the settlements in relation to the larger metropolitan context, the local availability of services and access to facilities in the formal urban areas through proximity and transport networks. The specific quality of the urban fabric of a settlement is dependent on the age and history of the settlement, density of houses and the availability of infrastructure and quality of public and commercial services provided in the settlement.

From the perspective of most households I interviewed there is little clarity about the affordability of urban infrastructure; interviewees do not always differentiate between payments towards plot ownership, taxes and service fees, and in many cases do not pay any of these.

The subjective experience and views of urban settlers and migrants described in the interviews gives a good indication of which urban facilities are appreciated and which urban experiences are unwelcome. Interviewees often mentioned the availability and quality of urban services in their evaluation of the urban area where they live or wish to live.

The site and service projects encountered in the fieldwork present the households with an immediately workable package of urban services, but questions on the maintenance and upgrading of infrastructure that directly influence the upgrading potential for household energy services, seem not to be addressed by the local authorities and planning professions involved. Of specific relevance is the type of water-connection to each individual site, and local electrical reticulation networks that pose questions about future upgrades and the financial responsibilities of households for these.

(3) RESIDENTIAL AREAS ENCOUNTERED IN THE FIELDWORK:

1.Informal and semi-formal settlements peripheral to the metropolitan area.

Here energy servicing requirements are differentiated by the long distances to commercial centres where liquid fuel, food and appliances are available. The 'Greenpoint' and 'Site 5' interviewees in the Noordhoek Valley expressed a clear need for refrigeration services to facilitate bulk buying, food preservation, and the setting up of local shops, because of the distance to commercial facilities. The site and service areas on the periphery of the metropolitan area such as Macassar and Harare did not seem to generate much local informal commercial activity. Transport to work and commercial centres seemed to be a hardship for residents.

2. Pockets of informal urban fabric within well established urban areas, for example Thambo Square in Gugulethu, and the various informal sites in Khayelitsha:

These areas are spatially limited and have grown to high densities. Fire risks are very high. Often emergency communal services for water and sanitation are available. Most of the houses are within walking distance of local township facilities such as shops and transport nodes. High density areas are often only penetrable on foot. Fuel stocks and batteries are carried or hand-carted to houses. Generally street-lighting is not available. Because the settlements are situated on scraps of land not designated for housing development, major problems with high water tables- resulting in health problems, space-heating problems, and deterioration of the housing stock often occur. (continued over page)

The existence of community spirit and identity is common to these settlements and in most of these a committee structure of community representation had been formalised to interact with outsiders and authorities of various kinds. These committees, each representative of an area, are often politically affiliated to larger organisations. Interaction between community representatives and organisations who engage in service provision seems to present a vitally important channel for the communication of user requirements to suppliers and for the accessing of information regarding technical and financial aspects of proposed services to individual households.

The energy use requirements of households in the various residential areas are differentiated by the accessibility of ranges of fuels, foodstuffs, the need for bulk buying of both fuel and food and the associated processes of food processing and refrigerated storage requirements. The development of informal support networks within communities, such as spaza shops, is dependant on the density of local urban fabric for it's client base and the distances to formal commercial facilities. The availability of re-useable discards from the metropolitan areas as well as the free resources (such as wood for building and fuel) available at the metropolitan periphery characterise the survival mechanisms employed by households. This results in the fact that when looked at in detail, energy service requirements are specific for different urban locations.

(Continued from the previous page)

3. Areas providing serviced sites

Serviced sites have been set out onlarge tracts of land in Khayelitsha.

The various site and services developments offer varying packages and levels of services and facilities, erf-layouts and densities. The quality of self-built housing varies considerably. In already established areas informal commercial activity is extensive, also trade in housing kits and building materials.

4. The relocation of a specific communities from informal to serviced sites. (Thambo square and Noordhoek Site 5)

Community involvement and the assistance of NGO's in the development facilitates the difficult process of realising needs fulfilment for services and housing within affordability restrictions.

Community members seemed to be empowered by the participation in processes of identifying and realising their needs but seemed to be ill informed about planning and development procedures, costs and delivery timing and have little information about infrastructural organisation is involved in the energy (electrification) services provision.

The availability of water and toilets on individual sites, as well as street-lighting were most often mentioned as advantages of relocation.

House Structures

There are extensive descriptions of typical house structures in the fieldwork transcripts. The quality of materials and building techniques vary considerably and this determines the wind- and weather-resistance of structures.
The most obvious impact of house structure on energy requirements is that of it's thermal performance on space heating and also lighting service requirements.

Housing structures in informal settlements are unlikely to be built to perform thermally efficiently because of the prioritising of other survival factors such as security, shelter from direct exposure from the elements, containment definition, privacy, etc. as well as the need for speedy erection in the making of the houses. The found objects readily available for building are not usually good insulators or wind and water shields.
Internal space dividers are often very flimsy and it makes it difficult to seal of separate spaces for heating. The size (internal volumes) of informal houses vary from small single roomed units to large units where internal rooms cannot be thermally isolated and this results in different space heating requirements for individual houses.
The urban conventions that have developed around self-help urban house building do not seem to have the qualities of good building practice inherent in most " traditional " self made housing (Fuggle). Most of the materials I encountered as commonly used in self-built houses are highly flammable and the windy conditions of the Cape Flats increase the fire hazards of working with open flame energy appliances inside these houses. The wind leaks in lightweight construction, often patched together from a variety of ill matching materials, make the use of open flame appliances inconvenient and decrease their energy efficiencies.

The use of cardboard sheeting in combination with wall papering with ex-factory reject print runs or newspaper, is a prominent practice in the tradition of incremental improvement of housing stock. This technology, often with the focus on interior finish, helps with wind-proofing and to a lesser degree thermally insulates house structures.

Formal erf lay-out is determined by planning which takes into consideration least-cost scenarios for public services provision, access and plot-size. Formal site and service plot lay-outs determine the orientation of buildings and of wall openings towards street facades, etc. The consideration of sun or wind directions related to the latter, that could improve the thermal performance of the houses seem to be of secondary importance. I suggest that orientation for energy efficient performance will have to be initiated far up

front in the planning path to enable house-builders to achieve beneficial thermal gains from orientation at the same time as meeting other requirements for the placing of rooms and wall openings.

Development interventions to improve standards in housing for the very poor has a history of failure despite the availability of many technical solutions. Interventions aimed at upgrading thermal performance of housing to produce higher levels of body comfort in interiors of these houses and to lessen the burden of space heating requirements will have to be carefully slotted into the existing building patterns and skills used in self-help incremental building with the use of found objects as building materials.
Some interviewees obtained space heating in winter from the use of coal or woodburning 'imbawhula's or from paraffin stoves . These practices cause interior air pollution and the paraffin use is inefficient and costly. (1).
Another problematic feature of informal houses are uneven earth floors that make the stable placing of appliances and kitchen furniture difficult. It is also difficult to fix electrical boards and conduits designed for concrete structures to flimsy partitioning.

The subjective views of interviewees on self-made houses point to the fact that these structures are seen as not proper, inferior and temporary (tyotyombe). An improvement in housing stock was associated by interviewees with improved household and energy services.
The disassociation of improved services with informal housing stock predicated by historical experiences of eviction and demolition, and by idealistic hopes for the betterment of living standards, may obscure the expression of requirements for better energy services by people living in informal houses for indeterminate time spans.
I suggest that the consideration of strategies through which to deliver a minimum quantity of energy required as a 'basic need' to poor households, should link up with current practices of site and service provision (2).

(1) Thorne (1994) has researched the economic costs of domestic space heating to the national economy and concludes that major energy savings can be obtained from improved thermal performance of house structures. Thorne proposes that government subsidies to the poor should be invested in the upgrading of the thermal performance of housing stock.

(2) The common practice of excluding energy services from housing finance packages in development schemes, seems illogical in terms of the duplication of financing arrangements for households that find it difficult to negotiate any such deals for themselves. This practice may be the legacy of historical precedents where low-cost housing was not electrified. However, the integrated nature of energy use and other services points to the need for a housing package inclusive of access to electricity for the urban poor who can afford electricity.

5.2.2 POVERTY AND PERIPHERAL SOCIETY

From my fieldwork descriptions it is clear that many households interviewed live below the Minimum Living Level datum (1), or intermittently decline to below this level.

Poverty and exclusion from services.
The households that I interviewed operate largely in the informal economy, and may have structural access to both the formal and informal economy of the city. Many households with no or little cash income are relegated to the informal sector of the city and have no security of access to the formal benefits of the city. Financially and structurally they are excluded from urban energy service benefits but survive on the periphery of urban life. In this situation it may be appropriate to think of their participation in a conjunction of economic systems rather than a progressive transition from informal to formal systems(2).

Urbanisation - a flight into poverty.
Some interviewees described the opportunities of earning money in the city as a reason for rural-urban migration, whilst others found themselves trapped by poverty in the city, unable to remigrate to a preferred rural situation.
Urban poverty spells out the failure of trying to overcome the poverty of subsistence lifestyles by accessing the urban money economy. In the face of an increasing dependence on cash for basic survival strategies the very poor urban households resort to other mechanisms and strategies for survival (Cross 1992).(3).
In the light of these experiences and the statistical projections that illustrate a future increase in the numbers of poor people and the inability of the formal economy to put money in the hands of the poor, it becomes clear that the problems of energy provision have to be solved within the context of poverty.

(1) The Minimum Living Level.(MLL) Refer to chapter 1.1.2. "In South Africa as a whole , including the reserves, the proportion of the total population living, in 1980, below subsistence (measured as the urban MLL) was estimated to be 50 per cent "(Wilson and Ramphele 1989:17).

