The contours of domesticity, energy consumption and poverty: The social determinants of energy use in low-income urban households in Cape Town's townships (1995-1997)

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Until recently, the transitional model has been a cornerstone of energy policy in South Africa, especially relating to the understanding of household energy issues. Along with education and urbanisation, the model states that income is the key variable that determines the type of fuels used by householders. Decisions about what type of fuels to be used are determined by whether or not a householder affords such fuel or appliance. The model states that multiple fuel use, which is the use of more than one fuel at the same time, is only a temporal phase in the process of transition from 'traditional' to 'modern' fuels (electricity). Implicit in this view is that providing households with electricity is a sine qua non of modernisation and addressing of the highly skewed energy services of low-income households in particular. The logic is that access to electricity would then result in the decrease in the use (and ultimately phasing out) of 'traditional' (wood) and 'transitional' fuels (gas, kerosene, batteries). The transitional model works on the premise that it is every householder's wish to be connected to electricity. However, being connected to electricity does not automatically ensure that householders are able to use it to the optimum. There is more to it than the above oversimplified notion of household energy-use patterns.

The transitional model has come under severe criticisms in the late 1980s and early 1990s because of its oversimplification, naiveté and ethnocentric approach to low-income households' energy-use patterns. The recent contribution of scholars from the Social Sciences in the energy debate, in particular, has brought to the fore the limitations of the model in explaining the energy-patterns of the majority of South Africans who are incidentally poor. Yet, it appears that thinking around transitional model is still prevalent in the current energy policies, despite the obvious limitations. An obvious example is the current electrification drive that aims to 'bring light' to all South Africans. Despite its noble intention of improving people's lives, the current drive ignores many problems regarding the use of electricity, and downplays the significant roles that 'traditional' and 'transitional' fuels *still* play in many low-income households. At present, electricity utilities recognise that transition to electricity is fraught with problems. The problems result from relative ignorance in policy circles about multiple fuel use — in low-income households is wanting.

This project developed out of a need to seek this holistic knowledge about the energy-use patterns from the householders' perspectives. The project shows that fuel use should not be understood in isolation from wider political economy and socio-cultural contexts. A range of factors, not only economic, determines how people use energy. Fuel expenditure and appliance acquisition may not be solely determined by 'cost and affordability' considerations – a popular rationale used by classical economists – but by a combination of factors such as the gender of the purchaser, socialisation, cultural ideology and many other non-economic factors. A study of energy-use patterns in low-income households is essentially a study of a social process – of the interaction between social actors (people) and their fuels over a time. This interaction is dynamic and changing in response to different contexts. It is these contexts that should be analysed as they underpin the very choices that people make regarding the most appropriate fuels for their domestic consumption.

This report is a product of three years of research on the patterns of energy-use in low-income households near Cape Town. Fieldwork started in May 1995 in the formal and informal households in Khayelitsha and in the backyard shacks in Langa, and informal unplanned households (Joe Slovo squatter camp) near Langa.

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#### Introduction

This report is a product of three years of research on the patterns of energy-use in low-income households near Cape Town. In terms of scope (geographical locations and energy issues) and length of research, this project is arguably the first of its kind to be instituted in South Africa's urban centres. Fieldwork started in May 1995 in the formal and informal households in Khayelitsha and in the backyard shacks in Langa, and informal unplanned households (Joe Slovo squatter camp) near Langa. This longitudinal research project has a time span of three years, from May 1995 to April 1998, including the writing phase. During this period, it has produced various outputs about some components of the project, including preliminary findings based on fieldwork undertaken in 1995 and a published paper on the relationship between energy and nutrition in low-income households. This project is one of four sponsored by the Department of Minerals and Energy known as The Social Determinants of Energy Use in Low-income Urban Households. Research with similar focus is being done in townships around Durban, East London and Johannesburg.

As the democratic South Africa has been firmly put in place, the main task of the new government in the second half of the 1990s is one of delivery of basic services. The emphasis, therefore, has been on redressing past imbalances and inequities concerning service provision. It is equally important that delivery of equitable energy services should be preceded by quality research in order to ensure that policies are relevant to target communities. There is an urgent need that research should inform as well as evaluate current energy policies. One way of doing this is for research methods and techniques to be constantly reviewed; and there should be a holistic approach to household energy problems. This study, and those that preceded it, argues that fuel use, especially in low-income households, should not be understood in isolation from the wider political-economy and socio-cultural context. A range of factors, not only economic ones, determines how people use energy. Fuel expenditure and appliance acquisition may not be solely determined by whether or not a household can afford them; they may be determined by factors such as the gender of the purchaser, socialisation, ideology and many other 'non-economic' explanations. It is these factors that should be analysed, as they underpin choices that people make regarding the most appropriate fuels for their domestic consumption. Such an approach allows for a rounded, holistic view of the interaction between people and the fuels they use over a period of time, since it takes into account both the socio-cultural and economic notions that influence domestic energy use.

The broad goal of this project is to extend knowledge of factors influencing domestic energy use at a household and community level, by investigating the context in which energy-related decisions and activities are carried out over time.

#### Methodology

The importance of research in policy making or any development intervention cannot be overstated. Methods used to collect data are as important as the research findings. In the field of household energy, methods of data gathering are given secondary importance. Yet, as has long been recognised by anthropologists, the type and quality of information or data collected in primary research is determined to a large extent by the methodology used by a researcher. Although this study employed a multi-disciplinary approach in collecting and analysing data, it focused on anthropological participant observation for a number of reasons. One reason is the limitations of data obtained through conventional quantitative methods. It is increasingly clear that qualitative data obtained through participant observation methods yield new insights to energy research.

Participant observation, in-depth interviews and workshops were key methods used to generate data in this project. Also, conventional quantitative forms of generating data such as survey methods were used only for research components that could be analysed statistically.

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#### Capacity building and workshops

Building the capacity of the researchers has been a cornerstone of this project. In this way, the researchers would be able to pass on their knowledge of energy-related matters to the households and communities they are researching. An operating principle of action-orientated research is to feed back results of the research and – where research is policy orientated – to promote the implementation of policies that will benefit participants. The aim of feeding back research results was to provide informants and civic organisations in the research areas with the results of the research in order to stimulate debate around household energy matters. Secondly, it is to promote constructive interaction between them and to promote the implementation of beneficial policies. Information dissemination and building capacity at the household level was achieved through discussing research results with residents in the sampled communities, facilitating workshops in research areas with members of households and community organisations and initiating interaction among all stakeholders – households, community organisation and energy providers.

The workshops had the following objectives:

- i. An interactive way of bringing large groups of end-users together to discuss the energy problems they experience, and to find solutions.
- ii. To increase awareness among end-users about the efficient use of energy. The main aim is to empower end-users to make informed decisions regarding their energy use and appliance purchases, and to promote efficient, safe and cost effective use of energy.
- iii. To augment and reflect on research findings in these areas.
- iv. To initiate future interactions between communities, policy-makers and service providers.

#### Household management and decision-making

The energy budget is located within the household's budgetary constraints, which are related in part to households' incomes. The low-incomes of the sampled households demand that households prioritise their spending well and this has implications for appliance purchases, which are important determinants of fuel use at household level. Women who have no independent source of income or access to other resources play a limited role in budgeting and decision-making in their households. Because these are social processes, there are variations and contradictions between households. For instance, in some households women even though they do not have access to income, are able to assert themselves or their needs when this is necessary for the household's livelihood or their own security. Other mediating factors include, 'contracts' between spouses, and people's general perceptions and attitudes. What becomes apparent is that the subjective experiences of women in these households are not homogenous.

The gender and age of household members play an important role in the management of households and decision-making processes. Children also contribute to the household's labour and decision-making, for instance, they play an important role in facilitating appliance purchases. Because households are made up of individuals with certain rights, responsibilities and obligations, adults often feel obliged to accommodate their children's needs. Where incomes permit households that have children or households that are occupied by young adults tend to have a variety of appliances than households that are occupied by elderly people alone. Children also play a central role in the sharing of appliances, mainly, the television sets. The availability of children's labour may free adults to concentrate on the income-generating activities. This means that through their labour children may be contributing indirectly to household economy. Some children join the labour force, and thus become actively involved in generating income, which they contribute to their homes.

Power relations found within households, expressed in terms of gender or seniority depending on the household composition, shape this allocation of responsibilities. The division of labour within the sampled households differed from one household to the other depending on the power relations as well as on the stability of the household members. In some households, as members moved in and out, the allocation of tasks also shifted in order to accommodate the movements. The movement of household members in and out of a particular household also affected the household organisation.

#### Appliance acquisition

Ownership and use of appliances by households has often been, and continues to be, explained according to the income levels of households. Simply put, such a view argues that as household incomes increase or decrease, so does their investment in, or accumulation of, appliances. In electrified households with low disposable incomes, people do not invest in so-called 'sophisticated' electrical appliances and, as a result, resort to cheap and readily available appliances, such as wood and paraffin appliances. According to this view, ownership of 'modern' appliances is perceived by proponents of the transitional model as the ultimate goal that each household sets itself. Accumulating electrical appliances is one of the signifiers that households have reached a particular stage of 'development'.

We argue that while income and gender are indeed significant factors in the purchase of appliances, it is when these explanations are universally perceived as the *only* determinants of energy use that problems arise. We should also consider other equally important factors that may not be strictly economic or gender-defined. One of the ways of exploring appliance acquisition is to locate people's decisions about what appliances to buy within specific contexts. We also reiterate that economic decisions about appliance purchase should be seen within the wider socio-cultural and political contexts. However important income and gender are, there are other factors. There are multiple factors that simultaneously influence what appliance is bought or used.

#### The multiple fuel use

The notion of multiple fuel use describes the use of a number of fuels for one or more household applications, such as using a combination of gas and paraffin or electricity for cooking. The conventional wisdom is that multiple fuel use is symptomatic of households with low disposal incomes. Multiple fuel use is meant to be a temporary stage in the process of 'modernisation', as household energy use changes from the so-called 'traditional' biomass fuels to 'modern' energy sources. Along with other modernisation indices of income and education, full transition to electricity (that is, access to and use of electricity) is the yardstick to measure a household's 'development' status. We argue that provision of electricity, while it is a good thing, its usefulness should not be overstated. Electricity does bring light to many households, and potentially provides improved living standards of many individuals and households.

There is a need to understand better the fuel-use patterns in low-income households by exploring economic and social factors contributing to multiple fuel use. Household income is arguably the major determinant of fuel use, other factors – the availability of energy sources, individual preferences and socio-cultural factors – also play important roles in domestic energy use. Householders need to know that electricity is *not* necessarily the best energy source for every domestic application; it has advantages as well as disadvantages.

Generally, there is a strong correlation between variables such as income, household size and energy expenditure. Income alone, however, cannot explain the less expenditure on fuels in Langa backyard households.

A general observation is that as householders continue to have access to different fuels, they do not forsake one fuel for another. Instead, householders juggle between different fuels and, in many instances, it becomes very costly. Research suggests that it takes a minimum of five years for the uptake of electricity to stabilise in low-income households. This view is obsolete and simplistic, as it ignores important fuel-use patterns in these households. The present rate of electricity consumption patterns in low-income areas indicates access to electricity does not

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automatically mean that people will use it for most of their energy needs.

A particular pattern of electricity use in both Khayelitsha and Site B is its use for domestic services such as lighting and entertainment and less for cooking, space-heating and ironing. A factor contributing the reduction in electricity use in Khayelitsha is the current policies of Phambili Nombane regarding the free loaders or electricity defaulters. Other reasons for under-utilisation of electricity include inadequate wiring, lack of education, high costs of appliances, none-energy matters (such as inter-household or personal relationship).

The advantages that people derive from non-electric appliances also contribute to the underutilisation of electricity. For instance, the current fuel-use patterns in poor households suggest that paraffin use will continue well into the next millennium. The reasons for the continued use of paraffin are economical (accessibility, availability and 'safety') and social (relationship between householders and spaza shops, and sharing of paraffin among households).

The increased use of other fuels such as gas, candles and batteries also contributes to multiple fuel use. In order to arrive at a rounded understanding of fuel use patterns in low-income households, it is better to consider why fuels are used, under what circumstances and who use fuels.

#### Domestic activity analysis

Existing research indicates that in the absence of electricity (and even where electricity is not the sole fuel used) fuels are chosen for their perceived efficacy in performing specific tasks. There is little local information, however, that relates this phenomenon to fuel end-use and the contexts in which different fuels are utilised. There is a need to analyse householders' choices in light of the broader socio-cultural and economic framework.

The daily use of fuels and appliances familiarises users with the best fuel-appliance combination for particular applications. In many instances, appliances and fuels are used for their efficacy in performing certain tasks without incurring additional costs. Ideas around what appliance-fuel combination are good for certain household applications are circulated between households by word of mouth.

At different times of the year, month and day, fuel use patterns are different. For instance, in summer, energy use patterns by households are different than in winter in terms of energy intensive activities such as space heating and cooking. Month-ends or the first week of the month are also periods where fuels are used the most. Domestic energy use is also determined by whether it is used during the week or at weekends, or is in the morning, afternoon or evening. Energy use peaks during weekends when most household members are present in their dwellings.

That household income plays a big in role in determining the food consumed in households has been stressed by many studies. It is general knowledge that there is a causal link between nutrition, income and energy. Low-income households, because of their very low disposable incomes, have to find a balance between buying household energy and food. Studies have found that low-income households spend about 85% of their income on food. In addition, there is also a rise in the purchase of cheap basic (and less nutritious) foodstuffs. Our findings also note correlations between income, energy sources, and household diet. Households with more disposable income have an ability to spend more on food. We show, however, that linking food consumed in households with income does not provide a complete picture, as there are other factors that complicate the picture even more. In addition to income, the meal patterns in the sampled households are, to a large extent, determined by four inter-linked factors. These are the types of energy or appliance used, gender differences, generational dynamics and cultural ideology.

#### Energy efficiency and safety

An analysis of energy sources and appliances would not be complete without exploring strategies that householders employ to maximise and conserve their energy use. In addition, it

is important to explore the issue of safety. It is crucial for policy-makers to gain insight into how people understand the notions of efficiency and conservation. As householders become familiar with the fuels they use, they devise strategies to lessen their energy expenditure while getting maximum output from the energy services. These strategies are often passed on between households in different areas through – as one research participant said – 'ucingo lwabantsundu' (gossip). This 'gossip' usually takes place during encounters between householders – such as in buses, shops, or women's meetings. Some of this 'gossip' may not give accurate information about energy efficiency. It is important when reviewing the strategies of energy saving to understand their contexts; what drives householders to choose a certain strategy not the other. We have focused on factors that encourage the adoption of certain strategies, and linked these to socio-economic and cultural variables, as well as to practical considerations.

We have seen that electricity is more widely used in Khayelitsha than in other sampled areas. People in this area have, however, expressed concerns that electricity is expensive. Many households have devised coping strategies to reduce the cost of electricity. Such strategies are based on householders' daily use of fuels and energy and are their means of coming to terms with escalating costs of fuels. That these households end up paying for more is, however, not relevant to them. We should not lose sight of the individual causes that compel households to employ the 'energy saving strategies' outlined above. In many ways, these strategies result from energy poverty – of households not having adequate energy choices – or as a result of entrenched poverty. Some householders recognise that some coping strategies come at the cost of compromising households' nutrition and budgets.

Some strategies to maximise energy are also used as safety precautions against hazards associated with the use of household fuels such as paraffin. However, many of these practices cause the accidents that people seek to avoid.

The fires in Joe Slovo are caused by a combination of factors. Three causes of fires, however, stand out: (i) the dangerous fuels and appliances that most households are exposed to daily, (ii) the highly flammable building materials of shack dwellings and the densely filled shacks; and (iii) the dangerous way in which people handle their fuels and appliances. This latter cause of fire can, at least, be controlled while wider structural problems of poverty; unemployment and lack of proper housing underlie the first two causes. The civic committee of Joe Slovo, in a step to control the spread of fires, has banned the use of candles. A person found to have caused fire is usually made to shoulder the responsibility of his or her 'careless' actions. Despite the precautions that people take, fires occur repeatedly and are strain on people's minimal resources. Fires have become a reality that people in informal dwellings have to face in one way or another.

#### Insulation and thermal performance

It has long been recognised that many low-income households spend substantial amounts of their income and energy on space-heating. This is attributed to the housing materials used to construct dwellings, as well as fuel-types used. We contend that a dwelling unit should not be conceived only for its provision of shelter. It should also be measured for other characteristics such as its indoor environment and its provision of the minimum level of comfort possible through improved thermal performance. When room temperatures fall below 16° Celsius, people use energy to generate heat. A thermally efficient dwelling reduces household fuel expenditure, as the need for space-heating is reduced.

There are many factors that determine the purchase and use of building materials by households in informal areas. These are availability and affordability of housing materials, security of tenure, re-usability of materials and people's perceptions of personal safety about the fuels used inside the dwelling units. It is the interplay of these factors that influences people's decisions around the choice of materials for dwelling construction. Standard dwellings in the Khayelitsha sample are two-roomed brick houses – having only a bedroom and a living room/kitchen (and a toilet-bathroom). These dwellings are so small that they

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cannot accommodate household members. The assumption was that the owners would renovate their dwellings at their expenses. The residents of informal dwellings define their choice of materials according to varying circumstances. They erect their dwellings using any available materials and labour. As a result, dwellings in Site B have, on average, more rooms than the standard Khayelitsha houses. In Langa, the sampled backyard shacks are, on average, one-roomed structures mainly because of space limitation. As backyard renting is a 'business' in Langa, landlords maximise their income from backyard leasing by accommodating as many shacks as possible. Informal dwellings are erected using a variety of materials such as corrugated iron, popularly know as amazinki (sing: izinki), timber, plastic and concrete slabs. Amazinki are probably the most common materials for building shacks throughout South Africa.

#### Small business development and energy

Many energy studies focus on immediate household energy needs such as cooking, cooling, lighting, and heating. Little attention has been given to the energy needs stemming from income-generating activities, which are crucial for the survival of many low-income households. As many householders depend on pensions, disability grants and domestic work or similar kinds of employment for income, they turn to micro enterprises to sustain a living. The official estimates suggest about 42% of the 'economically active population' are not employed in the formal sector. More recent estimates place this figure close to 50%, indicating that income-generating activities or self-employment ventures are becoming alternatives for householders in the face of widespread poverty. These activities vary from the sale of cooked sheep heads, freshly slaughtered chickens, ice-licks, cold drinks, beer brewing, hairdressing and the sale of paraffin. Other activities include sewing and the sale of snacks such as biscuit off-cuts, chips and sweets. Some of these activities were dependent on the availability and use of energy sources.

We propose that a definition of 'domestic energy use' be broadened to include activities that generate income, to arrive at a holistic understanding of energy needs of low-income households. At times, the energy sources used for income-generation are different from those that are used to meet the household's immediate energy consumption needs. The are relationships between income-generating activities and domestic energy consumption patterns. In analysing the strategic choices and uses of energy sources for micro enterprises, we reiterate the need for low-income households to have access to a wide variety of energy sources.

A majority (73%) of Site B households are involved in income-generating activities of some kind. Most of these activities are energy intensive such as *ukusila* (brewing 'traditional' beer), sale of sheep heads, *braais*, wood sales and chicken plucking. Most notably, 64% of these income-generating activities use wood. Why is there a high incidence of income-generating activities in Site B? Why is wood the primary fuel for household micro enterprises?

Clearly (lack of) income does not sufficiently explain the existence of income generating activities in the Site B sample. We contend that four mutually inclusive reasons encourage income-generating of activities in the Site B area. The first reason is the proximity of woodlands to Site B settlement. In Joe Slovo and Langa, it is impossible for residents to get to the woodlands without incurring transportation costs. In Site B and other parts of Khayelitsha, however, people are able to collect wood from nearby bush areas. Although potentially dangerous, women and men can be seen crossing the highways to and from the woodlands. For those who prefer to buy wood, there are many vendors who sell wood in various quantities at reasonable prices. The price ranges from R2 for a small bundle, to R50 for a load (either a truckload or donkey-pulled cart).

There are two ways in which wood is used to generate an income in low-income urban households. Firstly, it is generated through the sale of wood by vendors. Secondly, wood is used in the preparation of foods and beers for sale, as occurs in Site B households. These

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# Household energy debates in South Africa

#### 1.1 Introduction

This report is a product of three years of research on the patterns of energy-use in low-income households near Cape Town. In terms of scope (geographical locations and energy issues) and length of research, this project is arguably the first of its kind to be instituted in South Africa's urban centres. Fieldwork started in May 1995 in the formal and informal households in Khayelitsha and in the backyard shacks in Langa, and informal unplanned households (Joe Slovo squatter camp) near Langa. How we came to choose these samples of households is elucidated in the next chapter. This longitudinal research project has a time span of three years, from May 1995 to April 1998, including the writing phase. During this period, it has produced various outputs, including preliminary findings based on fieldwork undertaken in 1995 (Mehlwana & Qase, 1996a), and a published paper on the relationship between energy and nutrition in low-income households (Mehlwana & Qase, 1996b). This project is one of four sponsored by the Department of Minerals and Energy known as The Social Determinants of Energy Use in Low-income Urban Households. Research with a similar focus is being carried out in townships around Durban (Jones et al, 1996), East London (Bank et al, 1996) and Johannesburg (White et al, 1996).

Why is there a need for this kind of longitudinal research? How different is this research from others preceding it? What new insights is it bringing to the household energy debate and policy formulation?

As the democratic South Africa has been firmly put in place, the main task of the new government in the second half of the 1990s is one of delivery of basic services. The emphasis, therefore, has been on redressing past imbalances and inequities concerning service provision. Access to energy sources is still, however, highly skewed along racial and class lines. Poor communities, which have been disadvantaged in terms of employment and general living standards, are still experiencing energy poverty, that is, inequitable access to energy resources. The 1990s have shown, however, the commitment of the government and energy providers in instituting equitable policies. A look at the Reconstruction and Development Programme (ANC, 1994) and Eskom (1994) policy documents is a testimony to this. For instance, the RDP aims to electrify 500 000 houses per year resulting in 70% electrification by the year 2000 and 85% in 2010, with the electrification of 100% of urban houses being achieved (ANC, 1994). The ESKOM scenario is to connect 300 000 homes annually to the national grid. Ambitious as these scenarios are, they show that the government and utilities have put (energy) service provision high on their agendas. Eskom, for instance, has been well ahead of its targets. In 1996 the electricity supply industry (ESI) provided 450 000 new homes with electricity (NER 1996: 6).

It is equally important that delivery of equitable energy services should be preceded by quality research in order to ensure that policies are relevant to target communities. There is an urgent need that research should inform as well as evaluate current energy policies. One way of doing this is for research methods and techniques to be constantly reviewed; and there should be a holistic approach to household energy problems. There have been many quantitative studies (for example, Afrane-Okese, 1997: pers. com), and yet very few studies focus on the qualitative dimensions of energy use in this country. In the 1990s, when the policy focus shifted to demand-side management, research focuses also changed. Studies by Annecke (1992), James (1993) and Ross (1993a) amongst others provided a new perspective on energy-use patterns in low-income households in South Africa. This study follows and

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complements these qualitative studies, particularly Ross' study, which has provided a springboard for the current research.

This study, and those that preceded it, argues that fuel use, especially in low-income households, should not be understood in isolation from the wider political-economy and socio-cultural context. A range of factors, not only economic ones, determine how people use energy. For instance, fuel expenditure and appliance acquisition may not be solely determined by whether or not a household can afford them; they may be determined by factors such as the gender of the purchaser, socialisation, ideology and many other 'non-economic' explanations. Therefore, we should guard against making one-sided assumptions about energy use. The study of energy and appliance use in low-income urban households is essentially a study of a social process – of people interacting with their fuels over time. This interaction is in itself dynamic and changing in response to different contexts. It is these contexts that should be analysed, as they underpin choices that people make regarding the most appropriate fuels for their domestic consumption. Such an approach allows for a rounded, holistic view of the interaction between people and the fuels they use over a period of time, since it takes into account both the socio-cultural and economic notions that influence domestic energy use.

#### 1.2 Multiple fuel use, fuel substitution and a 'transitional model' framework

The transitional model of energy use, which has been the basis for energy research has come under intense criticisms in the 1990s (e.g. McGregor, 1992; Ross, 1993c; Eberhard & Van Horen, 1995) and has been rejected because of its 'simplicity and intuitive appeal' (Eberhard & Van Horen, 1995: 66). The model assumes that the transition from 'traditional' fuels to electricity occurs through various 'unilinear' stages that are propelled by variables such as urbanisation, income levels and education. It is not a coincidence that such a model of household energy use has been criticised when there has been a global paradigm shift in development discourse. Why has this shift occurred? How relevant is it to the transitional model or more specifically to energy policy in South Africa and to this project?

Top-down strategies, argues Chambers (1995: 30-42), which dominated in the 1950s and 1960s have been challenged in the late 1980s and early 1990s in the wake of failures of development programmes especially in the so-called 'Third World' countries. The top-down development initiatives are based broadly on neo-classical economic analyses that treat the 'recipient' communities as objects. This 'paradigm of things', although still widely used, has been replaced by the 'paradigm of people' (Chambers, 1995: 32). The current development and policy rhetoric puts 'people' first – a direct opposite of top-down approaches that put 'things' first. The uniform became diverse, the simple complex, and the static became dynamic. The popularity of the 'paradigm of people' was facilitated by the increasing role played by anthropologists, amongst other social scientists, in development projects.

A redefinition and deconstruction of development apparatus preceded the shift in development programmes. While 'experts' imposed a top-down, universalistic model, the driving force behind the bottom-up approach has been its recognition of diversity and its opposition to ethnocentric models of development. Thus the universal conception of development has been replaced by a situational and localised analysis of development.<sup>1</sup>

What has been the implications of this paradigm shift on the approaches to energy studies in South Africa? It should be noted that the transitional model is a spin-off of modernisation theory. Development paradigms have, over the years, been based on modernisation theory that sees societies 'developing' from 'traditional' to 'modern' forms of organisation. Traditionality, in this context is equated with simplicity, backwardness and homogeneity, with modernity being viewed as an antithesis. Somewhere in between these ends is a stage 'in-between', a stage of transition. It is not our intention at this point to criticise

<sup>&</sup>lt;sup>1</sup> It is not within the scope of this chapter to explore the extent to which this paradigm shift has been translated into practice and what its implications have been (see Chambers, 1995).

modernisation theory. Suffice it to say that the transitional model of energy use argues along the same lines. Its main thesis is that an individual with very low disposal income and resident in urban areas for a short period of time will be inclined to use inferior fuels. As the same individual becomes an established urban entity, he or she will be able to change from these inferior fuels to more sophisticated and cleaner fuels such as gas. The ultimate end-result is the final stage of (full) electricity consumption.

According to this model, multiple fuel use, where household members use two or more fuels for the same end-use, is the 'in-between stage'. It is a temporal phase towards the ultimate goal of modernisation (which is correlated with electricity use). Ross (1993c) and Eberhard and Van Horen (1995) reject this model as inappropriate when explaining low-income energy use. The transitional model, we also attest, is flawed on a number of grounds. A key fallacy is to see urbanisation as equivalent to modernisation. Another is correlating fuel use patterns with the period spent in urban areas. The third major fallacy results from a deterministic analysis: income does not always determine the type of fuel used.

In our analysis of fuel use patterns among the sampled households we argue that urbanisation is not always a one-way movement of people from rural to urban areas. In the southern African context, for example, there is evidence that the broader political economy of the migrant labour system has prevented permanent urbanisation of many people. Instead it has contributed to oscillating migration where people keep their rural contacts and homes even though they may own urban dwellings (see also Murray 1981: 100). Secondly, as Ross (1993a, 1993b and 1993c) has argued, this report that the period of urbanisation does not necessarily or always correlate with types of energy use. Households that have been in urban areas for a long time (and have access to electricity) may use transitional fuels such as paraffin and gas, while a newly urbanised household may seem to adapt to electricity easily. Thirdly, income is not the only determinant of energy use. As shown elsewhere in this report, some households with relatively higher incomes would not invest in electrical appliances while others with lower incomes would prioritise these appliances (see Chapter 5). The transitional model is silent about, or is not equipped to address, how these social dynamics have an impact on the daily use of energy. Fourthly, domestic energy, especially in lowincome households should be seen in its social context: as Bank et al (1996) and Jones et al (1996) argue, household fuels are social commodities, and should be explained as such. It is therefore important to locate what appears to be an 'economic rationale' of energy use in its social context. The question should be what drives household's 'economic' decisions regarding fuel use. The answer to this would help to unravel the social logic behind what appears to be a 'rational' and financially influenced decision. Lastly, although the transitional model refers to households, it does not pay attention to how such households are managed, who makes decisions, and the different relationships between members of households. We show in this report that a household is not an undifferentiated socio-economic unit (see Chapter 2 for discussion of conceptual understanding of the household); instead it is made up of people with conflicting interests, loyalties and needs. If we want to understand how householders use energy, it is important to explore these dynamics as they impact on fuel use.

#### 1.3 The objective and aims of the project

The broad goal of this project is to extend knowledge of factors influencing domestic energy use at a household and community level, by investigating the context in which energy-related decisions and activities are carried out over time. This will enable tracking and prediction of energy policy impacts. Specific aims are to:

- (i) trace the effects of existing and new policies on domestic energy use and needs over time;
- (ii) record household energy consumption and end-use application patterns;
- (iii) monitor the fuel substitution process over time, to understand the reasons for backswitching and to feed this information into integrated energy planning;

- (iv) monitor processes and changes in decision-making related to energy;
- (v) explore the constraints which operate on energy use (at the household and community levels);
- (vi) discover the processes through which end-users can participate in decision-making at the household level on energy-related matters;
- (vii)create feedback between policy-makers and users to refine policies and work towards the generation and implementation of appropriate policies and technology.

#### 1.4 The main components of the research

#### Organisational capacity building

The three years of this national study has offered an ideal opportunity to train blacks and women researchers in the field of urban domestic energy policy. Affirmative action policies were followed in the employment of researchers. Affirmative action is essential in redressing gender and racial imbalances in South Africa's energy sector and academia. On-the-job training of researchers has been undertaken, although there is still scope for improvement (see Chapter 3).

#### • Multiple fuel use and the monitoring of fuel substitution

Fuel-switching towards higher quality fuels and backwards to lower quality fuels suggests that the idea of a smooth transition process is inaccurate and, at the detailed level of individual households, there are many factors that complicate the picture. In rural areas, for instance, the scarcity of wood may lead towards the greater use of paraffin, even if it is difficult for householders to afford it. On the other hand, some urban households normally reliant on paraffin may fall back on the use of wood because of lack of income. The current project explores fuel-switching behaviour in both electrified and non-electrified households, and also explores multiple fuel use and the reasons behind this practice.

In addition, there are 'local' views and explanations regarding some energy sources and appliances that need to be taken into account when planning for energy policies. In some situations, bottled gas is avoided, not because it is expensive, but because it is felt to be unsafe. In other situations, paraffin appliances such as wick stoves are used although they cause untold damage in terms of fires. It is important to explore reasons behind such behavioural patterns. The project also assesses household members' perceptions regarding certain types of energy sources, so that a comprehensive understanding of their attitudes to different fuels could be achieved.

Gender and generational dynamics influence fuel use. The different ways in which men and women and old and young use energy and their different perceptions of energy should be taken into account.

#### Appliances

Previous research on ownership and use of appliances has indicated that there is a wide variation in patterns of appliance purchase (Golding & Hoets, 1992). Some of this variation can be explained by income, while some aspects are gender-related. Still more variation has not as yet been explained at all. The research monitors appliance purchase patterns over time, and has also looked at ways in which energy appliances are financed, such as credit organisations and savings groups.

The gender and generation dynamics surrounding appliance use have also been examined to ascertain, for example, whether men and women, and old and young people, have different priorities or preferences in terms of appliance use. The research explores other factors affecting appliance use, such as affordability, accessibility and user-knowledge of appliances. Other related and important factors – such as the date of purchase, length of appliance ownership and frequency of use – are also explored. Finally, we record the activities for

which these appliances are used. The aim is to examine purchasing criteria, and contribute such socio-economic data to the national energy database compiled by the Energy and Development Research Centre, other on-going research and to inform policy-makers, utilities, appliance marketing companies, financing institutions and national service-delivery forums. This is done with the purpose of improving energy services.

#### Thermal performance of dwellings

Research has indicated that there is substantial variation in the heating requirements of formal and informal houses (Simmonds & Mammon 1996). The project investigates thermal performance in two ways. The first is quantitative in nature, and is a description of the actual construction of the dwelling and the materials used. Secondly, during 1995, selected households' owners were asked to record the inside and outside temperatures of their dwellings. The goal is to record individual attempts to solve problems of thermal performance of houses.

#### Decision-making

Domestic fuel-use occurs in the context of particular social constraints. Power relations and divisions of labour within households influence the processes by which decisions are made about fuels and who make those decisions. Policy recommendations such as the suggestion that policy be made 'woman friendly', how such policies could be effected, and implementation of decisions and their sustainability require research. In addition to studying the role played by women, the project examines in greater detail how the so-called 'economically inactive' members of the households (children, the disabled and elderly) impact on decision-making around fuels and appliances. The overall goal is to examine the ways in which decisions about fuel use are made within the household, and to determine the extent to which people who make such decisions are those who actually use the fuels and appliances on a daily basis, and to use those findings to inform projects involved in appliance use, marketing strategies and policy-making.

Domestic budgeting is an important factor in determining the fuels which people use and the appliances that they are able to afford. Fuel expenditure is situated within the financial constraints and priorities or felt needs of individual household members. The project thus examines issues of affordability and preferences, including the extent to which fuel expenditure plays a role in household budgeting (thus looking at both economic and socio-cultural influences) and the priority of fuel or appliance purchase in the context of demands made upon household income. It also examines fuel- and appliance-switching barriers in order to inform policy. Decisions around these issues have been monitored over the period of the study to determine how and why changes in these patterns occur.

#### Energy needs stemming from income-generating activities

Domestic energy use is usually associated with immediate household energy needs such as cooking, lighting, ironing, and water heating. However, the definition of 'domestic' should be broadened to include energy needs stemming from income-generating activities, as in many instances, there is an overlap on fuels used for income activities and fuels consumed in the household. A household may sell paraffin, but also use some for household consumption; wood used to brew beer may also be used for space heating or the fire used to boil water. In this way energy planning and policy-making become more holistic and inclusive. For example, within the context of a burgeoning informal sector, research should explore the energy needs stemming from income-generating activities that may be hidden by domestic energy use. This information could be used for future energy planning, for example, to determine the sources of energy that should be supplied and made more accessible to improve the efficiency of these businesses.

#### Policy stream

Domestic energy policies have, until recently, been formulated with little reference to the

users' needs and interests. Efficient and effective policy interventions should be an interactive, two-way process informed by the users' needs and interests. By monitoring the impact of existing policies, testing policy recommendations that have involved extensive research and by using the findings from this project to inform future policies, this research could facilitate this objective. The project has provided a unique opportunity to test and evaluate emerging recommendations.

#### Disseminating research results and facilitating provider/end-user interaction

The research method of participant observation depends on the creation of relations of confidence and trust between researchers and informants (see Chapter 2 below). The researchers have been successful in creating these relations with their informants during the research programme. An operating principle of anthropological research is to feed back research results to participants in the research and, where research is policy orientated, to promote the implementation of policies that will benefit participants. It is therefore incumbent on researchers, given their acceptance in the research areas and professional ethics, to undertake these tasks. This component provided research participants and civic organisations in the research areas with the results of the research in order to stimulate debate and develop the proposals further. It has also brought the informants, civic organisations and energy providers together in order to promote constructive interaction, leading to the promotion and implementation of beneficial policies.

#### 1.5 Conclusion

The structure of this report, which closely follows the research components as outlined above, consists of eleven chapters. The following chapter gives a brief description of the research areas and the sample. It examines the research methods and techniques against various components of the project. Of note is the anthropological method of participant observation that has been the cornerstone in the data gathering. Also mentioned is the workshop method that has been used both to generate data and to impart useful energy information to the sampled households and community structures. We then refer to the constraints, challenges and lessons from these methods in order to inform future research.

Chapter Three sketches the extent to which this project has contributed to building the capacity of the research staff, and inform community members of energy issues. We argue in this chapter that research projects should be the means of providing training to disadvantaged researchers (blacks and women), as well as imparting knowledge on critical issues to the communities where research is undertaken. This approach is, in our opinion, important in terms of redressing the current imbalances in energy research, which white males have in the past, dominated. Also, we contend that useful information that can benefit communities is stored away in archives and libraries. If energy information can be made accessible to communities in an easy way that people can understand, half of the battle in terms of energy poverty could be won.

Chapter Four explores the various contexts of decision-making in households. It argues that the process of decision-making is complex and we need not stereotype gender relations in households. The chapter analyses household management and decision-making processes by paying special attention to gender issues and generational dynamics. In terms of the latter, the role of children in household management and in influencing appliance and fuel purchase is discussed, as well as the part played by the notion of 'tradition' in energy use.

Chapter Five discusses the logic of appliance accumulation and the various contexts of decision-making for appliance acquisition. We examine different rationales such as gender, household income, preferences, practicalities, and 'culture'. We explore the reasons for the slow accumulation of electrical appliances in most households while, on the other hand, entertainment appliances appear to be prioritised. We also examine the factors influencing the acquisition of non-electric appliances.

Chapter Six provides a detailed documentation and analysis of fuels with special emphasis on

the notion of multiple fuel use. This is approached through locating the energy burden within households' incomes. The chapter then explores what hinders full electrification in Khayelitsha, Site B and Langa backyards. Secondly, it discusses why paraffin continues to be used in both electrified and non-electrified households despite problems of fires. Thirdly, it explores the use of gas in Khayelitsha despite access to electricity and why little gas is used in the Site B and Joe Slovo households. Our thesis is that problems relating to electricity and the corresponding advantages of other fuels contribute to multiple-fuel use.

The activities relating to energy use in households are the subject matter of Chapter Seven. Particular emphasis is on strategic allocation of fuel-appliance combinations to certain domestic applications; when fuels are most used; and the analysis of household diets. Questions such as how economic and cultural notions such as gender and generation dynamics influence types of food consumed by household members are examined. This chapter also explores the effects of income differences on food, and the symbolism attached to certain foodstuffs is addressed in order to illuminate the connection between energy and nutrition.

Chapter Eight explores notions of energy efficiency and conservation by analysing householders' energy practices and survival strategies. This chapter argues that households' notions of energy efficiency are not necessarily based on 'fact' and, instead, are based on urban legend. In many instances, we argue, poverty leads to 'irrational' practices that lead to unintended effects. Chapter Eight also documents and analyses safety issues with special emphasis on fires in Joe Slovo. In analysing the causes of fires, we examine people's dangerous use of energy and appliances. The social aspects, such as dislocations and feuds caused by the results of fires are discussed. The chapter also discusses how some households avoid accidents, especially paraffin ingestion.

Chapter Nine gives a description of housing materials used by the sampled households. This is done to measure the extent to which there is awareness by households of the connection between the physical structure of their dwellings and energy consumption. This chapter also records people's perceptions of insulation and analyses space-heating practices.

Chapter Ten examines the kaleidoscope of informal activities reliant on wood as an energy source, particularly in Site B. It probes gender constraints and dimensions of informal business. Two important questions it evaluates are why women dominate these activities and why men are encroaching on what has been perceived as women's domain. Is this encroachment by men in informal activities putting pressure on women? To what extent could energy provision be improved in order to enhance these activities and to minimise gender inequity? Secondly, the chapter looks at other businesses that trade in energy or in which energy plays an important role – these are households selling paraffin, spaza shops, and shebeens.

Chapter eleven concludes the report by summarising the research findings, highlighting key policy issues. It also explores the implications of these research findings for policy formulation.

# A note on the methodology and reciprocal learning

#### 2.1 Introduction

The importance of research in policy making or any development intervention cannot be overstated. Research involves identifying problem areas or issues and uses various methods, techniques and analysis in order to come at 'acceptable' findings. These findings have been the basis of intervention strategies and policies. Methods used to collect data are as important as the research findings. As has long been recognised by anthropologists (such as Van Velsen, 1967), the type and quality of information or data collected in primary research is determined to a large extent by the methodology used by a researcher. This chapter, therefore, describes the methodology used in this research in light of current development debates such as 'representations', and 'participative' research methodologies (Schrijvers, 1995).

Although this study employed a multi-disciplinary approach in collecting and analysing data, it focused on anthropological participant observation for a number of reasons. One such reason is the limitations of data obtained through conventional quantitative methods. It is increasingly clear that qualitative data obtained through participant observation methods yield new insights to energy research. We suggest that conventional methods of energy research such as snapshot interviews and questionnaires are in themselves inadequate in capturing the richness of people's representations of themselves and those around them. A quick examination of most energy literature shows gaps in knowledge of low-income household energy-use patterns. These gaps are reflected by omissions of valuable information, such as the different ways that people utilise energy. The ways that people utilise energy and make choices about appliances and space use, for instance, are not economic decisions alone but relate closely to political, social and cultural factors such as gender, generational dynamics. ideology, etc (see for examples studies by Annecke, 1992; Ross, 1993a; James, 1993). We propose a framework that takes into account subjective (emic) intentions, feelings and practices; that is, an account that recognises people's own representations based on their varying experiences.