(2) This has repercussions in planning strategies. Planning for housing and services is presently mainly approached from the perspective of the formal economy and the ability of households to access these opportunities depends on the degree to which they participate in the formal economy. The more peripheral the household the less likely it is to access basic needs goods.

(3)"Since cash income is the primary support need for both rural and urban areas and households in aggregate can be shown as a first preference to put their labour resources into the job market whenever this is possible, ...they may be able to call for local activities on the labour of unemployed men as well as that of women members and older children. Otherwise vulnerable households in older communities may possess land and assets and be able to access social networks. In newer settlements and rural towns, land is less likely to be available, and in relocated or refugee settlements, both land and social networks may be absent, while cash incomes tend to be uniformly low" (Cross 1992).

Survival strategies and the dynamics of peripheral society.

Informal society evolves it's own dynamics, aimed at accessing services and benefits. These can be seen as survival strategies employed within households and in local society. This diminishes to some degree the dependence of the informal on the formal sectors of the city, but these local systems are very vulnerable to outside interventions.

Most households interviewed in both informal settlements and self-built housing on serviced sites use mainly liquid fuels for their energy services. The paraffin network that operates through a system of spaza and house shops, is a good example of the grass roots building of local micro networks that extend commercial supply networks. This micro network meets the requirements of the household for small scale daily expenditures and a pattern of fuel acquisition based on last minute and absolute need. Paraffin is available practically at all hours and in small quantities.
The flow of income and expenditure is unchartered in most households interviewed. House shops and home industries are operated even if gain or profit it is of very small scale. The opportunity for the access to internally generated cash or the facility for small scale credit granted on trust between neighbours, is created insuch informal trading. It may be a fact that most informal businesses in these circumstances do not generate, but circulate money. There are indications from the fieldwork that the circulation of available cash in the community is of great value, despite their profit inefficiency. If the short term survival of people in the informal sector is dependent on such circulatory networks, it is important not to destroy these in the process of development intervention.

Household poverty gradients and basic needs.
The categorisation of the economic capacities of poor households,for planning and research purposes, are most often hierarchically arranged according to levels of money income. I think that both household economic capacity and basic needs requirements should be described in more accessible terms that refer to the real survival strategies that households employ, taking into consideration other than only financial capacities.

Integrated Needs Assessment

People in poverty are daily confronted by demands from the formal economy that they cannot meet. Households are confronted with a plethora of demands for cash amongst which they are able to satisfy only a few. Energy expenditure is but one of these (May, 1992) The description of basic needs as outlined in the definition of the Minimum Living Level, can be used as a reference of what should be provided for in development programmes aimed at poverty alleviation. However households daily make choices based on the hierarchy of priorities of household benefits in spending limited money resources. Basic needs definitions should take into consideration the actual energy and other services that households generate for their members, and the fact that households often have to choose which of these can be satisfied at one time.

Immediate survival focus

In the situation of extreme poverty, human energy and attention is directed at immediate survival. Cash is a very precious commodity. It is difficult for people to cope with problems removed from their immediate context. It seemed difficult or unusual for some interviewees to plan an expenditure budget for future infrastructure planning, when money is needed for food.

Daily hardships of poverty.

Information from the fieldwork and other energy studies give a clear description of user requirements for the improved quality of energy services, in response to hardships suffered. The most obvious are the health and fire hazards associated with liquid fuel use, fuel and appliance use inconveniences described for all household services, finance and access restrictions, and labour and time spent in obtaining and processing energy.

Alleviating energy poverty

"Affordability" as a first route of access to energy services can possibly serve a sector of the very poor. In the face of the dearth of cash that poor households suffer, there is a user requirement for access to energy via other means. Not only should subsidies and welfare be considered, but the problem of energy provision has to be resolved within the context of urban informal settlement and the urban resource base should be extended to provide more opportunities for households to employ survival skills and strategies at a micro scale (1).

Putting cash into the hands of poor households would improve their access to the commodities and service structures of the formal economy. The sustainability of higher money incomes is crucial for households who aspire to improve or change their lifestyles. If there is too much fluctuation, then use habits will settle around less expensive lifestyles. For example, the paraffin stove will be used, because credit payments for electricity are out of reach.

(1) Correa (1986) describes the dynamics of Bombay..."Every day it gets worse and worse as physical environment and better as a city. That is to say everyday it offers more and more in the way of skills, activities and opportunities on every level...for many people the city is actually getting better."

5.2.3 INTRA HOUSEHOLD DYNAMICS AND HOUSEHOLD ECONOMIES

5.2.3.1 INTRODUCTION: INTERNAL HOUSEHOLD DYNAMICS - NEW ECONOMIC MODELS.

My fieldwork investigations into household acquisition of fuels and appliances, and into incomes and expenditures brought my attention to the survival strategies that these, mostly very poor, households employ in this particular context of an 'informal economy' and 'informal settlement'. I also observed how closely related the particularities of energy and appliance use patterns that I encountered are to the way that households manipulate their incomes and other household assets. Households evolve survival strategies employed within the household and in local society. These systems are very vulnerable to outside influences.

The relationship between the economic dynamics of the households, intra household social dynamics and energy use as integral to this household functioning, are described by other researchers (1). Anthropologist Fiona Ross has investigated the social contracts around energy between household members and the community in squatter settlements (Ross, 1993).

The multiple external factors that influence energy needs and demand within a set of other household functions are described by Annecke (1992),(2). The role of women in energy use has also been investigated by Feshakari (3).

(1) Julian May, working in rural domestic energy service research takes an even broader look at what influences energy service benefits: "During the analysis of the field work, it became apparent that acquiring and consuming energy cannot satisfactorily be analyzed without reference to the broader framework of domestic and productive household activity. Further micro-studies commissioned by the National Council should place greater stress on non-energy related activities and the relationship between these and energy behaviour" (May,1992).

(2) Amongst other important domestic features Annecke (1992) highlights the way in which difficulties that women who manage energy resources experience in controlling fuel consumption in the household influences their fuel purchasing patterns.

(3) For example Feshakari F and Dorian P,(1991) examine two factors of urban households in Asian cities; the value of women's time and the existence of small-scale commercial activity within the house, concluding that these are highly significant in fuel choice. The investigation also concludes that 'convenience' of access to fuel is an important factor in fuel choice.

Research specifically structured to establish domestic fuel use trends has revealed that a complex of so called external factors influence fuel use. In this regard I refer to Tyler's (Feshakari et al eds, 1991) investigation of fuel choice in relation to decision making processes of households (1). Julian May's research contextualises energy needs in relation to other household concerns (2).

Household economies

I focused my attention on household economies and found it hard to formulate their functioning. In terms of the demands of the formal economy these household economies failed to meet performance expectations. I became profoundly aware of the destructive impact of poverty as the failure of integrating households into to the money economy. The dynamics of the alternative survival strategies that are employed by the very poor are not well known. The households I had encountered seemed to depend on benefits both from the formal and informal economies and in addition used 'subsistence 'strategies in order to provide domestic benefits for their members.

My research objective of documenting user requirements, focused my attention on how these requirements are or could be satisfied within the context of the 'economies' and survival strategies particular to very poor households. In trying to formulate a scenario to facilitate the understanding and analysis of household economies of the urban poor, I considered several approaches, each elucidating different aspects and rendering information useful to specific research requirements.

An understanding of the particularities of energy use of poor urban households can be deepened by an insight into the detail functioning of household economies and by taking the subjective view point of the household members (3) of these internal economic factors as well as of external factors that impact on it. The household will employ any and it's best options to survive.

Modelling used by Cross and Bekker (1993) describes the ability of very poor rural households to employ survival strategies based on the intersection of various components and dynamics available in these households. This affirms my field work observations that similar urban survival trends are used in urban situations. The Cross and Bekker model has been helpful in my understanding of the household economies of very poor urban dwellers (4).

(1) In referring to his paper titled 'Cooking fuel choice in Thai cities: beyond prices and income.' Stephen Tyler notes: 'This paper takes the perspective that it is only by understanding the decisions make by individual households that aggregate fuel use trends can be explained' (Feshakari et al, 1991:469).

(2) May (1992:22) comments: "Energy was infrequently given as a priority and improved housing and access to schools emerge as the most important expressed household and community needs respectively".

(3) It is important to consider the contributions of household members to the domestic assets in terms of the social dynamics specific to the household.

(4) Poverty rating is done according to the household's 'opportunities and capacities': opportunities listed are cash income generation, claims to transferred incomes; capacity to access these are determined by household demographic composition, the quality and quantity of labour power available, age, gender, health, education and training of members, land and livestock ownership, access to transport, child-care and social network reciprocities (Cross and Bekker 1993).

Most analytical models used in other research on household energy use of the urban poor, take an etic view of the household as an economic unit and analyze information on incomes and expenditures. These research approaches have been criticised in recent energy research reviews, as not adequate to describe the complexity of economic and social dynamics that determine energy end-use for the very poor (2).

Conventional economic models of the formal economy, are not adequate in explaining the dynamics of poor household economies. I would even say that development proposals based on information from analytic models of the formal economy fall short of describing the very poor, and cannot be used successfully to plan for the fulfilment of their survival and energy requirements. Especially energy supply strategies with a prerequisite for 'affordability' based on cost recovery within the framework of the formal economy, will not meet the requirements of the very poor, failing to engage with their real economic capacities or to predict their energy behaviour.

(2) 'Forecasts of fuel or electricity demand must recognize the importance of lifestyle issues and demographic characteristics in influencing household fuel choice behaviour. Systematic changes in the size of households, their age profile, and labour force participation of women can have large consequences for aggregate energy use patterns. Such consequences may be very difficult to forecast accurately using deterministic quantitative models, and other tools should be developed to assist in identifying thresholds, inconsistencies, and limits of appliance penetration and fuel choice as urban household characteristics change' (Feshakari et al eds 1991: 482).

5.2.3.2 COMPONENTS OF HOUSEHOLD ECONOMIES

In this section I discuss a few of my opinions based on fieldwork findings. In the parallel text I present a resume of my fieldwork findings. This review of some characteristic components and dynamics of the household economies documented in interviews illustrates a few particular aspects of cash incomes of very poor households. These cash assets are critical in defining budgeting behaviour.

5.2.3.2a. CASH INCOME

The household income can be defined as the accrual of various assets, benefits or social exchange values. Cash income is but one, albeit vital component. Cross and Bekker (1993) stress the high ranking of cash in a hierarchy of household assets and my observations confirm this. (Household assets other than cash incomes are described by researchers Cross and Bekker 1993).

Cash income differentiations;
Cash income consists of various components differentiated by their source, scale, predictability and periodicity. From the fieldwork it can be seen that different cash components are employed to access different household benefits.

Sources of income:
Most households depend on multiple sources of income. Field enquiries about income contributions of members to household budgets indicated that these depend on the dues and responsibilities of various household members. (Cross and Bekker (1993:32) discuss demographic determinants of household's income capacity.) All income earners living in a specific dwelling do not contribute all their income to household functions They often have (temporary or permanent) economic responsibilities located outside of the household.

Expenditure patterns seem to be differentiated along the lines of the source of income. For example, the person who buys a television set is not the same person who buys a stove; television and other social consumption benefits are often paid for by younger members of the household, outside of 'liabilities' due to household budgets.

Resume of the most salient fieldwork findings on household economies:
Cash income is precarious, non existent, irregular and unpredictable. People cannot say by what means, or when they will acquire desired appliances, house improvements etc. The impact of the irregularity of income seemed apparent in the differences in attitude and coping ability of households, depending on whether income is regular or ad-hoc or non existent.
The flow of income and expenditure is unchartered in most households interviewed. House shops and home industries are operated even if gain or profit is of very small scale. Interviewees were reluctant to express commitment to undertakings - keeping wide open to the last minute their options in choice of expenditure. The aspirations of users seemed tailored to suit their economic ability of the moment: when asked 'do you want this or that' - the answer often was; 'I cannot say- it depends on the money' or 'we do what we can do'.
The practise of small scale, short notice, expensive expenditures, such as paraffin purchases per bottle, was commonly found. Poor households depend on spaza shops for small scale acquisition of basic needs goods at virtually any hour.
Expensive capital goods reach the very poor if provided through small scale organisations, on a non profit basis, often through charities. Despite the limitations of cash barriers to accessing appliances, households do obtain appliances through various mechanisms; unexpected contributions to household income that seem to depend on kinship ties - or some social agreements; the passing on of secondhand appliances and private deals (not usually covered under conventional questioning about acquisitions).

For the households interviewed, cash was variously accessed through work opportunities, small scale trading or manufacturing, welfare payments and kinship allegiances. The effort put to generate hard cash is reflected in the proliferation of shebeens and house shops in the informal settlements, of which some home businesses are extremely successful while others seem to falter along unprofitably.

Scale of income:
Income packages commonly available to the households interviewed were very small and were likely to be spent on satisfying immediate needs. The scale of income components vary over time and are unpredictable. Paradoxically, poor household could at times access and spend relatively large cash amounts. The variability of income amounts makes it difficult to base any permanent lifestyle improvements on it. Households are not able to sustain running and repair costs of appliances bought with 'excess income'.

Predictability and periodicity of incomes:
The periodicity of income is characterised by the duration and re-occurrence of cycles. Short cycles seemed common for income earners interviewed. Regular incomes from employment in the formal economy and self-generated incomes, remissions and pensions come periodically, in cycles of various lengths ; daily, weekly, fortnightly, monthly, seasonally etc. and may be predictably repeated over terms of longer and shorter duration. These terms are often determined outside the household but can depend on the availability of members of the household to realise outside opportunities. The way these cycles of income co-incide with demands for regular payments to credit schemes in which households would like to participate is vital for the link of households to the formal structures of the mainstream economy. Because of the tendency to look for regular incomes typical of the formal economy, ad hoc incomes and income subject to the disruptions of this informal context usually do not allow household to qualify for credit facilities.

There are thus many variables in the components that make up household cash incomes. This impacts directly on the expenditure patterns of households and the ability of households to plan investments. This variability is the antithesis of the security demanded for access to the benefits regulated by the formal economy, for example for hire purchase finance.

Income levels

Conventional assessments of 'cash income', determining income levels, describe poorly the economic capacities of households. Not only are most income surveys not refined enough to pick up the important detailed information but, where income is variable or cash flows are rapid, it is difficult for households to assess their own income ranges according to the models of the formal economy. Other economic components that can make up a large portion of the household assets of the very poor are rarely accounted for. I conclude that in order to establish in which way the aggregate income of a household will be divided for expenditure it is important to know what share the various income components make up of the total - how much is regular, how much is ad hoc and what scale the amounts are.

5.2.3.2b. FIXED ASSETS

Cross and Bekker (1993) mention land, housing and labour resources as important assets of poor households. The satisfaction of structural basic needs, such as appliances, housing, furniture and even clothing, require large once-off expenditures. In the absence of credit facilities, amounts are gathered in ad-hoc increments, as other immediate demands on the budget allow for it. In households battling to maintain basic living standards there is little excess money to save towards capital intensive assets. Even relatively small cash amounts (for instance R30 for a stove, or R5 for a lamp shield) are out of reach for some households. It is more likely that other assets such as labour will be converted to structural benefits such as housing by using found objects as building materials or using incremental processes suited to the small scale acquisitions that are attainable for poor households.

The differentiation of long and short term investments in a rural-based or urban-based assets, is discussed by Cross and Bekker (1992,:36). The city is good for cash generation but the rural base is seen as offering security for long term investments. Important assets for poor households are land, housing and labour assets. I suggest this attitude towards

the city may result from the insecurities of dependence on an inaccessible urban money economy. Some households I encountered find themselves trapped in the city, not able to re-migrate to a preferred rural situation. Households in informal settlements seem very vulnerable to the loss or abandonment of accrued assets in the processes of migration, degradation, fire-hazard, crises demands, etc.
The investment in appliances as fixed assets are restricted due to inaccessibility of finance for poor households (see also section 5.2.3).

5.2.3.3 DYNAMICS OF HOUSEHOLD ECONOMIES

5.2.3.3a HOUSEHOLD BENEFITS AND LIABILITIES

Fieldwork enquiries about income contributions to household budgets indicated that there is a need to investigate the dues and responsibilities of household members in order to understand the relationships between liabilities to contribute to household budget and the benefits enjoyed, between income resources and differentiated expenditures.

Energy services and related benefits are part of a whole set of benefits the household provides for it's members. There are many agreements and trade-offs between household members concerning liabilities to contribute to household functions and what benefits are expected in return. Fiona Ross investigated some of these dynamics (1).

The unwillingness of individual beneficiaries to contribute towards household expenditures, mentioned by some interviewees, could be contingent on habit of use where these services were free (fuel-wood for instance) or where the responsibility is traditionally allocated to specific persons in defined social roles.

The central function of taking responsibility for providing household benefits around energy services, accessing income to the household budget and running the household budget, more often than not falls on the shoulders of women who are both pressed and proud to render the services, come what may. Strength of personality, and creative survival skills are required to control purse strings and pursue the continuous battle for survival.
Where more adults make up the household it is likely that the manager of the household 'budget' will have to defend the household resources from internal 'abuse'. The

(1) Other research on how contributions are related to other household dynamics indicate that it is determined by i.a. household demographics, kinship ties, material contracts. Ross (1993) describes the trade-offs between domestic labour duties and benefits of commensality for nominal household membership.

allocation of part of the household budget to energy services is thus dependent on many variables. Especially if the main income earner is not involved in rendering these energy services, it may not be a priority to allocate expenditure to 'capital' investment (appliances) or even running costs (fuels).

5.2.3.3b EXPENSIVE HOUSEHOLD BENEFITS

Benefits accessed through small scale expenditures prove to be more expensive that the same available in the formal economy through differently structured expenditures. Other studies have shown that the inability of households to access structures of the formal economy makes for expensive alternatives in the informal economy (1).

There is a 'cash catch' in the nature of the income patterns in the informal economy that bars households from benefits they may actually afford. Cash and labour (woodcutting, battery recharging, etc) make up a large portion of contributions often demanded from specific household members towards household expenses. The amount of effort or cash applied for the gaining of benefits is sometimes disproportionately large for poor families (2).

5.2.3.4 HOUSEHOLD ENERGY BUDGETS

I conclude that the energy budgets of the poor and very poor households interviewed must be seen in context of the effects of household dynamics, infrastructural support networks, and the particularities of income and expenditure patterns characteristic of households living in informal settlements.

Firstly, it is difficult to determine the income of such households. In view of the complex arrangements amongst household members around benefits from and liabilities towards household economies, it cannot be assumed that all earnings go to a central household purse.
The great insecurity of incomes make it difficult to assess average or predictable income levels. The reliance of households on non monetary assets of the household economy influences the budgeting behaviour.

(1) "Another important feature of Eberhard's findings is that those households using electricity spent significantly less than those using other energy carriers, with the ratio in one area being R25 to R65. These trends have been born out by the Macroplan (1992) survey in Khayelitsha which found that non -electrified households were spending R127 per month compared with R68 per month spent by electrified households,"(Van Horen et al 1993).
(2) The bid for energy equity in South Africa should also look at how easy affluence eases access to energy - a benefit exclusive to the participants in the formal economy.