The approaches and methodologies of anthropology have increasingly influenced development agencies, non-governmental organisations and governmental policies (Chambers, 1994: 955). In the energy sector, methods of anthropology have just been 'discovered' as useful tools of analysing interactions between people, their society and energy services (see Ross, 1993a). We have shown in this study that anthropological methods of data gathering can successfully co-exist with other research methods. The strength of this report lies not only in its use of participant methods, but on its multi-disciplinary approach and methodology, which has yielded rich and textured data on household fuel use. A short description of the areas and households in which we conducted this study follows (more detailed information is contained in Mehlwana & Qase, 1996a.)

#### 2.2 The new and the old townships

Fieldwork was conducted in two of the most populous African townships near Cape Town. We selected Khayelitsha – about 30 kilometres from Cape Town – and Langa, situated about 12 kilometres south of Cape Town. The Khayelitsha complex ('New Homes') was a relatively new area when research began, having been established in 1984 as part of the controlled urbanisation by the previous government. It was intended to house those Africans that the government viewed as 'legal' citizens of the Republic of South Africa. The ultimate aim was to demolish the shack settlements that were seen as a 'security risk' and evict people seen as

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'aliens' to the former bantustans (Mehlwana, 1996: 38). Langa, on the other hand, is the oldest black township in the Western Cape. Historically, it used to be a place for single male migrants who were contracted for specific periods in Cape Town. In addition to migrants, the 'legal' residents (the so-called Cape-borners), most of whom were relocated from Ndabeni and Kensington in Cape Town, were settled there. The Native Affairs Act had forced them to move from integrated residential areas to Langa ('The Sun'), a place reserved for African occupation only.

These areas were chosen for the following reasons. Firstly, we wanted to compare fuel practices between 'new' and 'old' townships in order to see to what extent they differed. We realised later, however, that this comparison is problematic. A new urban settlement does not necessarily mean that residents have just been 'urbanised', nor does it necessarily mean that residents in Langa, the 'old' area, have been in Cape Town for a long period. Secondly, the project's terms of reference required us to cover different types of housing: formal, informal planned, backyard shacks and informal unplanned. Our first inclination was to select all of the above categories in Khayelitsha – which, at the time, was the only township that filled these criteria. This would also have made fieldwork easier. This was, however, not possible and, to a certain degree, this influenced our research findings (see Section 2.5 below). One reason is that the backyards in Khayelitsha housed additional members of the main households (see Section 2.2.1 below). Secondly, the local authority (Lingelethu Municipality) informed us that all squatter settlements in Khayelitsha were going to be upgraded or demolished 'soon'. As it was intended to study fuel patterns of unelectrified squatter shacks for a longer period, the Langa township informal unplanned settlement was chosen.

Our initial survey in Langa showed that backyard renting is a thriving 'business' in the formal dwellings in that township. We chose an informal unplanned settlement called Joe Slovo (on the outskirts of Langa township), which was not going to be renovated at all. The distance between research areas affected the way that data was gathered (see Section 2.4). Although situated in the oldest township, the backyard shacks and the squatter settlement of Joe Slovo were relatively new phenomena.

The underlying assumption is that different dwelling units would indicate that residents occupy different socio-economic strata. The logical conclusion would be that people who live formal housing units earn incomes that are proportionally higher than those in other types of housing. These people would then use different (and more 'sophisticated') fuels. The validity of this assumption is examined in subsequent chapters, as it resembles the 'transitional' model of household energy use. Suffice it to say that we have observed many instances in which there is no neat fit between the variables of housing type, income and fuel use patterns.

#### 2.2.1 A new home in Khayelitsha

In the beginning of the 1990s, the sprawling township of Khayelitsha covered an area of 2085 hectares with a population of 359 600 people. About 56 000 of these people lived in informal dwellings. SALDRU estimated that there were 41 677 formal stands and 13 400 informal structures in 1993. Based on a high growth rate and the current rate of urban-rural movements, we project that in 1997 the number of people living in Khayelitsha may have doubled the above figure.

SALDRU indicates that all formal stands are provided with full services, including individual water taps and waterborne sewerage systems. By 1993, the electrification process was at its peak, and 90% of Khayelitsha formal dwellings were connected to the electricity grid. None

<sup>&</sup>lt;sup>1</sup> No one had yet broken the news to the dwellers that the place was not earmarked for development. When we arrived there, most residents and the local power-holders were hoping that houses would be erected, or at least, essential services such as water and sanitation facilities would be provided. In the words of an official of the local municipality: 'we cannot provide them with water taps and toilets. This will give them a false hope that they will stay here for good. All these people are going to move ... I am not sure when, but they will move'.

of the informal areas were supplied with electricity. The level of service provision in informal areas was inferior in some parts and non-existent in others. Informal dwellings were served with communal taps (usually one in a street) rather than individual taps and long queues mostly of women and children were a common sight. The toilet facilities were operated on a bucket system. The buckets were collected twice a week. SALDRU maintains that the standard of service provision in informal dwellings was generally very poor. Sanitation facilities in these areas were substandard and lacked capacity to deal with the sewerage requirements of the area.

	Ages of men	Ages of women	Ages of children	income p/m	income earners		income earners		income earners		commitment	Residence on site
					Gender	Source						
#K1	31	33, 24	13,10	R500	W(24)	F/Grant	Cape Town	1985				
#K2	0	35	14,11,10,7,3	R900	V	F	Cape Town	1985				
#K3	67, 25	46, 24, 19, 19	17,16, 11, 2, 1	R730	M(67)	P/Inf.	Cofimvaba	1985				
#K4	24	84	12, 10, 7	R430	W	P.	Cape Town	1985				
#K5	50, 23, 19	22, 20	0	R1,170	M(2)	F	Centani	1985				
#K6	35, 25	31, 22	3,1	R1,800	M(35)/ W(31)	F	Cape Town	1985				
#K7	0	70, 33	2	R600	W(70)	P/Inf.	Cape Town	1985				
#K8	47, 21	40	12,9	R2,197	M(47)/W(40)	F	Cape Town	1985				
#K9	0	43	0	R900	W	F	Cape Town	1985				
#K10	46	66	0	R800	M/W	F/P	Cape Town	1985				
#K11	59, 25	54, 22, 20	2	R1,170	M/W	P/Inf.	Cape Town	1985				
#K12	26	55,34,28,26, 24	0	R2,500	M(all)	F/inf.	Lady Frere	1989				
#K13	20	59, 34, 23	14, 12, 11, 8, 7, 2	R430	W(59)	Р	Willowvale	1991				
#K14	19	41, 23, 21	13	R900	W(41)	F	Cape Town	1985				
#K15	26	69	0	R430	W(69)	Р	Cape Town	1985				

#W = woman; M = man; F = formal employment; Inf. = informal work; P = pension; SG = state grant

Table 2.1: The Khayelitsha sample - 1997 (n=15)

Things have changed significantly in this area since SALDRU conducted its study. One hundred percent of formal and informal dwellings are now electrified. This does not, however, mean - as shown in various chapters of this report - that people are using such services to the optimum. The informal dwellings enjoy the same level of service provision that was previously accorded the formal dwellings. Most of the existing informal areas have been upgraded with tarred roads and other basic services, but they still remain shack communities. There are also areas, usually on the margins of formal dwelling and between informal planned areas that are without these services. These areas, according to the official view, are called 'squatters' since they occupy the land illegally; hence the absence of provided services. We say provided services because these so-called squatters do, in fact, enjoy basic services that are brought from established dwellings. Because of their close proximity to serviced sites, the inhabitants of these 'illegal' communities have access to general services such as sewerage, water and even electricity. In terms of the latter, Phambili Nombane - a supply utility in greater Khayelitsha - is aware of this 'illegal' (and 'dangerous') electricity connection, but seems powerless to curb 'power sharing'. Lines connecting electricity from informal planned to informal unplanned can be seen forming a dangerous network above and across the area's highway.

It is in this area that we chose our sample of 30 households in May 1995 after consultation with civic bodies (see Tables 2.1 and 2.2). We selected 15 households from the standard two-roomed formal dwellings. The houses are very small; owners extend them by adding a room

or more. It is a common sight in this area that dwellings (especially of those who cannot afford to renovate with bricks) have *pondhokkies* or backyard shacks to accommodate some household members. At the beginning of the research, we ran a survey to determine who occupies these *pondhokkies*. Most residents were members of the main households. Together, therefore, they constituted a single household. This was not necessarily the case in Langa. Throughout the report we refer to these 15 households as 'Khayelitsha', or 'Khayelitsha formal'.

	Ages of men	Ages of women	Ages of Children	Income p/m	Income earners		Income earners Commitment		Residence on site
					Gender	Source			
#S1	39	30	0	R800	<b>V</b>	F	Steynburg	1995	
#S2	47	43	0	R770	W/M	SG/inf.	Umtata	1989	
#S3	49	40	12, 10	R2,300	W/M	F	Lady Frere	1990	
#S4	43, 22	41	14,13,12, 11	R430	M(43)	SG	Mt Fletcher	1990	
#S5	None	54, 31	5	R900	W(31)	F	Cape Town	1987	
#S6	69, 26	60, 35	11, 8, 7, 7	R1,231	M(69, 26)	F	Mt. Fletcher	1986	
#S7	55, 19	45, 20	12, 16	R2,500	M/W	Inf.	Qumbu	1986	
#S8	45	26, 22	3, 2	R1,600	M/W	F	Cape Town	1989	
#S9	71, 60, 35	30	13, 1, 1	R2,030	M(3)	F(2) /P	Cofimvaba	1994	
#S10	0	34	14,10,6,4	R420	w	F	Maclear	1991	
#S11	39	30	10, 8, 7	R900	М	F	Mt Fletcher	1986	
#S12	56	46	0	R800	M	F	Cofimvaba	1985	
#S13	33	33	11, 5	R1,561	M/VV	F	Cape Town	1986	
#S14	42, 21	41	17, 13, 4	R1,040	M(42), W(41)	F/Inf.	Mt. Fletcher	1995	
#S15	21	53, 24, 18	16, 12, 7	R499	W(24)	F	Umtata	1985	
#\$16	52, 22, 18	48	18, 11, 7	R200	VX(4B)	Int.	OloaT	1992	
#517	55, 22	33	18,15,10,7	R100	м	Inf.	Umtata	1993	

<sup>\*</sup>W = woman; M = man; F = formal employment; Inf. = informal work; P = pension; SG = state grant

Table 2.2: The Site B sample - 1997 (n=15)

A second sample of 15 households was chosen from an informal planned area near the formal dwellings of Khayelitsha in an area called Site B. At the time of research, Site B was fully served with water, sanitation and electricity services. The shacks are built in an orderly fashion and there are roads between and around them. The area was upgraded between 1993 and 1994. All upgraded shack areas are connected to the grid. As indicated above, there are other adjoining squatter settlements living 'parasitically' off Site B informal planned houses in terms of service and sharing of (electricity) power. Site B shacks were electrified in 1994 and supplied with a pre-payment 'keypad' dispenser which, according to a senior official of Phambili Nombane is 'theft-proof', and very difficult to tamper with (Mdingi, 1996: pers. com.).

#### 2.2.2 The migrants, the school people and the politics of space in Langa

Langa is one of the oldest townships in South Africa after Soweto in Gauteng. Langa was established in 1927 for 850 people, and this is reflected in Langa's architecture. In the past, two categories of people living in Langa were identified as the 'school-people' and the 'redpeople' (Wilson & Mafeje, 1963). The former consisted of people with no rural commitments (the urbanites) who came from previously integrated areas, while the latter were mostly single men (the migrants) living in hostels. Today, Langa's social structure is more complex than the above dichotomy. Like other South African townships, it has high-, medium- and low-income

<sup>\*\*</sup>Light grey = substituted + dark grey = new (from 1996) households

social groupings. The township consists of migrant labour hostels (about 45%), four-roomed houses (including backyard shacks), squatter settlements and a middle-class suburb (Cape Argus, 18-09-97). Unlike Khayelitsha where there is space for urban growth, Langa is geographically constrained and has not been able to accommodate the escalating growth caused by rural-urban migration and a high birth rate. The Cape Argus (18-09-97) reports that Langa's population occupies only 306,26 hectares, and is now a very congested settlement. Informal dwellings or squatter shacks spring up wherever there is an opening large enough to fit a shack.

	Ages of	Ages of Ages of Income Income earners		Commitment	Residence			
	men	women	children	p/m	Gender	Source		on site
#L1	40, 29	0	0	R500	M(40)	F	Qumbu	1984
#L2	35	32	1	R800	м	F	Cape Town	1989
#L3	43, 31	33	15, 10, 9, 3	R1,200	М	Inf.	Balfour	1981
#L4	35	31	13	R4,979.70	M/W	F	Cape Town	1989
#L5	21	19	0	R800	М	Inf.	Qonce	1992
#L6	0	32	0	R930	w	Inf./SG	Cape Town	1993
#L7	25, 22	0	0	R2,126.40	M(2)	F	Mt. Frere	1995
#L8	23	70, 33, 24	11, 9, 5	R4,330	W(3)	F+P	Umtata	1990
#L9	46	41, 23	11, 5, 5, 6	R1,000	М	Inf.	Alice	1994
#L10	0	29	2	R2,200	٧	F/Inf.	Upington	1990
#L11	70	70	0	R860	W/M	P	Queenstown	1989
#L12	0	32, 30	0	R572	W(32)	F	Stutterheim	1990
#L13	38, 27, 26	0	0	R1,850	M(3)	F	Xhora	1992
#L14	51, 19	44, 22	1611, 4	R2,320	M(51)/ W(44)	F	Cape Town	1985
#L15	53	43	5	R800	М	F	Engcobo	1996
#L16	0	28	2	R400	W	F	Ngqamakhwe	1985

<sup>\*</sup> W = woman; M = man; F = formal employment; Inf. = informal work; P = pension; SG = state grant

Table 2.3: The Langa backyard shacks sample - 1997 (n=14)

In the past, migration to places such as Langa was strictly controlled. Local authorities ensured, through repression, that only working men lived in the hostels. 'Aliens' – women, children and those not fit to work – were raided and deported to the infamous bantustans. After the relaxation of the Group Areas Act in the second half of the 1980s, the population of Langa (especially in the hostel area) trebled. In March 1989, the total population of Langa (excluding recently born babies) was 16 500 and this increased to between 80 000 and 100 000 in 1997 (Cape Argus, 18-09-97). No longer constrained by pass laws, erstwhile migrants began to be reunited with their families in Langa. In the past, these migrants' families were confined to the former homelands. Rapid migration to Langa's hostels created space problems, as hostels were not designed to carry large numbers of people.<sup>2</sup> Pressures from overcrowding and resultant social ills (such as crime, violence and deteriorating living standards) forced some people to move out of the hostels. Many moved to the formal areas and became backyard lodgers. During our research we observed that the formal dwellings closest to the hostels contain more backyard shacks than dwellings furthest from hostels. One

<sup>\*\*</sup> Light grey = substituted households & dark grey = new (from 1996) households

<sup>&</sup>lt;sup>2</sup> Ramphele (1993) provides a comprehensive and detailed analysis of overcrowding in the hostels in the Western Cape. She argues that after the influx control measures were relaxed, migrants brought their families to urban areas organising around a bed, which was the common denominator. A bed became a rallying point, hence the 'bed-hold'.

formal dwelling had ten shacks on a tiny piece of land. Lodgers pay between R20 and R100 per shack, depending on the landlord's rates and whether the shacks are provided with electricity. Elsewhere in this report we show that these rates were, in some instances, extortionist. As a result of the shortage of land in formal areas, lodgers have to erect small shacks (usually one room), space enough only for a bed and very few personal belongings. Owing to lack of space, new lodgers send some of their family members to live with relatives in other parts of Cape Town or in the rural areas. Our sample of 15 households from backyards averaged three persons in one dwelling – the lowest of the four housing units.

	Ages of	Ages of Ages of Ages of		Income Income ea		rners	Commitment	Residence
	Men	women	children	p/m	Gender	Source		on site
#J1	22	70, 45	0	R430	W (70)	Р	Cape Town	199-
#J2	58	59	16,5,1	R600	М	F	Tsolo	1995
#J3	21	53, 21, 19	16,2	R700	W(53)	F	Qumbu	1994
#J4	20	37, 18	10,6	R400	W(37)	F	Cape Town	1994
#J5	56	47,22	1	R2,300	M/W(47)	F	Tsolo	1994
#J6	0	62, 32, 26, 25	11,9	R 930	W(62)/ W(32)	F+P	Centani	1994
#J7	24	22	1	R800	M	F	Cape Town	1994
#J8	0	29, 19	2	R400	. W(29)	F	Port Elizabeth	1994
#19	37	29	0	R300	W	F	Bedford	1994
#J10	30	25	1	R400	М	F	Engcobo	1994
#J11	27, 27, 28	22	1	R840	M(27)/ M(28)	F	Mdantsane	1994
#J12	25, 17	48, 17	15,11,11,6	R500	W(48)	F	Tsolo	1994
#J13	31	24, 21	11,12	R900	W(24)	F	Mdantsane	1994
#J14	0	57, 35	4,6	R800	W(57)	Inf.	Qumbu	1994
#J15	29	42	1	R1,000	M/VV	F + Inf.	Ngqamakhwe	1994
#J16	50	30	8,4,011	P240	84	F	Tatic	1996
#J17	28	50, 26, 23	Ů,	R1,000	t#	F	Moanduli	1996
4,715	27	19	0	R800	M	F	Taplo	1994

<sup>\*</sup>W = woman; M = man; F = formal employment; Inf. = informal work; P = pension; SG = state grant \*\*Light grey = substituted households & dark grey = new (1996) households

Table 2.4: The current Joe Slovo sample (n=15)

As Langa continues to grow, backyard renting does not seem to be the answer. Lodgers complain of their deplorable existence, and also about the way they are treated by their comastandi (landlords). As a result, some people erected shacks on a bush area on the margins of Langa, which had previously been unoccupied because of the dangerous grid pylons above it, and its poor drainage system. Cape Town is a winter rainfall area, during which time the place is usually waterlogged. By December 1993, the area was full of shacks built very close to each other. Attempts by authorities to demolish the shacks from this area failed. Instead, these attempts to remove people were met with deep resistance and created a sense of solidarity and community among squatter residents. The residents of an upmarket formal settlement were opposed to the occupation of the land, saying that the shacks were devaluing their properties. One way of expressing their resistance to shack building is to prevent the 'shack people' from obtaining water from their houses. A sample of 15 households was selected from this marginal area that has become known as Joe Slovo.

During the period of research in this area (May 1995 – April 1997), it has grown dramatically. Shacks are squeezed onto all available land because, as one resident commented, 'no one owns this land'. Shacks that previously had yards lost them as new people arrived from

hostels and backyards. The latter came to live in Joe Slovo because they had heard that the government would build formal houses for them. The pioneers of Joe Slovo called on their kin members living elsewhere in Langa and beyond to move to this area. Some of the new members of Joe Slovo stay alongside their kin members, creating what Stack (1974: 93) has called a 'network of reciprocating relationships'. Lomnitz (1977) has also noticed this living pattern in a Mexican shantytown. In this area, households consisting of people related to each other by kinship cluster around each other for practical reasons, such as security, reciprocity and emotional support.

The overcrowding of shacks on this tiny piece of land has created social problems, such as fires, crime, rapes and feuds. When we began fieldwork in May 1995, there were two opposing civic bodies in this area, each claiming to represent the 'Joe Slovo community'. Violent conflicts erupted and lives were lost as a result. Unity was partially achieved before the 1996 local elections. Even then it seemed that violence was still pervasive. In November 1996, one of the most influential executive committee members was fatally stabbed, renewing distrust between residents.

Besides these overt political conflicts, Joe Slovo is renowned for the frequency with which fires break out. The closeness of shacks has been one of the contributing factors, as has energy poverty. The anatomy of fires and the resultant social dislocation (in Joe Slovo) are explored in detail in Chapter 8. Joe Slovo is not provided with services, especially water and ablution facilities. Demands for these have been the rallying points of residents during the research period. Such services were prioritised because residents were prevented from obtaining water from the formal houses near Joe Slovo. Instead, they have to travel to the hostels (where some have relatives) about a kilometre away. It is particularly dangerous for women to wander about at night in search of ablution facilities, as the 'toilet' area is a disused stream hidden away on the outskirts of the settlement.

# 2.3 The changing profile of the sampled households (May 1995 – April 1997) Our sample of 60 households did not remain constant throughout the period. We had hoped to work with the same households from the beginning to the end of the project, but this was not possible. The reasons show the difficulties of conducting longitudinal studies and, we hope, will inform future studies so that they can counteract such eventualities.

One of the most enduring problems encountered during fieldwork was the research fatigue of participants that manifested as early as the first few months of the project. At first, the sampled householders were enthusiastic about the project, but after months of repeated visits, they showed signs of fatigue. By the end of the first phase, nine households were substituted for – those who felt unable to continue their participation (one in Khayelitsha, four in Site B, three in Joe Slovo and one in Langa).

The reasons behind householders' fatigue were as follows. Prior to the sampling of households, permission was sought from local gatekeepers in order to ensure the smooth running of the project, and to make it as open and transparent as possible. The interests of the local gatekeepers, however, do not always coincide with those of the householders. Therefore, some household members agreed to participate in the research only because the project was approved by the local power-holders. After some time, these reluctant householders became disinterested, and would discourage researchers by locking doors and pretending to be away; not responding to the questions in a helpful way; and so forth.

The second cause of fatigue was that their expectations were not met. The project began when the government was supposed to be delivering services to previously disadvantaged communities through the RDP. When the research project was introduced, we made it clear that the project was linked to the RDP, the government and delivery of services. Some households thought that the project would, in one way or another offer them material goods or services. During the first few weeks, these households were enthusiastic about the project. We also believe that such enthusiasm contributed to some households giving us unreliable

information especially about their incomes. It was only after repeated visits that their 'true' statuses were known to the researchers. Realising that no material goods (from the project) were forthcoming, these households no longer wanted to take part.

In August 1996, as a way of expressing our gratitude to households that participated in the research project, gifts of wind-up radios were given. Subsequently, the rate of co-operation increased. This does not mean, however, that researchers need to 'buy' information from their participants. It is very important that incentives should be given to the households, especially when the research period is very long, as a token of gratitude and appreciation.

An important cause of the change of the sampled households' profiles, which has methodological significance, has to do with movements of households from one place to another. We observed constant movements of individual members between household members, or movements of entire households throughout the research period. Among the reasons for moving were the quest for reciprocity; commitments to other households; or long visits of up to six months duration. As a result, the boundaries of households were constantly shifting. In addition, many households, especially in shack settlements, did not enjoy security of tenure, forcing household members to move. On three occasions we were unable to track households. They did not leave forwarding addresses - except in cases where they had moved within the same area and were able to be traced. The 15 core households we started with in Khayelitsha's formal households remained the same until the conclusion of our fieldwork in April 1997. In Site B, two households were substituted for in the second phase of the project (1996/97), after all members of one household had moved to another area and members of another household went back to the former Transkei. In Langa backyards, the entire household moved after quarrelling with the landlord.<sup>3</sup> In Joe Slovo, two households left and did not leave any forwarding address.

#### 2.4 The research process

#### 2.4.1 Participant observation and in-depth interviews

Participant observation has been a key method used to generate data in this project. It is also a relatively new tool in energy research and so it is important to describe its general characteristics. We summarise here the gist of Bailey's (1982: 247-252) discussion on (participant) observation. Observational method involves a visual means of data gathering, but does not preclude other senses such as hearing, touching and smelling. Bailey argues that the observation method is particularly suited to studying individual and group behaviour over a long period of time. This is because of its ability to capture the 'non-verbal behaviour' of research participants. The researcher or observer is able to perceive ongoing behaviour or interaction as it occurs, and this allows for the recording of such information that cannot be readily gathered through other means of research. Second, the observational method enables the researcher to record people's actions and behaviour in their natural environment, and to observe discrepancies between what the research participant says and does. An observation technique also facilitates the collection of longitudinal data, allowing for observation and analysis of trends or patterns of behaviour (see also Wright & Nelson, 1995: 43-50).

There are also weaknesses in observation. The researcher often has no control of the natural environment in which the events are taking place. Bailey argues that data generated from this method is difficult to quantify. A third limitation of this method is that sample sizes tend to be unrepresentative. Fourthly, it is not always easy to gain and maintain access for a very a long time in the field. Lastly, observation may jeopardise anonymity.

<sup>&</sup>lt;sup>3</sup> Towards the end of the research period, two members of a backyard household moved and two were about to move. Members of a backyard shack moved back to the hostel area. The entire membership of another moved from to Site C, an informal settlement near Khayelitsha, and we were unable find it. Members of two households were about to move after their landlord told them that she planned to build a church on the site.

The observation method was a primary means of generating most of the data in this research project. In addition, interviews and surveys were conducted and workshops were run. Interviews were combined with participant observation in the following sectors of the study.

#### • Decision-making in households

In-depth interviews and observation were conducted in order to examine the role fuel expenditure plays in households' budgets, thus exploring economic, social and political as well as other household influences. Secondly, both techniques were used to establish the priority of fuel and appliance purchase in the context of demands place upon the households' income.

#### Multiple fuel use

Participant observation and interviews were used in order to document the process, extent and determinants of so-called fuel switching, and the extent to which it takes place in response to environmental, social, economic and policy-related factors.

#### Safety and fires

Observation and interviews were used (i) to ascertain the extent to which childproof containers or lids (the so-called safety caps) have penetrated the market; (ii) to record the extent to which such containers are perceived as improving standards of health and safety in the home; and (iii) to document critical incidents (potential accidents) and to relate these observations to socio-economic characteristics of the household, situational factors, and the end-user's behaviour

Observation and interviews were conducted near the fire sites. Victims and the general public were interviewed about the consequences immediately after the fire, and also after the reconstruction of neighbourhoods in order to gauge the social consequences of fires for individuals and groups.

#### • Informal (business) activities

Observation and interviewing documented in detail the relationship between informal activities carried inside and outside of households and energy consumption patterns. It has been crucial to record this information for future energy planning in order to determine the sources of energy that should be supplied and how to make them more accessible so as to improve the efficiency of businesses.

#### 2.4.2 Survey techniques

This project also made use of conventional quantitative forms of generating data. Survey methods were used only for research components that could be analysed statistically. Even then, quantification methods were employed only after such information was gathered through participant observation and in-depth interviews. The statistical information was to a large extent shaped by the kind of information generated through participant-observation. Statistical information was important in locating our sample in the regional and national contexts. The research components for which statistical data was generated were:

#### Eating patterns

Fuels logs were kept in order to document food and eating patterns. This information was related to energy end-use and appliances, nutrition and income.

#### Appliance acquisition

Questionnaires were used to collect information on appliance purchase and use. These explored purchasing criteria so that this information could be related to socio-economic data of the sample, and other on-going research.

#### Fuels use times and costs

Fuel logs and cost and quantity sheets were filled in 1995 and 1996, firstly, to identify fueluse periods in the day; and secondly, to determine the cost of fuel or energy sources over the two-year period.

#### 2.4.3 The participatory workshop technique

Most research projects identify the research themes or topics and research participants then respond to a set of preconceived questions. In this instance, households are treated as objects in the same manner as animated research objects are treated in the laboratory. In the extreme, such projects do not allow sufficient time for interaction with the 'research informants'. Therefore valuable research information then becomes inaccessible to users at the household level, because the language is foreign to them or the research results are not given to them for comments.

As a way of facilitating community feedback, significant time (between July 1996 and March 1997) was set aside for interactive workshops. These workshops were designed in such ways that people were treated as participants in the research. The workshops served two purposes. The first was to report on research findings of the first phase and allow people to comment or respond. The second purpose was to allow participants to determine the course of the workshop and the topics that they wanted to explore. The role of researchers was to facilitate discussions and offer suggestions when called upon. The themes of the workshops in Khayelitsha, Site B and Langa were different in both content and structure (see Chapter 3) as researchers' and the researched community's prioritisation of issues do not always coincide. When we were reporting the findings of the project in Khayelitsha for instance, households' members in a packed school hall responded emotionally to an electricity issue that researchers had not prioritised. The ensuing workshop was designed around that topic. In Joe Slovo, after the research staff reported what they perceived as the main research findings, workshop participants prioritised their own issues based on their experiences, such as the relationship between non-energy matters (insecurity of tenure) and energy utilisation. Participatory methodologies which treat the researched as partners in research are thus valuable in identifying priorities and marking differences in expectations between researchers, policymakers and the people for whom policy is made.

#### 2.5 Methodological constraints and challenges

We divided these methodological constraints and challenges into three categories: (i) those that cannot be avoided in most longitudinal studies; (ii) those relating to the methods we used to generate information; and (iii) constraints relating to conceptual understandings of the household as a unit of analysis. It is against these challenges that research findings should be understood.

#### 2.5.1 The day-to-day problems

Some problems cannot be anticipated in advance. Such constraints have an impact on information collection and, more importantly, are responsible for some gaps in the data.

- (i) Most of the research was conducted during working hours. On several occasions, many household members were either at their work places or not in their households. Although these households were mostly visited late in the afternoon, they were not visited as consistently as other households whose members were available during the day. This has important implications for the reliability and validity of data collected. For instance, in Khayelitsha and Langa where employment is relatively higher than in Site B and Joe Slovo, we could not visit all the households during the day. The Joe Slovo and Site B households were, therefore, visited more often than Khayelitsha and Langa backyards.
- (ii) During the second half of 1996, civic bodies in Cape Town's townships instigated a taxi boycott in an attempt to limit the on-going taxi wars. Routes to and from

Khayelitsha were most affected, which posed a direct problem to the research, as proper fieldwork could not be done effectively in Khayelitsha and Site B for the duration of this conflict (about two months). The bus service is neither efficient nor predictable, and buses take a longer time get to Khayelitsha than minibus-taxis. This meant that to get to Khayelitsha during the taxi feuds, researchers had to spend more than four hours travelling to and from the research areas. Moreover, during fieldwork researchers had to constantly check the time to ensure they were on time for the return bus. In addition to these logistical problems, the potential danger of taxi violence directly threatened the safety of the researchers.

- (iii) Safety could not be guaranteed, particularly for the woman researcher working during late afternoons and evenings. This was exacerbated when violence broke out between rival taxi organisations (see above).
- (iv) The sample profiles changed often as a result of household mobility, particularly in Joe Slovo and Langa. One of the reasons for mobility had to do with the insecurity of tenure. In Langa, the relationship between a landlord and the lodger determines the tenure of the latter. When such relationships fail, a lodger is forced to move. Landlord-lodger relationships are so unpredictable that it is difficult to predict lodgers' movements, either from an emic or etic point of view. Such unpredictability and insecurity of tenure has affected the research. As it happened, these backyarders did not leave forwarding addresses.
- (v) Some household movements, however, had to do with catastrophes or crises in the households. For example, a household might disintegrate after the death of an important member, as happened once in Langa.

#### 2.5.2 Challenges relating to research techniques

The most notable challenges, to which our techniques were subjected, related to the participatory method: the workshops. Such challenges related firstly to time and resources, and secondly, to perceptions of workshop participants about the researcher.

- (i) Workshops The research team facilitated four workshops between July 1996 and March 1997: July 04, 1996 (Langa); September 01, 1996 (Khayelitsha); October 10, 1996 (Site B); and March 01, 1997 (combined). They entailed considerable preparation and all commencement dates were delayed. In most instances, issues raised were not examined in the detail that would have pertained had these workshops started on time. To run a workshop requires considerable resources outlays. The researchers attended special courses on conducting workshops (see Chapter 3); money had to be made available to buy workshop materials, to cater for participants and to provide transport for participants.
- (ii) Perceptions Researchers were perceived as providers, and as having direct influence on (and even holding) decision-making processes. There were conflicts of interest between the researchers and the community. Participants often misconstrued the main purpose of the workshops, which was to empower the community with household energy knowledge. They expected researchers to solve their problems (such as supplying electricity in Joe Slovo). In addition, they wanted to use researchers as activists in order to attain some community needs such as toilets and water taps (in Joe Slovo) and lowering electricity tariffs (in Khayelitsha). We explore these and other issues in Chapter 3.

### 2.5.3 The notion of household in its anthropological perspective

Another important methodological challenge concerned notions of the household. Indeed, 'the household' is central to domestic energy use. Anthropological enquiry requires a high level of scrutiny that is arguably more labour intensive than that in any other discipline. The tradition of anthropology has been to analyse and deconstruct operating concepts that have been taken

for granted - especially those relating to development - in order to test their scientific validity.

'The household' is a key unit of analysis used by developers and planners. It has come a long way from being understood purely in neo-classical terms as a rational and unified economic unit. This conception began to be rejected in the 1960s when feminist anthropologists, amongst others, showed the fallacies and negative implications of seeing a household as a unified rational unit (Bruce, 1989 and Roberts, 1991). These studies and others see households composed of conflicting and competing economies defined along gender lines. They conclude that relations within households mirrored those of the wider society. Women, while playing a central role in the management of households, are often undermined in the decision-making processes. These studies urge development interventions and policies to look specifically at the roles of women in households.

The concept of the household was also scrutinised with reference to development by a growing number of South African anthropologists (Spiegel, 1990; Spiegel & Sharp, 1988; Bank, 1993; Ross, 1993b; Mehlwana, 1996) and anthropologists working in southern Africa (Murray, 1976; 1981; Ferguson, 1990a, 1990b). These anthropologists argue that the notion of the household should be seen and located within particular socio-cultural and politico-economical contexts. Ross (1993b) shows that it is inappropriate in certain contexts to view the household as co-residential ('living together'), commensal ('eating from the same pot') and co-productive ('pooling resources for all in the household) units at the same time (Ross, 1993b). Her study in the shantytown in Die Bos (Western Cape) shows that an individual's allegiance shifts between these units. Individuals, she argues, may be commensal in one unit, resident in another and co-produce for the benefit of various units. These allegiances shifted frequently during the Ross' research there.

All the anthropologists cited above underscore the centrality of the concept of household in both development and policy discourses. If we do not view households as homogeneous and static units, we will be in a better position to understand the dynamics of gender, generation and other relations, and to examine how they influence energy use in these units. For instance, it has been widely understood in energy circles that women are the principal energy users at household level but their voices or views are not sufficiently recorded (Eberhard & Van Horen, 1995). Researchers have been cautioning policy-makers against making gender-blind energy policies (Annecke, 1993; Makan, 1995), or policies that do not take into consideration the social imbeddedness of energy use especially in low-income households (Ross, 1993a).

#### 2.6 Conclusion

There has been a shift in methodologies from neo-classical economic methods (which treat people as objects) to participatory (including anthropological) research methods which study people. These changes followed the shift in development theory from a 'paradigm of things', which dominated development discourse in the 50s and 60s (Chambers, 1995: 31-33), to a 'paradigm of people', which recognises that policies should take cognisance of the multiplicity of societies, and that policies should be driven by the 'subjects'.

Notwithstanding the differences in methods of data-gathering, anthropological perspectives, supplemented by other techniques, offer insights into how fuels are used that other techniques cannot offer. We argue what may appear to be economical or 'rational' decisions regarding fuel use is indeed influenced to a large extent by local contexts. We show in the remainder of this report that economic decisions about fuel use are part of social processes. What these processes are is the subject matter of subsequent chapters.

# Democratising household energy research and community interactions

#### 3.1 Introduction

One of the important issues that the previous chapter has raised is the importance of involving people in the project not just as passive 'informants' or 'respondents' but as research participants. If one takes this view to its logical conclusion, research participants should also be involved in identifying research topics and questions. It is also incumbent for researchers to make available and accessible their findings to communities so that people can make meaningful responses. When the research team reported its 'main' research findings to the community of Joe Slovo, the community did not feel that these were of primary importance. Instead, other issues were prioritised over those presented by the researchers (see below).

We contend that research projects should not only be evaluated on the 'quality' of the research outputs, but should be evaluated on other criteria as well. The contribution of the research project towards developing and empowering of communities as well as producing competent black researchers should be significant criteria for evaluation. At present, there are very few blacks and white women in energy field; white males have traditionally dominated this field. This research programme has given important energy information back to the community in an interactive way, and contributed to equity in energy research, policy and development in terms of race and gender.

This chapter provides a description of a process of building capacity of researchers and raising awareness of energy issues at household and community level. Secondly, it describes energy issues that the 'community', or households on behalf of the 'community', raised. We do not analyse these issues here as they are examined in later chapters.

#### 3.2 Building capacity of the researchers

Building the capacity of the researchers has been a cornerstone of this project. In this way, the researchers would be able to pass on their knowledge of energy-related matters to the households and communities they are researching. Capacity building consisted of employing more research staff and the application of affirmative action policies. In the first phase of the project, two researchers were responsible for participant-observation on a full-time basis. However, given a total sample of sixty households per research centre, this number was too large for participant observation. To counteract this, an additional researcher was employed to assist in fieldwork. Secondly, this study has trained black and women researchers in the field of urban domestic energy policy.

Researchers have been familiarised with the energy sector by attending EDRC's seminars on various topics around energy supply and demand. Research findings were presented at one of these seminars and in other academic and research environments (such as the Department of Social Anthropology of the University of Cape Town and Mineral and Energy Policy Centre). As a way of further building their knowledge of the energy sector, the project leader attended an energy conference in North Carolina in 1996, organised by the USA's Department of Energy. Researchers attended writing skill workshop and computer literacy programmes to improve their writing and computer skills. A researcher was funded by the project to complete a Bachelor of Social Science (Honours) degree on household energy demand. Lastly, researchers were trained in workshop facilitation in order to feed back their findings to the community.

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The researchers were also involved in other related projects. This served two important purposes: to disseminate and feed research information into, and to gain knowledge from, projects that would enhance their capacity to understand household energy matters. In 1995, the researchers contributed to the South African energy white paper process by facilitating regional community workshops on household energy. The knowledge gained from these workshops was fed into the energy white paper. The project was linked with Energy and Development's Household Energy Action Training (HEAT) programme. It assisted in defining the content issues of this project. Our researchers were involved in running HEAT's 'Energy for Sustainable Development' workshops, aimed at building the capacity of community projects on energy matters. Major findings from our research provided Soul City (a national education and awareness campaign) with energy messages, which are used in Soul City's radio and television programmes, newsletters, pamphlets and booklets. Insights gained from this project were also useful in shaping the urban household energy demand of the Namibian white paper.

#### 3.3 A summary of the process and findings of the community workshops

An operating principle of action-orientated research is to feed back results of the research and – where research is policy orientated – to promote the implementation of policies that will benefit participants. It is therefore both feasible for the researchers, given their acceptance in the research areas and incumbent on them, given their professional ethics, to undertake these tasks. The aim of feeding back research results was to provide informants and civic organisations in the research areas with the results of the research in order to stimulate debate around household energy matters. Secondly, the aim was to bring research participants, civic organisations and energy providers together in order to promote constructive interaction between them and to promote the implementation of beneficial policies. Information dissemination and building capacity at the household level was achieved through discussing research results with residents in the sampled communities, facilitating workshops in research areas with members of households and community organisations and initiating interaction among all stakeholders – households, community organisations and energy providers.

#### 3.3.1 Civic committee and householders' workshops

The results of most energy research are rarely accessible where they are needed the most – to the end-users. This is true in low-income households. Energy reports are specifically written for policy-makers in a language and terminology that is complex and foreign for a lay person to understand. Energy information should be made available to users in an easily comprehensible language and format. Current household energy policy claims to promote social equity and encourage energy efficiency at household level. Yet, it is ironic that many households do not have sufficient knowledge of the energy sources and appliances they use. For instance, questions often asked by end-users suggest a lack of basic information which – in the spirit of equity and user-friendly energy policy – households are entitled to have.

We identified the workshop method as one way of disseminating energy information and creating awareness about energy. The workshops had four objectives:

- (i) An interactive way of bringing large groups of end-users together to discuss the energy problems they experience, and to find solutions.
- (ii) To increase awareness among end-users about the efficient use of energy. The main aim is to empower end-users to make informed decisions regarding their energy use and appliance purchases, and to promote efficient, safe and cost effective use of energy.
- (iii) To augment and reflect on research findings in these areas.
- (iv) To initiate future interactions between communities, policy-makers and service providers.

Three community workshops were held in Langa and Khayelitsha. All had a wider participation than just the sampled households. They included other householders and civic

committee members. The number of participants, however, was kept to a minimum for the workshops to be manageable. Civic committee members were invited so as to help implement action plans coming from workshops. The themes of the workshops were designed to be flexible depending on the context and they were constantly revised and changed to suit the particular needs of participants. For instance, two workshops – in Site B and Joe Slovo – focused generally on energy sources used by households in those particular areas. Also, in Joe Slovo, the workshop served as an opportunity to feed back results of Phase I research, while in other areas, separate meetings were called to inform the community of research results. At the request of the civic committee members in Khayelitsha, their workshop focused exclusively on the use of electricity, which was viewed by householders as an area of major concern.