Secondly, the household budget cannot be strictly compartmentalised in terms of differentiated 'basic needs'. Where the household budget is too small to cope with household needs, the household budget will consume any assets released by one set of savings for other survival needs. Priorities for household expenditure are differentiated along lines of source and nature of incomes.

Consequently household energy demand cannot be related in a straightforward way to changes in money income. The use of conventional economic models for predictions on energy expenditure are problematic. Generalised surveys of very poor households incomes and proportional energy expenditures may be totally misleading in trying to project continuing or future energy expenditures.

Phil O'Keefe identifies a tendency for households with rising incomes to minimise risk, rather than maximise benefits, as one of the reasons that a model of income elasticity with regard to fuel use does not apply to poor households. Domestic users do not necessarily move up an energy ladder to more sophisticated fuels (1).

I suggest that because of the nature of poor household economies, increases in energy use cannot be predicted upon the elasticities created by greater energy efficiencies or increases in income (2). The use of a less costly fuel (for arguments sake, electricity instead of LPG) will not necessarily mean that the amount previously spent on energy will still be allocated to an energy budget.

Surveys done in Namaqualand (Borchers, 1991) indicate that the proportion of income spent on energy increases for the poorest households, and this could indicate a minimum energy requirement for survival, however my fieldwork shows that households do without required energy services if income falls. (This is substantiated by the work of Annecke, 1992).

In order perhaps to facilitate best choices, households seem to achieve a fluidity of budget - make it laterally elastic - by keeping as may things as possible in flux, not entering into large scale commitments, and sticking to just in time purchases even where these are expensive.

(1) I have quoted O'Keefe on this issue in section 1.2.3., discussing the sustainability of household energy services.

(2) From my fieldwork I get the impression that where the income is inadequate to provide the household services that are regarded as essential, money allocations have to be shifted around to satisfy selected requirements at different times and that minor or typically temporary increases in income cannot easily be related to models of expenditure patterns.

5.2.3.5 EXPENDITURE PATTERNS

In the context of poverty the expenditure demands for basic needs tap income sources as soon as thy become available - cash flows like quicksilver. Expenditure patterns are thus closely related to income patterns.

The pattern of small scale just-in-time, daily expenditures observed in the fieldwork could be informed by income patterns as well as its function of keeping options for expenditure open till the last minute. I speculate that this strategy of keeping as many things as possible in flux may be an inhibition to large scale expenditures.

Household benefits accessed through small scale expenditures prove to be expensive. Bulk buying of fuel is, for instance, more economical than buying it per bottle at the local spaza shop. Households can be barred form access to such benefits through this small scale cash flow pattern.
The satisfaction of different energy requirements, demands various rates, scales and timing of expenditure. There is a need for studies about the fuel allocations to various energy services in order to elucidate the particularities that determine energy expenditure (1).

From the fieldwork I observe the subjective values attached to the benefits gained from specific expenditures rank them as regular or exceptional as well as in a hierarchies of priorities for choices of where to spend available cash (2).

The subjective and hierarchical values attached to different energy services would determine how much effort or what particular component of money income a household would be prepared to spend on any of these. For me questions arise such as: would a household be prepared to allocate regular income, which may be small component of the aggregate household capacity, to for instance lighting?

The insecurity of incomes sets at risk the sustainability of commitments to expenditure. Over both long and short time periods money available for energy expenditure varies. The expenditure on specific household benefits may thus vary as limited cash is allocated to other needs and users have the choice to not use the energy system when things are tight.

(1) For example the energy requirements for heating water are different to those needed for lighting.

(2) The baking of homemade bread for instance, and the subjective values around samp as regular basic need or delicacy.

(Going without heating in the winter is a known choice). This may explain variances in figures given by households for fuel use.

In conclusion expenditure on energy seems to be inflated by so many secondary factors and variable choices that I cannot see a simple relationship between the total energy requirement of a household and the aggregate monetary expenditure on it in practice. In order to detect expenditure patterns it is important to understand in detail the household dynamics, requirements, priorities and likely choices that a household would make.

5.2.3.6 ACCESS AND AFFORDABILITY

Affordability (cost) facilitates access to energy services and other benefits but often it appears that other aspects of the structuring of access-finance are strong determinants. The structuring of required expenditures to match income patterns and budget control strategies is vital for poor households to gain access to benefits - they have to be affordable in both these senses. There seems to be a **cash catch,** barring households from benefits they actually can afford and paradoxically forcing the poorest households to spend more on energy than they should rationally afford.

5.2.4 TRANSITION

Change and Stasis

In view of the contingency of changing user requirements on contextual conditions, research is required to establish what does change and what does not. In the parallel text, under side notes, I give a resume of my view of change and stasis that illustrates the typical experiences, viewpoints and responses to the demands for change that the interview group is confronted with. The decision to go along with change or not, sometimes appear contradictory and ambiguous. It is obvious from this that it is no simple matter to base rational planning on predictions of complex processes of change (1).

Since initiating my investigation on the effects of change on user requirements, I have altered my perceptions of the various processes of change that I had expected to investigate. The world trends in economic growth and urbanisation seem to indicate that informal settlements will become a feature of the future world and that it is no a transitional situation on the way to a 'formal society' as it is known in the economically dominant cultures. The changes and growth in informal settlements are likely to be incremental and contain a collage of elements from the formal and informal economies. This perception of stasis is not reflected in the subjective perceptions of interviewees who expressed their desires for change, betterment and stability. In the mean time they wait and their dictum is 'we do what we can do'.

The changes in energy use patterns of people I interviewed were related to several factors: Firstly there seem to be dynamic fluctuations in energy use patterns that are related to the fluctuating economic capacities of households with insecure and minimal incomes and to intra households social dynamics (as described by Ross 1993 and Cross 1992). These manifest in fuel and appliance switching rather than permanent and progressive improvements in access to improved energy packages.

Secondly, interviewees expressed aspirations for improvement of energy services that can be related to longer term structural change in economic capacity, urban infrastructure and housing. Interviewees associate better energy services with better housing. However the nature and time span of such social transitions are highly uncertain in view of the extent and persistence of national poverty and the depth of poverty for households.

(1) Firstly, the changes that interviewees were confronted with are the daily changing circumstances of survival lifestyle demand adaptability from households, and secondly those of moving from informal, illegal settlement to living legally (sometimes not) on a serviced urban site. They change from exiles to citizens (politically, geographically and materially) and potential participants in the money economy. In view of the fact that poverty cannot be seen as a transitional paradigm, the question to me is how can such changes and empowerments be attained by means other than participating in the money economy. How do households meet the responsibilities of land tenure and service benefits and how does the government cope with the granting of these, where households cannot pay for them.
How do households respond to change - do they hold on to existing habits or integrate change easily into their lifestyles? How easily can they switch from one situation to another and how frequently is this demanded of them? How transitional does a household see itself to be, in terms of progressive development. In view of the hardships of informal settlement, is housing, urban stay and lifestyle seen as temporary? To what degree are people stuck in a status quo they would prefer to change?

There may even be a resistance from households in informal self-built houses to installing better energy services because of their view of the houses as being 'temporary' and inferior *(tyotyombe)* (1). The association of impermanence with informal settlement may be rooted in the history of violent displacements of 'squatter' settlements by both local and national governments. Further the fact that the houses are created out of crises situations arising from migrations, housing shortages and poverty may contribute to this perception.

Paradoxically households are proud of their achievements in providing shelter and benefits to their households. The continued hope of escaping from poverty makes the lifestyle temporary and some interviewees regard their presence in the city as a temporary measure, with a future move to an acceptable lifestyle elsewhere. It is clear that informal settlement often entails a lifestyle of hardship and courage.

In practice informal settlements are not temporary phenomena, but become the status quo in large tracts of city landscape. Incremental improvement of houses and infrastructure seem to be the mode of transition rather than replacement with better housing stock. The now established practice of providing serviced sites for selfhelp settlement underwrites this as a formal approach to development and change.

Some interviewees in the research group seemed not to rate too highly the opportunities for security and permanence of owning the land they live on - instead, economic opportunity or social turmoil would still induce migration. Other interviewees (notably those with more economic security) seize the opportunity to establish a home through incremental improvements. The transitions are from insecure illegal informal squatting to a self-built house on a serviced site. Changes in energy use patterns do seem to occur when users migrate between situations with different infrastructural resources - rural to urban, as well as between urban areas offering access to different services. However fuel switches do not seem to follow a predictable pattern, Opportunity is more important than 'progress', the process is syncretic - a collage of opportunities. At the same time users are seen to stick to some 'traditions' or use-habits (2).

(1) *tyotyombe* - Xhosa word describing a shack with connotations of being 'not perfect' or 'temporary'.

(2) From my fieldwork it did not become clear which use-habits dominate the use of energy services. The switching of fuels and appliances seem more likely than the of changing foodstuff and food preparation procedures. Where I did speak to rural urban migrants it seemed that they link specific practices to location and opportunity and are willing to switch practices with relocation. Some 'traditional' dishes are prepared as specialities where the normal run of 'urban' domestic proceedings do not allow for their regular consumption, for example pot bread, home brewed beer, and even samp.

Lighting
There is no electrical light in the outhouse (toilet and bath). The electrical light at the front door has been broken for the past 2 years.

Laundry
This is done in the outside bathroom where there is cold water on tap

ELECTRICITY
She has had electricity for the past 8 to 10 years (maybe longer, her teenage daughter thought that they had had electricity when she was born.)
There are ceiling lights in each room and one plug per room and two plugs in the kitchen.
A lead is taken out to the extra room in the back yard for her son.
Mrs Keke does not know the pre-pay card system for electricity purchase.

End of interview material

5.3. FINDINGS ON USER REQUIREMENTS

5.3.1 INTRODUCTION

Following are a few definitions to introduce the discussion of energy services and appliances and fuels.