The workshop plan followed a uniform pattern in all three areas. Firstly, participants brainstormed their energy problems – in the case of Joe Slovo and Site B – and their electricity problems in the case of Khayelitsha. These issues were then prioritised so that the most important two or three energy issues were systematically analysed by participants. Secondly, participants suggested interventions at household, civic structure, service provider or government levels. Lastly, participants designed a plan of action on how and who would carry issues from the workshops further. We outline below important themes that emerged from these workshops.

#### 3.3.2 'How do we know if they are robbing us?'

Participants preferred electricity to other energy sources. The discussions raised interesting points. For example in Joe Slovo squatter camp – where there is no hope that there will ever be electricity – people were wary of discussing fuels they are using, such as paraffin and gas, lest this be construed as meaning they are satisfied with these fuels. They did not understand why they could not have access to electricity when electric power lines pass above their homes.

Moreover, we noticed that people's perceptions of electricity differ tremendously depending on access to it. In Joe Slovo squatter camp, people believe that if they should have electricity they would never use other energy sources again. Evidence from elsewhere, however, shows that this does not happen in practice. The main reason is that other fuels such as paraffin and gas are associated with the dangers of paraffin ingestion, fires, and other health-related hazards. Accidents caused by electricity are rare. There are various reasons for using other fuels and these will be dealt with in this discussion. It must be re-iterated, though, that people expressed a genuine desire to have electricity and to rely on it for all their energy needs.

The squatter settlement of Joe Slovo does not have access to most basic services, including electricity. All the residents use paraffin and a few also use gas. As the settlement is very dense and houses are built of highly flammable materials, fires are common. If one shack burns, fire easily spreads to others because of their close proximity to each other. As workshop participants pointed out, it is difficult for them to get access to the fire brigade, as there are no telephones in the settlement. Also there are no roads to allow cars as well as fire and ambulance services into the area. If electricity were supplied, fires could be minimised as people would cut down on the use of candles and wick stoves that are the main causes of fires.

For women, the environment is also not safe especially at night because there are no streetlights. Women say this limits their involvement in community activities. Some people feel that returning home in the evening from work is dangerous especially in winter when it becomes dark early. Therefore, they feel that an electricity supply would help them lead

At the beginning of the study in May 1995, we had promised the civic organisation that we would present them with research findings of their respective areas. Since Joe Slovo consists of a changing population – in terms of movements – we experienced some problems in organising this workshop.

normal lives. Lack of electricity also limits people's choice of appliances and fuels. Some have electrical appliances that they used in their previous areas of residence, and obviously cannot use them. Some have kept these appliances in the hope that they will be able to use them. Others have sent these to their families who live in electrified areas.

Although electricity is preferred for all its positive attributes – such as cleanliness and convenience – there are associated problems. One of the main problems is that poor people cannot afford it and as result do not utilise it fully even though it is available in some settlements, such as Khayelitsha and Site B (see Chapters 5, 6 and 7). In two workshops, participants expressed a common concern that electricity costs are higher than an ordinary end-user can afford.

As we indicated earlier, once people have access to electricity, their perceptions about electricity change. In Khayelitsha as well as in Site B people continue to use other energy sources. According to one participant, 'using different energy sources is too expensive – it is better to spend all your money on one fuel'. Among a myriad of reasons for people underusing electricity, is that their knowledge about electricity is limited. End-users' levels of knowledge about electricity differ according to whether or not they use this energy source. In other words their level of knowledge depends mostly on their experience. It is clear that end-users do not have sufficient information about electricity in particular and energy sources in general. In sharing information about energy sources during the workshops, we hoped to bridge this gap.

Some of the questions people had about electricity were:

- (i) Who is responsible for supplying Khayelitsha with electricity? Is it Eskom, Phambili Nombane or Lingelethu Council? Who is responsible for our billing?
- (ii) How are the units calculated? Who is responsible? Are bills based on estimates? Can whoever is responsible for providing electricity gives us a breakdown of our consumption of electricity?
- (iii) Are streetlights included in our bills? If they are, what about the service charges that we pay?
- (iv) How many plugs should we connect with electricity?
- (v) Can I use a different appliance on the plug marked for a stove?

From these questions, it can be seen that there is lack of communication between electricity utilities and end-users. End-users, for instance, do not know who is responsible so that they can lodge their complaints when necessary. There is no one available to answer questions, although customer care is supposed to be a prime focus of any service provider. In both workshops, there was a negative stereotyping of Phambili Nombane. It is seen only as a 'watchdog' for Eskom with no interest in serving the community. This has been made worse by the alleged failure of the utility to honour agreements between them and the community. For instance, it continues to confiscate ready-boards of people alleged to have tampered with them without proper consultation with civic committees. Households were either ill informed about how to use ready-boards, or no information was given to them when electricity was installed. For instance, when people buy appliances, they are supplied with operating manuals; the same principle, they argue, should apply with electricity. It appears that endusers are not sure about their electricity expenditure even though they use prepayment meters. They believe that the electricity units they buy end too quickly.<sup>2</sup>

Problems relating to appliances featured prominently in the workshops. Some would say, 'I

<sup>&</sup>lt;sup>2</sup> The cost of electricity does not only cover units (kWh) that end-users consume. They also cover capital, such as power station capacity, transmission and reticulation networks, and metering and other hidden operating costs other than the price of electricity itself (Eskom, 1992: 1-14).

bought a light bulb and it fused the same night'. 'There is a problem with this electricity that we are using. Sometimes when you use a kettle, the cord becomes very hot and it becomes soft'; 'I bought an electric stove brand new but it is not adjustable, it is always high.' These problems provide information about difficulties that people are experiencing on a daily basis. Although the numbers of participants in these workshops were too small to draw any generalised conclusions, it is, however, possible that these problems may be common to other end-users. When buying appliances people are not always aware of important features to look for in an appliance. For example, the man who complained about the bulb did not know that they come in different sizes, which indicate their power and durability. Moreover, people need to know what kind of appliances cost more to use. This should not be limited only to electricity, but should instead include other energy sources. For example, gas is reportedly cheaper in the Western Cape for cooking than electricity (see Thorne, 1996), and this needs to be emphasised.

Generally, participants in areas supplied with electricity felt that the quality of service is very poor, in terms of both the supply and customer relations. End-users mentioned frequency of blackouts or power failures especially in winter when it is raining. These mostly occur late in the afternoon when people return from work. This is the time when they need to prepare evening meals. 'It has become difficult to rely on electricity for cooking because it can go off while you are still busy cooking,' said participants in one of the workshops. This forces people to look to alternative fuels like paraffin and candles. Also, it is not possible to use a number of appliances at the same time and this causes a great deal of inconvenience. A male participant related how his television broke as it was switched on while the sewing machine and the radio were also in use. He said; 'At first I could not see pictures on the screen and now it is broken completely. You cannot use many appliances with this electricity.' Such a perception, whether or not it is valid, reinforces the argument we have made earlier that people do not have sufficient knowledge about the energy sources and appliances they are using. Until they are given this information, perceptions such as this will continue to create discomfort within the community.

In part, as a result of the above problems, people feel that there is no customer care at all and this causes dissatisfaction among the people. As one said; 'These blackouts just happen. We are not respected at all as customers. These things do not occur in white areas'. The general feeling is that people need to be informed in advance if there is going to be a power failure and the anticipated duration of a blackout so that they can make contingency plans. They said, 'They used to do it [give a warning] with water in Gugulethu and people would fill up their buckets with water in good time. Why cannot they employ the same system here when there is going to be a blackout? We are working and there is no time to prepare evening meals.' These are reasonable complaints, even though at times blackouts are not necessarily caused by the low quality of electricity supply – that they are not informed about it makes them difficult for people to think otherwise. In established and mostly white areas, where the blackouts are infrequent, people are able to contact the authorities to find out what the causes are and how long is it going to last. In Khayelitsha people argue that, 'When they cut off electricity we do not know who to consult so that we can find out why and how long will it take. These people are not accessible to us.'

Participants complained about inconsistent and unreasonable metering, and some attribute this to the new prepayment keypad system. They argue that these units run faster than usual. As a result, they say, it is difficult to budget for energy expenditure even though they use prepayment meters. Prepayment meters were, however, introduced to assist low-income households so that they can plan for the amount of electricity they use. 'These days you buy electricity for R50 and it is already finished in four days. As a result we resort to ukutokola.'3

<sup>&</sup>lt;sup>3</sup> This is a township euphemism for stealing electricity. This is done in three ways, bypassing the readyboard, tampering with it and illegal connections. Some people call this behaviour 'ukukokothela'.

Due to these problems, some people have devised other means of coping with the escalating costs of electricity, which may not always be legal. *Ukutokola*, which people admit is common, is one of the ways adopted to minimise electricity expenditure. Although they admit that this is wrong they find it difficult to accept the way authorities, particularly Phambili Nombane, handle the problem. For example they mentioned that people's ready-boards have been taken away by Phambili Nombane even though they have not tampered with the ready-boards. Everyone is charged R750 for the ready-board to be replaced. One person said, 'Some boxes have been taken away [by Phambili Nombane] although some people have not tampered with them. Everyone is charged R750 [to replace the box]. We have agreed with Phambili Nombane that they should not go about doing this without the knowledge of the committee – I still have the details of those agreements.'

# 3.3.3 'Ipalafini iyabulala kodwa igasi iyatshabalalisa'

Women, particularly in Joe Slovo, raised problems relating to paraffin, such as burns and chest problems. Women approached problems that paraffin cause by referring to services such as clinics. The main reason that a clinic is needed is to provide help to victims of fire and people suffering from chest problems as a result of over exposure to paraffin fumes. Women underscored that paraffin and faulty wick stoves cause fires, which occur repeatedly in Joe Slovo. A woman who sleeps with the lamp on, complained that the paraffin smell tightens her chest at night. She said that, as a result of exposure to paraffin fumes, she now suffers from asthma. Another man mentioned that when a flame stove is switched off the house is filled with choking smoke, making it hard for people, especially children, to breathe. The nearest clinic is situated far away, and does not offer a 24-hour service. On Sundays, for instance, the clinic is not open and people have to take their children to the Red Cross hospital, some ten kilometres away, or adults to Conradie hospital which is also far from where they live.

The problem of the low quality of paraffin and paraffin appliances was also made succinctly in the workshops. Again, women – who are primary users of paraffin – pointed that paraffin is very dirty as compared to the type of paraffin they used 'in the olden days'. 'Paraffin is a problem because it is very smoky. It affects the lungs and results in a person getting tuberculosis and other chest problems. The eyes are also hurt too; the walls are black and dirty. What do you expect?' '[The] paraffin, which is sold to people, is very dirty. Sometimes it comes totally black and brownish. When you add it in a stove, you find that there is a watery something at the bottom of the bottle. That is why this paraffin is smoky. People should check it.'

Even when end-users complain to shops where they buy paraffin, they are not given satisfactory explanations. The spaza shops owners often do not have the power to determine the quality of paraffin they are supplied with. Since households rely mainly on paraffin for cooking, they have no choice but to use this dirty paraffin even though they know it is a health risk. A woman said, 'As recently as last month [September 1996], paraffin had a strange colour. It looked like diesel. When we bought it, it was so dirty that it produced a black smoke. We asked the shop-owner about this but he said it came like that where he, himself, bought it, and there is nothing he can do about its quality.'

Although gas is better than paraffin for cooking (as it is faster and more efficient than paraffin stoves), it is not seen as a safer option because it is regarded as dangerous. A man in a Joe Slovo workshop put this view rather succinctly when he said; 'Ipalafini iyabulala kodwa igasi iyatshabalalisa (Paraffin kills but gas destroys)!' Although adults may know how to use gas safely, children may use gas when adults are away from home. It is worth mentioning that gas was not seen as more expensive but as very dangerous to use. In Site B in particular, none of the participants said gas was expensive. The few women who use gas said:

Gas is safe but people do not know how to use it. When you switch on a gas stove you should have matches next to you. You cannot switch it on if you are going to search for matches. People who are forgetful should not use gas... You have to avoid spilling water on the gas ring when you are cooking with gas because the two are not friends.

A point of concern around the safety of gas is that local gas hawkers are viewed as unconcerned about the safety of their customers when they sell gas. Most gas hawkers do not have measuring devices that show when the canister is full or empty. This results in overfilling or under-filling the gas canister. A woman who uses gas shared her experience that:

People who fill our gas tanks do not care. They will connect a pipe and go somewhere else, when they come back the tank is over-filled but they do not care about this. They will just give it to you. Then when you get home and switch on your stove, gas continues to leak and causes flame beneath when you light it. This flame is dangerous.

At least one can see when a wick or pump stove is old, they argued, but it is difficult to see when a gas ring is old. A woman, who emphasised that she will never use gas said; 'These gas appliances do not show when they are very old, and this is dangerous too.'

# 3.4 Community/service-provider interactions

As the main purpose of workshops was to promote and initiate constructive interactions, a special workshop for energy service providers, householders and civic members was held in March 1997. This particular workshop sought to encourage householders to use the best mix of fuels and appliances. It was not the intention of this particular workshop to rank one fuel or energy source over the other. Instead, the broad purpose was to enable users to assess the advantages and disadvantages of each energy source and make informed decisions based on sound knowledge of different fuels and appliances.

# 3.4.1 'Communication is the best way of solving electricity problems'

The most pressing and overriding issues relating to electricity in Khayelitsha are costs and what is perceived as poor service from the local utility. From the discussion, it appeared that the participants' problems with electricity are rooted in their conflict (perceived or real) with Phambili Nombane, their electricity providers. Since the latter was not represented in the workshop, this conflict was not sufficiently addressed.

The presence of a representative from Eskom was crucial in that the participants were made to think about local-level solutions towards some of their problems. Participants were made to understand that some problems relating to electricity were also being addressed at a national level. For example, electricity distribution in the whole of South Africa was fragmented according to apartheid policies: different authorities were responsible for distributing electricity. This caused, among other things, lack of uniformity in the billing of electricity users.

Concerning the cost of wiring of dwellings which participants saw as very expensive, they were told that Eskom is conducting training on house wiring. Local people are being equipped with expertise on wiring of houses. Phambili Nombane also offers this training. It was up to the residents to inquire whether Phambili Nombane or Eskom could bring the information to the participants. This training serves two purposes: trained personnel would be able to wire people's houses at comparatively low cost, and it may provide a few jobs.

## 3.4.2 'Gas could be the alternative to paraffin'

Gas users were concerned about the dangers that may be caused by faulty gas canisters. This is because canisters, which weigh 9 kg or more, are always exchanged when people go to refill them. It was explained, however, that this is done to ensure customer safety. With the rough handling that goes with the use of heavy gas bottles, regular checking is a necessity. Before canisters are returned to customers, their condition is checked thoroughly and it is not possible for them to leak. Therefore, these bottles are not a threat to the lives of users. Instead, people should be more concerned about their gas connections. What is more important, gas bottles are made from durable steel and iron to ensure that they withstand most pressures. In the rare cases when they are broken or leaking, they make strange noises immediately. Notwithstanding this, people have their right as customers to refuse to take a bottle if they are

not happy with its condition. If there is a fire resulting from a faulty gas bottle, people could take to court the company responsible. Since it is more likely that the danger comes from faulty appliances than broken canisters, gas users should always check the valve and the pipe to see if they are still in good condition, and should change then immediately if they are not.

One of the major barriers to people who want to use gas at their homes is that gas appliances are not easy to find. In general, gas has been used more for recreational purposes than for domestic purposes. More and more people are now using gas for domestic purposes, and this has increased demand for this fuel. As companies realise this, gas appliances will be made more readily available. At the moment CADAC is the only South African manufacturing company producing gas appliances for household use. What is important is that their appliances comply with the quality and safety standards as recommended by the South African Bureau of Standards.

Householders pointed to their inability to monitor the quantity of gas left in the bottle. The gas would, for instance, run out in the middle of cooking, thus causing a great deal of inconvenience especially in the evening. Also, places to refill canisters are often far from people's homes and do not open late in the evenings. It was suggested that there is a need for a measuring device to show users how much gas is still left. It was learned that there are special mechanisms that have been devised to address this problem but it is possible that people are not yet aware of them. There is a meter that can be put on gas bottles, but it is very expensive and most people may not be able to afford it.

# 3.5 Conclusion

We sum up this chapter by posing some ethical questions relating to researcher-researched relationships. How can researchers make it a point that the information accumulated through weeks and even months of continuous fieldwork is fed back to the community? In what way is the energy information that is stored in archives of energy research centres and in the DME be made accessible to communities?<sup>4</sup> Should researchers rely on policy makers and other implementing agencies to disseminate energy information? What is the best method of disseminating information that allows quick feedback and dialogue?

We underscore that the workshop method is one of the numerous methods of generating and ploughing back energy information to the users. The workshop method should be seen as complementing information generated through scientific means. Although the purpose of scientific research is, to a large extent, to examine and analyse physical or social phenomena and offer an explanation, it should not end there. A workshop is but one form of action-oriented methods that is best equipped – as we mentioned earlier – to serve a dual function. Firstly, it provides households or communities with an arena in which they can actively and directly respond to the energy issues facing them individually in a group situation with other individuals facing similar issues and, secondly, it allows service providers an opportunity of listening and responding directly to community needs.

The workshops have raised three energy issues that are of prime importance to this report. These issues are explored and analysed in later chapters. The first is the problem relating to electricity. We have mentioned in the previous chapters how the proponents of the transitional model view electricity as a 'short-cut' solution to the households' energy poverty. The workshops have shown that people with and without electricity have different perceptions about this energy source. In Chapter 6 we explore further these perceptions and how they influence electricity use.

The second issue raised by these workshops is the gendered nature of fuel preferences. Men as shown above, prefer electricity and would not be drawn into discussion relating to paraffin and gas because they do not know it as well as women. We show that paraffin is seen in the

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<sup>&</sup>lt;sup>4</sup> In this context, we mean by accessibility information that can be supplied to the communities in easily understood language.

same context as women in the sampled households. That gender is attached to fuel use is a theme that cut across the whole investigation. How gender is manifested in the households and how it influences decisions about what, how and why fuels are used is the subject matter of Chapter 4.

The third issue relates to the primacy of paraffin as the key fuel in many households and the reluctance of many households to experiment with other fuels, such as gas. In later chapters (especially Chapters 5, 6, 7 and 8), we explore the different contexts of fuel use and how a decision relating to what fuels is used is also linked with the type of end-use. These chapters show that decisions relating to the best fuel use are conscious and rational strategies by end-users rather than solely responses to the incomes of households

# Shifting boundaries, shifting roles: the social dynamics of decision-making and budgeting

# 4.1 Introduction

Household decision-making is a 'bargaining process between parties whose bargaining power depends on their position as individuals within the larger economy ... where there is a conflict of interests, decision-making outcomes will reflect the differential bargaining power of household members' (Kabeer & Joekes, 1991: 2). Households are very diverse, and this requires an analysis of the context within which each household is located. All households are located within social, political, economic, and cultural contexts, and thus the experiences of individual householders will vary according to how these different contexts affect them. These variations can be observed within and across societies. Resources, personnel and decision-making are organised differently in different households within and across cultures (Peterson, 1994).

In this chapter we explore different levels of decision-making: the issue of household budgeting and the social dynamics of decision-making within low-income households. Household budgeting is mainly about how money is allocated to various functions such as food and fuel within households. It includes the manner in which householders prioritise their spending depending on available financial resources. In discussing prioritisation, our focus is on the individuals involved in decision-making pertaining to how money is allocated to different household needs. In particular we seek to understand the main factors that determine individual rights to participate or influence decision-making within households. We argue that issues such as gender, age and income-earning status are the main determinants.

## 4.2 Household budgeting and decision-making

The energy budget is located within the household's budgetary constraints, which are related in part to households' incomes. The incomes of the sampled households demand that households prioritise their spending well and this has implications for appliance purchases, which are important determinants of fuel use at household level. As shown in Chapter 5, there are a variety of methods employed by householders to gain access to appliances. The methods used include hire purchase for more expensive appliances such as electrical appliances, the use of second-hand shops, lay-byes and savings clubs.

All these methods have their advantages and disadvantages. For instance, many householders find buying second-hand appliances to be unreliable. While hire purchase (HP) offers people access to brand-new appliances, items bought through HP have a guarantee that offers consumers protection against malfunctioning or factory defect for an approved period (usually twelve months) from the date of purchase. Hire purchase rights are, however, given only to people with reliable incomes, fixed address and so forth. Case 4.1 shows the extent to which the problem of lack of access to reliable sources of income affects decision-making around appliance purchasing within low-income households. The case encapsulates some of the issues mentioned above – mainly the impact of gender and the income-earning status of individuals within households.

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# Case 4.1

Nosidima (#S08) lives with her husband, two young children, and her brother-in-law. When we first met her in 1995, she was unemployed. She spent most of her time at home doing housework. She also used some of her time to do people's hair - a skill she had learnt when she was living in the Eastern Cape. The income from this activity had been unreliable though. Owing in part to high unemployment level in Site B, few people were coming for hairdressing. It was even difficult for her to estimate the number of people who would come in a week or month, as patronage for this activity was highly irregular. Her business was running at loss, as some of her customers were not paying immediately. The household, therefore, relied almost on the income of Terrence, her husband.

Then, her husband was working at a clothing factory in Epping, earning R250 per week, of which R100 was used to buy groceries every week. Nosidima explained to us that this method is more economical than buying groceries per month. She is able to monitor the household's expenditure patterns on groceries over a shorter time. Monitoring expenditure, she proudly said, is part of her household management role. Her husband even acknowledges this role, admitting that decisions on appliance purchases are hers. This is a source of tension, however, as her husband controls finances and he does not like spending 'his money'.

Although Nosidima and Terrence claim that they make decisions jointly, the latter had the final say in matters relating to the household's budget because he was the sole breadwinner. Instead of 'always' asking for his money, Nosidima used the income she got from hairdressing to buy a paraffin heater for the household. She bought it on lay-bye. The lay-bye method means that one has to plan well in advance because access to a laybye item is gained only when the full amount is paid. She bought this paraffin heater in winter 1995, as she planned to use it in 1996. Meanwhile they used a primus stove for space heating.

At the end of 1996, she gained employment, as a domestic worker in a suburb of Maitland, working eight days a month for R250. When she got this job she bought a colour television which she had always wanted for a long time. She bought this on HP because her husband has a stable job, and they have a good credit record. The new colour television set replaced a portable black and white television set. She recalled; 'I did not consult my husband because I knew he would refuse ... I bought it [the television] and I knew that once it is in the house he will be very delighted.' Indeed, she did not tell him about it until the day it was delivered to her home. As she expected when he saw the television he was delighted but 'he kept on worrying about the cost'. Nosidima, however, is responsible for paying the monthly instalments of R100 for the television set. She also has an HP account at Foschini clothing store where she pays between R60 - R100 a month for her own clothing.

Terrence is responsible for buying groceries, and his own and the children's clothes. He works at a clothing factory where he qualifies for a staff discount. He buys their children's clothes at work because it is cheaper. He is also a member of a savings club. In his savings club members exchange appliances as Christmas gifts at the end of the year (each member suggests what he or she wants). Terrence gives Nosidima the opportunity to make this decision.

Nosidima and her husband have clearly distinct roles and responsibilities. Nosidima is mainly responsible for household management but her ability to execute this function depends on the amount of financial support she gets from her husband. Her husband controlled decisions around the household's expenditure, and this affected the purchase of appliances. In order to counter this problem, she utilised various methods to acquire household appliances. Since it is her responsibility to purchase appliances, she decided to buy a paraffin heater for space heating purposes.

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When Nosidima had independent income in 1996, she was able to bypass her husband's control over the household's allocation of financial resources. Her skills in being able to manipulate small amounts of income became her source of strength. To be able to fulfil her goals Nosidima used various strategies to obtain appliances such as the lay-bye method when she was unemployed and HP when she subsequently found a job. This case study shows that having access to an independent income may enable women to overcome some of the barriers they confront while bargaining with their male partners.

Women who have no independent source of income or access to other resources usually play a limited role in budgeting and decision-making in their households. Because these are social processes, variations exist and contradictions between households. For instance, in some households women are able to assert themselves or their needs when this is necessary for the household's livelihood or their own security even though they do not have access to income. Other mediating factors include, 'contracts' between spouses, and people's general perceptions and attitudes. What becomes apparent from the case studies is that the subjective experiences of women in these households are not homogenous. Rather, although their experiences may be similar in some ways, they may differ in others.

# Case 4.2

Nolulamile (#S09), Mgoduseni (her husband), their two sets of twins and her father-inlaw all occupy a single dwelling in Site B. Before she married him, she had a job. Since her marriage she has not been working because her husband refused to allow her to continue with her job. Her husband is a driver for a furniture shop in Claremont and earns R1 500 a month. According to Nolulamile, budgeting in this household is a joint decision making process.

A portion of this money, about R500, is sent to her husband's parents in Cofimvaba, a household of four members, and they use R200 a month to buy food for the Site B household. Then they buy 20 litres of paraffin at R27, which is mainly used for cooking, and boiling water. For electricity they spend R40 a month, and this energy source is used for lighting, to power a black and white television set and a radio cassette recorder. The rest of the money goes to a savings account. A large portion of these savings will be used to pay her *lobola* (bridewealth). Mgoduseni does not keep his money at home because 'it will be misused ... we agree how much should go to the bank each month.' Sometimes, unforeseen circumstances arise causing them to shift their budget plans. For instance, the family of Mgoduseni frequently comes to stay with them, causing budgetary constraints, as they have to spend more when there are additional people.

In 1995 Nolulamile collected wood which they used for space heating. When her pregnancy advanced, she stopped collecting wood. In 1996 they did not use anything for space heating because there was no one to collect wood. Instead they switched on electric lights during the day because they believe that the light bulbs make the house warmer.

In this household both spouses believe in 'tradition' but the latter is manipulated differently in order to gain control of household resources. In the 'traditional' sense, a man is perceived as the 'head of the household'. This gives him absolute authority and control over his dependants (women and children). He exercises that authority by maintaining a final say in decision-making outcomes. Nolulamile's husband exercised his authority by refusing to let her find a job. He decided to be the sole breadwinner, thus taking responsibility to maintain his wife and children. She did not challenge this view because she also believes that a husband has to have a final say in household decisions. This perception is held by many women, as Nosakhele (#L15) explained, 'the role of the woman in a household is only to make suggestions, but the final say rests with the man'.

Interestingly, Nolulamile uses the fact that her husband denies her an opportunity to earn her own income, to get some of the things she wants. For instance, apart from his moral obligation to clothe and feed them, she is putting pressure on him to pay her *lobola*. She

argues that this is important for her social status and self-esteem. It differentiates her from a live-in partner, thus earning her some respect within her extended family and community. She strongly believes in this custom, as she says, 'my parents have to benefit from my marriage'. It is therefore clear that both spouses believe in tradition but they manipulate it differently in order to achieve their personal goals.

Nolulamile has no say regarding her husband's relatives moving in and out of her household even though some of them stay for extended periods. Although this puts a strain on the household's financial resources she says, 'I cannot refuse them a place to stay otherwise I will cause tensions between us'. At some stage in 1996 her sister-in-law came with her three children and she lived with them for six months. She could not contribute financially because her 'husband', who had never paid lobola for her, abandoned them. Nolulamile told us that, 'while she was with us, buying grocery cost R400, excluding the items that are difficult to budget for, such as vegetables and meat'. Her husband's father has no obligation to contribute to this household's expenditure. Instead he sends his pension to his rural homestead, unless they have specifically asked him for money.

# 4.3 The role of children in influencing household decision-making

We mentioned earlier that gender and age play an important role in household management and decision-making. Children, however, also contribute to the household's labour resources and decision-making. Children play an important role in facilitating appliance purchases. Because households are made up of individuals with certain rights, responsibilities and obligations, adults often feel obliged to accommodate their children's needs. Where the incomes permit, households that have children or occupied by young adults tend to have a variety of appliances that do not occur in households that are occupied by elderly people alone. Children also play a central role in the sharing of appliances, mainly the television sets (see also Chapter 5). Case 4.3 below shows the role children play in influencing appliance acquisition and fuel use patterns through their contribution to the household's labour resources.

### Case 4.3

Nosandile (#S04) lives with her husband Edinburgh and their five children. Nobuzwe, her 15-year-old daughter, is responsible for cooking, boiling water for all the other children to bathe in the morning, and for ironing school uniforms. Nosandile bought an electric iron and television because her children wanted these appliances. She bought the iron in 1995 because Nobuzwe said, 'it is difficult and time consuming to iron school uniform with a flat iron'. To save time she 'encouraged' her mother to buy an electric iron. Realising the importance of saving time especially in the morning, Nosandile suggested that in 1996 she would also buy the urn for her children to heat water in the morning. However, her children requested a television set. They insisted that they were missing out on some of the educational programmes that are shown on television, for example Mathematics, which is taught on SABC Channel #3. They suggested that their teachers encouraged them to watch this programme. Subsequently, Nosandile bought a 51-cm colour television on hire purchase. She was unable to purchase the urn as she had planned because of limited financial resources.

The above case illustrates that children contribute to the labour pool within households depending on their age. We argue that the availability of children's labour may free adults to concentrate on the activities aimed at generating much needed income in households that are engaged in such activities (see also Chapter 10). This means that through their labour children may be contributing indirectly to the household economy. Some children join the labour force, and thus become actively involved in generating income, which they contribute to their homes.

# 4.4 The shifting notions of labour allocation within households

The division of labour in this context refers to the special allocation of tasks to different members of a domestic unit. Power relations found within households, which are expressed in terms of gender or seniority depending on the household composition, shape this allocation of responsibilities. The division of labour within the sampled households differ from one household to the other depending on the power relations as well as on the stability of the household members. In some households, as members move in and out, the allocation of tasks also shift in order to accommodate the movements. The movements of household members affect household organisation. We illustrate this point with reference to Nobuzwe (#S04) in Case 4.4 below.

## Case 4.4

Nobuzwe is mainly responsible for cooking, boiling water for all the other children to bathe in the morning, and ironing uniforms. In 1996 they accommodated another woman, an older relative, and she took over most of Nobuzwe's responsibilities. For sometime (about four months) she became a child, always playing with other children on the street. When this woman moved out of their home after finding her own site in an informal unplanned settlement commonly referred to as ezimbacwini (place of refugees), Nobuzwe returned to her normal responsibilities – cooking, heating water to bath, and ironing uniforms.

Similarly Ross (1993) observes in Die Bos – a shack settlement she conducted her study – that movements of household members have an effect on the type of fuel used. For instance, wood is used in many households when there are enough people, as wood collection is labour intensive.

Not only are inter households movements affect fuel-use patterns, gender and age also affect the division of labour within households. Case 4.5 illustrates a division of labour based on gender in a household where there are no children. To supplement income, members of this household are involved in brewing beer for sale. As in most households involved in the preparation of food and drinks for sale, wood is used strategically to reduce household expenditure on energy.

# **Case 4.5**

In 1995, Mawawa (#S02) lived with his live-in girlfriend, Susan, in Site B. They were both divorcees. Both have children from their previous relationships but the children live with their respective grandparents in their natal homes.

Mawawa received a disability grant every month, because of an injury he sustained when he was a little boy, which left him with one eye. Susan was unemployed. To supplement this income, they were involved in beer brewing. They used wood, which Susan collected from the neighbouring forests. She collected wood almost everyday in the mornings. She was relieved of this duty when the weather was not conducive to wood collection, for example when it was raining heavily. On her return from the bush, she would go to the shop to buy malt and other necessary ingredients. Then she would make the fire, boil water and cook the porridge used to make beer.

When finished with preparing beer, Susan cleaned, cooked and washed dishes. Mawawa was mainly responsible for selling beer and handling cash. Susan also took responsibility for washing their clothes and ironing. In 1996, they broke up so Susan left. Mawawa continued with beer brewing but now instead of collecting wood himself he decided to buy it. Only when there is a shortage of income did he collect wood. To do this he borrowed a trolley from his neighbour which he used to transport wood to his home.

Susan's gender identity played an important mediating role in determining her contribution to this household's activities. Through the ascribed gender roles, 'women's tasks', automatically become her responsibility. The outcome was that the amount of responsibilities allocated to

her became more than that of the man. Consequently, she worked what is commonly referred to as a 'double day'. She woke up early in the morning to go and collect wood with other women while her normal domestic chores awaited her. Her partner mainly took care of beer sales and cash handling. For safety reasons, beer is sold until early evening, at 7 p.m., which gave her male partner enough time to rest. Susan however had to sleep late because of her responsibilities to cook and wash dishes after the evening meal, and to clean the room used by customers.

Susan's case also shows cultural stereotypes are attached to gender roles. Of particular significance, is the fact that Mawawa did not assist Susan with wood collection. He maintained that wood collection is a woman's role; 'men do not have that power'. It is possible that his contribution to wood collection could have reduced the frequency with which Susan collected wood. This could have created time for her to concentrate on the actual beer brewing and sale, or give Susan some time to rest. Mawawa's reluctance to participate in wood collection is due to a tradition that has stereotyped this activity as a woman's role. It is demeaning for men to carry bundles of wood on their heads. It is mainly for this reason that Mawawa borrowed a supermarket trolley to collect wood. At the same time he never considered the use of a trolley while Susan's labour was still available.

In addition to the gender and cultural stereotypes, other factors, such as attitudes and perceptions of household members, play an important part in determining the roles that individuals play in the management of their households. For instance, Nothobile's household (#S16) differs considerably from Mawawa's. In the former, gender does not play a significant role in household management. Household members are involved in a system of co-operation and sharing of chores. Labour allocation involves all household members, both men and women, young and old. Rather than gender, the age appears to be a salient factor, which defines each member's contribution. In other households, it is normative for men to take the role of being the financial providers. In Mayedwa's household all adult members are involved in activities aimed at generating income while children are responsible for domestic chores.

## Case 4.6

Nothobile lives with her husband, Mayedwa, who suffers from epileptic fits. They have five children including Nothobile's niece who came to Cape Town because schools here are close to the communities unlike in the rural Transkei. Whereas in Transkei she would have to pay money to go to boarding school or lodge in another home, here she stays at home at no cost to her biological parents. Due to his condition, Mayedwa experiences difficulties in finding a job. At the beginning of their involvement in the research in 1996, Mayedwa's son was repeating standard six. He failed because 'I did not have enough time to concentrate on my studies as I had to work every day after school'. He also worked at a well-developed spaza shop owned by his uncle where he received R100 in weekly wages. He gave his full wages to his parents because as the eldest son he believes it is his responsibility to support his parents. Part of this money was used to buy food and fuel while some of it was used to buy sheep heads. They sell sheep heads in order to generate income.

In this household, the children (a 17-year-old son and their 18-year-old niece) are responsible for cooking and washing the dishes. Nothobile and Mayedwa take the responsibility of collecting wood and preparing sheep heads for sale. Mayedwa carries wood on his head just as his wife does. However, at the early stages of our relationship with him, Mayedwa was reluctant to admit his involvement in wood collection because of the stereotype associated with it. He therefore explains his involvement in wood collection as, 'indlala ayinabufazi' [poverty knows no gender discrimination]. They use wood for preparing sheep heads for sale, paraffin for cooking and electricity for lighting and powering the radio. The radio was a gift from 'Uncle Ficks', who owns the spaza shop to his nephew, Monwabisi.

In the above case, labour allocation involves every member and the gender of individual

members has little significance in the allocating chores. Age is the only important factor. Both male and female children are responsible for domestic activities that would otherwise be performed by females, as is the norm in many other households. Adults, including the eldest son, are responsible for generating income. Mayedwa shares the task of collecting wood. In terms of the often-mentioned maxim that 'poverty knows no gender discrimination', we see that 'tradition' – which is used by some to reinforce gender ideology – in this household is challenged by the realities of poverty. Having erratic income, this household is forced to find alternative means of generating income to ensure its survival.

Underlying this case study, is the need for co-operation and understanding between household members as well as the use of social networks. This case shows the way in which households survive because of the existence of networks of relationships with other households. Relations between households, especially kin networks, play a useful support function in times of need or destitution. Mayedwa and Nothobile, despite their struggle for livelihood, assisted Nothobile's brother from the Eastern Cape by giving his daughter opportunities for education in Cape Town. As Nothobile put it, 'at least here she can go to school because the schools are nearby. She will eat what we eat and when we do not eat she will not eat'. Her presence in this household clearly contributes to its labour resources. This household survives because of their relationship with a spaza owner. They are able to get credit, even though 'Uncle Ficks' know that they do not have a reliable income.

The availability of children's labour is also more important in households owned by single parents. In households where the single parent is a working woman, the mother retains some form of absolute control. For example, before leaving for work mothers give instructions as to what must be done in the house, as in the case of a household in Langa. Zukiswa and her sister Vuyokazi (#L14) shares the responsibility for cooking. Their mother Albertina advises them on what to cook each day, and sometimes on her return from work, she brings vegetables and meat. Zukiswa says it is easy because we always know what to prepare.

Often, older children are required to look after the younger children. It is, therefore, not unusual to find 13 year olds, and even younger, cooking with the assistance of their younger siblings. Edith (#J03) switched from using gas to paraffin in order for her children to be able to cook safely. Edith feared that children might not be able to manage gas properly, which may be highly dangerous.

# 4.5 Appliance acquisition and the elderly

Generally, households occupied by elderly people alone have fewer appliances than those occupied by young adults or in households where there are children (see Chapter 5). We illustrate this finding with a case study of an elderly couple in Langa backyard shacks.

## **Case 4.7**

Although a pensioner, Maggy (#L11) continued doing domestic work, once a month for her long-term employer and was paid R60 per visit. Her three children are all adults and independent. Her husband deserted her while the children were still young. She came to Cape Town in 1967 for employment and has been working for the same employer in a wealthy suburb in Kirstenbosch since then.

Maggy lives with her partner Thangana, also a pensioner. Thangana had divorced his first wife and he remarried another woman who is staying in his rural homestead. He maintains three children he had with his first wife, in Bonteheuwel in Cape Town. Maggy says she encourages him to pay his maintenance because 'I do not want his estranged wife to come and cause trouble here'. He also sends money to his wife in Transkei who has good relations with Maggy. She writes letters to Maggy asking for money or anything including bedding and clothes.

In their shared backyard dwelling, Thangana's responsibility is to pay rent and buy food while Maggy does cooking, cleaning, and washing clothes and ironing. Maggy explains

this division of responsibilities in this manner: isandla sihlamba esinye (a hand washes another). Thangana goes to buy groceries, including fuel. He mainly buys basic foodstuff such as rice, samp, beans, sugar, and maize. As a supplement, Maggy buys canned food such as beans, peas, fish, meatballs and fruit. She suggests that since they do not have a very good appetite she cooks once a day and they eat fruit to substitute for other meals.

They buy chicken portions on credit from a meat vendor. Due to the fact that they do not have a refrigerator, they keep meat in their neighbour's fridge across the street. She explained that she has three neighbours who are very helpful to her.

Maggy's total monthly income of R470 is spent as follows. She contributed R100 to a savings club and R100 to her partner monthly – the two of them have their savings club. She is also a member of the funeral club where she contributes R120 per year. They have two stoves, a primus stove and a beatrice stove. Maggy bought the beatrice stove because it is convenient, safe and good for space heating. There was no agreement as to who bought the 'silence' primus stove. However, the primus stove was bought as a replacement for a broken raaskop. They have a radio that belongs to Thangana.

Of particular importance from this case study are the norms that govern the allocation of responsibilities to household members. In line with the beliefs of other women, Maggy has decided that in return for doing household chores including washing clothes and ironing for her partner, he must take responsibility for the financial needs of the household. This is despite the fact that their income is almost the same. As she explains it, they help each other – isandla sihlamba esinye – this is the norm that governs their distinct roles.

Owing to their age, Maggy and her partner do not have many appliances in their house. Even their radio is only used by Thangana to listen to the hourly news broadcasts. As a result their dry cell batteries (PP10) last for six months. In contrast, households that have young members, where there is a relatively low but reliable source of income tend to have more appliances (this theme is picked up in Chapters 5 and 7).

It must also be pointed out that the few appliances in this household may also be linked to the problems that many backyard dwellers are confronted with, including the fact that to get access to electricity they have to negotiate with site owners.

Maggy's case also illustrates the importance of social networks, which most people in low-income households depend on for their daily survival. They are able to buy meat and store it in their neighbour's fridge. They do not store it in the main house because the main house does not own any electrical appliance and, like Maggy's, is also mainly dependent on paraffin.

## 4.6 Conclusion

In many cases, householders argue that decision-making is a joint process. As Majali (#J10) said: 'yintetho-mvano' (it is consensus). We have seen, however, that bargaining or consultation in these households does not necessarily reflect the opinions of all the members involved in the process. Instead, various factors such as the income-earning status of the individual, power relations especially those based on gender, and the presence of children impinges upon the decision-making processes. Taking cognisance of their low-incomes, households have to prioritise their spending well. However, it is clear that when this prioritisation takes place, the person who brings income to the household has the final say. This creates tensions where men and women have different priorities. For example, women assume the responsibility of purchasing household appliances. However, with lack of access to income, it becomes difficult to carry out this function.