ENERGY SERVICES

Domestic energy services can be defined by their broad functions (for instance heating water) as well as in terms of their particular application (for instance, luke warm water for a baby's bath or large volumes of boiling water for beer brewing). Any one domestic energy service can be obtained through the use of a variety and combination of energy appliances.

USE-HABITS

These energy services are closely linked to **typical use habits** of households. For instance, a use habit such as cooking is characterised by the foodstuff available, the type of dish prepared from it, the time spent on the procedure, who does it, when and where, the accessibility of energy source and appliances, etc.

ENERGY SERVICE PACKAGES

Because it is difficult to separate energy services from the appliances and fuels used to achieve these, I introduce the concept of energy service packages as follows:
Characteristic energy use patterns practised by households are aimed at obtaining specific energy services and are dependent on access to and acquisition of fuels and appliances - each with specific characteristics. The elements of an 'energy service package' encompass all the specific aspects of the energy service, including labour and time components, and qualitative values, as well as fuels and appliances. The concept of an energy service package allows for the inclusion of considerations other than energy technologies in evaluating energy systems.

USER REQUIREMENTS

User requirements reflect the desirability of sustaining established patterns of energy end-use while improving the quality of these, as well as the desire to obtain more extensive energy services and to use of different energy packages.

CONTEXT
Energy use patterns are specific to the informal context in which the households make a living. The context of poverty impacts greatly on energy packages obtained, and requires a different approach to that of the formal economy, in solving the problems of needs fulfilment. Contextual changes that would change the energy use patterns of households could be amongst others, infrastructural and housing upgrades and cash income increases. Further there are the effects of the micro context of household dynamics and informal local support networks on energy use patterns, as described in the work of May (1992), Ross (1993), Annecke (1992) and others. The effect of changes in these contextual dynamics on the household's ability to survive, require that great care be taken in interventions within the energy provision system in order to avoid creating rather than alleviating hardships (1).

5.3.2 ENERGY SERVICES

Introduction
I give only a brief outline of my findings. An energy service (such as for instance water-heating) can be obtained through the use of various fuel and appliance combinations that can be more or less appropriate in meeting the user's requirements for various aspects of the specific task. In this chapter I discuss the energy services obtained by households using currently available fuels and appliances.

The following is a summary list of the energy services most commonly provided in the households interviewed:
A variety of procedures for food cooking
A variety of services in water-heating
Space-heating
Ironing
Lighting
Refrigeration
Media - TV and Hi-fi

In reviewing the interview material I find indicators for the following:
1. A knowledge of the **details** of use habits is required to understand user behaviour around energy services.

(1) See also Chapter 5.2 on survival strategies.
' Fuel use is fundamentally about social relationships and meanings. As something which is used for and by people, fuel becomes a reflection of social relationships and a tool for generating these. No understanding of changing patterns of fuel use can be complete without an idea of the context in which the fuels are used, and how that context is in continual change' (Ross, 1993: 5).

2. Users consider an extended range of contingent factors in making choices when putting together energy services for their households.
3. Energy services can not be separated fro the context of other user needs.

I conclude that in order to provide the facilities to meet the users requirements for a good energy service, all of these factors have to be taken into consideration.

5.3.2.1 REVIEW OF HOUSEHOLD ENERGY SERVICES

I base these descriptions on observed use patterns and expressed requirements. The energy services listed here describe household benefits (for household members) that are accessed through processes in which energy is used.

1. HOT WATER SERVICES
Water is most commonly heated on open flame stoves in various sized aluminium pots, with and without lids.

1.1. Small quantities quickly heated to boiling point for hot beverages. The speed of heating with an electrical kettle is cited as a desirable aspect of this service.
1.2 Large quantities slowly heated to luke warm for body washing.
1.3 Large quantities quickly heated to luke warm for body washing (usually achieved by mixing with cold water)
1.4 Small quantities used to steam - reheat food.

2. IRONING
This domestic service activity is usually undertaken weekly or daily and typically lasts a few hours. Common practice is to heat solid irons on paraffin stoves. Gas is not so often used. The initial heating up time is seen as a constraint where low heat level flames such as a wick burner is used. Users perceive the wick burners to be more economical in fuel use for long low heat procedures, than other flames (gas or pressure stoves).
Intermittent reheating of the iron during the ironing process is sometimes facilitated by alternating two irons on the stove. The soiling of irons with soot deposits from yellow flames is seen as a major drawback in using wick burners. The user action then includes

wiping the iron on a wet cloth before applying it to the clothes. Labour and time requirements increase with certain qualities of flame.

3. LIGHTING
Lighting services include:

3.1 Ambient lighting for moving about, dressing and bathing.
3.2 Light for kitchen work, socialising, reading and school studies.
3.3 Light for personal safety.
3.4 Early morning lighting services, for breakfast and washing and dressing routines.

Most commonly households use candles and paraffin lamps in combination. (These provide only low lighting levels.) Fire hazards are strongly linked to lighting with paraffin lamps and especially candles. Wind leaks in self-built houses become a hazard and inconvenience to candle use. Falling asleep leaving a candle burning is cited as a cause of domestic fires and deaths resulting from these.
Street lighting is welcomed and high-mast lighting also lights backyards not reached by street-front lighting. Household safety is enhanced and journeys to toilets and water taps, which are invariably located outside the house, are facilitated.

4. SPACEHEATING
Most households that did have specialised appliances have paraffin heaters and found them too expensive in fuel consumption to run with the result that many remain unused. Households who report no other use of wood do use wood to fuel home made 'imbawulas' (Xhosa work for a wood-burning brazier for space heating). This is typically made from a twenty litre paraffin tin, perforated on the sides and fitted with a wire handle. Paraffin stoves with home made heat-spreaders are also used as space heaters.

The characteristics of internal spaces of self built houses impact on space heating requirements. Indoor spaces often are not separated by solid partitioning or internal doors, increasing heating demand. Wind leaks combined with damp penetration could also complicate space heating. Floor coverings over sand floors, mostly made up of scraps of carpeting, were found in most homes. These could have a primary function in keeping damp and dust down, and also insulate against heat flow away from the feet. Concrete floors (that have a more obvious effect on conducting heat away from the body than earth floors) were also similarly covered.

Kitchen spaces are not reported as warm spaces inducing people to gather there. However samp cooking procedures where a lot of water is steamed off over a long cooking period, could provide increased humidity and warmth. One of the most efficiently heated internal spaces I encountered was a closed off room in which several persons gathered for some time, while ironing was being done on a paraffin stove.

Most houses were internally clad with cardboard box linings covered with wall paper (ex factory reject runs). Explanations of this practice mentioned it's function as a wind barrier. More research on the effect of internal linings typically used in these houses should inform research on ambient temperature control.

5. COOKING

The relationships between **energy service** requirements for cooking (and refrigeration), the **foodstuffs** used and the **method of preparation** are very important in understanding the energy service requirements for the preparation of various dishes. This project has allowed only a superficial investigation into this.

Limited stove plate accommodation strongly influences cooking procedures. The preparation of even the simplest meals involves the use of more that one pot of food and, where only one stove-plate is available, the reheating of food just before serving it.

Baking scones and bread and heating food in an oven are some of the suppressed energy service demands cited by interviewees.

In order to illustrate the multiple aspects that have to be considered in analyzing an energy service, I describe the **cooking procedures** required for the preparation of a samp dish as reported in the interview material. In the fieldwork, making samp was the most commonly found cooking procedure, and I describe some of the factors that contribute to this.

Samp is seen not only as a basic foodstuff but also as a delicacy prepared specially as such, even by cooks who do not have the time to do it regularly. Samp is eaten at various meal times and even as an in-between snack. Samp or samp and bean mixes are sold in small packagings by supermarkets, spazas and house-shops. It is thus locally readily available for households. It is easily dry stored. Samp can be soaked in advance to

slightly decrease the cooking time. Samp is slowly simmered in water for one and a half to two hours. Water is continually added - requiring constant surveillance.
Interviewees perceived that it is best to cook samp on a paraffin wick burning stove. I speculate that cost and convenience inform this valuation and also refer to Annecke's (1993) observation that women need to be seen to 'be busy' fulfilling their housekeeping roles, extending this as a possible reason for the fact that interviewees engage in long cooking cycles.

6. TV AND HI-FI
This is a highly desired household benefit. Hi-fi's are a priority requirement for shebeens run from houses.

This service is characterised by the high capital cost of appliances and the low energy consumption. I encountered it in homes where the household budget can ostensibly not afford it. This must be seen against the differentiation of household expenditure according to the priorities of the various income earners. (The person who buys a TV set may never buy a stove).

In the research area TV and Hi-fi sets are mostly run off rechargeable car batteries. There is great inconvenience to users in transporting batteries for recharging. There are technological problems around use patterns resulting in battery deterioration. Consumers are not empowered to evaluate the quality of battery recharging services. Viewing and listening procedures are commonly interrupted for recharging operations.

Both out-of-commission and in use TV and Hi-fi sets are perceived as part of lounge furnishings. Dead appliances, or appliances awaiting repair, may have no other place to be stored.

Small radios and wall clocks are operated of dry cell batteries.

7. REFRIGERATION
Interviews reveal that there is a lack of refrigeration services in the communities that were researched. This has an impact on the choice of foodstuffs and regularity of their use. The lack of refrigeration facilities for food storage not only increases the economic and inconvenience burden of small scale food acquisition, but limits the range of foodstuffs

used. Barriers to the use of refrigeration seemed to be the high appliance costs and restrictions of maintenance and repair.

Spaza shops with refrigeration facilities sometimes provide a community service in the informal micro commercial network. They give convenient but costly access to a limited supply of perishables such as meat and milk.