We have argued that access to an independent income may give a woman leverage enabling her to influence decisions, but it does not necessarily translate into greater power for these (income-earning) women (cf. Young 1992). The presence of children plays a major role in influencing decisions around appliance purchases. Parents often feel obliged to satisfy their children's desires. In relation to this, we have also suggested that children are often behind the sharing of appliances – where they either visit a neighbour's house to watch television or parents lend their television sets to people who look after their children.

The social networks between income households are used as a support function, which is useful in times of destitution. This is shown also by the movements of members in and out of households, which has an impact on household budgets. At the same time, we have shown that this movement also affects the organisation of households, and this is mainly reflected in the changes in labour allocation decisions. We have argued that the perception that men should be the breadwinners still persists in the households surveyed. However, we have observed that it is translated differently in different households. In some households, it means women refer to their husbands, while in others, women demand recognition for their roles as well. This is captured well in Maggy's words that 'isandla sihlamba esinye'. This means that she is prepared to do the household chores provided the man is prepared to take responsibility for the household's financial needs.

Finally, we have also argued that households that are occupied by elderly people alone tend to have fewer appliances than households occupied by young adults or households where there are children present.

# A kaleidoscope of choices and decisions: the logic of appliance accumulation

# 5.1 Introduction

Ownership and use of appliances by households has often been, and continues to be, explained according to the income levels of households. Simply put, such a view argues that as household incomes increase or decrease, so does their investment in, or accumulation of, appliances. In electrified households with low disposable income, people do not invest in so-called 'sophisticated' electrical appliances and, as a result, resort to cheap and readily available appliances, such as wood and paraffin appliances. According to this view, ownership of 'modern' appliances is perceived by proponents of the transitional model as the ultimate goal that each household sets itself. Accumulating electrical appliances is one of the signifiers that households have reached a particular stage of 'development'. 'Development' in this sense is equated with 'modernisation' and exemplified by ownership of modern electrical appliances. The transitional model of fuel use, as we have argued in earlier chapters, propagates this thesis. Although such a view seems plausible in a grand scale, it crumbles under intensive scrutiny. This chapter shows that income does not always determine the purchase and use of appliances by household members. There are other determinants that play an equally significant role in appliance acquisition.

Recent studies suggest that appliance acquisition would appear to depend only on who makes the decisions. These studies have approached household energy use and appliance acquisition from the feminist point of view. Gender relations within households are identified as powerful determinants of the types of appliances purchased and used (see for example Annecke, 1992; James, 1993). These studies suggest that men and women have different and often conflicting preferences regarding what appliances may be purchased for their domestic units. 'Power' over household resources, notably income, is seen as a key determinant of appliance acquisition. As a result of their ascribed 'power' or socially defined status, men are able to control and allocate household resources according to their preferences. In terms of appliance purchase, the implicit view is that men and women's choices of appliances must be conflictual – men invariably prioritise entertainment or electrical appliances, while women would, for instance, prefer cooking or other timesaving appliances, such as washing machines.

We argue that, while income and gender are indeed significant factors in the purchase of appliances, it is when these explanations are universally perceived as the *only* determinants of energy use that problems arise. This chapter demonstrates that we should also consider other equally important factors that may not be strictly economic or gender-defined. One of the ways of exploring appliance acquisition is to locate people's decisions about what appliances to buy within specific contexts. We also reiterate that economic decisions about appliance purchase should be seen within the wider socio-cultural and political contexts. However important income and gender are, there are other factors that are explored in this chapter.

This chapter explores different and changing contexts of appliance purchase in the sampled households. In most instances, determinants of appliance acquisition are complex. There are multiple factors that simultaneously influence what appliance is bought or used. In examining the variations of appliance purchase, the chapter first gives a general overview of appliance investment in the sample households. It touches on the issues relating to the ethics of appliance purchase but does not cover them in great detail. It briefly explains patterns of

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appliance purchase over a six-year period (from 1990 to 1996), and compares appliance purchase across the sampled households and relates this data to the regional and national data about appliance purchase in low-income areas. Secondly we draw on crosscutting themes about what influences decisions around buying or not buying appliances in all sampled households and analyse the interplay of social factors including income and gender.

# 5.2 An overview of households' investment in appliances

Appliances owned by the sampled households are closely linked with the types of fuels used by or accessible to them. In Khayelitsha for instance, appliances owned are a reflection of a range of fuels found here such as electricity, gas, paraffin and dry-cell batteries. Households in the impoverished settlement of Joe Slovo possess very few appliances. Paraffin appliances for cooking – such as wick and pump stoves – are found in all households irrespective of settlement type. Indeed paraffin stoves are used or owned by about 90% of all the sampled households. In Site B – a settlement which has been electrified since 1994 – all the sampled households still use paraffin appliances for cooking. Indeed, in some households there is more than one paraffin stove. During the period of fieldwork in electrified areas, we have observed a rather slow take-off of electric appliances, especially for cooking (Figure 5.1).

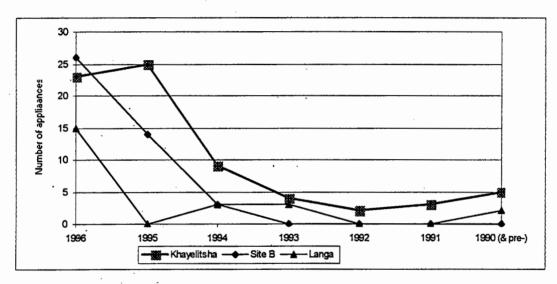


Figure 5.1: Accumulation of electrical appliances (1990-1996)

Generally, appliance purchases in Khayelitsha, Site B and in electrified Langa backyards have been rather slow between 1995 and March 1997 (except for entertainment appliances). We analyse the reasons for this slow uptake of electric appliances in section 6.3 below. Suffice it to say that since electrification, only 47%, 20% and 29% of households respectively own electric stoves (which are predominantly cheap two-plate stoves) in Khayelitsha, Site B and Langa, respectively (see Table 5.1). We contend that cooking is probably the most important end-use. Yet, based on these figures, it would seem that electrified households do not prioritise cooking appliances. Electric appliances, especially cooking stoves are renowned for their timesaving features. Cooking time is reduced and, since electric stoves do not need close supervision, women are freed to pursue other household chores. The use of wick stoves, on the other hand, compromises the time of women and other members of households who operate them. Wick stoves are considered to be dangerous – as they cause fires – and are hardly left alone when they are in use. It seems surprising that electric cooking appliances are not prioritised. We explore the reasons for this.

<sup>&</sup>lt;sup>1</sup> It should be recalled that not all backyard households are electrified in Langa. In 1996 only four (27%) backyards had electricity.

	Khayelitsha	Site B	Langa	Joe Slovo	Total
	n=15	n=15	n=14	n=15	n=59
Cooking Appliances (%)					
Paraffin stoves	53%	133%	57%	113%	90%
Electric stoves	47%	20%	29%	0%	24%
Gas stoves	53%	13%	50%	20%	34%
Lighting Appliances (%)					
Paraffin lamp	33%	33%	71 %	107%	60%
Electric lamp	100%	100%	29 %	0%	58%
Candles	0%	13%	0 %	0%	3%
Heating Appliances (%)					
Paraffin stove Paraffin heater Electric heater Wood brazier	33%	47%	64%	113%	64%
	47%	13%	27%	20%	27%
	27%	7%	7%	0%	10%
	7%	20%	0%	7%	8%
Heating H₂0 Appliances					
Paraffin stove	33%	80%	93%	113%	80%
Electric stove	7%	7%	7%	0%	5%
- Electric kettle	60%	33%	27%	0%	27%
Gas stove	13%	7%	0%	0%	34%
Ironing Appliances (%)					
Paraffin stove	47%	60%	93%	113%	78%
Electric iron	53%	47%	7%	0%	27%
Cooling Appliances (%)					
Gas fridge	- 0%	0%	0%	7%	2%
Electric fridge	53%	13%	14%	0%	20%
None	47%	87%	86%	93%	76%
TV and Radios (%)					
D-Cells	20%	47%	79%	73%	54%
. Car Battery	0%	13%	21%	20%	14%
Electric	133%	73%	36%	0%	60%

Table 5.1: Inventory of appliances owned by fuel type in 1997 (\*percentages have been rounded)

Statistics for electrified low-income households according to the National Domestic Energy Use Database (NDEUD) suggest that about 70% of 'non-rural' households in the Western Cape own electric stoves of some kind while at the national level, 63% of urban households own electric stoves (Afrane-Okese 1997). The same database also suggests that formal households are likely to have more cooking appliances than any other settlement type. Indeed, it shows that 84% of people living in formal households have stoves while the figure for backyards and shack settlement is 51% and 8% respectively. It does not, however, differentiate between non- and electrified shack settlements. Another contention made by the above database is the strong correlation between income and stove purchase. The movement up the income ladder is accompanied by appliance purchase. Our findings, it might seem, are an antithesis of the database's figures (see below).

Electrification has played a very important role in providing light to all the sampled households. One hundred percent of households in Khayelitsha and Site B use electric lamps or bulbs for lighting (Table 5.1). Electrification does not, however, mean that households have done away with their paraffin lamps. In Site B, 33% of the households in the sample still use paraffin lamps in conjunction with electric bulbs. On average there are three rooms per dwelling in Site B shacks. The readyboard is usually installed in one room only. It has become a common practice that an electric bulb is fitted only in the room with the readyboard while paraffin lamps supply lighting in the other rooms. The unreliability of electric service, especially in Khayelitsha, has meant that households still keep their paraffin lamps in case there is a blackout. In Joe Slovo, all the sampled households claim that they use paraffin

lamps. We have observed, however, that a significant number of households in our Joe Slovo sample also use candles. The civic committee has banned the use of candles in Joe Slovo since they are perceived to be the major cause of fires.<sup>2</sup>

The motive behind the sampled householders' preference for paraffin stoves is the ability of an appliance to perform more than one task. Paraffin stoves can also be used for spaceheating, heating water and for ironing. Indeed, households that own electric heaters in Khavelitsha either do not use or use them selectively because bar heaters consume too much electricity. This view is supported by Thorne's (1996) financial assessment of household energy in South Africa. When paraffin stoves are in use for cooking, ironing or heating water. the heat generated also warms the house when it is cold. A paraffin heater also provides a space for important end-uses other than heating the house. It provides a surface for simmering pots, keeping water hot and drying up damp clothes. During the winter of 1995 Lindelwa (#K07) would keep her paraffin heater burning the whole day in order to protect her recently born baby from cold winter weather. The heater was also used for warming meals for the household and to heat water for the baby. Site B is the only settlement where wood braziers are used for space heating. Although there is only a 33% use of the wood brazier, we project based on observation - that its use might be several times higher. Unfortunately, there are no up-to-date surveys on wood use in Site B for domestic purposes. The use of the wood brazier has to do with the abundance of wood near the settlement. Chapter 10 examines micro business enterprises, specifically those trading in wood or enterprises that use wood in Site B.

For activities such as heating water for bathing and beverages or ironing clothes, paraffin appliances are also considered to be ideal in Site B, Langa and Joe Slovo. However, during the period of research, we observed a steady accumulation of electric kettles and irons in Khayelitsha and, to a lesser extent in Site B households. The most obvious reason for this trend is the timesaving features of electrical appliances including the time in which water is heated or clothes ironed. Employed and school-going members of households prefer electric kettles and irons. Ironing clothes, and heating water for bathing (as many electrified households do not have geysers) are mostly done early in the morning when there is often a rush against time.

Our figures on the ownership of refrigerators by urban households do not tally with the NDEUD. According to NDEUD, the regional ownership of refrigerators is perched at 71% and the national at 62% (Afrane-Okese 1997). Our figure, by comparison, is just 20%. This may be as a result of our sample (a) not being representative or (b) its recent electrification. Formal households, however, own more refrigerators than any other settlement – 53% against 13%, 14% and 7% of Site B, Langa and Joe Slovo, respectively.

For reasons that are explored later in the chapter, many households invest in entertainment appliances such as radios and televisions. The NEUD indicates the ownership of televisions and radios is very high. There is an 83% and 79% ownership of radios and televisions, respectively in the Western Cape urban households, while the corresponding national figures are 83% for radios and 67% for televisions (Afrane-Okese 1997). Indeed, there was not a single household in our sample that did not possess either a radio or a television. Many households in Khayelitsha have both a television set and a radio or a music system (hi-fi set). In Joe Slovo, more and more households have at least a radio 'to make us forget about our miseries', said one research participant. Very few households, however, own television sets in Joe Slovo. One of the reasons is that there is no recharging outlet in the settlement. As in Joe Slovo, there are many households with battery-operated radios but few with televisions. Unlike in Joe Slovo, there are recharging outlets in Langa. As we show later in the chapter, some members of households in Langa purchase items such as televisions and send them

<sup>&</sup>lt;sup>2</sup> Candles were not the cause of fires in all the incidences that we have recorded in Joe Slovo. Paraffin appliances, such as wick stoves or paraffin lamps that overturn caused most fires (see Chapter 8).

'home' to the rural areas or give them to relatives living elsewhere in Cape Town for 'safekeeping'.

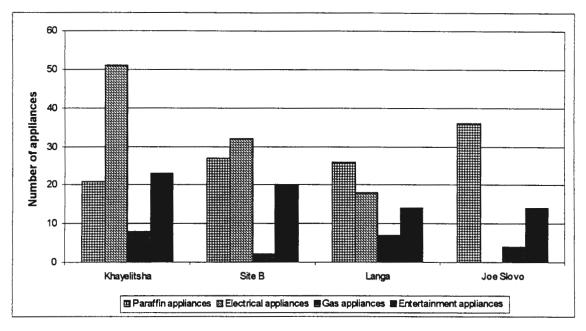


Figure 5.2: Number of entertainment appliances owned versus others (1996)

We now provide a brief description of how much money is invested in household appliances. We do this by locating household investment in appliances within household compositions, the percentages of working members of the households and how much money household members pool every month. Table 5.2 below gives a concise comparative picture of differential investment in the sampled households. It would appear that there is a strong correlation between household membership, the gender of employed members, and the joint income of the households and the extent to which the household has invested in appliances. Most studies on household energy use have taken this view. Many studies suggest that income and the gender of the breadwinner are the main factors determining domestic energy use, as the Energy Database suggests.

The NDEUD shows that households with greater per capita expenditure own more appliances than those with less. On the scale of one to six, households in the first scale (that is, negative R100 per capita expenditure) own fewer appliances. These households are mostly reliant on paraffin stoves for cooking and on battery-operated radios for entertainment. They own very few appliances that use gas or electricity. The third most popular appliance in this expenditure group is the television. Households that have a per capita expenditure of R500<sup>+</sup> own a range appliances – many of which are powered by electricity. There are fewer paraffin and gas appliances in households that have this income expenditure. Income levels of households, according to the NEUD, therefore determine the number and types of appliances purchased and used by households. The database, however, does not analyse appliance ownership by gender and composition of households.

On a superficial level, Table 5.2 suggests a very close linkage between individual incomes of households and appliance accumulation. Indeed, more than half of the sampled households' monthly incomes does not exceed R1 500.<sup>3</sup> In the impoverished settlement of Joe Slovo, 80%

<sup>&</sup>lt;sup>3</sup> Income of these households, as noted elsewhere (Chapter 2) should be treated with caution. This data on income is based on the calculations of income derived from formal employment and grants such as pension, disability grants and maintenance. A significant number of households, especially in Site B derive 'other' income from informal activities. The nature of income endeavours does not allow for accurate calculations.

invest in appliances with a collective value of less than R500, such as paraffin appliances. These 'cheap' appliances, as will be explained later, have short life spans and might prove expensive if these calculations take into consideration appliances that have been replaced.

	Khayelitsha n=15	Site B n=15	Langa n=14	Joe Slovo n=15	Total n=59
Average household size					
Women Men Children-	1.9 1.5 2	1.4 1.4 2.2	1.1 1.1 1.3	1.7 1.4 1.4	1.1 0.9 1.5
Employed members (%)					
Women Men	46% 55%	43% 67%	62% 80%	39% 47%	46% 62%
Household income p.m. (%)					
R100 – R500 R501 – R1 500 R1 501 – R3 000 R3 001+	27% 53% 20% 0%	27% 47% 27% 0%	7% 50% 21% 21%	47% 53% 0% 0%	27% 51% 17% 5%
Appliance investment (%)					
R1 - R100 R101 - R500 R501 - R1 500 R1 501 - R3 000 R3 001 - 6000 R6 001+	7% 7% 40% 13% 27% 7%	13% 40% 27% 20% 0%	7% 36% 43% 0% 7% 7%	40% 40% 20% 0% 0%	17% 31% 32% 12% 8% 3%

Table 5.2: Household composition, income and appliance investment (1996)
(\*Percentages have been rounded off)

It is not absolutely clear at this stage how the gender of household members plays a role in appliance acquisition, although, according to Table 5.2 there are indications, at least in Khayelitsha, that it does. Women own most of the sampled households in Khayelitsha. In most instances these women are engaged in formal employment, or are pensioners. We have observed that there are more electrical and other appliances in these households than in maledominated and man-only households. Appliance ownership, however, cannot be explained purely in terms of income or gender of the household members as discussed in Section 6.3. Appliances are financed in different ways and most households own basic appliances such as electric hot plates and gas stoves, irons, paraffin stoves and so forth, which they purchase on a cash basis. More expensive appliances are bought on hire purchase such as televisions, hi-fi systems, large stoves and refrigerators. Figure 5.3 below shows that the majority of households are still using cash to pay for their appliances. This pattern of appliance acquisition is changing, however, as more urban households become electricity consumers.

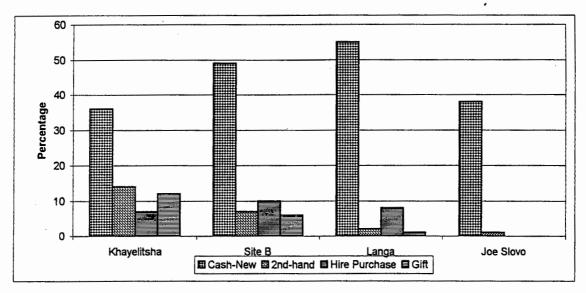


Figure 5.3: Buying patterns of the sample (1996)

It is important to also examine 'hidden' factors that shape appliance purchase and use in low-income households. These factors include generational dynamics and children, ideologies brought by socialisation, socio-cultural factors, and urban consolidation and employment histories. We now explore in detail the interplay of these factors in influencing decisions about what type of appliance is purchased, when, and for what purposes.

# 5.3 Social pressures and the different meanings of household appliances

The social life of the township life demands that their material measures households' statuses belongs and not, for instance, according to how much money such households save in the bank. Household members will therefore spend large sums of money in upgrading the structures of their dwellings and fitting in 'modern' furniture and appliances. During December 1996, Nomtshato (#K11) renovated her house after she received the disability grant belonging to her husband. Gladwin (#K08) also added extra rooms, furniture and a new electric stove when he received money from his rotating savings club. A dwelling with many 'modern' appliances draws both envy and admiration from neighbours, friends and relatives. Generally, those householders who aspire to 'modern' or electrical appliances are the younger or 'well-to-do' generation. Even those who cannot afford electrical appliances, because they are unemployed, would prioritise electrical appliances. Although the electrical appliance 'syndrome' is more prevalent in the formal houses of Khayelitsha, it cuts across all the sampled areas. We cite a case in Site B of a younger women who was unemployed in 1995, but subsequently found employment, and began to fill her household with 'modern' appliances.

#### Case 5.1

In 1995, the young and single Sizeka (#S01) was not employed. She was living with her boyfriend who contributed to the household income. Sizeka had sent her two children to live and be raised by her parents in the rural village of Steynsburg in the Eastern Cape. During the first year of our research there, her shack was scantily furnished. Although she had access to electricity, she did not have electrical appliances other than three light bulbs and a portable black and white television. She had a battery-operated stereo radio, which she used to listen to the midday radio serial and music programmes 'to chase away the blues of not working'. She used two pump stoves for cooking, heating water and space heating. She would got to her neighbour's household (#S2) – which always had a fire for brewing *umqombothi* (traditional beer) – to sit around the open fire. Although, she was doing this to save fuel, she liked to go there for the sake of socialising with her neighbours.

In 1996 Sizeka obtained 'casual' employment at Shoprite, a grocery shop situated a few kilometres from her house, where she receives R300 per week (depending on whether she works the full week). As a 'young woman', she began to accumulate new furniture and appliances because, 'I do not want my friends to think I am poor'.

She has brought back one of her two children, but continues to send remittances to her parents in the Steynsburg. She is now involved in rotating savings clubs. The money she receives is used to buy more appliances and groceries. At present, she has a colour television, a music centre and an electric kettle, iron and stove. She bought an old-fashioned stove for R250 to relieve herself from paraffin stoves. Her friends and neighbours also own stoves. Her stove only worked for few weeks and it packed up; firstly the oven would not function and later the plates did not either. In the beginning of 1997, she bought an electric hot plate at Shoprite for R199.

In January 1997 she called us to look at her damaged stove. She said, 'I bought this stove and paid for another man to install it for me, because he also installed my friends' stoves. After he had installed the stove, I could not light the oven and after sometime the stove became useless'. In addition to the age of the stove, it turned out that it was installed incorrectly.

The case of Sizeka shows the extremes to which individuals may go in order to purchase electrical appliances. Her first priority after she was employed was to buy furniture and appliances for her shack so that her friends would see that she too could afford these. She understands that her work is insecure and could be terminated so she cannot buy appliances on hire purchase. She has become involved in savings clubs with the view of increasing her income to enable her to buy appliances and furniture, food for her household and her parents, and sending money to her other child in her natal home. In her pursuit of being 'welcomed' to township social life – by owning more 'modern' appliances – she made mistakes. She bought the stove second-hand without ensuring whether it would function and hired someone – who obviously did not know how to install the stove for her. Although the stove could have been useful for cooking, it also has symbolic value. 'Even if [the stove] does not work other people [visitors] do not know that and it makes my house to look dignified and nice', she said.

We also observed the symbolic value of electrical appliance in Khayelitsha. Appliances are important not only because they function well, but because of how they make the dwellings look beautiful. Jacqueline's house (#K02) has a refrigerator given by her neighbour for safekeeping in 1993 when her neighbour bought a new one. The refrigerator does not function but Jacky is not perturbed. She said, 'I have kept it here to give my house *isithunzi* [dignity]. Thozama's (#K01) brother bought a big old-fashioned stove, a twin-tub washing machine, a big black and white television set and a refrigerator from an auction in 1995. None of these appliances are, however, working. By March 1997 the appliances were still not usable except for the television set which had been sent for repairs. That these appliances are not working is beside the point. They hide the true status of Thozama's rather impoverished household and make it look presentable in order that friends and visitors cannot guess how poor her household is.

The three women who own the households cited above have a number of things in common. They are relatively young, single (although they live with their boyfriends) and aspire to ownership of electric appliances. Another important factor influencing appliance purchase, is the familiarity of household members with certain types of appliances. Such familiarity is caused by (a) the place from which household members come from, and (b) the history or length of formal employment which often corresponds with appliance accumulation. Rebecca's case below shows how appliance ownership is closely linked with familiarity with a certain type of appliance.

## **Case 5.2**

Rebecca (#L10) came to stay in a backyard 'shack' in Langa from Upington, Northern Cape in 1987. She comes from a 'mixed' parentage: her father is a Sotho and her mother is a coloured of Nama descent. The township in which she was born and raised is also a mixed area, but predominantly Sotho. After we calculated the value of her appliances, she said:

Ever since I was born at home we hardly used paraffin appliances. We use an electric stove for cooking, a bar heater for heating ... and we also have a fridge, television and electric lights. That is why I am buying these many electric appliances because I am used to them.

She has a hob and stove with oven, purchased in 1994 which cost her R2 500. She has never used this stove though; for everyday use she has a two-plate electric stove which cost R159. She interchanges this with a 3kg-gas stove, which she bought in 1995 for R125. She has a music system that cost R2 500, a television she bought second-hand for R800 and a video machine that was R2 100. All these appliances were bought in 1993 – interestingly, they were the first appliances she bought. In 1996 she purchased a fridge (R2 800), an electric kettle (R159), an electric fan (R1 500), a laundry dryer (R1 500), a chest freezer and microwave oven (both for R2 500). The total worth of her appliances is about R13 000.

Rebecca is a woman with a modest income. She is a domestic worker in Sea Point but she supplements this by buying and selling clothes. She says that her monthly income is R2 500 from formal employment and her informal business. She can afford these appliances because, 'I only have one children (2 years old) and I save a lot of money in savings clubs'.

Rebecca has over recent years (between 1993 and 1996) accumulated electrical appliances in preparation for when she obtains her own house. During the period of fieldwork, Rebecca was not actively seeking a dwelling of her own. She is content to live in a backyard shack where she pays R200 for lodging and electricity. Most of her income is used to pay accounts. She said, 'when I have finished paying for these goods I will then look for a house ... it is difficult to buy appliances when you have to pay for the house'.

Rebecca's case is not unique. Indeed, the Matolengwes (#L04) – a young couple also living in a backyard shack in Langa – own a range of electrical appliances much to the envy of their landlord. The latter charges them a flat rate of R100, which increased to R150 in 1996, for using electricity which is used to pay for the main household's consumption of electricity. Before living in Langa, the Matolengwes had rented a flat in the suburbs but moved out because 'we could not afford the rent', they said. It was when they were living in this area that they begun to accumulate electrical appliances. The household's income was R4 979, however, and their appliances' value was about R4 000.

Most households in Khayelitsha consist of young, township-bred members (with little connection to rural areas). These householders aspire to middle class status and invest in 'modern' appliances. Irrespective of income, the common denominator is the pursuit of 'modern' appliances, whether by buying them for cash, hire on purchase or as gifts from benevolent employers. There are more appliances in Khayelitsha households than other sampled areas, and householders in Khayelitsha were more vocal in the workshops about the problems they have with electricity. In the areas' general meeting and a workshop conducted by us in 1996, issues that were of concern to residents were related to electricity. Our interviews with Eskom and Phambili Nombane also highlighted Khayelitsha as one of the problem areas in terms of non-payment of electricity services. Indeed, an official of Phambili Nombane stated that 'electricity theft' in informal areas (including Site B) is not as great as in formal houses in Khayelitsha. In the workshop, participants would complain of the escalating costs of electricity as one of the reasons that they 'steal' electricity. Indeed, it is our argument

that ownership of many electrical appliances in Khayelitsha partially explains non-payment for this service.

We have also observed that households who do not aspire to 'modernisation' goals were generally not familiar with electrical appliances. One of the research participants from Site B, Nowait (#S12) claimed illiteracy as the reason why she does not have electrical appliances. She said, 'I am from the village in [the] Transkei and I do not know these electrical appliances.' Nowait and others like her are not interested in pursuing electrical appliances. They have different priorities – and accumulating electrical appliances is not presently one of their felt needs. In fact, they consider the indulgence in electrical appliances a waste of money that could have been used for other household needs, such as food or investing in rural homesteads.

Some members of these households would argue that it is owing to lack of money that they do not have electrical appliances. Taken at face value, this would seem to be the case but we have discovered that it is indeed not only the lack of money but a different kind of commitment that prevents these people from buying 'modern' appliances. The two cases below illustrate different and yet complementary issues affecting investment in 'modern' appliances. Case 5.3 shows how perceptions about fuels are powerful in preventing or encouraging an individual to purchase or reject a certain type of appliances. Case 5.4 shows that people may not see energy appliances as a priority and would rather invest their money in rural homes.

# Case 5.3

Catherine (#J01), a pensioner from Joe Slovo uses paraffin appliances for all her household energy needs. She admitted to us that she could afford gas appliances from her pension money, but would not buy them because:

I do not like that nonsense of gas. I do not want to even see it in my house. I saw how dangerous it is when my child almost died while using it. The tank leaked and it caught fire. People tried to put down the fire but they were unsuccessful. The fire could not stop because it came directly out of this very big [gas] tank. God was with her. She managed to get out of the house alive. She was burnt a little though.

Although she sees paraffin stoves as potentially dangerous, she prefers them to gas and electrical appliance (although she does not have access to electricity). She said to us that:

I will continue using paraffin stoves until I die. Even if I can move and stay in another area, I will still use them. The primus [pump] stove is safe if you are not careless with it. People should stop using flame stoves because they are dangerous. In my house, we use *beatrice* and primus stove – and nothing else. Even for lighting I use a paraffin lamp because it is safer than a candle. But people here are very poor; they use whatever is very cheap for them without thinking of the danger.

She also perceives paraffin appliances as being cheaper and safer than electricity. She swears that she will never use electricity and its appliances in her lifetime because:

Even electricity itself is very dangerous. When I was living in Langa [lodging in a formal house], the house we stayed in was burned to ash because of this electricity. They said that a plug on the wall caused the fire. No one knows for sure the cause of that fire. The "doctor" said that the fire was *uvutha* [voodoo] that was communicating bad news. Electricity is bad for me. I know that these electric heaters caused the fire. I will never, never use electricity and its appliances as long as I live.

#### Case 5.4

Florence lives with her partner, Phois in the shack of the latter in Site B, Khayelitsha. Each has two children. Florence is involved in the sewing business, and her partner owns two minibus taxis. Florence estimates that she gets about R300 per month from her

business while her partner earns about R1 000 per month. (This is an extreme underestimation: the household's expenditure, which is more than R2 000 per month, negates her estimation. It is our calculated guess that the household's income is three times more than the stated R1 300.)

Most of Florence's monthly income goes on the payment of furniture she has bought on hire purchase from a furniture shop in Cape Town. Over the years Florence has made it a point to buy furniture and appliances in Cape Town and send them to her house in Transkei. At present she has just finished paying off her lounge suite, and is paying R167 per month for a kitchen unit. The latter is stored in the bedroom of their shack waiting a time when she is ready to send it to the Transkei.

The dwelling in which they live is, however, scantily furnished. All the furniture has been bought second-hand. Although they have had access to electricity since 1994, they have been under-using it. It is used only for lighting and for powering the music system that Florence bought in 1995. If it was not for the children, she says, she would not have bought it. For basic domestic tasks such as cooking and space heating, this household relies on two paraffin stoves. Since they use electricity scantily their electricity bills are between R10 and R20 per month. She defends her investments in Transkei as 'I cannot buy new things for the shack because it can burn at any time'. The shacks in Site B are, however, formal and all use electricity for lighting. As a result, there are very few cases of fire in this area.

Both case studies show inadequacy of economic notions in explaining why people do not buy certain types of appliances. There are other examples of people investing elsewhere; who therefore do not use electricity to the optimum, in case of electrified households; and would not buy alternative appliances such as gas appliances in the case of households without electricity. Case 5.4 shows very well that Florence could well afford to pay for electrical appliances, but she chooses not to buy them because she maintains a home in the Transkei. When asked about why she does not buy a stove, for instance, she said that she could not afford it. It was after subsequent visits and further probing, that other reasons emerged as to why her urban household owns very few electrical appliances. In Florence's case we another case of how children have direct influence on what appliances are purchased. Florence's children put pressure on her to buy the music system. If it was not for children she would not have relented and bought the appliance. The television that is used in Florence's household belongs to a relative who sleeps at her place of work and comes to Florence's during the weekends. During the period of our fieldwork, Florence's household had relied on the sister's television. She said in 1995:

My sister lends me this television but she comes to fetch it on weekends, I see my children's disappointment whenever she comes. I am planning to buy them a colour TV when I have saved enough money, as I did when they wanted a hi-fi.

We have seen from Table 5.2 above that children are the majority of household members; they make up 37% of the sample. In Chapter 4 we have shown the extent to which these children influence and play significant roles in the management of, and decision-making processes in, their households. Parents are 'forced' in certain circumstances to buy appliances especially televisions because they do not want their children to watch it elsewhere. Attached to this is the notion of family bonding. Adults and children sit together and watch television. Below we present a case taken from a backyard shack in Langa. Osborne is one of most conservative men who still subscribe to the view that 'women should be kept in their places'. His management and control of 'his' household is absolute. He decides what appliances are bought with or without his wife's consent.

## Case 5.5

Osborne (#L15) is a fifty-two year old railway labourer who lives alone in a backyard shack in Langa. He has a home in Engcobo in the Eastern Cape where he owns cattle and

plantations that are managed by his wife, Nowinile. Nowinile, (and, at times, his children) visits him intermittently, but does not stay for long, usually only for four weeks. Between June and December 1995, she had come to Cape Town three times. Osborne is the only breadwinner in his household. The money he earns (about R1000 monthly) is used to invest in his rural home. He makes all the decisions about how the money is spent. Usually, he does not send large sums of money to Engcobo to purchase bigger items such as furniture. He normally buys these items in Cape Town because 'here they are cheaper'. He then sends for his wife to come and collect these. In August 1995, Nowinile was in Cape Town; she had brought a battery-operated black and white television for repair.

Nowinile says her husband is the head of the house. Although she usually recommends what to buy, the final say rests with Osborne. This is how she was brought up: 'to obey my husband at all times'. She says that when she asked her husband to buy an additional cooking stove, he said it was a waste of money, but 'he did not say that when children wanted a television set'.

The case of Osborne also highlights the gender issues that appliance acquisition raises. At times, as this case shows, men and women have different preferences. In most conjugal households where 'tradition' is closely followed, we observed a hegemonic relationship regarding decisions on what appliances are purchased and used. In most cases women's preferences are seriously undermined although women would claim that decisions as to what is bought in the households are arrived at jointly. In some instances, it is the economic power of men that makes their control of the household possible. In other instances, however, although the women are generating income, their husbands still make decisions as to what appliances are bought because they are traditionally the 'heads' of their households.

# **Case 5.6**

Pakamile (#S13) makes most of the decisions regarding the purchase of household goods. He claims that he contributes more to the household than does Princess, his wife. Pakamile is a contract labourer and his income per fortnight was about R500.00 in 1995 while Princess's is far less. She earns R35 a day from her char work (this increased to R50 in 1996). She works for four employers whom she visits once a week. Because it is her husband who makes the decisions, she would not purchase anything without his approval, while he, on the other hand, would purchase a television with or without her approval. This is a 'drawback', she says, 'that is why I want another char work to make my week full so that I can also get more money to buy something close to my heart.'

She takes pride, however, because her husband:

Unlike others [husbands] I know, he gives me most his wages to keep ... he takes only a small money to buy cigarettes and for few drinks [liquor]. We have a single banking account No one withdraws money in the bank without another's knowledge.

Although this arrangement has its merits, she admits that it is also limiting because she might want goods that her husband considers a waste of money. For instance, she once wanted to purchase a refrigerator but her husband refused. She explained to her husband that a refrigerator would be a 'lifesaver' for the household. A refrigerator would make it possible for her to buy meat (which is a favourite food of her husband) and other food stuffs in bulk and stores them. Also, it would make it possible to cook large quantities of food and store them to be eaten the next day. Despite this her husband refused. Princess recalled that when her husband purchased a television to watch the rugby World Cup in 1995, she consented without any objections.

Most examples shown above also illustrate the extent to which entertainment appliances form a central part of people's lives. Television sets and radios are not seen as luxury appliances, but are perceived as basic necessities: every household should have them. After Sizeka (Case 5.1) began working at Shoprite she replaced her black and white television with a colour one and she also bought a music system (although she owned a stereo radio). The first appliances

that Rebecca (Case 5.2) bought in her impressive collection of appliances were a television, video recorder and a music system. Although Florence (Case 5.4) and Osborne (Case 5.5) would not buy other appliances because they invest in their rural households, they bought entertainment appliances in order to please their children. Florence is also thinking of buying her children a television because she wants to make her children happy. We have also seen in Case 5.6 that Pakamile used his authority as the 'head' of the household to purchase a television when his wife would have preferred a refrigerator. She was not able to get it because Pakamile perceived it as a waste of money. We investigate in more detail why televisions and radios are so central in people's lives

# 5.4 Televisions and radios: the primacy of entertainment appliances

We have indicated above (see especially Figure 5.2 and 5.4 below) that radios and televisions are the most frequently bought household appliances. Householders are likely to buy more televisions and radios than other household appliances. Only a small fraction of households that do no have these appliances in the Joe Slovo sample. We have discussed above the community, which are exerted on householders to have these appliances.

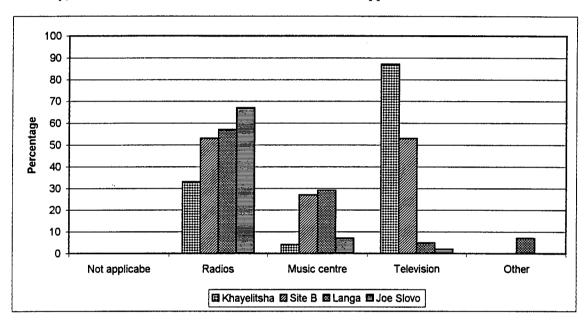


Figure 5.4: Percentage of entertainment appliances (1996)

An interesting pattern that has emerged is that the purchase of radios, especially, are so important that householders, irrespective of gender, economic status, ideology and generation, or commitment perceive radio as essential. Even the few households that did not possess a radio during the period of research had once owned one. It is likely that these households have since purchased one.

# **Case 5.7**

Both Maggy and Thangana (#L11) are in their late 70s. Maggy was married but her husband deserted her 'many years ago' and Thangana has two wives: one lives in a rural village in Cofimvaba and another lives in Bonteheuwel (a township in the Western Cape). Maggy and Thangana share a backyard shack in Langa and live as husband and wife. The only form of entertainment for this old couple is a radio that they keep on for most of the day. Every time we visited them we would find them listening to the radio. They like to listen to radio news and other programmes because 'this is the only thing that drives loneliness away', Maggy said one day. 'The radio educates us because it tells what is happening in other worlds [countries or areas]', added Thangana. They say that they cannot do without it. When Maggy's radio became faulty 'because I use it everyday', her partner, who also has a room in the nearby hostels, brought his radio.

Televisions, it seems, appeal to most people irrespective of their gender because, as Fundiswa (#J03) said, 'watching a television makes you forget that you are suffering'. For some, it is sees as educative as it brings the world into their living rooms. For others, like Fundiswa, it is a momentary escape from their world of suffering. Fundiswa's household does not have a television though. She watches her favourite 'soaps' every afternoon with her neighbour, Ivy (#J15). Some households would even replace a small black and white television with a big one in order 'to see the picture better'.

## Case 5.8

Before she got employment as a domestic worker, Nosidima (#S08) was generating money through a hairdressing business. Only her husband Terence was employed. Between 1995 and 1996, her husband was generating only R250 per week. Nosidima's business was not paying off, as there were very few clients. Late in 1996 – after a few months of working – Nosidima opened up an account at Russell's for a television and a music centre. It is important to note that her household had a small black and white television and a radio/cassette player. She bought these without thinking 'because they were on a "no deposit sale". I did not even consult my husband because he would have said it is a waste of money', she said.

Clearly, as far as the purchase of entertainment appliances is concerned, it appears that gender, generational dynamics and, to some extent, cultural ideologies do *not* explain the logic of appliance purchase. In many households, entertainment appliances are not viewed as luxury commodities, but a necessity. The argument which posits that men prefer entertainment appliances (and, because of their dominant positions in their households, would prioritise entertainment appliances over other household appliances) needs to be questioned. The evidence from this study suggests that this view does not apply in many cases.

# 5.5 Choosing between paraffin appliances

Almost all households own paraffin stoves in the sampled settlements. The purchase of paraffin stoves involves many decisions, as there are different kinds of stoves. The sampled households mainly use three types of paraffin stove. Wick and pump stoves are the most frequently used stoves followed by beatrice stoves. There are few outlets that sell beatrice stoves, however. In a popular supermarket in Langa prices as at January 21, 1997, were as follows: a wick stove cost R26.60, the raskop (noise-head) pump stove was R66.99, the silent pump stove was R85.95, and the beatrice was R93.39. The prices of these appliances depend on the place of purchase. If they are bought from large retailers they are cheaper than in local spaza shops.

Purchasing decisions are influenced by different circumstances, some of which may seem contradictory in terms of purpose. Most householders, especially in Joe Slovo, use wick stoves. Yet they are often despised because of inferior quality. Also it is generally known that stoves cause most fires in Joe Slovo. Households, however, continue using wick stoves not only because they are cheap but also because they are familiar with them 'as we have been using flame stoves even in the Transkei', said Nomelikhaya (#J18). Although, it is the cheapest appliance, the life span of a wick stove is short. Some households replace their wick stoves in the space of two months. The reason is that after repeated use, the stove's top leaks fumes. Nokwakha (#J16) of Joe Slovo said:

A flame stove does not last for a very long time at all. As you see it now, it is leaking fumes. My child [two months] does not even sleep properly when the stove is on because of the fumes. Do you believe that we bought this stove at Nabe just two months ago? This stove is new. The last one nearly caused fire. It was brand new. We had just bought in at Nabe. In the same day, the head of it exploded and nearly caused fire. We threw water over it. Next time I buy a stove, I am going to go for a primus stove.

Nokwakha had bought a new flame stove on the 13th of January 1997. The flame stove she had bought in December 1996 exploded in her shack while the children were alone. It was fortunate that this incident occurred during the day and a passer-by saw this and quickly took it outside the house. However, the 'new' stove is not functioning because she cannot replace the finished wick, 'even my husband cannot fix this stove ... I do not know why', she said.

She has bought another flame stove at a cost of R27. In order to ensure that it does not cause fire:

I heard from a neighbour that if you take off the lid the flame stove burns very well. It is when you tighten the lid that it explodes. You see the fire comes out of this hole; if it is tightened with the lid, it bursts. When there is no lid, you can control the fire.

In view of its short life span and the danger it causes, some households have replaced their flame stoves with pump stoves. Although, a single pump stove is more expensive, it is reported to be more durable and safer than a wick stove. In households where a combination of a flame and pump stove is used, the former is rarely used. Mostly it is used for space heating and for cooking when large meals are prepared. Nomelikhaya (#J18) who has both appliances, but uses the pump stove more said:

These days you cannot trust a flame stove. Our houses are not built properly and so wind come in and out as it pleases. When there is slight wind ... even fresh air ... a flame stove will explode. I have seen flame stoves exploding for the most of my life, I know what I am talking about. When we were poor, we were using the flame, but I forced my husband to buy this *raskop*. He had to buy it because we do not have money to repay people if their shacks are burnt because our flame exploded.

## Case 5.9

Simphiwe's shack (#J07) caught fire one evening in April 1996. A wick stove was responsible for causing the fire. Simphiwe's live-in girlfriend was pouring paraffin while the stove was lighted. She had done this before, she said, 'and nothing happened'. On this night, however, the flame stove burst. Upon seeing the fire, she dashed out of the shack, taking her two-month baby, and screamed for help. Neighbours came and tried to dowse the fire. Nothing was saved; her shack and two others nearby were burned to the ground. She recalled the incident as follows:

When the fire started I did not know what to do. Simphiwe was not at home. It was the baby and me and was I was about to boil water to prepare food for the baby. You know, the flame stove was new. I had bought it at Nabe's store in a previous week. It was very new. I do not know what happened, but as I finished pouring paraffin in, it exploded right in front of my face. All I could think at that time was the safety of the baby. That is why I did not attempt to put out the fire ... I just ran and screamed.

The consequences of fire are detrimental in terms of both material loss and social costs. Their shack (with all that was inside – including baby clothes and food) burned. The fire also burned the shack next to theirs and a shebeen belonging to Simphiwe's brother. When fire broke out, Simphiwe's brother was also away. The cases of beer that he had bought also burned, as did a shack that belonged to a domestic worker. Fortunately, the latter was at home. She managed to retrieve some materials – but not much.

The social problems of fires are discussed in detail in Chapter 8, where we examine how this case affected Simphiwe socially. Suffice it to say here that Simphiwe and his partner decided from that day not to ever use wick stoves in their household.

Despite its negative aspects, the wick stove is preferred because 'it cooks food to perfection', said Nobuyisile (#S11). Florence (see Case 5.4) prefers a wick stove because it 'does not use a lot of paraffin ... you pour one bottle of paraffin (750ml) and it will cook your samp'. She also likes this stove because, she says, it does not burn food, as is the case with pump stoves.

As a way of dealing with the problems of wick stoves, households are changing to superior brands of paraffin stoves such as pump and beatrice stoves. Even though the two different brands of pump stoves are significantly better than wick stoves, they also have problems. A raskop is said to be so noisy that it is difficult for people to hear one another. The silence stove is seen as having problems similar to a wick stove. When there is wind, the silence stove also explodes. In addition, one has to use methylated spirit to light it. Another disadvantage of both pump stoves is that their flame cannot be reduced and they must be pumped every now and again. In addition to its durability, the beatrice this kind of paraffin stove is said to be safe, as it rarely explodes. However, its cost is an inhibiting factor for most people. In the sample of fifteen households in Joe Slovo, only two have this appliance. One of the women who has this type of appliance, Dorothy Mbane (#J09) said:

I bought this beatrice at OK stores in 1994. It cost me R43.99 then, but now these stoves are more expensive. Ever since I bought this stove, it never gave me any problems. It burns like a heater. You only replace the wick after months of use. You see the [cover] glasses here ... they prevent the flame of this stove from being uncontrollable in bad weather, especially when there is wind. I go to fetch water in the hostels [some one kilometre away] and leave it burning. Nothing happens. If paraffin runs out, the flame just dies out by itself.

Most households in Joe Slovo and in other sampled areas expressed resentments towards wick stoves (although many used them). The commonly felt resentment concerned the safety of these stoves: 'Flame stoves can explode anytime regardless of its age'; 'It burns the house very easily'; 'It takes a very long time to cook foods'.

# 5.6 Relations between household members and the role of appliances

The discussion of appliance purchase and use would not be complete without a reference to the impact of appliances on household relationships. If we take the view that energy appliances are commodities, we have also to understand the role these commodities play in people's social relationships. In many instances, this role is not explicit. For instance, households would borrow and lend appliances or part of appliances and thereby cement their relationships. It is not only the appliances that are exchanged or shared but also the end-use. We have seen Fundiswa (#J03) above sharing the television with her neighbour Ivy (#J15), who is also a spaza shop owner. From Monday to Friday, Fundiswa would spend time with her and both women would watch their favourite soaps. The bonding between these women is so strong that Ivy gives Fundiswa food and other household items on credit.

Maggy (#L11) buys meat in bulk and stores it in her neighbour's refrigerator. In Khayelitsha, Netney (#K07) would store in her fridge ice-creams and meat belonging to her neighbour because 'she does not have a fridge and we are friends ... when I do not have soap I go to her'. In the households cited above, there have been exchanges of appliance and services. Although relationships between these households are not necessarily created by the exchange of appliances and services, the movements of appliances between households strengthen relationships. When there is no co-operation between households, commodities and appliances are also not exchanged.

Although in some instances, the services of electrical appliances are shared between households, in other they are not. Electrical appliances are not easily shared between households because of the high cost factor. Some householders would not share their electric appliances because they are expensive. One of the main characteristics of these households is that they are self-supporting, have a higher income, have many electrical appliances and do not interact intimately with other households in the area. Eunice (#K08), a woman from one of self-supporting households in Khayelitsha formal houses once said:

My husband and I are working until late in the afternoon. Only our children are at home during the day. They know that they cannot lend a neighbour any of our appliances. \*Even when I am in one of my off-days, no one comes here to borrow because they

know that I do not borrow from any one. If I need something, I buy it. My husband does not like us to borrow from anyone. People of Khayelitsha like to gossip about people who borrow. It is better not to have something than to borrow it. I cannot lend my things to people because if they are damaged who is going to repair them?

# 5.7 Conclusion

This chapter has shown that the use of commodities such as domestic appliances by low-income households cannot be simply explained in economic and gender terms. There are multiple factors that influence appliance use. These include differences between young and old, socio-cultural issues such as tradition and gender, socialisation and rational decisions such as considerations of the function of the appliances. We have also explored the impacts of appliances on social relationships between households. We have argued that the exchange of appliances or their services do not build relationships, but this exchange implicitly cements relationships between them. In other instances, however, appliances contribute to the deterioration of sound relationships between households.

Three important conclusions can be drawn from this discussion. The first is that the multiple factors that shape appliance purchase and use occur simultaneously. The cases show a number of social processes at work. Appliances purchase and use may be simultaneously influenced by gender, income, generation, rural commitment and socialisation. These socio-economic and cultural factors co-exist.

Our second conclusion recognises the symbolic value that appliances play in the life of households. We have seen above how the mostly younger, 'well-to-do' generation values 'modern' appliances. Although these households aspire to these appliances because they are efficient and easy to use, they are also preferred for the status that they impart to households.

Our last conclusion concerns the fluid nature of the above factors. Factors that influence appliance acquisition are not limited to a certain income group, gender orientation or a specific settlement type. All the issues that we have outlined above cut across all settlements. This is consistent with our contention that differences between these settlements are only structural and that there are as many crosscutting factors – especially relating to the use of appliances – as there are differences. These factors would explain, for instance, the reasons why households with stable and relatively higher incomes in formal areas would invest very little on electric appliances. At the same time, it would also explain why a household with a low or erratic income, situated in an insecure area would aspire to the ownership of electric appliances.

In the next chapter we investigate decisions relating to the use of fuels by the sampled households. Some of the same themes, such as gender, socio-cultural influences and generational dynamics, raised in this chapter are the focus of Chapter 7.

# Why multiple fuel use is a permanent phenomenon: economic and social influences on fuel use

## 6.1 Introduction

The notion of multiple fuel use describes the use of a number of fuels for one or more household applications, such as using a combination of gas and paraffin or electricity for cooking. The conventional wisdom is that multiple fuel use is symptomatic of households with low disposal incomes. Multiple fuel use is meant to be a temporary stage in the process of 'modernisation', as household energy use changes from the so-called 'traditional' biomass fuels to 'modern' energy sources. Along with other modernisation indices of income, education and urbanisation, full transition to electricity (that is, access to and use of electricity) is the yardstick to measure a household's 'development' status. Taken to its logical conclusion, the operating principle of this transitional theory is that mass electrification of households is the sine qua non of addressing the energy poverty of disadvantaged households. It is less complicated to provide electricity than other important services such as housing and employment. The accelerated electrification drive of previously disadvantaged areas such as shacks in informal areas, new low-income formal dwellings and rural peripheries is, on the whole, 'addressing past inequities' in energy (electricity) provision. We argue the importance of the provision of electricity should not be overstated. Electricity brings light to many households, and potentially provides improved living standards for many individuals and households. It is important, however, to understand electricity within its daily usage: the constraints that prevent poor people from using it.

For the electrification drive to be sustainable there needs to be an accelerated consumption of electricity by households. The national electricity regulator (NER) has recently reported, however, that the electrification drive is 'threatened' by the 'alarmingly' low electricity consumption by 'new customers', as well as by the non-payment or theft of electricity in Black townships (Business Day 24-06-97). This study has also revealed low consumption patterns of electricity in newly electrified households, while paraffin consumption is not decreasing. The current energy-use scenario is that multiple use of fuels in low-income households is a permanent feature. The differences between settlements are just a matter of degree. Where there is access to a range of fuels, householders use a combination of fuels for different domestic applications. In squatter settlements such as Joe Slovo where access to fuels is limited, there are low incidences of multiple fuel use. This is not a new phenomenon. In townships that have long been electrified, multiple fuel use is an observable phenomenon. We argue that multiple fuel use is a defining feature of fuel use in low-income households (Golding & Hoets, 1992; Ross, 1993a; Williams, 1994; Eberhard & van Horen, 1995). Instead of following a linear transition to a single energy carrier, mainly electricity, poor households continue to use multiple fuels to meet their energy needs despite having physical access to electricity. We should attempt to understand why multiple fuel use is so common. Should the policy makers encourage it? Is multiple fuel use a 'threat' to electricity utilities, threatening their viability?

The thrust of this chapter is to improve understanding for fuel-use patterns in low-income households by exploring economic and social factors, which contribute to multiple fuel use. Although household income is arguably the major determinant of fuel use, other factors – the availability of energy sources, individual preferences and socio-cultural factors – also play important roles in domestic energy use. The purpose of this chapter is not only to show that multiple fuel use exists, but also to demonstrate that households need to have a widened

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access to various energy sources and, where possible, to be encouraged to use the best mix of fuels. Householders need to know that electricity is *not* necessarily the best energy source for every domestic application; it has advantages as well as disadvantages. We now turn to the interplay of energy expenditure, household composition and income in the sampled households.

# 6.2 A description of the energy burden and households' income

Generally, there is a strong correlation between variables such as income, household size and energy expenditure. In households with higher incomes (such as in Langa backyards), the energy expenditure does not take a bigger slice of the income. Table 6.1 shows that in 1996 the average income of households in Langa increased as did the expenditure on fuels. What is most noticeable is that the average energy expenditure as part of household incomes decreased from 7.93% to 5.98%. Income alone, however, cannot explain the lower expenditure on fuels in Langa backyard households. To a large extent, the composition of Langa backyard households influences how much energy is bought and used. A majority of the sampled Langa backyard households consists of adult members. As indicated above (see, for example, Chapter 2), Langa backyard dwellings consist mostly of 'incomplete' households. Many backyard dwellers have other family members living elsewhere in Cape Town and in the rural parts of the country. Space and tenure problems, in particular, do not allow them to live permanently with all their immediate families. Small house sizes and the fact that most backyard dwellers are engaged in formal employment mean that energy intensive activities such as cooking are not often done during the day.

	AVERAGE		KHAYELITSHA		SITE B		LANGA		JOE SLOVO	
	1995 (n=60)	1996 (n=59)	1995 (n=15)	1996 (n=15)	1995 (n=15)	1996 (n=15)	1995 (n=15)	1996 (n=14)	1995 (n=15)	1996 (n=15)
Average HH income (R's)	762.45	1113.59	510.00	1030.50	878.27	1024.10	988.23	1740.57	681.14	701.40
Monthly expenditure on energy per HH (R's)	85.80	116.47	116.01	155.95	96.23	115.03	71.83	104.08	53.42	98.98
Energy as a % of HH income	12.11	10.46	18.64	15.13	11.08	11.23	7.93	5.98	10.11	12.83
Average number of HH members	4.2	4.5	4.6	5.4	4.5	5	4	3.5	3.7	4.2

Table 6.1: Energy expenditure as percentage of household income

One would have expected higher average income levels in Khayelitsha than in the other settlements, given that it is a formal township with brick houses. This shows that, at times, the type of settlement does not always correlate with income. In the first year of our study (1995), income levels of the sampled households in Khayelitsha were lower than in Site B, Joe Slovo and Langa. However, in 1996 the income levels of Khayelitsha became one of the highest in the sample as a result of:

- (i) increased salaries of employed householders (or pensions);
- (ii) improved employment chances;
- (iii) the inclusion of income from informal business; and
- (iv) withdrawal from the research the sample of households with high incomes.

Netney (#K07), a pensioner from Khayelitsha claimed that her only household income, which was R410 in 1996, was derived from her pension. In later visits, we were able to document other sources of income from her lucrative informal trade of selling drinks, snacks and food to school-going children. Again, the same household was receiving a monthly 'support' (legally enforced maintenance grant) from Netney's daughter's boyfriend, which was R100 per month. In the first year of the study, many other households could not quantify their 'other' sources

of income and, as a result, did not mention them at all.

One of the reasons for the breakdown of the sample into different housing categories is the hypothesis that there is a correlation between dwelling type and incomes. Yet, although they do not have the highest average income, the Khayelitsha households appear to be spending more on energy – at 18.64% in 1995 and 15.13% in 1996. Nationally, energy expenditure in low-income households, as part of their incomes, is between 5% and 20% (Campbell et al, 1990: 12). What is of note in our sample is the increase in energy expenditure in 1996, compared to 1995 (see Table 6.1). Contrary to the findings of other studies (for example, Thorne & Van Gas, 1994), our research indicates that access to electricity does not automatically result in the reduction of energy expenditure. Indeed, if one compares energy expenditures across the sampled settlements, electrified settlements such as those in Khayelitsha, Site B and, to a lesser extent, Langa backyards spend more money on buying energy. The decrease in energy expenditure as part of household income in Khayelitsha in 1996 compared to 1995, results from increases in household incomes as well as a reduction in electricity use especially for space-heating as households switched from electricity to paraffin (see Section 6.3).

Households in Site B also have comparatively higher average household incomes. Incomes of Site B householders are mostly derived from multiple sources such as formal employment, pensions or government grants and informal businesses (see Chapter 10). Unlike householders in Khayelitsha, however, very little of their income is spent on buying energy. In two years, energy expenditure in Site B was stable; only 11.08% (1995) and 11.23% (1996) of household income was spent on energy. We contend that this low energy expenditure results from the under utilisation of electricity, as these households own and use very few electrical appliances (see Chapter 5). In contrast to Khayelitsha, it appears that energy is not a priority for householders in Site B (see Section 6.3 below).

As in Khayelitsha, the major source of income for households in Joe Slovo derives from pensions and very few household members are involved in domestic work or informal businesses. Although the average income in 1995 was higher than that in Khayelitsha, there were households in Joe Slovo that had an income of less than R100, and some did not have any observable means of income. It is worth noting that in 1996 the average income levels in Joe Slovo suggest a different picture than the 1995 one. In 1996, with an average income of R701.40, households in Joe Slovo were the worst off in the sample. Their expenditure on fuel compares well to Site B's, yet none of the sampled households had access to electricity. Householders in Joe Slovo depend almost exclusively on paraffin. Very few householders use gas for cooking. Indeed, as discussed in Section 6.4 below, there is little multiple fuel use in Joe Slovo.

Although household income patterns and energy expenditures have risen between 1995 and 1996, it should be noted that the average per capita income of the whole sample is still very low. According to the Household Subsistence Level (HSL), the minimum monthly per capita expenditure for a household to meet its basic needs is R270 (LAPC, 1995). Electricity does not seem to have made a telling difference to the energy expenditures of the sampled households. The average monthly expenditure remains high. It rose from R85.80 in 1995 to R116.47 in 1996, and fuel expenditure continues to constitute much of household incomes. As householders continue to have access to different fuels, they do not forsake one fuel for another. Instead, they juggle between different fuels, and this can become costly. Electricity appears to have increased expenditure on fuel? If the use of many fuels is expensive, what prevents householders from using only one fuel to meet their energy needs. We attempt to understand the phenomenon of multiple-fuel use by exploring reasons why electricity cannot

<sup>&</sup>lt;sup>1</sup> Three households were substituted in 1996 (see Chapter 2). The substituted households had higher average incomes than did the households that replaced them. This has, consequently, affected the average income of the sampled households.

replace other domestic fuels, or why the so-called 'transitional fuels' appear to be a permanent feature of low-income households' energy-use patterns.

# 6.3 And the light never comes

Research suggests that it take a minimum of five years for the uptake of electricity to stabilise in low-income households (for example, Africa et al, 1997). These studies assert that this period is necessary to accumulate appliances in order to be able to use electricity. This view is obsolete and simplistic, as it ignores important fuel-use patterns in these households. The present rate of electricity consumption patterns in low-income areas indicates access to electricity does not automatically mean that people will use it for most of their energy needs. Electricity is under used in Khayelitsha and Site B, and could be so in the medium to long term. Combinations of factors, which often occur simultaneously, are responsible for low consumption of electricity. These factors include low disposable incomes, not having access to suitable appliances, reliability of supply, users' lack of knowledge about how electricity works, investment in other fuels, individual preferences that are often based on notions of convenience and familiarity, as well as socio-cultural reasons. Clearly, the uptake of electrification cannot be simply reduced to the question of affordability, although this factor is also important in determining fuel use.

	TOTAL		KHAYELITSHA		SITE B		LANGA		JOE SLOVO	
	1995 (n=60)	1996 (n-59)	1995 (n=15)	1996 (n=15)	1995 (n=15)	1996 (n=15)	1995 (n=15)	1996 (n=14)	1995 (n=15)	1996 (n=15)
Percentage using	55	57.6	100	100	100	100	20	29	0.0	0.0
Average monthly costs (R's)	40.9	62.2	45.3	79.3	30	33.6	73.3	105	0.0	0.0

Table 6.2: Electricity usage and costs

Khayelitsha formal households were electrified between 1990 and 1993. For reasons outlined in Chapter 5, electricity is used more in Khayelitsha than in Site B dwellings. As noted in Section 6.2, this has little to do with incomes of the respective households, as they have approximately the same average incomes. On the whole, electricity consumption and expenditure is very low in both areas. The figures released by Phambili Nombane on electricity consumption also suggest a very low take-off in greater Khayelitsha area (including Site B). The average consumption of formal dwellings was 163 kWh (1995), 206 kWh (1996) and 255 kWh (1997). If we use the 1997 unit price of electricity, which is R0.26 per kWh, the average electricity expenditures, excluding value added tax (VAT) of 14% were R42.38 (1995), R53.56 (1996) and R66.30 (1997). The informal areas have even lower consumption and expenditure figures. The average monthly consumption for informal dwellings was 47 kWh (1995), 72 kWh (1996) and 95 kWh (1997). This translates into the average expenditures (excluding VAT) of R12.22 (1995), R18.72 (1996) and R24.70 (1997). Our figures are slightly different to Phambili Nombane's, although we also observed lower electricity consumption patterns in Site B informal settlement (see Table 6.2).

A particular pattern of electricity use in both Khayelitsha and Site B is its use for domestic services such as lighting and entertainment and less for cooking, space-heating and ironing. Between 1995 and 1997, we have observed a gradual decrease in the use of electricity for space-heating in Khayelitsha, and a corresponding increase in paraffin heater purchases. Generally, there are high incidences of multiple fuels, which often result in limited amounts of electricity being used. Multiple fuel use is not limited to cooking and space-heating

<sup>&</sup>lt;sup>2</sup> These figures are from Phambili Nombane (PTY) Ltd, a utility that supplies electricity in the Khayelitsha region.

practices. Electricity and candles or paraffin lamps are frequently used simultaneously for lighting 'to save costs'.

A factor contributing to the reduction in electricity use in Khayelitsha is the current policies of Phambili Nombane regarding the free loaders or electricity defaulters<sup>3</sup>. Phambili Nombane has reacted strongly to electricity defaulters in Khayelitsha. This utility is closely policing the consumption of electricity, and stiff penalties are instituted against any household found to be stealing electricity (Mdingi, 1996 pers. com). The penalties include the confiscation of the readyboard and high reconnection fees for offenders. When electricity was 'freely available' – that is, when there was a lack of control by the authorities – householders were able to use it for many energy-intensive applications such as space-heating without regard to cost. Tight policing of electricity use in Khayelitsha has meant that many householders cannot afford to use it for activities requiring high levels of energy.

There are other constraints that contribute to the below average electricity consumption. We argue that when these constraints are addressed there could be an improvement in electricity consumption in low-income households. Our discussion of constraints on electricity use also touches on backyard dwellers, since their experiences regarding electricity use are unique.

# 6.3.1 'Can I put a kettle plug in the place marked for a stove'

Households that are part of the current electrification drive are provided with prepayment meters. This includes the installation of a meter or energy dispenser (ED), and the readyboard, which can be used to plug in a few appliances. Householders are expected to provide wiring at their own costs and time. Although the reason that prepayment ED's are installed is to enable poor households to 'budget' for their electricity consumption, the measure was also conceived to prevent the non-payment of electricity prevalent in low-income urban townships of South Africa. It must be pointed out, however, that by not providing dwellings with wiring appears to be counter-productive, as it does not take into consideration the circumstances of impoverished households.

According to residents in Khayelitsha, to wire a standard two-roomed dwelling by a qualified electrician could cost a minimum of R800. Indeed, most people do not have the skills required and cannot afford qualified technicians. Low incomes and lack of expertise compel residents to hire 'street electricians' because 'their prices are reasonable'. Often, this creates a problem in that wiring is usually substandard. In many dwellings, there are no wall sockets and householders continue to use the readyboard to switch lights. Research participants say that this causes a great deal of inconvenience, and is one of the reasons that paraffin is used in rooms without the readyboard. Having access to many plug points in the house is what makes the use of electricity more convenient than other energy sources. However, without adequate wiring, many low-income householders' use of electricity will remain an impractical dream.

Lighting is arguably a major benefit that electricity brings to a home. Yet, some householders in Khayelitsha and Site B continue to use candles and paraffin lamps for lighting despite their physical access to electricity. In 1995, about 60% of households in Site B used electric bulbs at some point only in one room, and paraffin lamps or candles in others. For them the benefits of electric lighting will take time to be realised. These benefits include longer days, which gives people more time to do other tasks; for youth, additional time to study or do homework with proper lighting, as well as the reduction of fires normally caused by candles. The use of 'substitute fuels' for lighting purposes is mainly the result of lack of wiring, which most households cannot afford. In Khayelitsha, householders who have managed to accumulate some electrical appliances are compelled to use extension cords connected to the readyboard. Also, to be able to use a number of appliances simultaneously, people have to use multiple adapters resulting in the overloading of plugs and this is hazardous. People are not clearly aware of the dangers of loading the readyboard.

<sup>&</sup>lt;sup>3</sup> This point came out strongly in the community workshops in Khayelitsha (see also Chapter 3).

The ED's are a new technology that few households are familiar with. It is even more difficult for people who have not been socialised into electricity to know the intricacies of using them. Familiarity increases competence, but with the use of electricity it is not effective for people to learn by experimenting. In a village in the former Bophuthatswana, writes Golding (1994: 65), householders transferred their appliance-use patterns across to new electrical appliances without sufficient regard to energy efficiency. Although some householders are domestic workers, this experience appears not to have been helpful. Instead, it raised their expectations as they aspired to use electricity for all their energy needs. Higher income groups, for which they work, depend mainly on electricity in their homes. The draft energy white paper (1996) recognises that lack of awareness regarding energy conservation and efficiency in South Africa is not limited to low-income households. In low-income households, this knowledge is essential (cf. Thorne, 1996; Mabuse, 1996). If people are not informed, they rely on their perceptions (Chapter 7) and resort to inefficient methods of energy usage. For instance, some people in electrified households continue to use dry-cell batteries to power radios in order to save electricity (see Section 6.7 below).

# 6.3.2 'We cannot afford stoves because they are expensive'

The NER (1996) and draft energy white paper (1996) acknowledge that the high costs of electrical appliances prevent householders from using electricity for many end-uses, and little has been done so far to rectify this situation. The costs of electrical appliances are not comparable to the costs of paraffin appliances. Paraffin appliances, such as heaters and cooking stoves, are more affordable than gas and electrical appliances. In addition, paraffin appliances are used for multiple functions such as cooking and space heating. In contrast, electrical appliances are single function, so that householders have to buy a number of appliances to obtain the same benefits. This is difficult for low-income households, as electrical appliances are expensive to buy and maintain.

Although many people prefer to buy second-hand appliances, electrical appliances are expensive to repair when broken or damaged (see also Section 5.3 in Chapter 5). As the costs of repairing electrical appliances are high, people are reluctant to lend their appliances. This produces negative social implications for people who rely on borrowing and lending to cement their social networks. It is not uncommon to share paraffin or gas appliances, but sharing of electrical appliances is not as common. Indeed, it is not easy for electrical appliances to be moved from one household to another. There were few exceptions. Nokwakha (#L09) was lent a television by a relative because she was taking care of the relative's daughter. Florence (#S07) is lent a portable television by her sister during the week, as she is a live-in domestic worker who comes home only at weekends. A common sight, however, is neighbours visiting one another to watch television (cf. Golding, 1994).

# 6.3.3 'I pay for it [electricity] because I am desperate'

Very few backyard dwellers in our sample (20% and 29% in 1994 and 1996, respectively) have access to electricity. Those few that use electricity do not have independent access to electricity, but are connected 'illegally' from the main house. All the backyarders that have access to electricity are paying a flat rate, which excludes the lodging fee. This occurs although all the formal dwellings in Langa have prepaid meters. As Table 6.2 shows, the backyarders' expenditure on electricity is the highest in the sample. Since there is currently no policy regarding the electrification of backyard dwellings, backyard dwellers depend on the 'goodwill' of the site owners to have access to electricity. To use electricity, the backyard dwellers have to negotiate with landlords for a connection to the main house. The agreements that often result from these negotiations are a reflection of the differential bargaining power between them, as backyarders are often charged exorbitant fees for the use of electricity. The case of Vuyisile (#L04) captures the dilemmas and frustrations in which backyard dwellers often find themselves.

#### Case 6.1

Before Vuyisile and his wife Wendy came to live in a backyard shack in Langa in 1992, they had been renting a bachelor flat in the Sea Point suburban area. The high costs of renting in the suburbs and the high monthly payments on their new car made them to look for 'an affordable' accommodation in the townships. Their intention is to ultimately find their own house in the township. The couple, which has only one eight-year child, is in their early thirties. Both have secure employment, and their household had a comparatively high per capita income of R1 509 per month in 1995. Vuyisile is a 'business consultant' for a local NGO while his spouse is a waitress. The former had a monthly income of R3 383 (in 1995) while the latter earned R1 144 a month.

Since moving to Langa in 1992 they have used gas and paraffin until they decided to negotiate with the site owner in 1994 to have electricity connected to their shack. They knew that this would mean an increase in their monthly rental but 'we were prepared to pay anything to have electricity', said Vuyisile. In 1995 they were paying a flat rate of R100 for electricity per month, which was subsequently increased in 1996 to R120. According to Vuyisile the amount of electricity he pays covers the monthly consumption of his and the landlord's households. He said, 'I do not want to think about the money I pay for electricity. I pay for it because we are desperate ... we do not have a choice. It is not nice to use paraffin and gas. I have been using them for many years now and I am tired of using them again.'

Other backyarders that are connected to the main house voice similar concerns: that their landlords exploit their desperation for electricity. The common denominator in backyard shacks that have access to electricity is that the inhabitants have been using electricity in their former settlements and have, over time, accumulated electrical appliances. Their experience in using electricity makes it difficult for them to adjust to other fuels. They become vulnerable, as they are forced to make compromises when negotiating for electricity. A compromise made by Vuyisile is to subsidise the energy consumption of his landlord and to assist his landlord in settling an electricity debt incurred during the years of boycott of services.<sup>4</sup>

The high price paid by backyarders for electricity encourages wasteful practices and inefficient use of electricity. Electricity is intentionally used inefficiently because, 'I am paying a lot of money anyway', said Rebecca (#L10). Before Rebecca bought a three-bar electric heater in 1996, she was using a two-plate electric stove to heat her shack. She did not mind this inefficiency because she was paying a flat fee of R100 per month. Most of her energy needs are fulfilled by electricity, as she has an impressive collection of electrical appliances (see Case 5.2 in Chapter 5).

In the majority of cases, backyarders do not ask for electricity, as it may upset the relationship between them and their landlords. Although Gilbert (#L03) prefers electricity to the fuels he currently uses, he has vowed never to ask his landlord for it. He sees the connection from the main house as a potential source of conflict. Backyard renting is never stable, and backyard dwellers live a life of insecurity. There is no law that protects their tenure. A minor quarrel with his landlord is enough to send a lodger packing with little or no notice. For instance, near the completion of our research, Pumla (#L06) and Madumandile (#L07) were not sure how long they could stay. They had heard that their landlord was thinking of evicting them from her yard as she was contemplating erecting a structure for her church. It is possible that by the time of writing this report, both Pumla and Madumandile might have been evicted. In one of our visits after the conclusion of fieldwork, Nokwakha (#L09) had moved back to Langa hostels after a conflict with her landlord, and Albertina (#L14) moved to Site C, an informal

<sup>&</sup>lt;sup>4</sup> Households in Langa have been recently converted from credit to the pre-payment system. Most households, including this one, owe the City Council large bills carried forward from the boycott period. Ten percent is deducted every time a household buys electricity, in order to recover debts.

settlement near Khayelitsha, because of conflicts between her and the family of her deceased landlord.

In some instances, backyarders give up their electricity use when they detect that they are being 'exploited' beyond their means by their landlords. As case 6.2 below shows, Mavis (#L16) gave up using electricity because she could not afford the exceedingly high fees.

## Case 6.2

Mavis comes from a rural village of Ngqamakhwe, in the former Transkei homeland. She came to live at the present backyard in 1994. She had come to Cape Town to look for work 'because my husband's money was not enough for me and my [six] children.' Together with her late husband they moved from a crowded hostel room to rent a backyard site for R20 per month. Mavis's husband died of cancer in December 1994.

Because Mavis's late husband and the owner of the site come from the same village in the Transkei; they were soon given access to electricity. The hostel room that they lived in before their renting of the backyard shack had electricity. Mavis's husband had been in Cape Town for 'more than 15 years', and had bought a hotplate, iron and a kettle. It was fitting for them to use electricity, as they were used to it. The agreement was that Mavis would pay R50 per month for electricity.

In 1995, there were problems with this arrangement as the owner of the site had extended electricity use to the other two shacks on the site. Electricity consumption became higher, and so was the bill. It was during this time that a majority of householders in Langa were converting from credit to prepayment meters. Most had amassed huge bills dating back from the electricity boycotts of the 'struggle' years. Mavis recalls that 'he [the landlord] called us one afternoon [Mavis and other two shack owners] and showed us the bill. It was a lot of money.' The landlord apparently wanted all the electricity users to share the bill. According to Mavis, 'I have been paying for my use of electricity every month without failing ... I was even not using much electricity.' When she did not agree to share the bill she was disconnected.

Since 1995 she has been using paraffin and gas for her households needs and 'I would never ask for electricity even if I can move from the present site. These people [landlords] are *skelms*. They are robbing us', she fumed.

In an attempt to safeguard their relationships and tenure, many backyard dwellers would rather not use electricity. Ideally, many backyarders want to have a separate connection from the landlords' to minimise potential tensions and to protect themselves from exploitation. Some research participants indicated that they tried to negotiate with the local authority for separate connections but did not get support from their landlords. The relationships between tenants and landlords are fragile; any disagreement can trigger off conflicts and, ultimately, eviction. Some site owners are 'even jealous' of the progress made by their tenants and conflict begins. Grace (#J05) had moved to Joe Slovo because her landlord in Langa '...was jealous of my things and told me to move out of his premises without giving me a notice.' Apparently, her landlord was envious because she had accumulated many electrical appliances including a vacuum cleaner while 'he did not have even a television set', she said.

# 6.4 And the darkness continues to grow

Paraffin is undoubtedly the principal fuel for low-income households. The current fuel-use patterns in poor households suggest that paraffin use will continue well into the next millennium. Our research shows that electrification does not effect dramatic impacts in breaking the monopoly of paraffin use. A very noticeable trend, as seen in Table 6.3 below, has rather been the increase of paraffin consumption in Khayelitsha from 495 litres (1995) to 525 litres (1996). Both surveys were taken at roughly the same period (winter) of each year. The increased use of paraffin, as noted above, coincided with the decreased use of electricity for space heating and the onslaught on electricity free loaders by Phambili Nombane. Space-

heating and cooking of certain meals which are energy intensive, such as samp, call for the use of paraffin, as householders perceive paraffin to be suitable for these domestic functions (see Chapter 7).

It appears that there has been a slight reduction in paraffin purchases in the sampled settlements (except for Khayelitsha) in 1996. Although these householders consume less paraffin, the money they pay for paraffin is increasing. We suggest that the increasing prices of paraffin – not the electrification of the area – contributes to the drop in paraffin consumed in Site B in 1996. When compared to the expenditure on electricity coupons, householders in Site B are spending more on paraffin than on electricity. The average expenditure on electricity in 1995 and 1996 was R30 and R33.60, respectively while the in the same period the average expenditure on paraffin was R43.60 and R52.40. This shows that the expenditure on paraffin and electricity increased at the same time. Rather than decreasing householders' expenditure on fuels, access to electricity increases their expenditure. Fuel-use patterns in Joe Slovo, as compared to other sampled settlements, show this clearly. In Joe Slovo we observed relatively lower paraffin consumption figures, while in electrified households, paraffin use is at an all time high. This is caused by a combination of factors. Among these factors are cooking patterns, household membership and sizes, financial constraints, high prices of paraffin, fewer numbers of appliances, and so on.

	TOTAL		KHAYELITSHA		SITE 8		LANGA		JOE SLOVO	
	1995 (n=60)	1996 (n=59)	1995 (n=15)	1996 (n=15)	1995 (n=15)	1996 (n=15)	1995 (n=15)	1996 (n=14)	1995 (n=15)	1996 (n=15)
% using	95	96.6	80	80	100	100	93	100	100	100
Litres used per month	1847	1853	495	525	537	529	385	373	430	426
Average monthly costs (R's)	37.97	48.6	41.3	43.6	43.3	52.4	30.6	39.3	28.6	28.4
Average cost per litre (R's)	1.17	1.50	1.22	1.30	1.21	1.49	1.11	1.47	1.12	1.70

Table 6.3: Paraffin usage and costs

Although prices of paraffin as shown in Table 6.3, show a marked increase in 1996, the table also shows the differences in paraffin pricing in the settlements. Paraffin prices are highly unregulated. In a workshop in Joe Slovo, the participants argued that 'every spaza shop charges his own price'. As a result of this *laissez-faire* in paraffin, prices are increasing at an alarming rate and are not consistent. In June 1995 the wholesale price of paraffin per litre was 92.63 cents at the coast, but cost between R1.11 and R1.22 when householders bought it from the spaza shops. In June 1996, the wholesale price was R1.14 but cost between R1.30 and R1.70 per litre in spaza shops (DME, 1997). By the conclusion of our research in April 1997, the price of paraffin in Joe Slovo was R2.20 per litre. The escalating costs of paraffin could be a major reason that its consumption appears to be decreasing in Joe Slovo while the expenditure on paraffin is increasing. The decrease in paraffin consumption does not necessarily mean that householders are going to stop using it. The reasons for this are explored below.

# 6.4.1 'Paraffin is better ... better than electricity and gas'

Although paraffin is a preferred fuel, it causes fires and is potentially dangerous as children can drink it. As reported in Chapter 8, there have been spates of fires caused by paraffin use and faulty paraffin appliances such as pump and wick stoves in Joe Slovo. These fires continue to destroy people's material possessions and they have negative effects on social relations in the community. Why, then, should the majority of households use paraffin in the face of these problems? One reason is its accessibility, that is, its relative low price, its widespread availability and, its perceived 'safety'. Many paraffin users feel that gas is more

dangerous to use especially in households with small children (see Section 3.3.3 in Chapter 3). The deep fear of gas is usually based on anecdotal evidence. Stories abound of people 'dying while sleeping'; of gas as a 'silent killer' (cf. White et al, 1996), as Case 6.3 shows.

# Case 6.3

Catherine (#J01) has been using paraffin for as long as she remembers. She often said that she could easily afford gas, but chooses not to use it because of a past incident involving gas. She said; 'I saw how dangerous it is when my [adult] child almost died while using it. The tank leaked and there was fire ... The fire could not stop although we were pouring water over it. God was with my child ... she got out alive but the house [shack] was burned.'

Although she also perceives paraffin as dangerous, it is better than gas and electricity because, 'paraffin is safe if you are not careless with it. People should just stop using flame stoves because they are dangerous. In my house, we use a beatrice and primus stove ... and nothing else. Even for lighting the house, I use [paraffin] lamp not a candle.' Paraffin, according to her view, is 'cheaper and safer' than electricity. She recalled, 'When I was living in Langa [lodging in a formal house], the house we stayed in was burned to ashes because of this electricity. They said that a plug on the wall caused the fire. I will never use it ... people say that you cannot stop electricity fire with water...'

In a community workshop in Joe Slovo, householders agreed that although paraffin use is problematic in terms of safety, at least people could control its use. What is dangerous, they argued, are paraffin appliances dangerous not the liquid.

# 6.4.2 Symbiotic relationships between retailers and householders

Paraffin is mostly bought from informal traders (big and small spaza shops or private households) who usually sell paraffin in affordable quantities. These traders are within a short walking distance from households and many have no strict trading hours. This means that a bottle of paraffin may be bought even late in the evening. In many instances, householders are involved in intricate credit relationships with these paraffin traders. These credit relationships ensure the traders with a stable customer-base in the face of competition from a myriad of other spaza shops, as customers may not buy paraffin at other traders without jeopardising this relationship. This relationship between households and paraffin traders is crucial: the very ability of some households in meeting their basic needs of cooking, heating and lighting is largely dependent on it.

# Case 6.4

One of the reasons that Catherine (see Case 6.3) likes to use paraffin is that she can 'borrow' it from Ivy's spaza shop (#J15) nearby. She said, '... here in the township you can borrow paraffin. I sometimes borrow paraffin from Ivy because she knows I am her valuable customer. She is very expensive though. A 750-ml bottle of paraffin is R1.30 (1995). You can find that at Nabe [a local supermarket] or at Mojo [a bigger spaza shop], a litre of paraffin cost R1.20.'

At month ends she buys paraffin and other household goods at Nabe where they are cheap after she has paid her debts at Ivy's spaza shop. She said, 'Ivy cannot complain because sometimes she does not have paraffin and she knows that I buy it somewhere else. She knows also that I am a pensioner ... the money we have in the house is not enough. I have to buy a month's grocer at a cheaper place. When the grocery runs out ... usually in a second week ... I go to her for a "tick" [credit]'. She told us that Ivy is the 'person of God' because she helps 'everybody' who needs paraffin. She said; 'She [Ivy] helps us because she knows that not everyone has money all the time. We are poor. So she has to bear with us. If a spaza shop does not give credit, we [the customers] are going to run away.'

'Small-time' spaza shops and households selling paraffin are usually more expensive than

bigger spaza shops as they tend to mark up their prices in order to gain profit. These retailers usually (a) purchase paraffin in quantities of 20 or 25 litres; (b) have limited who may buy paraffin in even smaller quantities (such as 750 ml); (c) give credit to their customers; and (d) operate at flexible hours. In March 1997, Ivy increased her price of paraffin from R1.50 to R1.80 a 750ml bottle. When Nosilent (#J06) buys it at Mojo supermarket (where Ivy buys her stock of paraffin), she gets 5 litres for R7.20 (about R1.44 a litre). She cannot always buy her paraffin at this shop, as 'they only accept cash'. She says that buying paraffin from this cheaper shop upsets Ivy because, 'she complains when we buy our paraffin from the supermarket. She says that if we buy in that shop she will not give us credit. At the end of the month, I send children to buy paraffin from this shop ... and we hide it so that she does not see.' Nokwakha (#J16) used to buy her paraffin from the 'big' spaza shop but is not able, 'In the middle of the month we do not have cash to buy it'. The shop in Zone 21 (Mojo) only sells for cash. I now buy my paraffin here at Ivy's. She continues to buy her paraffin at Ivy's although she claims that she is very expensive.