Interviewees running house-shops and shebeens place great value on refrigeration services that will allow them to sell meat packages and cold beers. Other households mentioned storing bulk-buys, meat, milk and ices for children as requirements for refrigeration. Questions around fresh vegetable use revealed that the once a week supply that is common, and the short shelf life of vegetables, limits the use of certain vegetables to one day per week only.

8. LAUNDRY
Households report using cold water only for clothes washing - there was no expressed demand for hot water. (This may be due to the awareness of the prohibitive costs of heating water). Cold water washing powders are positively promoted in the local peripheral urban areas.
One electrified household used a cold water twin tub washing machine. No other washing devices were encountered and washing is done by hand. Drying is done in the open air and is weather dependent.

5.3.2.2 CHANGES IN ENERGY USE PATTERNS

Introduction
I briefly outline some of the micro-scale variables of end-use that determine changes in energy use patterns. All of the elements of energy packages are variables and could inform changes in use patterns. Many of these are non-quantifiable aspects of domestic demand in demand modelling.
Some of the desirable changes centre around improvements to existing services or changes to greater energy consumption and the use of a broader spectrum of energy services.

Immigration

There are indications that rural immigrants to the city switch fuel and appliances (wood to paraffin) to prepare the dishes familiar to both locations (like samp). The limited information from my field work does not allow me to conclude that there are fixed use habits in the research group or trends in fuel and appliances switching. However where I did speak to rural-urban migrants it seemed that they link specific energy practices to location and opportunity and are willing to switch practices with relocation.

The preparation of samp is a good example where urban domestic time constraints prohibits the time consuming preparation of samp and in some instances inhibit the every day use of this foodstuff (where rice or bread is seen as affordable it is used instead). Some 'traditional' dishes are prepared as 'specialities', where the normal run of urban domestic proceedings do not allow for their regular consumption (potbread for instance). Such trends need to be further investigated in order to understand changes in energy use patterns in the context of migration.

Contextual Change

I have previously outlined the contextual circumstance that impact on energy use patterns of households. Realistic projections for changes in urban infrastructure and for income increases and poverty alleviation are required before changes in energy use patterns can be predicted upon these.

User choices that influence domestic energy services

It is my opinion that users ideally make 'best choices' in considering the multitude of factors constituting energy service packages. Users may for instance choose to prioritise any of these factors over fuel or appliance cost or efficiency. In making choices users consider factors that may appear to be external to the 'energy service', for instance household living below Minimum Living Level, could by preference be allocate cash expenditures to other basic needs and not to measures that would lead to greater energy efficiency. When using expensive paraffin in small quantities users may be choosing the only or best option available to meet their specific requirements. The lowest cost rationale does not necessarily predict choice.

Survival strategies

There is need for adaptability in the use of household resources. In this context of poverty where adjustments in domestic procedures are continually employed to ensure survival, a wide range of available energy packages could ease such adaptations. The survival of the very poor household seems to pivot around the ability of the household manager to manipulate, adapt, extend and curtail different elements of household services (Annecke 1992 affirms this observation).

Julian May (1992) warns against the assumption that the equilibrium attained by way of various inputs into an energy service package, indicates a level of user satisfaction. He warns against the hardship of insufficiency, resulting from change or intervention, that a household may incur in trying to juggle too few resources that are actually inadequate to meet their basic needs (1).

5.3.2.3 BASIC ENERGY SERVICES AND ENERGY EQUITY

I assume that poor households and especially those living below the MLL always require more and better energy services than what they obtain. A realistic perspective on this should be attained through careful research into and consideration of user requirements, seeking out both expressed and suppressed demand.

Qualitative characteristics of basic energy service packages, pertaining to health, convenience, time and labour demands, could inform the provision of basic energy resources to poor households.

In reviewing my research on those energy services commonly found, I conclude that access to the media, such as radio and television, should be considered as a basic energy service. In practice it seems that the split in household budget expenditures along the lines of the divergent interests of income earners reinforces this trend. This is a shift away from the view that 'basic needs' definitions pertain to issues of physical survival only and can be based on the combined household income earning capacity.

The definition of a 'basic energy requirement' is problematic; The evaluation of the appropriateness of any energy service packages should in my opinion be the prerogative of the users not suppliers. In order to allow users to define this for themselves the actual energy services that users do obtain for themselves and the choices they do make, should be reflected in the definitions of a basic energy need.

(1) "It is commonly accepted in many micro studies on energy, either implicitly or explicitly, that the survival strategies that are adopted by rural women in meeting their energy requirements ultimately lead to some form of low level equilibrium. This refers to the position in which constrained time budgets, finances, labour , physical resources and environmental resources are combined to produce a stable , if minimal, level of need satisfaction... Disequilibrium means that no sustainable balance occurs and as a result, on or all the factors necessary for energy attainment then deteriorate.

An even more controversial assumption implicit in this approach relates to change. As socio-economic change occurs, in terms of prices, availability, household labour supply, resources and life cycle, women are believed to be able to adapt their time budgets and resource usage so as to move to some new equilibrium (Wismer, 1987;25). This leads to recommendations for action which actually increase the role that is expected of women, ... In order to avoid an uncritical acceptance of this standpoint, the study emphasises the precarious nature of survival strategies in Ingwavume district in Kwazulu" (May et al, 1992).

5.3.3 APPLIANCES AND FUELS

INTRODUCTION

Prominent issues
In this subsection I briefly discuss a few issues that were prominent in my fieldwork; the appropriateness of appliance features to user requirements; the link between energy service and choice of appliance and fuel combinations; the barriers users encounter in accessing appropriate energy systems; the problem of dead appliances and the maintenance and fixing of appliances. Many of these issues are appropriately illustrated by a description of the use of paraffin stoves by household that I interviewed. I review only briefly the other appliance and fuel combinations encountered in the field work and give a resume off the perceptions of interviewees to access to electricity

Research goals - fuel-use or energy service
Research into end-use is often based on fuel use analysis - an approach that fits well with the interests of planning for fuel supply and energy resource networks. It is my contention that fuel and energy source analysis constitute one element in the field of energy end-use planning and that prioritising it gives a particular slant to research finding and planning actions. I feel that the emphasis should shift closer to the experience of the user by investigating the actual energy services required in end-use and the appliances used to obtain these.

Choice and Broadening options
Researchers seeking to understand end- use behaviour cannot ignore the process of choice, which in this research context is characterised by user requirements for needs fulfilment on various fronts simultaneously. Planners who wish to facilitate the fulfilment of user requirements for energy end-use applications, could broaden the options given to energy users and need to remove barriers to preventing users from accessing the fuels and appliances of their choice.

The content of energy packages that households obtain results partly from their choice to fulfil certain needs and party by the inevitable acceptance of options that are available and accessible to them. These two aspect seem to be continually played off against each other when users make energy choices - they say ' we do what we can do' It is my opinion that

energy packages become more appropriate to meeting user requirements as the degree of choice increases, if users determine what they can get.

5.3.3.1 PARAFFIN STOVES

Most households in the research group use paraffin stoves, either solely, in conjunction with other fuels, or have a paraffin stove stored and ready for 'emergency use'. In the poorest and most peripheralised of these households, the paraffin stove was the only domestic energy appliance in the household possession, providing all heating services for food, water, ironing, and space heating.
Two types, the wick- and pressure-stoves are widely used in the researched group. Most households used single plate models.

5.3.3.1a Acquisition
There are various trade makes on the market available from closely situated formal urban areas. Some very poor users perceive the cost of paraffin stoves as prohibitive of fulfilling their real needs for replacements or the use of more than one stove. On the other hand, the low cost of paraffin stoves, relative to other cooking appliances, seemed to fit the expenditure patterns of poor households.

5.3.3.1b Life cycles, maintenance and fixing
Stoves seem to be used until they have deteriorated to a point of complete disfunction. Stove life was reported to vary from 6 months to a year or at most 2 years. My observation was that there was a variable of the intensity of use that correlated with life-cycle. I observed stoves in use with serious flame leaks. Users can buy spare parts for various components of the stove and replace valves and needles on pressure stoves, and flames spreaders and pot supports of most stoves. Major repairs are not seen as viable and users either replace broken stoves or 'do without'. There is an obvious need for more durable designs.

5.3.3.1c Stove use and stove characteristics
Various thermal energy services require different rates of heat release as well as other stove performance characteristics. In general, low heat is obtained from wick stoves and intense high heat release from pressure stoves. Some households obtain all energy services using paraffin stoves. Generally the stoves are used for food preparation, water heating and heating of solid irons, in some cases the stove is used as a space heater with a home-

made perforated sheet-metal heat spreader placed on top of the pot holder. In some households the paraffin stoves seem to be in use all day long, in a succession of energy service tasks.

In some of the informal self-made houses a separate kitchen space was available for stove use and in others not; in some cases one space is used for all domestic activities. For cooking most households have a table or level surface to use the stove on, but I saw stoves used at floor level for water-heating and ironing. During windy weather conditions, stoves that are used inside houses that are not windproof are prone to loosing flame and heat or igniting adjacent combustibles.

The pressure stoves are noisy to work with. The sense of danger that users experience while using pressure stoves was evident in their panic reactions at every change in flame tone and stove noise. One interviewee described two types of flame-spreaders by calling the one 'silence' and the other 'raaskop' (noisy head).
Different models and makes of stoves are more or less standing-stable. The standing stability of stoves is vital for balancing oversized pots on the stove plate. Stoves become hot during use and cannot be touched to move them. (Stoves that fall over while they are lit could be very dangerous)

5.3.3.1d Fuelling paraffin burners

Users perceive wick burners to be more economical in fuel use for long low heat processes than the pressure stoves. Users sometimes refuel hot stoves halfway through procedures. This may result from limited fuel tank size or user's fuel acquisition patterns. Fuel acquisition is closely controlled and fuel acquisition so directly linked to consumption that sometimes a household members would be sent out to buy fuel to complete a cooking procedure.

Fuel stocks for stoves seem to be kept separate from fuels for lamps in some households. (I suspect that this practice is dependent on practical assessments of fuel quantities used for cooking.) There is an easy relationship between observable quantities of liquid fuels and energy services obtained from these. External factors also seem to impact on fuel acquisition patterns. I suspect that, because of household budget requirements for small sale ad hoc expenditures, fuel is bought in small quantities and frequent intervals. This is dependent on the support network of conveniently located spaza shops that trade 'after hours'. The time of day when these purchases are made, I suspect, depends on a pattern

of buying fuel close to the time of use as well as the fact that daily earned incomes may only be available after the working day is over.

Small quantities of fuels are bought in self supplied containers. (The danger and consequences of poisoning from paraffin swallowed from cool-drink bottles has been well research)(Ross,1993). Where household expenditure patterns allow for it, some users choose to buy larger quantities of paraffin at a time (5 litre, 10 litre, or 25 litre purchases are noted) I speculate that the link between cash expenditure patterns and fuel acquisition patterns may inform choices of fuel types and temporary fuel switches. (If the electricity bill or gas bottle refill cannot be paid, at least a small amount of paraffin can immediately be afforded).

5.3.3.2 OTHER APPLIANCES AND FUELS

Other paraffin appliances:
I did not encounter any paraffin refrigerators in the field work and the few paraffin space-heaters I did encounter, were reported by users to be too uneconomical and expensive in fuel consumption. These heaters were retained unused.

Wood:.
Wood-fuel seems to be reserved for use in cooking on special occasions- such as an open 'braai' for the preparation of food on a large scale in big pots for social gatherings and also for beer brewing in large vessels or the preparation of 'sheep's head'. Large cooking vessels are not easily accommodated on commercially available domestic energy appliances.

LPG:
I encountered the use of 9kg and 14kg gas bottles to fuel gas stoves. This was not a very common fuel/appliance combination. Users appreciated the cleanness and speed of cooking on gas. Re-filling gas bottles in informal areas, where transport is difficult, was a barrier to gas use. Few gas lamps were encountered.

Paraffin lamps and candles
These lighting sources were often used in combination.

Rechargeable batteries and Hi-Fi and TV sets
Many households enjoyed these energy benefits. The batteries are expensive and recharging procedures very problematic and costly.

Generators:
Only two interviewees used a generator to provide energy services to home businesses.

Refrigeration:
Interviewees expressed the need for refrigeration but for most it was not affordable, not suited to their lifestyles and some preferred not to have an open flame appliance (in the absence of electricity).

5.3.3.3 APPLIANCE ACQUISITION AND MAINTENANCE

The relationship between expenditure patterns and the acquisition of appliances acquisition drew my attention to cash flow and affordability barriers to access capital intensive appliances for poor families. This was relevant for stoves and fridges using various kinds of fuels.

White goods, such as fridges and oven /stove combinations, as well as TV and Hi-fi sets feature commonly amongst 'dead' appliances. The lack of access for households to suitable transport facilities may also contribute to this repairs impasse.

I encountered 'dead appliance' that were kept in the possession of households for long periods. These were out of commission, in need of minor maintenance or major repairs that could not be met by users. Maintenance and repair systems from of the formal economy seemed to me totally inappropriate to the informal settlement context. There is an absence of service infrastructure as well as a lack of money and expertise in the local community. Users would try to save up or wait for long periods for opportune income to finance repairs. In practice there seemed to be some reliance on local skills accessed through kinship ties, despite problems of a lack of technical expertise. Users are faced with the problems of tapping into a white-goods supply system that is geared to serve existing elite markets of the formal economy. There is no realistic economic relationship between makers of appliances and poor appliance users.

5.3.3.4 ACCESS

Access to both appliances and fuels seem problematic for poor households in informal areas. I explore the complex links between access and affordability in chapter 5.2.3.5 and recap here that the high cost of appliances and fuels are not the only determinants of affordability but that the patterns of expenditure play a major role in determining accessibility. Other studies (Borchers et al,1991) indicate that poor households pay high prices for fuels. This trend is confirmed by the paraffin network observed in my fieldwork where users pay high prices for access opportunities that fit the dynamics of their household economies.

I interpret the subjective remarks of interviewees about coping with fuel and appliance problems as indicating that they feel themselves disempowered and up against difficult problems in trying to provide energy services in their households.

Supply systems are not structured to trade or exchange in any equitable way the assets that poor households do have for energy benefits. Studies (Annecke 1992, Feshakari 1991) of labour and time inputs by women to obtain cooking services from wood-fuel emphasise the exorbitant costs, dangers of poisoning and fire, inconveniences of inappropriate appliance functioning, disruptions and inadequacies experienced by these users.

Access to improved energy benefits is usually foreseen through increased and regulated cash expenditures - hence the link between the idea of moving up an 'energy ladder' and income increases (refer to chapter section 1.2.3). It is my opinion that the negative scenarios foreseen for alleviation of poverty through employment or other cash income increases are too negative to allow planners and users to pin the only hopes for access to better energy services to cash income increases.

Within the context of overstretched household economies and volatile household dynamics, users seem to require adaptability in switching from one route of access to energy services to another and in choosing from day to day to curb or extend energy expenditures. Better energy services could be accessed if greater flexibility is offered in the size and periodicity of payment for energy services and if a range of options are available in quantities of fuel and appliance models, and if energy benefits are tradable just in time for consumption.

State subsidisation of energy service costs to poor household seems to be unavoidable where households cannot pay the costs of their energy requirements.

5.3.3.5 ELECTRICITY

Historically, households in informal settlements had no access to electricity. Some interviewees found the idea of electrifying a temporary house strange, but others were keen to obtain access, (even at the cost of moving to an area that is electrified). The conversations about electricity were invariably hypothetical. Most interviewees said that electricity would be their preferred energy source. They were, however, quick to mention the barriers of access to appliances. The spectre of budget crises associated with credit non-payments made interviewees wary of expressing a desire to have electricity. Once the pre-pay system had been explained, many interviewees said that would be their preferred method of payment. Interviewees had little idea of what energy services they would obtain from different categories of supply, or which they could afford (cooking, water-heating or lighting).

It is my opinion that as consumers, households should be well informed of the implications of the pre-pay, cost recovery system - it's sustainability and the responsibility that supply companies take in terms of immediate installation, future local infrastructural upgrades and maintenance(1).

(1) Presently the electricity supply system for this user group relies on access through consumption payments that include infrastructural cost (S1 tariffs). While consumption per household is low, conservative energy use is in direct conflict with financing mechanisms of the supply authority, which require relatively high electricity use to cover initial infrastructural costs. The household has an interest in both low consumption levels as well as energy efficiencies of appliances and the sustainability of supply networks, **but not at the cost of access** - maybe it is appropriate to restructure access for this user group through cross subsidisation rather than cost recovery based on a minimum level of consumption.

5.4. CONCLUSIVE COMMENTS

5.4.1 RESUME OF MAIN USER REQUIREMENTS

The following is a summary overview of the most salient user requirements:

1. Currently many poor energy end-users do not have adequate energy services, often not even basic energy needs services. Their foremost requirement is to obtain these. The services required are specific to the user group and energy services packages for households in informal settlements should be informed by an understanding of practices observed in these households.

2. The range of choices for appropriate and available appliances and fuels, needs to be extended.

3. Households should have a say in determining which and what type and quality of energy services are made available to them. A consumer representative body could lobby their cause.

4. Households need to be informed about the technical aspects of appliances, fuels and energy systems. They need to be informed about financing access and be able to lobby for services infrastructure for their settlements.

5. Households need to gain access to existing energy systems, fuels and appliances more easily than at present. Access barriers of affordability, inappropriate financing structures and lack of local infrastructure need to be removed.

6. There is a need for improved facilities for the maintenance of and control over energy service systems that contribute to their sustianability. (Appliance use is impaired by inappropriate maintenance facilities).

7. Constraints, hazards and hardships characteristic of energy practices currently used need to be eliminated. 'Improved quality of life' requirements, defined in response to known hardships experienced by energy end-users in the group under review, should be met by lessening health hazards, use inconveniences, financing access restrictions, labour and time spent on obtaining or processing energy. Existing energy 'packages' could be optimised in order to obtain greater efficiencies in fuel, time, and labour inputs.

8. Households would like to use more sophisticated energy services, using more energy units per household (for instance providing for more and varied cooking procedures, quality of lighting, refrigeration).

5.4.2 GENERAL COMMENTS ON THE FINDINGS

1. User requirements for appliances and fuels are **specific** to the context in which the households reside. The context of **poverty** impacts greatly on differentiating user requirements from those of users in the formal economy and requires a radically different approach to problem solving and needs fulfilment.
In view of the of crisis dimensions of the existing end-use context and the need to rectify that, it is sometimes difficult to uncover other aspirations of users.

2. The complexities of household dynamics require that detailed and specific information be used in planning energy services. The details of components of energy service packages should be known in order to understand the variables in changing energy use patterns.

3. The social, commercial and urban services **infrastructures** in informal settlements currently define opportunities for access to appliances and fuels. The reasons why the requirements of energy users in the informal sector are not adequately met by existing supply systems are multiple, the first being that of access: The lack of public and commercial distribution systems is an obvious reason for inadequate energy services in

informal settlements. The fact that these households do not participate successfully in the money economy makes affordability and the lack of appropriate financing structures the most prominent barriers to access. Equity in access to energy resources at a national level is not likely to be achieved if access is determined only by ' affordability', cost recovery, or participation in the cash economy.