Fundiswa (#J11) buys her paraffin at the cheaper mini-market because 'paraffin prices in Joe Slovo are 'exploitative'. If she does not have paraffin, she says, she would not 'borrow' from the spaza shop but would 'take it from my friends across here'. She says that one of the reasons is that she once quarrelled with the spaza shop owner:

She likes everyone to buy everything from her. If you come from work and see that you carry plastics from Shoprite she would show a face. She would quickly come and demand the money you owe her. She is very selfish. We nearly had a fight after she saw me carrying a 25-litre container full of paraffin. She came here and demanded that I pay her at once. She wants everyone to buy from her all the time. Imagine if I could do my grocery from her and not at Shoprite. Do you think I would be in the right mind?

In March 1997, Catherine was finding it very expensive to buy paraffin 'these days'. She claims that, maybe, the reason is that 'the government is trying to stop us from using paraffin'. 'Why', she asks, 'is the paraffin price going up all the time? Why does it not go down?' She says that five litres of paraffin from the spaza shop 'is between R8 and R10'. She claims that this is ruining their relationship with the spaza shop as 'Ivy does not give easily the credit to us because she says that she finds it difficult to buy her stock if all people take on credit, I do not blame her; paraffin is very expensive now?'.

Although in most cases, the relationships between spaza shops and consumers are cemented by the exchange of paraffin on credit, they are also easily broken by quarrels regarding non-payment of paraffin debts. Even long-standing relationships are often broken when the customer constantly fails to pay back the debt. Novuyani (#J12) says:

Sometimes when you want back the money of paraffin from people who have borrowed paraffin, it becomes a problem. Some people do not want to pay back. They will hide from you until you give up. What happens to us? When you need to buy paraffin to sell you do not have enough money because most of the money is still with people who owe you. Other people will pay with not enough money. I am not on speaking terms with some neighbours here because they still owe me money for paraffin, which I have given them long time ago.

Even so, Novuyani recognises that most people in Joe Slovo do not always have money in hand, so she is forced to give them credit. In order to minimise her losses, she limits those who borrow to only one (750-ml) bottle. However, it is very different when she deals with her close family. She gives unlimited credit to her son's household because 'when they have money they give more than they have borrowed'. There are also other households, especially close relatives, where credit limitations do not apply.

# 6.4.3 'People who know each other share paraffin'

Given the widespread use of paraffin in low-income households, it is worth noting that reasons for continued use of paraffin go deeper than the explanations outlined above. Indeed,

the economic rationale should be located within a specific social and cultural context because fuel use is socially embedded (see also Bank et al, 1996; Jones et al, 1996). It is widely documented in international literature that the economically marginal populations of any society rely on their social relationships for survival (see Stack, 1974; Lomnitz 1977). These social relationships are usually based on kinship, neighbourliness or friendship. These studies have shown that the very poor cannot rely on a single resource base for survival. Networks are created between households, sometimes stretching beyond the immediate geographical area. These networks are dynamic and their boundaries shift in response to different situations, such as people are breaking out of networks due to household movements, improved economic status and so on. The following case shows how kin networks are used strategically to access paraffin.

#### Case 6.5

Nomelikhaya (#J18) says that she does not normally buy her paraffin in spaza shops in Joe Slovo because 'they are all very expensive'. Because there are only two of them in their household, they normally buy paraffin in bulk from 'Mojo, that big spaza shop in Zone 24'. Occasionally, paraffin runs out in the middle of the month and 'by this time we do not have enough money in the house to buy again'. When they run out of paraffin, they go to Novuyani (#J10), her mother-in-law who sells paraffin:

Our mother [in-law] sells paraffin. We go to her and she will give us a bottle of paraffin we need. She does not only give us paraffin but she also gives us vegetables she sells ... No, we do not repay her in a normal way, like other people. She does not chase us at the end of the month demanding her money. She knows that we are part of her household. Sometimes when she is out of money to buy her stock of paraffin, she comes to us. Vuyane would give him the money she wants to buy paraffin. Our life is like that. She gives us paraffin when we need it, and we also help her when she needs help. This is one family.

The most important function of reciprocity networks is to distribute resources between households that have a similar socio-economic position. Paraffin and food are seen in the same category: they can be shared between households according to socially defined rules so that each household involved in the network understands the logic of sharing. Fundiswa (#J13) captured the essence of inter-household reciprocity in general and of paraffin in particular when she told us that:

We lend each other everything. If I borrow them something I do not expect them to return it. And also if I go there and say, 'Mkhaya [homeboy], my paraffin has just ended in the middle of cooking, can I take one bottle from you?' They will give it to me if there is one extra. I will not return it. Paraffin is not a debt between people who know each other. When I cook something nice, I give them also. It is like that: we are one big family.

On the other hand, Fundiswa sees money differently: 'imali ngu-Sathana [money is Satan]', she said, because it causes conflicts. When she needs cash she borrows from people in her network. Unlike paraffin, she returns it when she is able to.

# 6.5 A remnant of the pre-electrification era

In 1993, 24% of electrified households were using gas in Cape Town's low-income areas, and 67% of non-electrified households were using it for cooking in Khayelitsha (Williams, 1994: 24). It is significant to note that our research shows that gas use is still high in Khayelitsha despite electrification. Table 6.4 shows that during the period of research, 60% of Khayelitsha households still use gas for cooking, despite having access to electricity. Gas ownership and use dates back to the pre-electrification period in Khayelitsha. Even in 1991, 47% of electrified households in Khayelitsha owned gas stoves (Williams, 1994: 29). A survey by Theron (1992) in Khayelitsha found that 25% of electrified households still use gas on a daily basis' (Van Horen et al, 1993). Instead of householders discarding gas appliances when

electricity becomes available, gas is used simultaneously with other available fuels for cooking (see also Chapter 7).

	TOTAL		KHAYELITSHA		SITE B		LANGA		JOE SLOVO	
	1995 (n=60)	1996 (n=59)	1995 (n=15)	1996 (n=15)	1995 (n=15)	1996 (n=15)	1995 (n=15)	1996 (n=14)	1995 (n=15)	1996 (n=15)
% using	33.3	35.6	60	60	20	13	33	50	20	20
KGs used per month	254	247	130	120	66	28	38	43	20	56
Average monthly costs (R's)	33.3	36.1	37.7	36.5	54.5	58.4	22.8	22.2	16.3	52.9
Average cost per KG (R's)	2.6	3	2.6	2.7	2.3	4.2	3	3.6	2.5	2.8

Table 6.4: Gas used and cost

Many householders in Khayelitsha had invested in gas stoves prior to their access to electricity. It is difficult for these householders to part with this investment. Unlike people who are not familiar with gas, they have come to appreciate the convenience of using gas for cooking purposes. Indeed, gas stoves are seen in the same light as electric stoves; both have a higher status than paraffin stoves. Like electric stoves, cooking on gas is quicker than cooking on paraffin stoves, and is more suitable to people's needs and lifestyles. It is more convenient for working women who have to cook evening meals on their return from work.

Not all householders are likely to use gas for cooking. Although Table 6.4 shows a slight increase in gas consumption in 1996, the number of households using gas is not increasing in some areas. Gas consumption is lower in Joe Slovo and Site B than in Langa or Khayelitsha. We do not attribute this difference to the factor of economics. As the discussion thus far has noted, there are minimal differences in incomes between the sampled households, irrespective of geographical location. The residents of both Joe Slovo and Site B do not speak favourably about gas (see Chapter 3). A workshop participant in Joe Slovo said 'Ipalafini iyabulala kodwa igasi iyatshabalalisa [paraffin kills but gas destroys]'. Nosidima (#S08) commented in the workshop in Site B that:

People [gas vendors] who fill our gas tanks do not care. The will connect a pipe and go somewhere else, when they come back the tank is over-filled but they do not care about this. They will give it to you. Then when you get home and switch on your stove, gas leaks and causes flame beneath the surface of the gas plate. This flame is dangerous.

Gas is viewed as even more dangerous than paraffin. In Joe Slovo, it was viewed as an uncontrollable 'killer'. In a Site B workshop, the participants discouraged one another, particularly in households with children, from using gas. In both these workshops, householders who use gas argue that it is as safe as any other fuel if it is used with care.

In the workshops in Khayelitsha and Site B, the participants complained that the supply of electricity is unreliable, particularly in winter when blackouts become more frequent. Electricity supply in Khayelitsha particularly, and in Black townships in general is thought to be of lower quality than in higher income areas. The frequency of blackouts and the lack of 'explanations' for these, compel householders to keep other appliances and fuels ready 'just in case'. Blackouts often happen during the evening when householders have just returned from work and are preparing evening meals for their families (see also Section 3.3.2 in Chapter 3). Having access to a gas stove means that they can continue with their cooking activities uninterrupted.

# 6.6 Not for candle-lit dinners

In contrast to Khayelitsha or Site B, the residents of Joe Slovo and Langa backyards cannot use the fuels of their choice. Since their tenure depends entirely on their landlords' goodwill, they guard against any action that will result in their eviction, such as fires. For this reason, candles are rarely used for lighting in Langa backyards. Table 6.5 shows that a very small percentage of households in Langa backyards use candles, even though the number increased slightly in 1996 from 27% to 29%. This is despite the fact that very few (29%) households here use electricity for lighting (Table 6.2). The number of households using candles for lighting is more or less the same as in electrified households in Site B and Khayelitsha. Candles are mostly used in 'emergency' situations, for instance, when paraffin runs out in the middle of the month or when there is no cash to buy paraffin. It cost about 63 cents a candle compared to R1.41 or more for a litre of paraffin in Langa.

The households in Joe Slovo use more candles than others. The reason for the increasing candle use in Joe Slovo is self-evident. Unlike in Khayelitsha or Site B and even in Langa backyards, the residents of Joe Slovo do not have the choice of using electricity for lighting. We have shown in Section 6.3 that 100% of households in Khayelitsha and Site B use electricity for lighting. In 1994 when Joe Slovo was established, the use of candles caused most residential fires. In 1995, this compelled the local civic committee to ban candles as well as open fires in Joe Slovo. The ban on the use candles for lighting has been difficult to monitor. Table 6.5 suggests a continued use of candles – the number of candle users increased from 33% in 1995 to 40% in 1996. Householders, because of their impoverished conditions and lack of access to electricity, are forced to use candles. The civic committee as well as householders faces a dilemma. It is known that candles are used in many households despite the fines imposed by the committee. In many instances, the civic members turn a blind eye on candle use. As Dorothy (#J09) said in 1995, 'At the moment I am using candles for lighting since the glass of the lamp is broken. But, you know I can die if I can be caught by the civic because we are not allowed to use candles here.'

	TOTAL		KHAYELITSHA		SITE B		LANGA		JOE SLOVO	
	1995 (n=60)	1996 (n=59)	1995 (n=15)	1996 (n=15)	1995 (n=15)	1996 (n=15)	1995 (n=15)	1996 (n=14)	1995 (n=15)	1996 (n=15)
% using	26.7	27.1	27	13	20	27	27	29	33	40
Number used per month	223	165	24	9	38	56	29	46	132	54
Average monthly costs (R's)	7.39	7.80	3.05	4.76	7.63	12.85	2.99	7.26	14.24	5.82
Average cost per candle (R's)	0.53	0.76	0.51	1.05	0.60	0.92	0.41	0.63	0.54	0.65

Table 6.5: Candles use and cost

At the beginning of our research in this area, many householders claimed that they were not using candles. It became obvious after repeated visits, however, that it was not the case. Householders find it difficult to avoid candles completely and are forced to take risks. Lucy (#J02) continues to use candles in her household for lighting because she does not have enough money to buy paraffin lamps, but she avoids making open fires. She possibly takes this calculated risk because neighbours can easily see wood fires, whereas candles can only be seen by people who come and visit.

## 6.7 The logic of battery use in electrified and non-electrified households

Like paraffin, candles and gas, the other common denominator as far as fuel use is concerned, is the use of dry-cell batteries particularly in non-electrified households. Dry-cell batteries are used to power small transistor radios or cassette players. All the sampled households, irrespective of their location, have either radios that are powered by dry-cell batteries or by

car batteries. By 1996, households in the Joe Slovo sample had the highest number dry-cell battery users followed by Langa backyarders (Table 6.6.1). The households that did not use dry-cell batteries in these settlements used car batteries instead (cf. Table 6.6.2).

	TOTAL		KHAYELITSHA		SITE B		LANGA		JOE SLOVO	
	1995 (n=60)	1996 (n=59)	1995 (n=15)	1996 (n=15)	1995 (n=15)	1996 (n=15)	1995 (n=15)	1996 (n=14)	1995 (n=15)	1996 (n=15)
% using	46.7	59.9	40	40	47	33	53	72	47	80
Number bought per month	32	57	7	7	10	14	9	10	6	16
Average monthly costs (R's)	16.98	20.68	17.20	19.29	18.29	29.53	17.86	18.28	17.07	19.70

Table 6.6.1: Dry-cell batteries used and bought

We have discussed in Chapter 5 the logic behind the prioritisation of entertainment appliances such as radios and television. Suffice it to say that dry-cell batteries are durable, sometimes more than three months. Catherine (#J01) replaces her PP10 batteries every fourth month because she uses her radio selectively.

Despite having access to electricity, a significant number of householders in Site B and Khayelitsha use dry-cell batteries to power their radios. The use of dry-cell batteries in these electrified households occurs because ownership of battery-operated radios dates back to the pre-electrification period. It is significant to note that none of the sampled households had purchased battery-operated radios during the research period. Instead, as noted in Chapter 5, the general trend was that householders were replacing their battery-operated radios and televisions with electricity-powered music systems and colour televisions. Looking at the appliance investment patterns of the sample, it appears that electricity is successfully replacing dry-cell batteries and car batteries. Indeed, none of the households in Khayelitsha used car-batteries to power their radios.

	TOTAL		KHAYELITSHA		SITE B		LANGA		JOE SLOVO	
	1995 (n=60)	1996 (n=59)	1995 (n=15)	1996 (n=15)	1995 (n=15)	1996 (n=15)	1995 (n=15)	1996 (n=14)	1995 (n=15)	1996 (n=15)
% using	20	20.3	0.00	0.00	0.00	14	33	36	47	47
No. of times charged per month	9.3	11.4	0.00	0.00	0.00	0.7	5.7	4.3	3.6	6.4
Average monthly cost (R's)	21.66	22.86	0.00	0.00	0.00	10	32	40	14.26	25.71

Table 6.6.2: Car battery usage and recharging costs

Electric appliances have substituted the battery-operated televisions and music systems, purchased during the pre-electrification period. The same pattern also applies in Site B households with few exceptions. Florence (#S07) used car-batteries to power a portable television. The reason was that the television belongs to her sister. If it were hers, she often told us, she would have converted it to electricity. Mayedwa (#S16) used the car-battery because 'it save electricity', besides he could not afford to convert to electricity.

In Langa and Joe Slovo, the use of car batteries is also very low (Table 6.6.1). Insecurity of tenure, accessibility of re-charging facilities and rural investment are the reasons for this low use of car batteries. Car batteries are often associated with ownership of televisions, of which there are few in Joe Slovo and Langa. As televisions are generally expensive, they are considered by many households to be an investment. In Joe Slovo, in particular, the fear of fires, theft and uncertainty of tenure discourages householders from owning these appliances

(see Chapter 5). The same reason applies to the backyard households in Langa. Moreover, as noted elsewhere, the backyard shacks usually consist of only working members of households. As in the case of Osborne (#L15) discussed in Chapter 5, the backyard dwellers usually purchase 'big' appliances such as televisions not for their own use, but to send 'home'. In addition to security problems, householders in Joe Slovo have to travel long distances to the filling station, where the batteries are recharged.

# 6.8 The social meaning of wood use in urban situations

With few exceptions, the sampled households do not use wood for domestic end-uses. We have seen how fuel use is linked to tenure in Langa. Like candles, the backyard dwellers cannot use wood because their landlords would not approve. In an attempt to prevent fires, hazardous fuels, including wood are not encouraged. In addition, the lack of space does not allow for the making of open fires. Residents in Joe Slovo face the same constraint. The settlement has been besieged with fires from its establishment in 1994 (see Chapter 8).

	то	TOTAL		KHAYELITSHA		SITE B		LANGA		JOE SLOVO	
	1995 (n=60)	1996 (n=59)	1995 (n=15)	1996 (n=15)	1995 (n=15)	1996 (n=15)	1995 (n=15)	1996 (n=14)	1995 (n=15)	1996 (n=15)	
% using	11.7	18.6	7	7	40	40	0.00	0.00	0.00	7	
Average monthly cost (R's)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Table 6.7: Wood usage

Moreover, the shacks are built so close together that it is nearly impossible for people to make open fires. The only household in our sample, which uses wood for space heating, is only able to do because it is situated on the outskirts of Joe Slovo. Here, it is possible to make brazier without the danger of causing residential fires. Even then, careful steps are taken to ensure that no danger is caused. As Table 6.7 shows, about 40% of Site B households use wood. A reason for the popularity of wood in Site B has to do with the widespread availability of the exotic Port Jackson vegetation within walking distance of the settlement. Even if they did choose to use wood, householders in Langa and Joe Slovo would find it expensive as woodland is situated very far from the settlements. Although wood is freely available for most households in Site B, few use it for major domestic end-uses like cooking and space heating. Wood is generally used for income-generating activities, such as selling wood to other households or brewing umqombothi, the home-made beer (see Chapter 10). Social pressure is arguably a major reason for the non-use if wood in Site B and Khayelitsha, despite easy access to woodlands. The urban environment to which the sampled householders are exposed promotes the use of commercial fuels, which are associated with modernity, for domestic applications. There is a stigma attached to the use of wood for household cooking. It is associated with a rural upbringing, traditionality or backwardness. The urbanites are not comfortable using wood for domestic cooking because people might perceive them as 'backward'. The urban ethos requires that people buy paraffin for cooking. It is acceptable, however, to use wood for cooking in festivities such as funerals or imicimbi (traditional celebrations), and for micro-enterprises.

The choice of wood for festivities and income-generating activities can be seen as a strategic decision aimed at reducing fuel expenditure. Although there are many income-generating activities in which low-income households are involved, wood is used only for activities that generally require substantial amounts of energy. Some examples of these energy-intensive activities are cooking and boiling water for beer brewing, chicken plucking or the preparation of sheep heads for sale. In this case, wood is preferred because it is more affordable than other energy sources such as paraffin, gas or electricity. As Table 6.7 indicates, our sampled householders collect wood rather than buy it from wood-vendors, which are spread across the township.

### 6.9 Conclusion

We have shown that electricity cannot wholly replace the inappropriately named 'traditional' or 'transitional' fuels. Instead, electricity becomes one of the energy options that poor householders use. Electricity is used for lighting and, in the majority of the households, has replaced the dim light of paraffin lamps or candles. In addition, the absence of fires during the research period suggests the role that electricity plays in preventing residential fires. We have noted, however, that in some electrified households, problems relating to house wiring, lack of knowledge about electricity and costs of appliances prevent them from making full use of electricity. We have also shown that the problems faced by householders are not the same. The backyard dwellers' electricity problems are unique in that they are closely connected with their relationships with landlords.

It is against this context that we have begun to understand the use of multiple fuels in the sampled households. Why are 'traditional' (wood) and 'transitional' (paraffin, gas, candles or batteries) fuels still used? In order to arrive at a rounded understanding of fuel use patterns in low-income households, it is better to consider why fuels are used, under what circumstances and who uses them. This chapter has examined the various contexts of fuel use. For instance, regarding paraffin use, we need to consider fuel accessibility, affordability and availability, as well as the centrality of paraffin in social relationships. With regard to gas use, we need to understand the investments made in gas appliances before access to electricity. In general we need to locate the use of each fuel-type within the changing situations and urban ethos which determine fuel-use patterns and purchases of appliances.

Further to understand multiple fuel use, we also need to examine end-uses that require fuels. What household applications require which combinations of fuel use? What governs or determine the choice of fuel combinations for certain end-uses? Are householders considering issues such as energy efficiency and safety when they use fuel. The question of fuel efficiency from the perspective of the householders is the subject matter of Chapter 7, while issues relating to fuel safety are discussed in Chapter 8.

# The social analysis of domestic activities and energy

## 7.1 Introduction

There are few energy studies in South Africa that focus on daily activities in households, and examine the variety of choices that individuals make about energy use. Existing research indicates that in the absence of electricity (and even where electricity is not the sole fuel used) fuels are chosen for their perceived efficacy in performing specific tasks. Wood is used almost exclusively for income-generating activities (see Chapter 10) and space heating; electricity is used more for lighting and entertainment; and wick stoves are preferred for cooking umngqusho (samp). These are specialised tasks usually associated with certain fuels irrespective of the number of fuels available to households. There is little local information, however, that relates this phenomenon to fuel end-use and the contexts in which different fuels are utilised. This chapter provides an in-depth analysis of the day-to-day energy activities in the sampled households. It shows that a choice regarding the best fuel-appliance mix is made in the context of a plethora of constraints; it is at the most a calculated and strategic decision that takes into consideration a host of factors that at first glance may not seem to be related.

The main objective of this chapter is to analyse these choices in the light of the broader sociocultural and economic framework. Also important is that these choices change in response to changing contexts. Although choosing the best fuel-appliance use for certain domestic applications is a rational and practical as well as strategic decision, we should, however, not lose sight of other equally important factors that shape choices relating to fuel-appliance use combinations. These are ascribed gender stereotypes, age and cultural influences relating to appliance and fuel choice. What is important, we argue, is to probe the notion of 'efficacy' within an emic perspective so that it is presented from householders' own perspectives.

We present three levels of analysis of domestic activities and choices of certain fuels or appliances for particular applications. These are:

- (i) Strategic allocation of domestic tasks to certain fuels and appliances. This section explores specific tasks that are allocated to different fuels and appliances, and the reasons behind those choices. It explains, for instance, why electricity is not used for energy intensive activities and the real or potential impacts that current electricity use in our sample could have on the current electrification process. This section also probes why certain fuels or appliances are believed to perform particular household tasks better. Although decisions relating to the allocation of task to certain fuel-appliance combination may appear to be economical, it is important to see them within the broader social context, or as part of social processes.
- (ii) Factors that determine time of fuel use. This section investigates when fuels are most likely to be used, and factors such as seasonal variations, monthly and weekly periods and daytime peak hours (early mornings and late afternoons) and how these affect choices relating to energy consumption.
- (iii) Choices relating to the type of meal consumed by households. This section draws relationships between household energy and nutrition, and explores factors that influence the type of food normally consumed in households. The analysis of diet patterns goes deeper than the economic or rational, by exploring factors such as gender, status differentiation, cultural ideologies and the association of certain fuels or appliances with particular meals.

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# 7.2 'We learn by experience'

The daily use of fuels and appliances familiarises users with the best fuel-appliance combination for particular applications. In many instances, appliances and fuels are used for their efficacy in performing certain tasks without incurring additional costs (see also Chapter 8). Ideas around what appliance-fuel combinations are good for certain household applications are circulated between households by word of mouth.

All the sampled households that have access to electricity show similar patterns of electricity use. Electricity is used for applications such as lighting, entertainment and boiling water. Differences between households are a matter of degree. All electrified households use electricity for lighting, although some Site B households use a combination of paraffin and electricity and other fuels such as paraffin (see Table 7.1 – see also Chapter 6 for the discussion of the electricity-paraffin/candle combination). Another widespread use of electricity is for boiling water. In the absence of geysers, most households in Khayelitsha, a few in Site B and all households that use electricity in Langa use electric kettles to boil water for beverages, bathing or washing clothes. The reason that electricity is preferred for this enduse is because it takes less time than a paraffin stove. This is particularly the case in households where much water is needed in the morning for working and school-going members.

		Cooking	Lighting	Boiling water	Space-heating	Entertainment
PARAFFIN AND	Khayelitsha (n=15)	53%	0%	20%	80%	0%
APPLIANCES	Site B (n=15)	100%	33%	67%	67%	0%
	Langa (n=14)	86%	71%	36%	100%	0%
	Joe Slovo (n=15)	100%	100%	93%	87%	0%
GAS AND	Khayelitsha (n=15)	47%	0%	20%	0%	0%
APPLIANCES	Site B (n=15)	13%	0%	0%	0%	0%
	Langa (n=14)	50%	0%	43%	0%	0%
	Joe Slovo (n=15)	13%	0%	7%	0%	0%
ELECTRICITY	Khayelitsha (n=15)	40%	100%	60%	13%	93%
AND	Site B (n=15)	13%	100%	33%	7%	87%
APPLIANCES	Langa (n=14)	20%	20%	20%	7%	20%
	Joe Slovo (n=15)	0%	0%	0%	0%	0%
OTHER FUELS	Khayelitsha (n=15)	0%	0%	0%	0%	47%
(E.G. CANDLES,	Site B (n=15)	0%	13%	7%	20%	47%
BATTERIES &	Langa (n=14)	0%	7%	0%	0%	100%
WOOD)	Joe Slovo (n=15)	0%	13%	0%	13%	100%

INSERT Table 7.1: Fuels and their applications (1996) (\*percentages are rounded off)

A striking feature of fuel-appliance use patterns, as noted in Chapters 5 and 6, is the under-utilisation of electricity for energy intensive activities such cooking and space-heating, and its over-use for lighting and entertainment. In 1996, for instance, only 13% of Site B households used electricity for cooking. In contrast, 87% of the same Site B households used electricity to power radios and televisions. Despite the overtly economical reasons, we have elucidated elsewhere in the report, other factors contribute to this pattern (see Chapters 5 and 6). We have also noticed a gradual reduction of the use of electricity for space heating in our sample. Between 1995 and 1997, there has been a significant decrease in the number of households in Khayelitsha used electricity for space heating. In a 1995 survey, 36% of households in Khayelitsha used electricity for space-heating, and in the 1996 survey of the same households, electricity for space-heating had been reduced to 13% (see also Mehlwana & Qase, 1996a).

The drop in electricity use, according to workshop participants, is because 'we learn by experience'. Householders therefore stop using electricity for certain applications after having tried it. For instance, the use of bar heaters has been reduced in many households, not only because they consume more energy, but also because they do not provide as much warmth as a paraffin heater. As became clear in the workshops, electricity is not an ideal energy source for heating. The reduction in electricity use for space heating has been accompanied by an increase on paraffin heaters. Paraffin heaters are said to give much warmth and can also be used for other end-uses (see below). Of note is that the idea of the unsuitability of electricity for space heating does not result from energy campaigns. It is a growing general knowledge resulting from experience in the continuous use of electricity.

This pattern of electricity use revealed in our sample has, we believe, negative consequences on the electrification drive currently underway. For Eskom to effectively realise its target of providing electricity to 100% of urban households, increased consumption of electricity by householders is required. High electricity consumption therefore means high returns from electricity sales, which in turn will create the necessary revenue for Eskom to go about meeting its electrification targets. From our sample, it can be seen that indeed, for energy intensive domestic applications, electricity is marginally used. In many households, different applications require different fuel-user combination, as the case of Nomtshato's household (#K11) shows.

#### **Case 7.1**

Nomtshato's household has a range of appliances that use different fuels, which are used at the same time. Electric lamps and bulbs are used to illuminate the whole dwelling. Their television and refrigerator use electricity. They used their electric hot plate selectively since February 1995 when the breadwinner lost his job due to illness. The hotplate is used to cook 'quick' meals such as eggs, or to re-heat the previously cooked meal. As a result of their selective use of electricity, the household's electricity bill is not very high. In the 1995 survey the electricity bill was R10, and in 1996, it increased to R30 per month.

A two-plate gas stove is also used for cooking meals such as rice and meat, and boiling water (sometimes though, they use the electric kettle to boil water). The 7-kg gas canister is refilled every month and in 1996, it was costing the household R17.26 for a refill.

The two pump stoves are used for cooking and ironing. In addition to space heating, the heater is used for baking and cooking because 'the heater is very good for baking and it does not burn the bread ... and it also provides a welcome surface to finish cooking the *umngqusho*'. It is cooked first on the paraffin stove and when it is nearly cooked, it is put on the heater. The household uses paraffin intensively. In 1996 they consumed 198 litres in one month, which cost R212.52.

Nomtshato's small transistor radio uses dry-cell batteries, which she buys every fourth week. The batteries cost the household R12.43 per month. They use a paraffin heater for space heating.

Nomtshato's household is not the only one that uses a combination of fuels and appliances for specific end-uses. Many households in Khayelitsha and elsewhere follow similar patterns of fuel and appliances use. Mathabo (#K06) of Khayelitsha also uses a paraffin heater for space heating because, as she says, 'I can also cook umngqusho or my soup bones on the heater'. Mathabo also boils water on the heater so that she makes the most of paraffin use: 'I am making sure that paraffin is not wasted'. The heated water would be used later to wash dishes or bathe. Also in Lindelwa's household (#K07) when the heater is on, a kettle full of water is always put on top because the steam from the kettle makes the house warmer. Besides, boiled water could be used for making tea and bathing the baby. The heater also helps to finish cooking umngqusho.

Even households with relatively high incomes, use a combination of fuels for domestic

applications. For instance, during 1995 to early 1996, Nontobeko (#K09) used an electric fan heater given to her by her co-workers as gift in 1994. She later became aware that her heater consumed a lot of electricity. She would use the electric heater only for very few hours and then switched to a pump stove in order to maintain the heat. By 1997, she had stopped using her heater altogether and had bought a paraffin heater. Princess (#S11) also uses a combination of a bar heater and wick stove for heating her shack. She uses the heater sparingly because 'it eats a lot of electricity. When it is cold days like today, I switch on the heater while I am cooking in the kitchen ... after I have finished cooking with the flame stove, I will switch [the electric heater] it off and use the flame stove'.

In our sample, paraffin is the only fuel widely used for such applications as space heating and cooking. From Table 7.2, it can be seen that 100% of households in Site B still use paraffin (this area was electrified in 1994). From our research in this area, it may appear that there is a reluctance by householders to change to other sources of energy. The reasons for still sticking with paraffin, however, points to the contrary. Householders make choices as to the types of paraffin appliances they should use for specific purposes. We have discussed in Chapter 5 the differences between paraffin appliances. In many households a wick stove is chosen because 'it cooks nicely and does not burn food'; 'you do not have to pump it all the time'; and 'it does not consume too much paraffin'. These are typical answers for using flame stoves despite their propensity for causing fires (see Chapter 8). As we have mentioned elsewhere in this report, householders choose pump stoves for their comparative speed in cooking as compared to wick stoves. Pump stoves are said to be useful late in the afternoons and early mornings when most household activities are taking place.

In Noxolo's household (#J08), both the wick and *raskop* (pump) stoves are used for most domestic activities. Noxolo, who is the main breadwinner, prefers the *raskop* because it cooks food faster. She likes to use the raskop stove especially in the morning when she has to go work, as it boils water quicker than the wick stove. When different meals are cooked, however, both appliances are used at the same time.

It appears that choices of which fuel-appliance combinations are used, especially for cooking, also depend on the type of food being cooked and when it is prepared. In households where members have to prepare meals after they return from work, quicker appliances are used. If a household has no electricity or gas, a pump stove is used for 'quick-fix' meals. Usually, working household members prefer gas. For instance, the Ntloko sisters (#L12) prefer to use a gas stove in the morning when preparing breakfast. During the day, gas is rarely used. The pump stove is normally used for cooking and ironing clothes (one of the household members was not working and therefore was always present during the day). For space heating they prefer to use a pump stove. Grace (#J05) uses a wick stove if she wants to cook umngqusho or heat water to bath, and uses gas for 'fast' foods. When she cooks supper, all her stoves (gas and paraffin) are used at the same time. Meals such as umngqusho, soft porridge and pap are cooked on a wick stove and meat and other 'quick' foods are cooked on the two gas stoves.

# 7.3 The peak time use of energy

At different times of the year, month and day, fuel use patterns are different. For instance, in summer, energy use patterns by households are different than in winter in terms of energy intensive activities such as space heating and cooking. The Western Cape is renowned for its cold and often wet winters. As a result, many householders agree that it is during winter that a lot of energy is used for heating dwellings and cooking food. In summer, however, the same households use less energy for heating. Some households go to the extent of using different fuels in summer and in winter. Adelicia (#J14) uses gas in summer because it is 'I do not have to scrub my pots and summers are hot ... the pump stove causes too much heat', she says. In winter, however, she uses her paraffin stoves because 'you can cook and heat the house at the same time'. Nosilent (#J06) likes to cook umngqusho especially in winter for nourishment and heating reasons. It takes between three and five hours to cook umngqusho. In addition to hot meals, the steam coming from the pot also generates heat for the dwelling.

Month-ends or the first week of the month are also periods where fuels are used the most. Pensioners, who comprise a significant proportion of household owners, are paid out at the end of the month. They buy their groceries and fuels during this period. When there is plenty of food, it means frequent cooking. In most cases, however, a household's income is not sufficient for the household to subsist on it for the entire month. In practise this translates into a high-energy use at certain times of the month, followed by relatively low energy use at other times. This is despite the fact that householders are involved in intricate credit relationships with spaza shops, where fuels such as paraffin or gas are given to households on credit and paid for promptly at the end of the month (see Mehlwana & Qase, 1996a: 32-43). An example of high-energy use at month-end followed by low use during the subsequent weeks is illustrated by Catherine (#J01). Between June 1995 and February 1997, Catherine's pension money of R430 was supporting six household members including herself - a per capita of about R72 per month. She was finding it very difficult to stretch her paltry income for the whole month. In the first week of the month, she would buy five litres of paraffin that would be sufficient only for two days, the reason being that 'there is plenty of food and meat, and we cook delicious dishes'. During the middle of the month, she usually buys or 'tick' paraffin in smaller quantities. She has formed a successful relationship with Ivy (#J15) who operates a spaza shop. Catherine is able to get paraffin from Ivy during the month and pays for it on her payday. The quantity of paraffin she is able to get from spaza shop is, however, limited to one bottle (750ml) at a time (see also Chapter 6).

Domestic energy use is also determined by whether it is used during the week or at weekends. or is used in the morning, afternoon or evening. Energy use peaks during weekends when most household members are present in their dwellings. This is usually a period of domestic activities. The weeklong household chores such as laundry and 'spring-cleaning' are usually done at weekends. It is also a time of socialising, of family reunions. Special meals requiring a lot of time and fuel are prepared. As noted below, special dishes such as meat are usually prepared on Sundays. During the week, it seems, most households do not invest a great deal of time on the meals they cook. This is partly due to the absence of adult members during the weekdays, as is the case with Nontsomi (#J04). During the week Nontsomi cooks mostly rice and cabbage because, 'they do not take much time to prepare'. In the morning she cooks maize pap. Once or twice in a week she cooks umngqusho when she knows that she will not travel. On weekdays, Noxolo and Ntombozuko (#J08) leave very early in the morning only to come back late in the afternoon to cook supper. As a result they only cook once - for supper or not at all. The food they normally cook during the week is mostly 'quick-fix' and precooked foodstuffs. Princess and Pakamile (#S11) both work until late in the afternoon and normally cook once a day. Their two children stay with friends after school until either of the parents comes home from work. During weekends, when Princess is not working, she prepares meals three times a day. Such is the standard pattern in households that have working adults.

We explore below the meal patterns in our sample and the impacts that energy (and other factors) have on household diets.

#### 7.4 The patterns and variations of meals

That household income plays a big in role in determining the food consumed in households has been stressed by many studies. It is general knowledge that there is a causal link between nutrition, income and energy (see for instance Chiwele et al, 1994). Low-income households, because of their very low disposable incomes, have to find a balance between buying household energy and food. Chiwele et al (1994: 6) argue that the increased prices in real terms (of food and domestic energy) mean households save on household energy and therefore compromise nutrition. They note a difference in expenditure patterns between high-and low-income households. The former buys in bulk while the latter buy in small quantities in response to erratic incomes and cash flow problems. Studies have found that low-income households spend about 85% of their income on food. In addition, there is also a rise in the purchase of cheap basic (and less nutritious) foodstuffs. Also, about 25% of low-income

households' expenditure on food is on staple food (Chiwele et al 1994: 16).

Our findings also note correlation between income, energy sources, and household diet. Households with more disposable income have an ability to spend more on food. These households also have access to different types of domestic energy and have money to purchase appliances. Indeed, Table 7.2 below shows foodstuffs normally consumed by the sampled households.

	TOTAL n=59	Khayelitsha n=15	Site B n=15	Langa n=14	Joe Slovo n=15
STAPLE FOODS					
Umngqusho	51%	47%	73%	50%	33%
Maize pap	46%	47%	47%	21%	67%
Maize porridge	51%	60%	47%	64%	33%
Oat meal	10%	13%	7%	14%	7%
Rice	29%	20%	27%	29%	40%
VEGETABLES	36%	40%	27%	29%	47%
MEAT					
Tripe	29%	27%	20%	29%	40%
Red meat	36%	40%	47%	29%	27%
Chicken	14%	13%	20%	14%	7%
Fish	3%	7%	7%	0%	0%
EGGS & BREAD	42%	60%	20%	57%	33%
OTHER	17%	13%	27%	7%	20%

INSERT Table 7.2: Percentages of most cooked meals (1996)
(\* Percentages have been rounded off)

We have shown elsewhere that most of the sampled households have very low per capita incomes (see Chapter 2 and Mehlwana & Qase 1996b: 129). Most households have less than the Household Subsistence Level (HSL) of R270 mentioned by the Institute for Planning Research, as the minimum monthly per capita expenditure for a household in order to satisfy its basic needs (LAPC, 1995). It can be seen that staple foods, especially umngqusho and maize pap and porridge are the most consumed foodstuffs. These foodstuffs are generally less expensive than others and are easy to cook – even children are able to cook them. It is notable that meat, which many households associate it with a higher status, is consumed less.

#### **Case 7.2**

There have been dramatic changes in meal patterns since Nothobile (#\$15) stopped working. When she was working, she used to bring home leftover food from her work place. As from August 1995, there has been significant reduction of food in this household. Her daughter's employers 'are stingy ... they do not give her parcels of food other than the little money they pay her'. The household members used to eat meat three and sometimes four times a week, but now meat and vegetables are considered luxurious commodities, and are consumed only at the end of the month. *Umngqusho*, pap and bread are consumed regularly. From the beginning of September 1996, Nothobile recalls, vegetables are consumed on average once a week. *Umngqusho* is cooked three times a week. In between, the previous day's meal is re-heated. Maize pap is eaten almost every day. Strict discipline is maintained with making of beverages – tea is reserved for the adult members of the household, and it is made once a day.

The link between household income and meal patterns is also demonstrated by the case of Thozama's (#K01) very poor household. The food consumed in her household reflects its minimal disposable income. She told us that:

If we ate *umngqusho* the previous night, these children have to eat it again in the morning, and take some in their sandwich boxes. For supper, we mostly eat

umngqusho, umphokoqo (crumpled maize pap and milk) and would eat meat once a month.

We show, however, that linking food consumed in households with income does not provide a complete picture, as there are other factors that complicate the picture. In addition to income, the meal patterns in the sampled households are, to a large extent, determined by four inter-linked factors. These are the types of energy or appliance used, gender differences, generational dynamics and cultural ideology.

# 7.4.1 'Cooking is a woman's job'

The gender division of labour in households determines that certain domestic tasks are reserved for women and others for men. This 'rule' is not the preserve of low-income households, but is a global trend. Housekeeping (that is, looking after the day-to-day running of households) including cooking is a role that is traditionally reserved for women. It is only in situations where women are absent, that men take on the tasks of cooking and housekeeping. In our sampled households, we observed that cooking in men-only households follows a particular trend. In these households the diet is as simple as possible – being limited to easily cooked staples such as *umngqusho* and meat. The example from a men-only household in Khayelitsha shows parallels between the gender of occupants and the type of diet.

# Case 7.3

In 1995, Msondezi and his brother, Lindikhaya (#K05) – both in their early 20s – were sharing a two-roomed house in Khayelitsha. Previously, they stayed with their parents. The latter moved back to the Transkei after Msondezi's father retired from working. When we first met them, Msondezi was the only one bringing income to the household, and his brother was a pupil at a local high school.

Since the older brother was always at work, the task of housekeeping fell on Lindikhaya. He was tasked to clean the house, replenish fuels when necessary and cook suppers. Lindikhaya would cook mostly maize pap and *umngqusho*; these being eaten for most of the week while 'in between ... we eat bread and tea for supper, lunch and breakfast ... on Fridays we eat meat'.

Lindikhaya rarely cooked vegetables except for potatoes and onions because 'cooking vegetables is wasting time'. He also made it clear that cooking vegetable meals is a gendered activity. He said 'it is women who like to cook vegetables not men. When mother was here she would cook vegetables ... but not us. We cannot.' Lindikhaya use a simple method of cooking meat. He would put meat in the pot and pour in water; simmer until cooked (usually for about 30 minutes), and add salt for flavour. No spices are added for extra taste as is the case in other households.

The situation regarding housekeeping changed dramatically as from October 1996 when their older sister came to live with them. Lindikhaya quit school and worked at his brother's workplace. Their sister does the housekeeping. There were additional appliances purchased. Whereas they previously used only a primus stove for all their cooking, a new flame stove and an electric hotplate have been purchased. The brothers enjoy varied meals since their sister started cooking.

Cooking in other men-only households has remained constant throughout the research period. Fickless (#K10) who is in his 60s has been staying alone in Khayelitsha since the death of his wife in 1990. He cooks *umngqusho* with monotonous repetition because, 'umngqusho is easy

J. Garly

<sup>&</sup>lt;sup>1</sup> The traditional role of men is to provide income for their households. Men are not expected to cook and, indeed, take any housekeeping roles. This traditional role has, however, been undermined by the exigencies of poverty. More men and women are engaging in activities that are outside their traditional roles (see Chapter 10).

to cook'. In Langa the Ntshikilana brothers (#L07) like to cook chicken pieces and rice because they are faster to cook. Even when they are not at work they cook the same meal except when their mother visits them at month-ends. She is a live-in domestic worker who gets weekends off once a month. When she lives with them, Madumandile said, 'she cooks very nice food'.

#### 7.4.2 'Western salad and African salad'

As is the case with appliances, the type of food consumed by household members has other meanings besides nutrition. Certain status symbols are attached to certain foodstuffs. This trend is particularly noticeable amongst the younger generation. Meat eating (red meat and chicken) is seen as a sign of affluence. When meat is eaten frequently in a household, it conveys that such a household is 'wealthy'. In most households, meat is reserved for certain days, such as weekends, month-ends or when there is a special visitor. Likewise, a household that eats *umngqusho* or other staples (without meat) is seen as poor, and some householders are even ashamed of the food they cook. Thozama (#K01), for example, would not let us in her household because she was cooking *amathumbu* (sheep intestines) for supper.

Below is a case study of a woman in her late 30s from Khayelitsha. This case shows the value that some householders attach to the food they eat. This case also reveals the interplay of multiple factors such as generation, occupation and income in determining the food choice.

# Case 7.4

Nontobeko (#K09) is a young single mother who works at a clinic earning R700 per month. Her small house in Khayelitsha is well kept. She prides herself on the type of food her household consumes. She normally cooks with an electric hotplate. She has a primus stove, although it is used as a back up in case there is an electricity blackout. She used to own a gas stove, but has since sold it because she feared for the safety of her children.

Like many other households in the sample, she cooks twice a day. Almost all her meals are prepared with vegetables. She loathes tinned foodstuffs because she perceives them to be unhealthy. (Her working environment might have a lot to do with this.) In one week her meals include fish, meat and vegetables. 'I know the value of eating good and healthy food', she told us, 'I cook vegetables everyday ... I have cut down on red meat and we now eat more fresh fish. I do not cook *umngqusho* every time because it contains too much starch.' In one week she prepared the following meals:

- (i) Monday: pasta and vegetables
- (ii) Tuesday: fish, vegetable salads and bread
- (iii) Wednesday: chicken and umngqusho
- (iv) Thursday: tripe, maize pap and cabbage
- (v) Friday: bread and sausage
- (vi) Saturday: maize
- (vii) Sunday: rice, red meat and salad.

Although Nontobeko's exposure to health information influences her choices of food, the fact that she is a young and single woman and lives in a tastefully furnished household in Khayelitsha, has also a role to play. The food she reflects her current standard of living. It is mostly young well-to-do householders in Khayelitsha, Langa and Site B that have varied meals, which invariably include red meat or chicken at least once or twice per week. The older generation of householders, on other the hand, like food made from maize (umngqusho, crumpled maize, and soft porridge). Umphokoqo (crumpled maize and sour milk) is referred to as 'African salad', so-named in opposition to 'Western salad', which is made of boiled potatoes, eggs and salad dressing. 'Western salad is a favourite amongst township households. The African salad' is eaten at any time in the morning, during the day or in the evening.

Indeed, in most cases households do not strictly follow the allocation of time (such as, breakfast, lunch and supper). *Umngqusho*, as the example of Thozama in Khayelitsha has shown above, can be eaten any time. Householders would argue that in African situations, allocating times to meals is not important.

# 7.4.3 'Umngqusho is the real African food'

The older generation, in particular, attaches cultural connotations to certain foodstuffs. For instance, other people consider as 'real' African food all maize foodstuffs (such as umngqusho). Mathulang (#S06) speaks emotionally about umngqusho. 'White (Western) food', she says, 'causes problems such as tooth decay'. She even compares the umngqusho bought in Cape Town and the one she is used to in the Transkei. According to her, traditional mtampo [manually ground stamp] is different to the 'present-day' umngqusho. The former does not take longer to cook, but one cannot find this type of umngqusho in urban areas. Nevertheless she continues to cook umngqusho. She is the only householder who to umngqusho in less than two hours.

Some householders juxtapose food choice as town food and rural food. People who have adopted western values prefer 'town food', while people who cling to their cultural values prefer the 'rural food'. These cultural metaphors are used to equate 'town-people' with tinned food while migrants are associated with food such as umngqusho, pap and umphokoqo (crumbled maize and sour milk). A conflict of cultural etiquette and loyalties is demonstrated in Maggy's household (#L11). Maggy likes to buy canned fruit, spices and tinned meat. Her live-in partner despises this type of food. Maggy refers to him as igoduka. The latter term, although meaning a migrant also denotes a person who is backward. Maggy's partner calls her umntwana wasedolophini (an urbanite) because she likes to buy 'sweets'. He uses the metaphor of sweets to describe foodstuffs bought by Maggy because this type of food does not last for long. The food is quickly finished leaving them unsatisfied. Staple foods, on the other hand, leaves a person satisfied, nourished and last longer 'in the stomach' than 'sweets'.

African food such as maize meals are said to be more nourishing than 'urban foods'. It is believed that township people like to spice their food in order to add taste. The 'migrants', on the other hand, like to cook their foods without spicing them, without adding 'sweets'. The spice is said to take away the food's natural taste. The only flavour they add to food is salt. Not using spice when cooking food is viewed as an 'African way of cooking'.

The kinds of food cooked and consumed in the household have ramification also floor the type of appliances used to cook them. We briefly explain the reasons below.

# 7.4.4 'Primus stove is for umngqusho and gas is for meat'

Households that depend mostly on paraffin generally have very few appliances for cooking an average of two paraffin stoves (mainly pump and wick stoves). Using these appliances is seen as inconvenient, as a lot of time is spent on monitoring them. For instance, pump stoves must be pressured at frequent intervals, and wick stoves must be closely monitored in view of their reported hazards (see Chapter 8). In Chapter 5 we demonstrated, however, that these appliances serve other important uses such as space heating, heating water for baths and drinks as well as ironing. Therefore, cooking, in most households using paraffin appliances, has to be balanced against other household end-uses. This creates a contradiction: firstly, meals have to be cooked in bulk in order to minimise cooking times and, secondly, the absence of refrigerating facilities makes these cooked meals perish after some time (especially in summer). Foodstuffs with high nutritional value such as vegetables and meat are, however, seldom cooked in bulk, partly because they perish easily, and partly because there are few cooking appliances available. The most frequently cooked meals are foods with a high concentration of starch, such as umngqusho and maize (see Table 7.2), and some tinned meat and vegetables. Umngqusho takes an average of three hours to cook and can take longer when other end-uses have to be performed.

In households where there are energy options other than paraffin, people tend to vary their

meals (as shown by the case of Nontobeko's household (#K09) above). A large number of households are constrained to paraffin and their meals take longer to prepare. To varying extents, this can have an impact on householders' nutrition, as they have to cook once or sometimes twice a day to accommodate the limited number of appliances. In households that are faced with this constraint, leftovers from previous meals are usually consumed in between cooked meals. Cooking umngqusho (and other meals) on one appliance is problematic, as it is difficult to cook other foods to accompany it (although some householders have devised strategies to solve this, see Chapter 8). In some households, there is no one present during the day to prepare meals. The working members arrive home from work late in the afternoon to prepare supper. For households who do not have many appliances or access to other fuels such as gas, it becomes a serious handicap to prepare evening meals. As a result, these households either prepare a 'quick-fix meal' such as bread and eggs, re-heat leftovers or cook one type of meal.

However, certain kinds of fuels or appliances have practical considerations. For instance, many householders see a wick stove as suitable for cooking *umngqusho* or baking homemade breads. Partly, this has to do with the time used to cook *umngqusho*. Householders say that bread is baked 'nicely' on a wick stove. This is despite the fact that paraffin stoves, especially the wick stove, have to be monitored closely and cause safety problems (see Chapter 8).

Another advantage of paraffin stoves is that they are easy to operate – children are able to use paraffin without adult supervision. In many households, adult members are away during the day and usually come home very late in the afternoon from their place of work. Children, on the other hand, are at home for most of the day – and they handle the task of housekeeping. In many households we have seen children at the ages of 6 to 8 preparing meals in the absence of adult householders. In fact, these children are assigned the task of preparing a supper meal since their parents return late in the afternoon.

Households that have gas appliances use them for preparing 'quick-fix' meals such as meat, rice, soft porridge and boiling water for drinks. Gas appliances help these households especially in the 'rush hour'; in the mornings when household members have to go to work or school and in the evening when meals are prepared. In the morning, water has to be heated for bathing and tea or coffee while the early morning meal has to be prepared. Gas is more suitable in the morning because it is quicker than paraffin stoves. A household member who has both paraffin and gas appliances says she uses the latter for cooking meat and the former for umngqusho.

# 7.5 Conclusion

Strategic fuel-appliance use patterns in low-income households as outlined above suggest three issues that need to be considered. Firstly, the choices of fuel-appliance combinations should be seen in the context of households' coping strategies. They are creative responses to energy poverty. Secondly, choices as to the best fuel-appliance combinations are conscious strategies made within the broader social and economic framework. These choices are dynamic, therefore, they are likely to change when the context changes. Thirdly, there is a realisation by householders that electricity alone may not be the best energy use for all domestic applications. Decades of paraffin use cannot be replaced by three or four years of access to electricity.

As long as the socio-economic context remains unchanged, there is unlikely to be a complete switch to electricity in the near future. At present, householders do not seem to be interested in acquiring new cooking appliances as such but are more interested in the services that these give. Cooking is powered by other fuels while electricity provides new and cheaper services for entertainment especially to power televisions. Such views explain in part why entertainment appliances using electricity are likely to be bought. On the other hand, householders seem to be reluctant to replace their gas and paraffin stoves. This has serious implications for Eskom's electricity drive, as low-income households continue to use electricity for household applications that do not require large amounts of energy.

We have also indicated additional factors that influence energy use in low-income households such as seasonal variations and different periods in the month, week and day. We have shown the links between income, energy and household diet. We have not attempted to hypothesise about the nutritional value of meals that are prepared by households. We argue, however, that meals that households consume result from a *combination* of factors, which simultaneously affect households differently. What is important is that our analysis of energy and diet patterns should take into consideration these factors in shaping householders' decisions to use certain fuels for specific meals.

# The anatomy of a disaster: the health and safety aspects of energy use

#### 8.1 Introduction

An analysis of energy sources and appliances would not be complete without exploring strategies that householders employ to maximise and conserve their energy use. In addition, it is also important to explore the issue of safety as it relates to energy. It is crucial for policy-makers to gain insight into how people understand the notions of efficiency and conservation. As householders become familiar with the fuels they use, they devise strategies to lessen their energy expenditure while getting maximum output from these energy sources. These strategies are often passed on between households in different areas through – as one research participant said – 'ucingo lwabantsundu' (gossip). This 'gossip' usually takes place during encounters between householders – such as in buses, shops, or women's meetings. Some of this 'gossip' may not give accurate information about energy efficiency. It is important when reviewing strategies of energy saving to understand their contexts; what drives householders to choose a certain strategy not another. This chapter focuses on factors that encourage the adoption of certain strategies, and links these strategies to socio-economic and cultural variables, as well as practical considerations.

The hazards associated with the use of household fuels - especially paraffin - in informal dwellings and the ingestion of paraffin by children has been highlighted in medical research findings (see for instance, De Wet et al, 1977; Kibel, 1990; Hudson et al, 1994;). Ross (1993a: 143-160) provides a telling account of how people in Die Bos are faced with the spectre of dangers and illness as a result of the fuels and appliances they use. These dangers range from poisonous gases that certain types of wood are thought to release, to house fires that are primarily caused by paraffin, wood and gas. Many households use potentially dangerous fuels and appliances in part because of their poor incomes, and in part due to their limited access to suitable fuels. A retrospective analysis undertaken on 194 patients admitted to the Burns Unit in Woodstock Hospital, Cape Town between January 1990 and June 1992 found that 33 patients sustained burns as a result of working with primus stoves (Hudson et al., 1994: 251). What is notable is that these patients were all black men and women, with an average age of 32.5 years (range 14-68 years). Medical research has found that more children than adults suffer from paraffin-related burns, mainly caused by residential fires. Fires that involve energy sources such as wood or paraffin account for 75% serious injuries in childhood occurring in informal settlements, and are responsible for 21% of child deaths (De Wet et al, 1977: 399). There is a general agreement that burns - resulting from the use of domestic energy sources (mainly paraffin) - are one of the top causes of injury and mortality in the under-14 age group (Kibel, 1990: 403). This tragic state of affairs is what prompted a national paraffin safety workshop, the 'Paraffin Safety Indaba' held in Cape Town on 7 August 1995, to devise a national strategy to combat the dangers of paraffin use.

We argue in this chapter that there is a causal connection between householders' notions of energy efficiency, health and safety, and the outbreak of fires. We demonstrate that in certain situations, the users' handling of fuels and appliances results in dangerous and non-efficient

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<sup>&</sup>lt;sup>1</sup> This phrase means 'the African telegraph'. It is said that this form of communication, that is gossip, is faster and more efficient than the telephone in distributing information between people. In many cases, the source of information remains anonymous.

use of energy.

# 8.2 Pragmatic or irrational strategies?

We have seen that electricity is generally more widely used in Khayelitsha than in other sampled areas. People in this area have, however, expressed concerns that electricity is expensive (see Chapter 3 above). Many households have devised coping strategies to reduce the cost of electricity. In one extreme case, Beauty (#K14) conserves electricity by not cooking frequently. During the week, she usually prepares 'light meals' such as bread and eggs, or brings leftover food from her work place. The following case shows the 'strategic' choices that householders opt for in the face of escalating costs of electricity. As evident from Case 8.1 such choices do not necessarily save energy expenditure, but could instead be costly. Individuals appear to choose these 'strategic' options for psychological rather than real benefits.

#### **Case 8.1**

Eunice (#K04) – an eighty-four year old mother of three daughters (all of whom have their own households) – stays with four grandchildren in a two-roomed house in Khayelitsha. Old as she is, Eunice retired as a domestic worker in December 1994. She had been working for one employer for 'many, many years', during which time she had been given various electric appliances as gifts from her employers. Among those gifts are a bar heater given to her in 1986, an electric kettle, an iron and an electric frying pan (the latter is not in working order however).

Eunice has been using a two-plate gas stove for cooking since 'the time I stayed here in Khayelitsha', which was in 1985. She would not change it for an electric stove because 'I have seen how my employer complained that how the stove uses a lot of electricity'. In our first meeting with her early in 1995, she was using an electric kettle to heat and boil water. By mid 1996, she was heating and boiling water on a gas stove. At present she uses the electric kettle only for boiling water for tea. Another practice that she had adopted by 1996 was to convert her electric iron to a stovetop iron by removing the electric cords from the iron. In defending this 'backswitching', she says, 'electricity is becoming very expensive. I do not have money to buy electricity all the time... I am a pensioner'. It is, however, noticeable that her expenditure on gas increased. In 1995, she used to refill her 9kg gas canister once every month, while in 1996 she would refill it 'sometimes two or three times ... it is better, though, because where I am buying gas they know me. They give it on a "tick" [credit] if I do not have money.'

When we first met her, she was meticulous about saving electricity. Only the bedroom and the kitchen have electric lighting. The bathroom is without its individual light – when used at night, the bedroom's electric lamp is put on the passage in order to illuminate both the bedroom and the bathroom.

This case brings together a number of coping strategies that householders employ to enhance energy efficiency. Such strategies are based on householders' daily use of fuels and energy and are their means of coming to terms with escalating costs of fuels. That these households end up paying for more is, however, not relevant to them. We have discussed – in Chapter 6 above – the extent to which juggling between fuels and appliances contributes to the household spending more on energy. Although such use of energy appliances is, in many ways, habitual, some householders juggle fuels as a strategy to counteract the high cost of fuels.

Eunice's juggling between appliances 'to save costs' is by no means unique. Many households both in Khayelitsha and Site B have also devised strategies to come to terms with electricity costs. A widely used strategy to save electricity is to use electrical appliances selectively. We have seen how between 1995 and 1997 Eunice scaled down the use of her electric kettle. Mathulang (#S06) – also very meticulous about saving electricity – no longer

uses her electric kettle and iron because, '...if we buy electricity for R20 and we do not use the kettle and the iron, it would last for more than a month because we would use [the electricity] only for lighting'. During cold winter evenings, Jacqueline (#K02) uses an electric heater only for few hours in order to conserve electricity. In their struggle to save fuel, Nomtshato's household (#K11) uses paraffin lamps to illuminate the house after ten o'clock in the evening. The strategies that households use to save on energy costs are not limited to electricity. Paraffin, a widely used fuel, is also used in a cost-effective way. Although cheaper and more widely available than electricity, the price of paraffin has escalated. It has been shown that paraffin appliances perform multiple tasks simultaneously (Chapter 5). Consequently, householders do not need to buy different appliances for different uses. In addition, householders have devised further strategies to save fuels, especially for frequent end-uses such as boiling water, space heating and cooking.

#### **Case 8.2**

When Simphiwe (#J07) was unemployed between May 1995 and February 1996, he used to cook samp with monotonous regularity. He cooked it three times a week, spending about four to five hours at a time, 'because sometimes I have to remove the pot to boil water for tea'. He had only one wick stove. When preparing his favourite midday meal – boiled eggs, bread and tea – he thought up of a 'cheap way' of saving energy. He would boil the eggs in the pot with samp and, '... in minutes the eggs are boiled', he said triumphantly.

The bottom line in Simphiwe's case is that he had only one cooking appliance and it was insufficient to meet all his household needs. He had 'ndichane iintaka ezimbini ngelitye elinye [killed two birds with one stone]'. Without buying extra fuel, he had managed to prepare two meals simultaneously at no extra cost.

Such ingenuity occurred in other households as well. To make the pump stove produce sufficient heat for the whole shack, Nomthunzi (#L03) puts a steel plate on top of the pump. This is done because '... when flame from the stove heats the steel it becomes warmer than when there is nothing on the stove'. She also provided other 'useful ideas' about maximising fuels. One of her ideas is to put the stove on the floor when cooking or heating water so that the 'steam from cooked food or boiling water makes the house warm'. She advises other women not to put the stove on the table because the 'warmth just goes out of the window'. Strategy used by Edith (#J03) is to 'boil' water in the big stovetop kettle. She said, '... especially in the morning, we do not just heat, but we boil it so that it can be shared among six household members ... you can add cold water on the boiled water and every one would have water to bath.' This, she says, is how she saves paraffin because 'you do not have to heat water every time you need it'. Madumandile (#L03) often uses candles to illuminate his small backyard shack. When he has finished cooking, he blows out the candle and the light from his portable television set illuminates the room. In this way, a packet of candles – which contains 12 candles – lasts four weeks, an average of one candle per 2.3 days.

Householders have also devised ways of maximising the fuels they use for their entertainment appliances. Mlityalwa (#S11) is adamant that the sun could be used to a greater effect for boosting the 'flat' dry-cell batteries. Instead of throwing away his used batteries, Mlityalwa puts them on the roof of his house for the sun to heat them. He believes that after some time on the roof, the batteries regain some power and are able to be used again. He asks, 'the sun is free so why should not we use it?' Gilbert (#L03) used to pay R5 to recharge his television battery, a charge that lasted only a day and a half. Now he connects the television battery to his car every morning, charging as he transports school-going children. He is then able to use it to power the television late in the afternoon.

We should not lose sight of the individual causes that compel households to employ the 'energy saving strategies' outlined above. In many ways, strategies result from energy poverty – of households not having adequate energy choices – or as a result of entrenched poverty. Some householders recognise that some coping strategies come at the cost of compromising

households' nutrition and budgets. For instance, Virginia (#S14) does not have a refrigerator in her household. She normally buys non-perishable foodstuffs. Instead of fresh milk, she buys powdered milk, tinned foodstuffs (in the place of fresh vegetables and meat), and so forth. When she buys fresh food, she ensures that it is used immediately. Similarly she only buys meat when it is to be cooked on the same day. She complains that buying commodities such as meat on a daily basis affects the household budget negatively. It would be cheaper, she adds, to buy in bulk rather than buying 'loose-ones'.

The costs of energy-saving strategies can be quantified in terms of nutrition or household budget, as well as in terms of extra work for those concerned. In 1995, Grace (#J05) would take all her household laundry with her when she goes to work. She would use her employer's washing machine, laundry drier, and electric iron. For her, this means carrying an extra load of laundry to and from work and also worrying over whether her employer approves or not of her use of his electricity and appliances.

# 8.3 Avoiding and causing accidents

Some strategies to maximise energy are also used as safety precautions against hazards associated with the use of household fuels such as paraffin. However, many of these practices seem to cause the accidents that people seek to avoid. In 1995, Nomthunzi (#L03) used to mix methylated spirits with paraffin. She was adamant that the mixture made her paraffin stove burn efficiently without emitting 'dirty smoke'. She had heard of this strategy from her friends who had also heard about it from others. She stopped this practice after her tiny backyard shack nearly caught fire:

My raskop was smoking, my friends advised that I should pour drops of [methylated] spirit into the stove so that it can clean the dirty paraffin. This would stop the stove from smoking. When I lighted the stove the spirit with paraffin caught fire. The house was half-burned, but there were no serious damages because the fire was dowsed while it was still beginning.

Strategies like this have become 'general knowledge' in the quest for energy efficiency and conservation. Of course, some strategies that people employ to avoid accidents are indeed safe, as shown below.

As prevention is better than cure, it is the potentially hazardous contexts that energy policy should immediately address. Some householders are aware of dangers associated with fuel use and have taken active measures to combat accidents. The fuels that are perceived to be dangerous are paraffin, candles and gas. The latter is rarely used, as it is viewed as the most dangerous fuel. Indeed, in many households gas is avoided altogether. We shall therefore concern ourselves with safety and health issues around the use of paraffin and candles.

Paraffin is normally purchased in small cold-drink bottles, which makes it easily accessible to young children, particularly given the lack of storage space above the ground and the nature of the bottle tops. It is worth noting that we did not come across any case of paraffin ingestion in our sampled households. Anecdotes of children who drank paraffin were, however, present. One of the research participants, Catherine (#J01) told us a story of ingestion which happened 'few years ago'. One of her grandchildren – who was only six years old at the time – drank paraffin because she thought it was a cold drink. The paraffin, she remembers had been placed in a bottle of "Ship Sherry"; '... we then gave the child a full bottle of milk to drink in order to vomit all the paraffin poison. We then took her the day clinic ... Ever since that day, every old [adult] person here makes sure that paraffin is kept away from children.'

Most householders were aware of the dangers of paraffin poisoning and have established ways of preventing children from drinking it. One way of preventing children from drinking paraffin is to educate them from an early age. As most shacks in Joe Slovo and Langa are very small; it becomes difficult for adult members of households to hide paraffin away from children. Noxolo (#J08) keeps a paraffin container under the table where it could be accessible to her eleven-month child. She believes that her 'child is very clever ... if you stop

him once he does not do it again. When I am outside doing the washing [laundry], the child likes to follow me so he is never left alone'. Although the container is not closed, nobody worries about the safety of the child. Nokwakha (#L09) places her pump stove on top of a table that is covered by a flammable plastic tablecloth. She also keeps paraffin under the table. A drink bottle is used to store and pour paraffin into the stove and it does not have a cap. Nokwakha argues her children would never drink paraffin because they know the difference between paraffin and water or cold drink. These children include four-year-old twins. Vathiswa (#L08) places a pump stove on a wooden board on the table. A cold-drink bottle, which is used as a paraffin container, is kept under the table within the reach of children. The three children, who are between 11 and 6 years of age, are said to be old enough to know the difference between a drink and paraffin. We have also observed that in Khayelitsha paraffin is usually stored under the table. In Constance's household (#K13) for instance, paraffin containers are kept underneath the table and are thus easily accessible to small children.

In some households, however, children's safety is prioritised. Paraffin is kept in 5-litre containers (never in cold-drink bottles) that are fitted with lids. A child cannot mistake this container for a cold drink. In addition, most of these containers have lids which when tightened by an adult could not be opened by a child. Nomthunzi (#L03) – who stays with her very small children – makes it a point to take precautions regarding how and where she stores her paraffin containers. According to her, none of her small children have ever experienced paraffin ingestion. She teaches her children the dangers of paraffin. Moreover, she stores her paraffin in a plastic 5-litre container and tightens it as described above. In 1995, Nosilent (#J06) lived with her two daughters and three grandchildren in her one roomed shack. She was concerned about the lack of sufficient space to 'hide' paraffin from children. Because children 'play with paraffin, I do not put in a bottle ... I put paraffin in a plastic container', she said. She then puts it at the head of her bed, where 'I see it all the time'. The children have never touched paraffin. She does not allow the small children to light the stove. She does, however, send them to fetch paraffin.

When measured against the danger of fires, the danger of paraffin ingestion seems to be less prevalent, especially in Joe Slovo. In informal settlements, particularly, more and more households fear fires and are actively seeking ways of preventing them. We have noted (Chapter 6) that, since 1994, the civic committee of Joe Slovo has banned the use of candles. The use of candles carries severe punishment. Even though some households still use candles, they do so very discretely and carefully so as not to cause fires. We explore the aftermath of fire later in the chapter. We present below two case studies of women in Joe Slovo, which illustrate the extent to which they attempt to prevent fires from occurring.

#### Case 8.3

When Catherine and her family (#J01) came to Joe Slovo in November 1994, she used candles to illuminate her shack. She stopped using candles after 'the civic committee said that no house is allowed to use candles'. The ban came after fires that occurred repeatedly between November and December 1994 in Joe Slovo.

Catherine has stopped using candles but she knows of some households still using them because they cannot afford paraffin lamps. According to her, 'the civic cannot stop people from using candles ... Ag, man, our committee is useless ... these candles still burn us although people will not say so'.

Catherine who uses a wood brazier for heating her shack is very careful about how she uses it. She is aware of the potential dangers of braziers in Joe Slovo. She uses it inside the house after she has given it enough time to burn into hot ashes outside. When it is warm enough, she takes the brazier outside to the open field and puts out the fire. 'I would not light my mbawula [brazier] when it is windy ... like today', she told us.

#### Case 8.4

Nosilent (#J06) acknowledges that a flame stove is very dangerous, especially if used in areas such as Joe Slovo. She says the committee and residents try to discourage one another from using wick stoves but people persist in using them. She has a wick stove that she bought in 1995 (then costing about R25). She wanted to buy a primus stove but did not have enough money. Although she receives a monthly pension, she feels that it is not sufficient, as she has to first settle debts she has incurred during the month. When the latter have been paid, there is usually very little money left. She maintains that she has developed ways of ensuring that she uses her stove as safely as possible. She explained how she ensures that she does not cause accidents with her wick stove:

When I switch off the flame stove I put a damp cloth over the wick to make sure that the fire has indeed gone out. I cannot put out the fire outside the house because when the flame stove comes into contact with wind, it explodes. When the fire has been put out, I then take it outside the shack because the smell [fumes] from the flame stove is unbearable. It is when I see that the stove is not smoking that I bring it back inside the house.

Nosilent sees this procedure as time consuming and has vowed to buy a pump stove at her next pension payoff date (at the beginning of February 1997). She perceives a pump stove to be better than a wick stove because it has safety features such as the temperature regulator and durability. In the Transkei, where she comes from wick stoves are widely used but there, they do not cause fires. This is because huts do not have ceilings and the roof is usually high so 'the flame cannot reach it even if it explodes'.

Case 8.3 shows how meticulous Catherine is about fires. Every action to prevent fire is a conscious measure because there are no second chances when fire breaks out. As she said later, 'one mistake and you are dead', indicating the problems that arise after the outbreak of fires such as punishment from the local civic committee. In Case 8.4, Nosilent has devised an innovative way of controlling a wick stove until she has saved enough money to purchase a more durable and safer stove.

Preventing fires is also a priority of households in other types of settlements. Although all dwellings in Khayelitsha and Site B are electrified, residents still use paraffin. Nomtshato (#K11) places her primus stove on top of a cupboard. She uses a wooden board to protect the surface of the cupboard from burning. She puts her electric hotplate on a silver tray to protect the surface of the cupboard from burning. Constance's (#K13) does not allow her children to use the electric iron. She says, 'children can cause a lot of damage ... they can leave the [electric] iron on while they play with their friends. The iron may explode and cause fire.' In Site B, Mathulang (#S06) swears that she would not use candles even if she did not have electricity. She also fears using gas, 'you might light up a matchstick unaware that children have not closed the gas cylinder tight enough and the whole house burns in a minute. I will never ever use gas.'

Some residents take preventative measures to combat accidents such as paraffin ingestion and fires, but some of these measures cause the very same accidents they seek to avoid. Noxolo (#J08) and Nokwakha (#J16) had heard that the cause of explosions in a wick stove is the cap that closes its fuel tank. Both women 'throw the cap away' after they purchase a wick stove, because, says Noxolo, 'when a flame stove is tightly closed with the cap it explodes'. Both women feel that this is a safe way of preventing fires. Nokwakha, however, later admitted that this might not be as safe as she thought it was earlier because 'once, there was nearly a fire caused by the open tank'.

In some households the handling of appliances creates real possibilities of accidents. In an extreme case, Pumla (#L06), who is virtually blind performs household tasks with little assistance. We observed her visit lighting a pump stove. While the stove was in use, a flame flared between the stove's head and the tank. When we raised this with Pumla, she was not bothered at all. She nonchalantly said it was because 'the stove's head is not tight enough'.

One wonders what could have happened if the stove had burst. In two households in Joe Slovo (#J11 and #J12), children as young as six years old operate wick stoves (and prepare meals) without adult supervision. Considering the built environment of Joe Slovo – that is, very dense shacks – these clearly are risky situations.

# **Case 8.5**

Fundiswa (#J13) is a cleaner at Red Cross hospital. She lives with two children – Ntombintombi (13 years old) and Nomandla (15 years old). Almost everyday, she travels to works at 6 in the morning and comes back at 5 in the afternoon. Ntombintombi is disabled and attends a special school for the disabled in Gugulethu. Her transport to school takes her at 7 a.m. and returns her at 4 p.m.

One day we found her preparing a meal on a flame stove. It appeared that Ntombi-ntombi was not aware of the danger that a flame stove often causes. She said:

Normally, I do not light the stove, but today my sister is still at school so I need to make something to it ... Yes, I know how to light the flame stove. I have often seen it how it is lighted. It is so easy ... you just strike the match, raise the wick and the stove is on ... I am not scared of it.

Considering the severity of fires in the settlement, such a child operating a flame stove in an extremely confined space poses a real danger. The shack is very small and densely filled. Although she did not cause a fire then, the spectre of it is, indeed, real. We provide below telling accounts of fires in Joe Slovo and their social costs.

# 8.4 An anatomy of disaster

# Saturday, September 7, 1996

In the early hours, fire broke out in Joe Slovo. Thirteen shacks were burned to the ground before the fire brigade arrived. This fire was not reported in any of the local newspapers.

Dorothy (#J09), who lived close to the scene of the fire, but whose shack was not affected reconstructed what she knew about the cause of the fire:

A jealous partner caused the fire. The boyfriend suspected that his girlfriend was having affair. He came early on Saturday and found her with another man. He torched the shack because he claimed that he bought all the furniture that was inside the shack. The committee is looking for this person. I suspect that he is going to be killed because there is no way he can repay the victims of fire since he is unemployed.

A shack belonging to Dumisa (not in our sample), a single and a recently unemployed man, was burned down. On Monday following the fire, we located him sifting through the debris, trying to find some building material that he could re-use to build a new shack. He had come to Joe Slovo in the middle of 1996 after he received employment. Before that, he had lived with relatives in a hostel shack in Langa. The casual employment he had soon ended. 'I had invested a lot on this shack because I knew that my work is not going to last for long', he reminisces. He said he had bought furniture – bed, chairs and clothes, 'now everything is gone'.

He was awoken by cries of 'Kuyatsha! Kuyatsha!' and, 'I knew that there was fire', he said. He was unfortunate because nothing could be retrieved from his burning shack. 'I watched as everything that I had worked for was taken by fire', he lamented. Another victim of the above fire, Zanele (also not in our sample) was not at home when the fire started. She also lost everything as the result of the fire. She, however, brought a different explanation to the fire. She said that the fire was not caused by an 'unknown' person, but by the 'carelessness of people' because, 'the fire was caused by a burning candle'. She reconstructs the cause of fire as follows:

~ You see some people like to blame others for their own carelessness. Also it is so easy

to put blame on someone else's shoulders. I have lost everything I have worked for. They said that a jealous man caused the fire, but I know better.

What could have happened, she says is that the owner of the shack that caused the fire might have fallen asleep with a candle burning. Or, she might not have put out the flame of her wick stove completely. According to Zanele, the flame may appear dead when it has not. Either of these two things might have happened that night. 'You know, she could not have told the committee about what have really caused the fire because she would have been made to repay us. Now, we have to re-build our shack knowing that some 'man' is responsible for our miseries. We know better', she said.

# Monday, January 13, 1997

On Monday at approximately 9 a.m., a spaza shop in Joe Slovo was burned to the ground. A member of this household was preparing a morning meal when a flame stove exploded. Nothing from the shack was saved from the fire – the shack with all its furniture, and the shop were burned down. The fire brigade soon arrived and the fire was dowsed quickly (after people reported it from a public telephone that was about 400 metres away). Other shacks nearby it were slightly burned. Mrs Siba (not in our sample) said:

My husband was still asleep when I was cooking porridge on a flame stove. A customer came into the shop. I was busy attending it when I smelled smoke coming from one of the rooms. When I went there to inspect, the kitchen was dark with smoke, after which a fire came out. I woke my husband and shouted to my neighbours that my house was on fire. They came quickly to our rescue. Someone phoned the fire department – it came very quickly and helped us put down the fire. Although I lost everything, including my business, I am happy that none of the shacks that are near mine were burned. Now my husband and I will have to find money somewhere and try to rebuild our shack.

# Wednesday, January 15, 1997

Groups of people are moving about among the debris of burnt shacks. People who have human power and money have begun to build shacks resembling their previous burnt ones. Others are still in a state of disarray and sift through the burnt materials trying to find reusable materials. Everyone is helping one another. Women, men and children are involved in the process of reconstruction. Clothing and pieces of furniture that have been salvaged from the fire are bundled together in a schoolyard and small children are given the task of looking after them. Some ex-household owners, who lack resources to rebuild their shacks the same day, do not know where they will spend another night. Shacks belonging to the secretary and a member of the Joe Slovo committee are among those burnt. The secretary summed up the feeling of what most fire victims must have been feeling. She said 'ayibobomi obu - yinzakala yodwa [this is not life - it is tragedy]'.

The fire – the second in four days – is believed to have started at 1 a.m. The fire continued to blaze until 5 am when it was finally overcome. It took a total of six fire brigade trucks to dowse the fire. By 6 am, 25 shacks had been burned to the ground – and more had been destroyed, as people had to dismantle a number of shacks in order to contain the fire. Fortunately, there were no major casualties save for a few burns, but the loss in terms of property was immense. Among the properties burnt was the biggest spaza shop in the area.

A paraffin lamp that was left burning by children is said to have caused the fire. The children – aged between three and eight – were left alone because their single parent (also a committee member) was working at a night shift. The lamp apparently fell and something caught fire. One of the victims commented:

If the fire had occurred during the day or early at night when people were not asleep, we could have stopped it from spreading. The problem is that the fire started deep in the morning. Everyone at that time is asleep except for witches. Maybe, the children

forgot to turn off the lamp and slept with it ... Sure, this women has a lot to pay for ... look at these burnt-down shacks. It is a catastrophe.

The Red Cross Society supplies the victims of fires with food parcels, blankets and clothing. On that day, however, the Red Cross had a backlog as there were so many fires. A Red Cross official working in the area said that they still had to provide assistance to the victims of a fire that had occurred two days before.

#### 3.1.1 Punishment and condemnation

The fires in Joe Slovo are caused by a combination of factors. Three causes of fires, however, stand out: (i) the dangerous fuels and appliances that most households are exposed to daily, (ii) the highly flammable building materials of shack dwellings (see Chapter 9) and the densely filled shacks; and (iii) the dangerous way in which people handle their fuels and appliances. This latter cause of fire can, at least, be controlled while wider structural problems of poverty, unemployment and lack of proper housing underlie the first two causes. The civic committee of Joe Slovo, in a step to control the spread of fires, has banned the use of candles. A person found to have caused fire is usually made to shoulder the responsibility of his or her 'careless' actions. Despite the precautions that people take, fires occur repeatedly and are a strain on people's minimal resources. Fires have become a reality that people in informal dwellings have to face in one way or another. As one research participant interviewed in 1995 said:

Even if you are more careful with paraffin, other people in this yard may not. Therefore if they are not careful and there is fire, all the *hokkies* [shacks] here are going to be burnt down ... and all your efforts and carefulness will amount to nothing. We are not the same, some of us are drinking and others are not. The reality is that you cannot escape fire.

Other people, especially those living in informal dwellings, shared this sentiment. As a result of fires, people in Joe Slovo (and elsewhere) have lost a great deal. We have mentioned in previous chapters the precarious economic existence of most Joe Slovo households. The case of Dumisa (above) illustrates the general feeling of hopelessness after a fire has swept through people's belongings. People are losing property that has taken months and years of investment. As one participant in a workshop in Joe Slovo puts it, 'umlilo usishiya size' [fire leaves us naked]'. The fear of fires, in addition, affects people's investment in household appliances and furniture. Novuyani (#J12) maintains she will not buy appliances such as television, radios and the like as long as she lives in Joe Slovo. Fires are constant reminders that valuables 'can go in one smoke'. Novuyani and Dorothy (#J09) would rather 'transport' them to Transkei where she has a house that is safe from fires. The fear of fire also destroys people's property. Novuyani said that some time ago when there was a fire scare (the fire was immediately dowsed without causing extensive damages), she moved her belongings hastily out of the house. She recounted:

When we heard that there is fire ... remember it was at night ... my children and I took all our furniture and things out of the house. When we were moving things, because it was very dark, some of my furniture was destroyed. We realised that there was going to be no fire after all so we had to replace everything back in the house. We later saw that some of our furniture was broken and some pieces were stolen. Not all people who help you are doing it honestly. Some will be seen helping you but in truth they are helping themselves to your things. Look, I lost a primus stove and a radio after that fire scare.

Indeed, it seems fires continue unabated in Joe Slovo. Even though people take preventative measures such as banning the use of candles and making the people who cause fire pay damages, the reality is that fires are frequent. As Table 8.1 shows, within a space of 11 months, there were seven (reported) cases of fires in Joe Slovo. The Red Cross attributes the cause of the fires to faulty wick stoves and candles overturning.

Date of fires	No. of shacks burned	No. of people displaced
04 March 1996	34	108
26 July 1996	12	48
01 September 1996	18	65
10 September 1996	14	40
17 December 1996	13	42
13 January 1997	26	85
16 January 1997	36	110
TOTALS	153	498

Table 8.1: Fires in Joe Slovo between March 1996 and January 1997 Source: SA Red Cross Society (1997)

What is most striking about Table 8.1 is the number of displaced people. Some of these people would normally stay with their kin and friends living in Joe Slovo or elsewhere, and the others would reconstruct their shacks from the debris (see Section 8.4). Harsh sentences are imposed on a person who has caused a fire. Such a person is made to pay for the victims' property, or if unable to do so, may be beaten severely and evicted. It does not matter whether the fire was caused by accident. In many instances, a guilty person absconds but he or she may not escape detection for long. A culprit is hunted down, as was case of an inhabitant of Joe Slovo who escaped to Khayelitsha, who was seen in the train by residents of Joe Slovo. They followed him, caught him in Khayelitsha and 'made him to pay'.

The consequences of fire are very detrimental in terms of both material loss and social costs. When the shacks of Simphiwe (#J07), his brother and that of a domestic worker burned, Simphiwe had to pay the latter. Simphiwe's girlfriend recalls the incident that occurred in April 1996:

After the fire there were problems for us. We were called to a meeting to explain what caused the fire. The problem was that we had to pay back this woman whose 'house' was also burned. Simphiwe had just started to work. We had a new baby – and things were starting to go well for us. Now we had to pay back whatever that women lost ... We paid her R500. We were fortunate that the other 'house' that also burned belong to his brother. He understands his [financial] position and he did not make us pay. Imagine if more houses were burned. We would be out of this area by now.