4. The specific **survival strategies** that poor households employ are often linked to micro networks for energy access and use, so that household survival is linked to very specific energy and appliance use patterns.

5. These commonly found energy use patterns, practised by households, are geared to obtaining specific **energy services** and are dependent on access to, and acquisition of, appliances, facilities for their maintenance and fixing, and the specific characteristics of fuels and appliances in use.

6. Informal society **evolves it's own dynamics,** aimed at accessing services and benefits. The 'informal networks' and survival strategies employed by the urban poor indicate a dynamic system for urban survival in conditions of poverty, a system which is essentially different to that of the formal economy. Although this diminishes to some degree the dependence of these users on the unsupportive formal sectors of the city, these local systems are very vulnerable to outside interventions. Poor end-users depend on structures from both the formal and informal economies and energy provision for these users should be done within a framework that can facilitate the precarious juxtaposition of formal and informal energy systems.

7. All of these above factors are variables that could inform future changes of use patterns for these households.
Changing energy use patterns are determined by short term dynamic fluctuations of survival strategies, Matching the characteristics of specific energy packages to changing immediate needs is more likely to result in **'random' switching** than a progressive transition to more and more 'efficient' fuels. Users make best choices to use or switch to energy packages that simultaneously meet various requirements of which energy service is but one. Technological refinements to energy services alone will not fulfil the requirements of users for whom other social, cultural and economic factors are more important. The fulfilment of user aspirations are often dependent on qualitative changes in energy packages.

8. Although informal settlement and it's contingent lifestyles appear to be less of a 'transitional' and a more permanent in the long term user requirements for change in energy use patterns could demand improvement of existing services, shifts to more consumption and the use of a broader spectrum of energy services. This could be achieved by structural changes in service provision to settlements or in the income structures of households.

9. User requirements could be met more appropriately by integrated approaches to needs assessment, fulfilment and financing. The basic needs of users range over a broad spectrum of services currently split amongst supply systems for various services to the household. This would require interdisciplinary work in needs assessment and development planning. The split of housing, service provision and energy provision need to be reviewed in terms of the related requirements of the various domestic services, the service infrastructures to housing and thermal performance of houses and. For instance, water supply systems determine the energy options for water heating. Currently both water provision and energy provision to households make great demands on household labour resources.
These could conveniently be financed as single subsidy packages.
Social support for the survival of the household could focus on self-help rather than on welfare in order to promote issues of sustainability and ownership of service structures.

10. The reason that the specific requirements of energy users in the informal sector are not met by existing supply systems, is that these supply systems are often inappropriate to this user group. Products are suited to supply driven development or have evolved to suit the specific requirements of a different user group. The relationship between users in poor informal urban households and the existing energy and appliance supply systems is one of great alienation.

11. There is a pervasive influence of contextual pre-conditions of poverty and instability on all aspects of user requirements. This situation and the actual needs of appliance users is not described by models of progressive or linear development, and planning based on the latter may be inappropriate to user requirements. Good appliance design requires an understanding of the context of use in these informal settlements.

12. The understanding of **the particularities of energy service use** of poor households can be deepened by relating these to their household economies. In particular **access** to energy services is subject to the characteristics of household budgets and the context of the informal economy. the structuring of required expenditures to match income and budget control patterns is vital. For poor households to gain access to benefits they have to be affordable in both these senses.

13. I broadly conclude that appropriate energy systems will have to be characterised by must be known adaptability and diversity as well as sensitive responses to the micro networks of urban subsistence household economies.

This dissertation has sought to illustrate energy end-use requirements seen from the user's viewpoint and hopefully has resulted in an improved understanding of household energy services, and can influence the design and implementation of energy packages which are in informal settlements.

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APPENDICES

MAP OF SETTLEMENTS.
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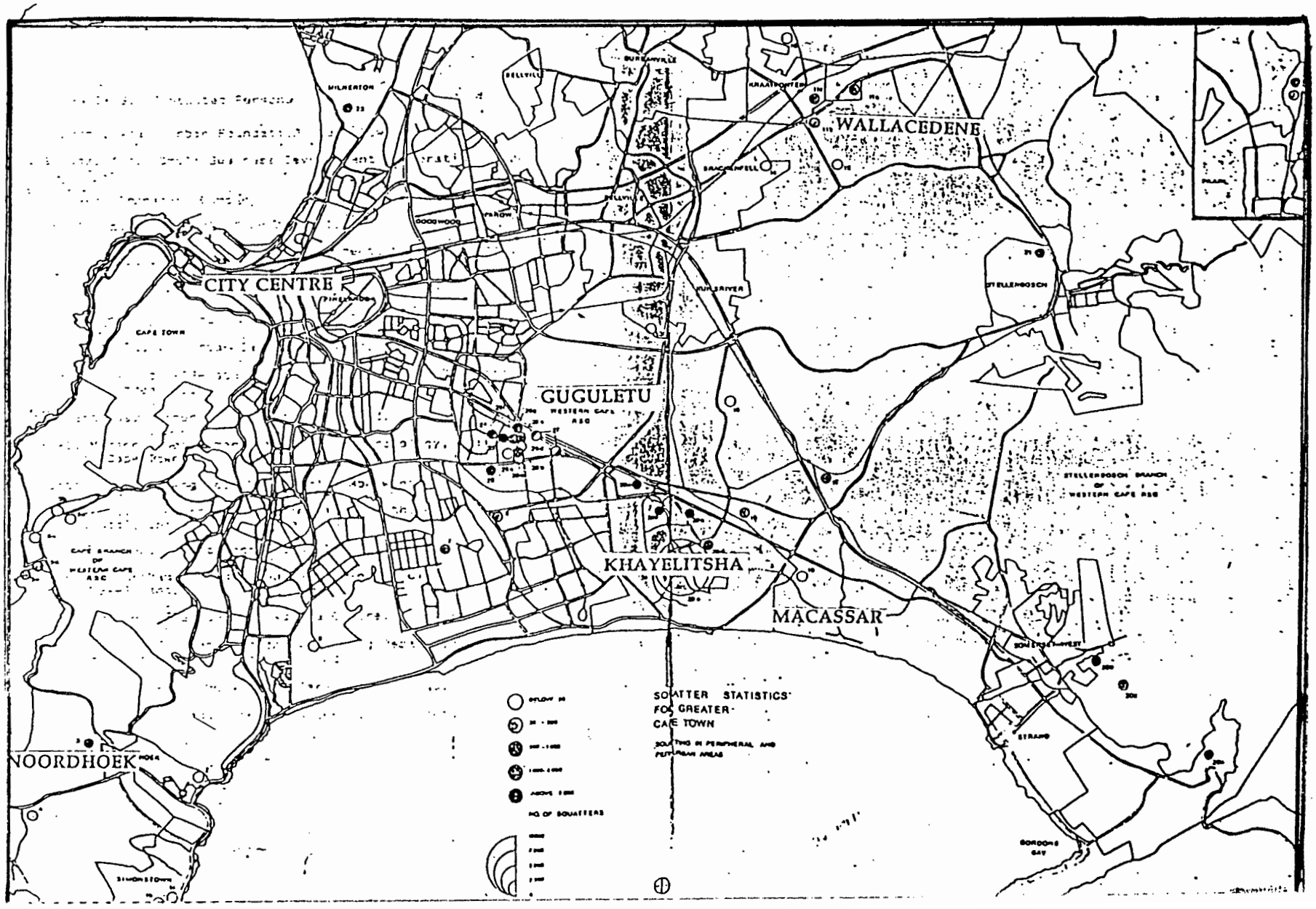
APPENDICES

MAP OF SETTLEMENTS.



GLOSSARY

amandla. Power, energy, also the position of power with the ability or initiative to act.

amarhewu. A sour tasting beverage made of maize flour.

braai. Barbecue.

bisto. An accompanying sauce for other dishes, usually with tomato as an ingredient.

Flame. A local term used for a wick burning single plate paraffin stove.

imbawula. A home-made, wood burning brazier used for space heating.

imbizo. A participatory community decision making forum, also used for discussions concerning household issues.

indlu. Simply the word for house, used for a brick house.

ihokkie. A shack, not a proper house (from the Afrikaans 'hokkie' for a small cage).

makoti. The name for a newly wedded wife, until the birth of the first or second child.

mphokoqo. A maize meal dish, with a crumbly texture.

mealies. Maize cob. **stampmielies.** coarsely ground maize known as 'samp'.

nkcencke. A sheet metal plate used with a paraffin stove to make a space-heater.

ntombomela. Sorghum flour used for beer brewing. The word is used as a brand name.

Primus. Generic use of the brand name of a paraffine pressure stove.

samp. Dish made of crushed maize.

shebeen. Home based beer hall.

Sileni. A local term used for a wick burning paraffin stove.

sihroxo. A local term for a small shop that sells paraffin, bread, soap, sugar etc.

smkolo. A local term for a shop that sells only beer.

spaza. A very small shop or kiosk selling food and fuel at all hours. These are spread throughout the urban fabric of informal settlements.

tyotyombe. The word for a house clad with sinc or wood boarding, it means 'not perfect' or 'temporary'.

umqombhothi. Home brewed beer.

umvubu. A dish, made of sourmilk with mphokoqo also known as 'African Salad'.

umgalelo. A community banking system.

umngqusho. A samp dish, usually served with beans and vegetables.

ACRONYMS

CAP Community Arts Project.

CPA Cape Provincial Administration.

DAG Development Action Group.

Eskom (The major South African electricity generation and distribution company).

SPP The Surplus Peoples Project.

UPRU Urban problems Research unit, based at the University of Cape Town.

WCUSA Western Cape United Squatters Association.