Before she came to live in Joe Slovo, Nosilent had suffered the wrath of the community for causing a fire that also burned other people's shacks. Case 8.6 shows how she was forced to live in Joe Slovo after the civic committee condemned her in 1994.

#### Case 8.6

Nosilent arrived in Cape Town in June 1994 from rural Centani, Eastern Cape. She lived with her late husband's brother's daughter in a hostel room in Langa. As the small room was shared with six couples, she built a shack between the hostels. However, one evening in December 1994, a candle caused a fire that destroyed her shack and others. She recalled that:

A candle that I left burning while I went to one of the hostel rooms to chat with my friends caused the fire. After some time I was there, I heard people screaming outside... I realised that my house was on fire. We tried to extinguish the fire, but unfortunately six shacks including mine were totally burned down.

The residents blamed her for causing the fire. Her neighbours had lost valuable property and their savings. She remembers that:

The [hostel's] block committee called me after the fire was extinguished. They said I caused much trouble to people whose houses were burned. They said to me "pack and

go". At first I did not know where to go ... I had been in Cape Town for just a few months. I was desperate but I managed to come and stay in this place [Joe Slovo]. I did not come here by choice ... I was so desperate.

Indeed she was given an ultimatum of either paying for the losses or moving out of the area. Since she was not able to pay, she opted to move out. She then approached the committee of Joe Slovo and was allocated a site.

In fear of being condemned and punished by the community, those responsible for fires usually place the blame elsewhere. For example, when the fire described in 5.8.4 occurred in September 1996, it was blamed on 'a jealous boyfriend'. Some people interpret this 'explanation' as the feeble excuse of culprits who do not want to take responsibility for the fire. If the fire is not blamed on arson, some individuals suggest that witchcraft causes fires. This was the case when Rose's shack (#S05) caused other shacks to burn in Site B in 1989. As an *isangoma* (divine healer), people believed her. She explained to us that:

I do not think that the fire was caused by anyone in the house, by paraffin or candles because, as far as I can remember, no stoves or candles were burning that night. Maybe the fire was caused by witchcraft – some people do not like my good work in the community, and so they try everything to stop me from the work that my ancestors have chosen me to do. I was bewitched.

Although Rose attributed the cause of the fire to supernatural powers, the reality is that, a burning candle may have caused the fire or an appliance left burning. When we probed further about the possible causes of the fire, she admitted that she went to bed early, and other people in the household were still watching television. Electricity had not yet been installed in Site B, and fires occurred repeatedly. Her relations with her neighbours were affected. The local civic committee intervened on her behalf and a potential bloody confrontation was avoided.

#### 8.5 Conclusion

This chapter has drawn attention to the connections between energy efficiency and conservation, the health and safety aspects of fuel use and the social dislocation caused by fires in informal settlements. In terms of energy efficiency and conservation, we have given examples of what appear to be 'pragmatic' practices. With the escalating costs of energy and appliances, these practices are employed to get maximum output from fuels and reduce expenditure. We have demonstrated in this chapter and elsewhere in the report that electricity is expensive. In the language of energy policy, households 'backswitch' from electricity to other 'lower order fuels' such as paraffin. Juggling between fuels may not necessarily mean a reduction in energy expenditure. We believe that policy makers need to be familiarised with households' coping practices so that intervention strategies can be informed.

Health and safety issues relating to fuel use are matters of prioritisation. This theme is also picked up in Chapter 11 where we touch on the relevance and effectiveness of some interventions from householders' perspectives. Householders, especially in vulnerable settlements such as Joe Slovo, believe fires to be more dangerous than paraffin ingestion. Indeed, paraffin ingestion is not regarded as an important issue. To them children (irrespective of the age) know the difference between paraffin and cold drink or water. This view is supported by the absence of children poisoned by paraffin during the period of research. On the other hand, fires have reached unprecedented proportions. Although people devise strategies to prevent fires, these have been largely unsuccessful.

# Keeping the house warm: buildings, insulation and space-heating practices

#### 9.1 Introduction

It has long been recognised that many low-income households spend substantial amounts of their income and energy on space heating (see for example, Mathews et al, undated; Thorne, 1995; Simmonds & Mammon, 1996). This is attributed to the housing materials used to construct dwellings, as well as fuel-types is used these dwellings. This chapter examines the interrelated issues of building and insulating materials, and space heating practices in the sampled households. We contend that a dwelling unit should not be conceived only for its provision of shelter. It should also be measured for other characteristics such as its indoor environment and its provision of the minimum level of comfort possible through improved thermal performance. Wentzel (1982) argues that the acceptable indoor temperature lies between 16° and 32.5° Celsius (in Simmonds & Mammon, 1996: 25). When room temperatures fall below 16° Celsius, people use energy to generate heat. A thermally efficient dwelling reduces household fuel expenditure, as the need for space heating is reduces.

The theme of this chapter is to draw symbiotic linkages between the dwellings (houses) and domestic energy consumption, especially for heating. It briefly describes the materials are used to construct dwellings in all sampled settlements. The purpose is to show the interplay of various factors in shaping people's decisions regarding what materials are used for construction and insulation. We argue that tenure, availability of materials, and safety are the three most important issues that people consider when using certain building materials in their dwellings. The chapter also describes space-heating practices, and links these to type of dwelling. Using measurements of dwellings' thermal performance as well as people's subjective explanations for their actions, we review the extent to which the insulation of dwellings has a bearing on energy consumption.

# 9.2 The interplay of micro and macro issues in purchasing building materials

There are many factors that determine the purchase and use of building materials by households in informal areas. These are availability and affordability of housing materials, security of tenure, re-usability of materials and people's perceptions of personal safety about the fuels used inside the dwelling units. It is the interplay of these factors that influences people's decisions around the choice of materials for dwelling construction. Standard dwellings in the Khayelitsha sample are two-roomed brick houses - having only a bedroom and a living room/kitchen (and a toilet-bathroom). In many cases, as suggested in Chapter 2, these dwellings are so small that they cannot accommodate household members. The assumption was that the owners would renovate their dwellings at their expenses. The residents of informal dwellings define their choice of materials according to varying circumstances. They erect their dwellings using available materials and labour. As a result, dwellings in Site B have, on average, more rooms than the standard Khayelitsha houses. In Langa, the sampled backyard shacks are, on average, one-roomed structures mainly because of space limitation. As backyard renting is a 'business' in Langa, landlords maximise their income from backyard leasing by accommodating as many shacks as possible. Informal dwellings are erected using a variety of materials such as corrugated iron, popularly know as amazinki (sing: izinki), timber, plastic and concrete slabs (see Table 9.1 below). Amazinki are probably the most common materials for building shacks throughout South Africa (cf.

EDRC 9

Mathews et al, undated)

	Total (n=59)	Khayelitsha (n=15)	Site B (n=15)	Langa (n=14)	Joe Slovo (n=15)
Walls					
Izinki	41%	0%	87%	43%	33%
Timber (bungalow)	32%	0%	13%	50%	67%
Concrete stabs	1%	0%	0%	7%	0%
Bricks	25%	100%	0%	0%	0%
Roof					
Asbestos	29%	100%	7%	7%	0%
Timber + plastic	22%	0%	7%	43%	40%
<i>lzinki</i> + wood	34%	0%	80%	29%	27%
Izinki + plastic	10%	0%	7%	14%	20%
Floor					
Wooden floor	39%	0%	0%	86%	67%
Concrete floor	42%	100%	67%	7%	0%
No solid floor	17%	0%	33%	7%	33%

Table 9.1: Building materials of the sampled dwellings - 1996/7 (numbers have been rounded off)

Table 9.1 shows that 67% of dwellings in the Joe Slovo and 50% in the Langa samples are constructed from wooden materials, as compared to a mere 13% of Site B dwellings. A reason for the popularity of timber in Langa and Joe Slovo is that both areas are situated near manufacturing factories. The area on which Joe Slovo stands is used as a dumping reusable waste, especially wood pallets. For reasons that we were not able to ascertain, it appears that *izinki* is widely available in the greater Khayelitsha area. Site B householders told us that they prefer *amazinki* to timber for building because, 'even after a fire, *izinki* can be used again ... you cannot use wood because it turns into ashes after a fire'. Another striking feature in Site B is the use of cement or concrete to build floors. Sixty-seven percent of Site B shacks (only 7% in Langa and none in Joe Slovo) have cement floors. Cementing the floor in these dwellings is an investment and a sign of permanence. An aura of permanence exists in Site B households, while the occupants of backyards in Langa and Joe Slovo shacks view their dwellings as temporary structures. We briefly explore this hypothesis below.

What generally guides people in choosing certain building materials for their dwellings? What role does energy play in influencing people's decisions around the choice of housing materials? Our focus on informal dwellings is intentional in that these dwellings constitute 75% of our sample. In addition, householders in informal dwellings were able to better articulate their choices of housing materials in their dwellings than the residents of formal households who often did not insulate their houses. The external environment (tenure, weather concerns and safety) influences the informal dwellers' understanding of building materials. Their reasons for choosing certain materials are crucial in informing our understanding of the needs of low-income households, including their level of awareness regarding thermal performance issues. We contend that insecurity of tenure, availability of materials and safety are the three important issues that shape decisions around the choice of housing materials in informal dwellings.

# 9.2.1 'We do not know when we will be moved on this plot'

In the previous chapters, we have seen the extent to which tenure problems directly affect fuel use patterns in Langa backyards and Joe Slovo. Insecurity of tenure is also a key factor that shapes decisions around the choice of housing materials in these settlements. In 1994, when families and individual began to occupy the area that became Joe Slovo, the local municipality attempted several times to evict them. However, residents resisted these attempts because they had no where to go. When a municipality evicts 'squatters', the shacks are usually dismantled without concern for people's material investments or property. In any

situation, forceful eviction is emotionally stressful and costly in terms of labour and time involved in reconstructing the dwellings. This experience affects people's choices of housing materials. Rather than investing in expensive materials, people in insecure settlements prefer to use readily available and replaceable materials to construct their dwellings.

In contrast, the backyard dwellers face tensions of a different kind – they are dependent on the mercy of their landlords (see Chapter 6). As the backyard dwellers negotiate with *oomastandi* (sing: *umasitandi* – lit: stand-owner) for a space to erect their dwellings, a backyard dweller's stay is dependent on his or her relationship with *umasitandi*. These relationships are generally very fragile and can be easily damaged. The backyard dwellers therefore live under constant fear of eviction at anytime with or without notice. There is usually no legal contract that safeguards interests of either party such as the guarantee of a notice period before the contract is ended. In addition, there is no collective organisation of backyard dwellers such as that found in formal or informal unplanned settlements. The backyard dwellers are usually not represented in townships civic committees. In the words of Gilbert (#L03), 'we do not exist.' They easily lose accommodation as a result of an argument or jealousy. The residents in Joe Slovo who were erstwhile tenants suggested that jealousy is the main source of tension between backyard dwellers and *oomastandi*. Many backyard dwellers are forced to find alternative accommodation within a short space of time after being evicted. It is one of the reasons that informal unplanned settlements such as Joe Slovo exist.

Backyard dwellers prefer timber bungalows for their ease of use. Bungalows have distinct advantages in that they can be easily dismantled when the occupants move to another area or site. This makes transportation easier even though there are costs involved. When one finds an alternative site, a shack is quickly reassembled from these materials. It is expensive to buy bungalows though. They are often bought at a cost of R400 to R2 000 in Langa, depending on the level of sophistication. It is understandable that backyard dwellers and Joe Slovo residents choose timber for constructing their dwellings.

None of the residents in either Langa backyard shacks or Joe Slovo had cement floors, except for Rebecca (#L10) who occupies a converted garage in Langa. Cement is associated with permanence and, because of the costs involved, it is also perceived as an investment. Joe Slovo residents consider buying cement as 'a waste of money'. This suggests that residents in Site B, most of whom have cement floors, have a greater sense of permanence. Insecurity of tenure in Langa backyards and Joe Slovo prevents people from investing in thermally efficient materials, such as ceiling boards. This has negative effects on the health of the inhabitants.

## 9.2.2 'The dump [area] is our saviour – we get materials for free'

Instead of buying properly constructed and expensive bungalows, some household owners in Joe Slovo use readily available materials such as discarded pallets to construct their dwellings. They use their labour to collect pallets in the dump and build their dwellings in stages; starting with one room and later on, adding more rooms. According to householders, children have to stay on guard so that when the truck comes to drop off the waste timber, their families could be among the first to get the pallets. One obvious advantage of using these materials is that it is possible to create shelter without spending money, especially for men. Although they collect the materials needed, single women and the elderly often solicit the labour of men, be it their sons, their friends and kin to build the shacks. They use their social networks and the costs are lower than buying a ready-made bungalow. Below is a case study that encapsulates some of the issues that are central to this discussion. The study shows the constraints that many residents, especially women, are confronted with in their attempts to improve their living conditions.

#### Case 9.1

Edith, (#J14) is a widow aged 61 who earns less than R500 per month as a domestic worker. She lives with her two children (ages 21 and 19) and three grandchildren (ages

between 3 and 9) in a three-roomed shack in Joe Slovo. Her shack is constructed from a combination of materials. The roof is made of corrugated iron. The corrugated iron materials are covered with a hard canvass, which she bought at R125. This canvass is primarily used to prevent rain. Like other shacks in Joe Slovo, the walls are made of timber. Ceiling boards are used to divide the rooms. Inside the dwelling the walls are covered with ceiling-boards, which she has transferred from her previous home. Because this shack is bigger than her previous dwelling, she used cardboard to supplement the ceilings. She told us; 'I cannot waste more time and money to buy more ceiling boards that will again be damaged by rain.' Newspapers are plastered over the cardboard for thermal and aesthetic reasons: to 'prevent draughts and to make our house look neat'.

There is no solid floor in her dwelling. Instead she uses plastic bags and canvass to cover the soil. She says this serves 'to prevent grass from growing underneath the carpet as it is happening in other houses'. Over the plastic bags she has a carpet and other pieces of matting

In August 1995, winter rains flooded her dwelling. Because the floor is not elevated, water invaded her dwelling. Some water leaked from the roof. She says her roof is flat and when it rains, it holds water, resulting in leakage. She used a washing basin and buckets to collect the water, and to protect the floor and other items in her dwelling from being damaged. However, she was not successful because her bedroom was completely flooded. She had to give it up, so she moved to sleep in her children's bedroom. Long after the rains had stopped, she could not occupy her bedroom because it was flooded. Water spread to other rooms so she dug a hole in the living room to facilitate drainage. She covered this hole with a carpet 'to prevent her children from being trapped and injured'. Because of the damp, her dwelling was smelly. To minimise the odour, she let the windows open during the day. In addition, it was very cold and she complained about her children getting sick. She asked her eldest son to come and fix the roof for her but 'you know my son is very lazy, I do not know when he will come. I cannot do it on my own, at least this needs men'.

Geographical location and climatic conditions in South Africa are the primary macro determinants of a household's energy consumption (Williams 1994: iv). Climatic conditions vary across geographical regions and within regions depending on seasons. As all the sampled households are located in the Western Cape – a winter rainfall region – the winter is very wet and cold. In winter, some dwellings in informal areas are infiltrated with water, and in others, the moisture makes the walls damp. This condition has negative effects on the health of the inhabitants of poorly constructed dwellings such as those found in our sample. This includes formal dwellings, many of which do not have insulating materials such as ceiling boards. In Nomtshato's household (#K11), for example, she placed hard board against the bedroom wall to prevent the children from getting into contact with the cold and damp wall in their sleep. This affects the health of the family members, and also damages clothes, as these are covered with mould.

In Site B, Joe Slovo and in Langa backyards, a large number of the sampled dwellings are in bad states of repair. Some have holes in the walls and roofs and are sources of concern in wet and windy weather. In Case 9.1, water comes through the holes when it is raining causing damage to items inside the dwelling. The dwellings becoming waterlogged in the rainy season worsening the situation in Joe Slovo. People deal with this problem in two ways: on the one hand, residents move their dwellings and re-build them in other vacant spaces. This situation further contributes to the close proximity of the shacks in Joe Slovo. The resultant effect is that when there is a fire outbreak, the fire easily spreads from one shack to another.

Householders have devised strategies to deal with wetness, one of which is elevate the floors, and this helps to prevent the dwelling from getting waterlogged. Eighty percent of dwellings in Joe Slovo and Langa Backyards have raised wooden floors. Wooden floors are also perceived to be warmer than cement or bare floors, as Gilbert (#L03) explains:

Cement floors are very cold in winter, and cool in summer. Wood floors are warm if you compare them to cement. I do not need a carpet on the floor and my children are sleeping on the floor but they do not get sick. Imagine if they were sleeping on a cement floor!

Thorne (1995: 21) suggests that thermally efficient housing is a subject that is related to adequate and affordable energy services, as well as to affordable housing for the poor. From the preceding discussion, it is clear that the effects of poorly constructed dwellings on the health and safety of the inhabitants are more important factors than conserving energy. Efforts to modify dwelling structures are therefore aimed at protecting inhabitants from external elements such as draught and rain.

Case 9.1 has shown that informal dwellers use a variety of readily available materials to modify the structure of their dwellings to prevent draught and rain. The types of materials used in each dwelling depend on what people can afford, and what materials are available. In formal dwellings it appears that affordability is the main determinant in fitting a ceiling. Formal dwellers may prefer not to have a ceiling than to use makeshift materials such as cardboard. This is what White et al, (1996: 37) refers to as a 'concern for aesthetics'. In formal dwellings, cheap cardboard suggests poverty and is avoided. More than 50% of households in informal areas, however, use cardboard to cover walls and roofs of dwellings to prevent draught as many householders suggested. Cardboard is more popular because it is cheap and readily available. Some householders in Joe Slovo and Site B collect cardboard in the dumping grounds. Wallpapers are also widely available at reasonable prices. According to Pumla (#L06), wall paper performs a dual function 'it covers the cardboard making the house neat while also preventing draught, which may penetrate in between the cardboard'.

Even if materials are available without access to labour it may remain difficult for people to construct their dwellings in a manner that would make their living conditions more comfortable. This particularly applies to women, the elderly and the disabled. As shown, for instance, in Case 9.1, Edith asked her eldest son to come and fix her roof for her. Although she knows what the problem is with her roof, she believes that it requires a man to fix it. To a large extent this is due to her age. Pumla, who is visually impaired, requested her friends to paste wall papers in her shack. One windy and rainy day Pumla's friends attempted to paste the papers on the walls and the roof. This proved to be a futile exercise because the wind that penetrated in between the cardboard kept blowing the papers away. They decided to quit. Pumla was worried because she would have to sleep 'outside' that night, meaning that she would be exposed to high level of draught and probably some rain. She also asked 'how am I going to find you (her friends) again because you know you are not always in your houses ... It does not help to make an appointment because we do not know if the weather will be OK, tomorrow'.

#### 9.2.3 'Izinki is safer than a cardboard'

In Site B most shacks are made of corrugated iron. In some households the corrugated iron was in a bad state of repair. It was evident from the rust that fire-damaged zinc was used to construct dwellings. Mayedwa explained that he prefers *izinki* because it is safer to use than wooden materials. 'You see', he pointed at his neighbour's shack, 'this house was burned sometime ago. Fortunately because it is made of *izinki*, our houses were not affected'. His neighbours reused the zinc to reconstruct their dwelling. Mayedwa explains thus, 'with *izinki* material it is easy, all you need is a hammer'.

That zinc is safer than wooden materials can be illustrated by the fact that fewer fires occurred in Site B than in Joe Slovo during the survey period. Also the extent of damage was minimal in Site B because the fire did not spread to many dwellings. As Chapter 8 shows, paraffin appliances and candles cause fires. The materials used in dwelling construction such as cardboard, plastics, and wallpapers intensify the extent of damage. Acknowledging the ways in which people themselves can prevent fires, Site B residents opt for zinc because if there is a fire, it does not cause extensive damage to other people's property. For the individuals

affected, the same materials can be used to reconstruct one's dwelling. This demonstrates that the decision to use corrugated iron in most informal dwellings is a rational choice influenced largely by people's perceptions of safety regarding the fuels they use inside their dwellings.

Although corrugated iron is safer to use, Mathews et al (undated) suggests that this material has poor thermal performance. The reason is that heat is transferred rapidly between the interior and the exterior, making it difficult to keep heat both in and out of the dwelling structure (Simmonds & Mammon 1996: 29). For dwellings that are constructed out of corrugated iron to be more habitable people are required to use materials such as cardboard and wall paper as insulating materials.

## 9.3 Keeping the house warm in winter

The amount of energy required for space heating varies between households depending on a variety of factors. These are the size and structure of the dwelling, the type of energy used, and the needs of the household members including their level of comfort (see also 9.3.1 below).

The materials used to construct dwellings play a major role in determining the energy requirements for space heating. For instance houses that have been built with standard building materials require less heat than dwellings built from 'shack' materials such as corrugated iron. Generally, well-insulated dwellings require minimum heating when compared to non-insulated dwellings. In our sample all the households required additional heating due to the poor quality of the materials used in dwelling construction as well as the cold winter in this region.

Fuels used for space heating differ depending on geographical location. In areas such as Gauteng where cheap coal is available, householders prefer to use this energy source for space heating, (Williams 1994). In the Western Cape households the energy sources used are paraffin, electricity and wood. Paraffin was, however, the dominant fuel used for space heating in the sampled households. Some households, which were reliant on electricity in 1995 for space heating, switched to paraffin in 1996 (see Table 9.2).

	Paraffin		Electricity		Wood		No heating	
	1995	1996	1995	1996	1995	1996	1995	1996
Khayelitsha	64%	80%	36%	13%	0%	0%	0%	0%
Site B	73%	67%	0%	7%	20%	20%	7%	7%
Langa	92%	93%	8%	7%	0%	0%	0%	0%
Joe Slovo	86%	100%	0%	0%	13%	13%	0%	0%
Total	86%	85%	12%	7%	8%	8%	2%	2%

Table 9.2: Comparison of fuels used for space heating in 1995 & 1996 (\*Numbers have been rounded off)

Few householders use electricity for space-heating purposes because of its high costs (see also Chapters 5, 6 and 7). For example, Lindiwe (#K12), said 'when we have R5 [worth of] electricity, we do not use the bar heater for space-heating otherwise it will use up all the units very quickly'. In other households, when an electric heater is used, people are careful not to use it for long periods. For instance, Sizeka (#01) explained that 'when I use my [bar] heater I make sure that it is in my bedroom. I do not use it for more than two hours because it consumes too much electricity'. Her bedroom is smaller than other rooms, and the floor is covered with a carpet. Hence most householders prefer paraffin for space-heating purposes because it is more affordable. In addition, paraffin appliances are believed to be more suitable than electric heaters, as they perform dual functions and thus reduce costs. Nothobile (#S15) explained that, 'when I see that it is going to be cold, I make dough so that I can bake bread when the paraffin heater is on'. This helps because the housing materials used in the

construction of their dwellings do not retain heat for a long time so heating the house for a short period is not effective.

Although affordability is the main reason that a particular energy type is preferred for space heating, fuels are also used strategically according to their perceived efficiency in performing this function (cf. Chapter 7 & 8). Catherine (#J01) uses *imbawula* [brazier] because, 'it does not only make my house warmer, it also helps to dry the floor' after the winter rains. At the time (July 1995), she did not have a raised floor or other materials (such as cement and canvass) that could protect her dwelling from being damp. (By the end of 1996, she was able to build another shack with an elevated floor.) A few householders in Site B, about 20%, also use wood for space heating. Mawawa (#S02), who brews beer, uses *imbawula* because 'my customers like to drink the traditional beer in a Xhosa way. They like to sit around fire, just like the old days.'

## 9.3.1 Materials and thermal performance of dwellings

The way that dwellings are constructed has an impact on the thermal performance of the sampled dwellings. The temperatures recorded in Joe Slovo between 6 and 12 September, 1995 supports our observation that a relationship exists between dwellings' construction and thermal performance (see Mehlwana & Qase, 1996a: 45-55 for detailed temperature recordings). Three shacks, which differ in construction, insulation, position vis-à-vis the sun and size were selected. In each shack, two thermometers were placed: one outside and another inside. The thermometers were placed on the south side of the shacks, always in the shade. Research participants were responsible for recording temperatures throughout the week. The research team, however, monitored the recordings to ensure that accurate temperatures were recorded on daily basis. Each household was given a sheet of paper for the records. The temperatures were recorded at 4 p.m. daily. The week in which temperatures were recorded followed weeks of heavy rainfall in the Cape Peninsula region. The aftermath of these downpours was still visible in some shacks in Joe Slovo (including one of the three selected for temperature recording). However, by Peninsula standards, the weather at the time of recordings, was warm. Throughout the week, the outside temperatures in Joe Slovo were between 8° and 10° Celsius (minimum) and between 23° and 25° Celsius (maximum).

#### (a) Fundiswa's shack (#J13)

The size of this shack is 6 square metres, and it is the smallest of the three. The walls are made of timber and the roof is covered with corrugated iron sheets which, compared with other shacks in the neighbourhood, were in good condition. A thick canvas had been put over the corrugated iron for extra protection. The shack is partially insulated. At the time of temperature reading, it was without a ceiling. The floor underneath the linoleum is bare, with neither cement nor timber. However, there had been attempts to insulate the walls with cardboard and wallpaper was used to cover it. There are no windows, although there was ample ventilation because during the day the door is always kept open.

The shack was densely filled with furniture and appliances. Because of the lack of space inside the house, cooking was mostly done on the floor. As a result, the steam from the simmering pots and the warmth from the appliances added to the heat of the shack. For heating the dwelling, a primus stove is used since they cannot use a brazier because of the small size of the shack. Six people occupy this shack.

## (b) Adelicia's shack (#J10)

This is one of the well-built shacks in the area. It is a big two-roomed L-shaped shack of about 15 square metres. The outside walls are made of solid painted metal sheets. The

We were not able to measure and compare thermal performance across the four settlements. We are in no doubt, however, that even without such data, a relationship exists between the type of dwelling and space-heating practices.

floor is made of timber, which is elevated to about 30 cm off the ground. There are two windows. The roof is of corrugated iron and thick canvas. The inside of the shack is insulated: painted cardboard pieces cover the insides of both walls and roof. The elevated wood floor is covered with linoleum and pieces of carpet.

This household consists of four members. During weekdays, the dwelling is used as a crèche. A primus stove is used for space heating. However, on very cold days, a wood brazier is also used.

## (c) Novuyani's shack (#J12)

This is the poorest of the three shacks. There is not much difference between the inner and outer wall surfaces, nor is there a difference in terms of materials between its roof and walls. Comparatively, the shack is big (about 12 square metres). It is made of an assortment of timber, plastic and corrugated iron pieces that had seen better times. The walls have holes, and little attempt has been made to seal them. The floor of the house was bare soil; indeed, at the time of temperature readings, it was recovering from the rains of the past weeks and was still damp.

This household consists of three children and one adult female (the owner of the dwelling). Partly because the owner was in Transkei, and partly because the shack was said to be very cold, the three children spent some nights at their neighbour's (and a relative's) shack.

In all the selected shacks, there was little difference in temperature on the outside. The recorded temperatures were approximately the same as the general temperatures recorded in the Cape Peninsula. Maximum temperatures ranged from  $18^{\circ}$  to  $24^{\circ}$  Celsius, while the minimum ranged between  $8^{\circ}$  and  $9^{\circ}$  Celsius. However, there were marked differences as far as the interior temperatures were concerned, as Figure 9.1 shows. These differences stem mostly from the different construction attributes of the shacks.

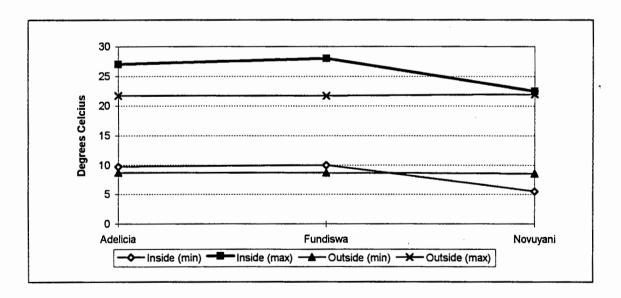


Figure 9.1: The September 1995 (6-12) minimum and maximum temperatures (Average)

The findings from temperature records in Joe Slovo can be summarised as follows:

#### (a) Constant minimum inside temperatures

While the maximum temperatures fluctuated, the minimum temperatures in all the households tended to remain constant. The exception was Adelicia's household where the minimum temperature on Thursday 7 September was 15° Celsius (see Figure 9.1). On that day, they had

been heating the house with a brazier.

## (b) Size of the shack and thermal performance

The size of the shack appears to influence its thermal performance. The smaller the shack, the warmer it becomes. Although Adelicia's shack has the best structure of the three, Fundiswa's shack was the warmest. At the same time the latter shack is the smallest, and there were as many as seven people who occupied this shack – so that heat was maintained for a longer time.

## (c) Cooking and thermal performance

Cooking inside the house also influenced the thermal state of the shacks. This particularly applied Fundiswa's shack. Because of the lack of space, cooking took place in the centre of the floor. The meal that was repeatedly cooked here was samp, which would take up to three hours to prepare. Therefore the steam from the pots, and the heat generated by the cooking appliances contributed to the relatively high temperature of the house. In contrast, the temperatures in Novuyani's shack – by far the poorest in the settlement – were the lowest. Owing to its bad state of repair, there was not much cooking done in this shack: most of it was done at a neighbour's shack.

## (d) Building materials and thermal performance

In Novuyani's shack, the inside minimum and maximum temperatures tended to be lower than the outside's. This was partly caused by the heavy rainfalls of the weeks before. The shack was not insulated in any form; and the walls and roof had huge openings, and at the time of recording, the inside floor was still wet. This prompted the occupants to vacate the shack and lodge temporarily in the neighbour's shack. Even during the day the inside maximum temperatures were consistently lower than those outside. By the conclusion of the research the shack's owner was considering destroying it and rebuilding it with other, better, materials once she had saved enough money.

In contrast, other shacks' room temperatures were relatively higher than those outside, as a result of the type of insulation present in the shacks.

#### (e) Cost of heating and thermal performance

There is a relationship between the amount of fuel consumed by the household and the state of the dwelling. It should be noted that households in the informal settlement of Joe Slovo rely more on paraffin than any other fuel. There are four inter-linked reasons that residents rely on this fuel for space heating:

- (i) The settlement is very far from places where wood can be collected. Wood is the only other cheap fuel, yet is inaccessible to the people of Joe Slovo.
- (ii) In addition, the civic committee in the settlement discourages open fires (like the use of candles).
- (iii) The general economic status of residents of Joe Slovo is insufficient. Most people, especially of the sampled households, were either unemployed or under-employed. This restricted their choice of fuel.
- (iv) The settlement is not officially recognised, and is situated on land, which is not designated for residential purposes. Therefore, no attempt has been made to develop this area, and it is without electricity.

Although the figures of paraffin consumption do not indicate end-uses, we observed that in cold months, sizeable amounts of paraffin were used for space heating.

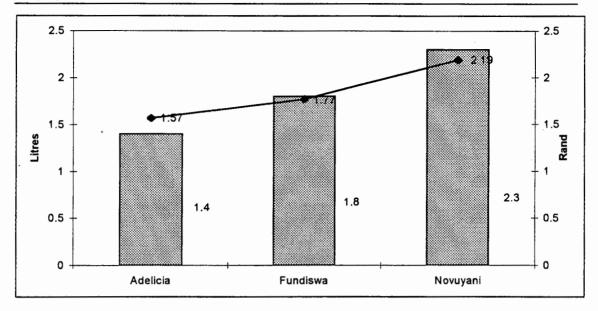


Figure 9.2: Average paraffin quantity and expenditure per day in September of the three surveyed households

Figure 9.2 shows that the daily consumption of and expenditures on paraffin. As might be expected from the description of their dwellings, two households spend significantly more on paraffin. Adelicia's household spends less on paraffin, partly because they also use gas for cooking. However, the costs outlined above are more complex than is immediately apparent. This derives from the different ways these households pay for paraffin. For instance, since Adelicia's household has a stable source of income, it is able to budget for paraffin, and buy it in bulk. Owing to their insecure income, the other households are not able to budget for their paraffin, and therefore pay more per litre (cf. Mehlwana & Qase, 1996b: 128-131).

Although the majority of research participants could not clearly explain the link between the thermal performance of their dwellings and fuel consumption by their households, efforts have been made at insulating their dwellings. Insulating dwellings takes place largely because of winters that are generally cold, wet and windy. In Joe Slovo and Langa backyard shacks, most shack floors are elevated because these areas tend to be waterlogged in the rainy seasons. Besides, more people are turning to timber for the construction of their dwellings. Timber shacks are cheaper, easy to put up and dismantle, and are said to be warmer in winter and cooler in summer than those made of corrugated iron sheets. The link between the thermal performance of dwellings and the amount of fuel consumed, especially to heat the house, is evident from the amount of money or time that householders take to buy or collect fuels.

The amount of fuel used in heating houses provides a useful point of entry into the subject. Case 9.2 below shows the way that the fuel used for space heating is tied to the thermal performance of the shack and hence its construction. When a shack is poorly insulated, more fuel is used in making it warm. This should be seen in the context of a cold winter in the Khayelitsha area. The heat from the primus stove is not adequate and wood was seen as a solution.

#### **Case 9.2**

Nolulamile (#S07) lives in a very big shack of about 42 square metres. The walls are made of a combination of plywood and corrugated iron. The roof is of corrugated iron, with canvass to cover holes. There is no ceiling. The inside wall is covered with pieces of cardboard and paper is stuffed in where there are holes. The floor is cement but there is no carpet of any kind. Despite attempts at insulating the shack it remained cold. Previously, she was used a pump stove to heat the house but, 'It really was a waste of our

money because this house would not be warm. If it was warm, it will be just for a short while. This house is big and a pump stove does not sufficiently make it warm'.

Since it was the middle of winter (July 1995), she changed to wood for heating her shack. She, together with other women in the neighbourhood, collects wood in an area about eight kilometres distant. She travels every day at 7 a.m., returning at noon. When she comes back, her father-in-law – who is unemployed – assists her in chopping up the wood. Partly because of cold weather and partly because the house is big, an *imbawula* is lighted every evening. The fire is made outside the house, and is put in the house only when it has stopped smoking. The fire is allowed to burn through the night even if everyone is asleep. They are aware of the dangers that this can cause, but 'it is very cold here at night', she added.

In contrast, dwellings that are well insulated are able to retain heat for a longer time, and therefore less energy is needed to heat them. The case of Nontobeko (#K09) in 1995 shows that with proper insulation, the thermal performance of the house is improved, and less fuel is consumed for space heating.

#### Case 9.3

Nontobeko, a single mother of two children aged 14 and 10 years, lives in a standard two-roomed house. Over the years she has been able to insulate her house: the roof has been fitted with a painted ceiling; the walls are now plastered with 'cretestone' and painted; the kitchen floor and the passageway are beautifully tiled; the bedroom floor is fitted with a wall-to-wall carpet. Unlike other houses in the Khayelitsha sample (where there is an overloading of the readyboard with electric cords), the ceiling conceals the electric cords, and there are switches in every room for the electric lights. The plugs are fitted on the walls, with the wiring concealed behind the 'cretestone' plaster.

Since her house retains warmth she does not heat it very often. When she does, she uses an electric fan heater. When she was compelled to use it, she would switch it on only for a few hours because 'my house is able to get warm quickly and electricity is very expensive'. Before she installed proper insulation and acquired an electric heater, she used a primus stove for heating: she would heat the house for about three hours on any given day – usually from 6 p.m. to 9 p.m. She believes that the primus stove would consume a 750-ml bottle of paraffin in each day she used it for heating the house. She said:

'It is very cold here in Khayelitsha. So I decided that the best thing is to make my house warm by putting in a ceiling so that I do not spend much money to buy paraffin for heating. Each day I used R1.20 worth of paraffin, but now I think I use less as I have this electric heater and my house is able to retain heat for a very long time.' <sup>2</sup>

Nontobeko is one of the few householders who saw the connection between the dwelling's thermal performance and the amount of fuel consumed in trying to heat the house. It was possible for Nontobeko to invest in thermally efficient materials because her tenure is secure. However, other householders in informal areas cannot invest in efficient materials – even if they can afford them – because of their insecurity of tenure.

## 9.4 Conclusion

This chapter has explored the factors that determine the choice of housing materials for dwelling construction in low-income households. Underlying this, we sought to determine the role played by energy in influencing people's decisions around the choice of housing materials. The primary determinants of the choice of housing materials, particularly in

<sup>&</sup>lt;sup>2</sup> In 1996, Nontobeko subsequently bought a paraffin heater because, 'I cannot stand the price of electricity'. Like other householders in Khayelitsha, she does not use her electric heater (see Chapter 5). \*\*

informal dwellings, are security of tenure, and perceived safety and availability of materials. Safety plays a primary role in determining the choice of materials for dwelling construction in informal areas. We have argued that people's experiences and fear of fires caused by candles and paraffin appliances influence their decisions to choose *amazinki* to construct their dwellings, which are seen as less dangerous than timber materials. Timber is preferred for convenience in Joe Slovo and Langa backyard shacks because people there do not have secure tenure. It is easy to dismantle and transport timber bungalows to another site when this is necessary.

There is more awareness about insulation in informal settlements than in formal houses. For dwellings to be habitable, people in informal dwellings use materials such as canvass or plastic, cardboard, wallpapers, and ceiling boards. These materials protect the inhabitants of these dwellings from exposure to extreme weather such as rain, wind and cold. The effects of adverse weather on the health and welfare of the inhabitants remain the primary determinants of the modifications to dwelling structure rather than energy conservation *per se*. Elevated wooden floors have obvious benefits over bare or cemented floors and these need to be encouraged in the short term. In the medium-to-long term adequate but affordable housing is the most desirable solution.

Despite people's efforts to improve living conditions within their dwellings, they continue to require more heating in winter. A majority of people prefers paraffin heaters for this function. For space heating in particular, people choose fuels for their efficiency in performing this function. People, who use electric heaters, use them with caution, for example, heating the house only for a short period. Due to the poor quality of housing materials, this sometimes proves impractical, as houses do not retain heat for a long time. For this reason, paraffin appliances are preferred because they can run for the whole day with minimal expenditure. When paraffin appliances are used, they are often used for a combination of functions, such as baking and space heating.

Lastly, even though we have reported energy efficient practices at household level, householders do not necessarily employ these practices to conserve energy, but for health and aesthetic reasons. It is therefore important to raise awareness about issues of improved thermal performance of dwellings and their benefits in energy savings to low-income communities.

# Sustaining livelihoods: energy sources and household micro enterprises

#### 10.1 Introduction

Many energy studies focus on immediate household energy needs such as cooking, cooling, lighting, and heating. Little attention has been given to energy needs stemming from incomegenerating activities, which are crucial for the survival of many low-income households. As many householders depend on pensions, disability grants and domestic work, or similar kinds of employment for income, they turn to micro enterprises to sustain a living. The official estimates suggest about 42% of the 'economically active population' in South Africa are not employed in the formal sector (Eberhard & van Horen, 1995: 45). More recent estimates place this figure close to 50%, indicating that income-generating activities or self-employment ventures are becoming an alternative for householders in the face of widespread poverty. These activities vary from the sale of cooked sheep heads, freshly slaughtered chickens, icelicks, cold drinks, beer brewing, hairdressing and the sale of paraffin. Other activities include sewing and the sale of snacks such as biscuit off-cuts, chips and sweets. A majority of these activities are dependent on the availability and use of energy sources.

We propose that a definition of 'domestic energy' should be broadened to include activities that generate income, in order to arrive at a holistic understanding of energy needs of low-income households. As we show, the fuels used for income-generation may be different from those that are used to meet the household's immediate energy consumption needs. This chapter explores the relationship between income-generating activities and domestic energy consumption patterns. Such information can be used for future energy planning. In analysing the strategic choices and uses of energy sources for micro enterprises, this chapter reiterates the need for low-income households to have access to a wide variety of energy sources.

The chapter first gives a summary of the number of households in the sample involved in income-generating activities. Secondly, it explores the use of wood for income-generating purposes with special reference to Site B households. Thirdly, it discusses problems related to the lack of access to refrigeration – the plight of small shebeens. Lastly, it explores the survival of households through the sale of paraffin.

## 10.2 The importance of wood for income-generating activities

A majority (73%) of Site B households are involved in income-generating activities of some kind (Table 10.1). Most of these activities are energy intensive such as *ukusila* (brewing 'traditional' beer), sale of sheep heads, *braais*, wood sales and chicken plucking (see Section 10.3). Most notably, 64% of these income-generating activities use wood. Why is there a high incidence of income-generating activities in Site B than other settlements? Why is wood the primary fuel for household micro enterprises?

Clearly, (lack of) income does not sufficiently explain the existence of income-generating activities in the Site B sample. As shown in previous chapters, the sampled settlements have comparable incomes, yet many householders in Site B appear to supplement their income. We contend that three mutually inclusive reasons encourage income-generating activities in the Site B area. The first reason is the proximity of woodlands to the Site B settlement. In Joe Slovo and Langa, it is not possible for residents to get to the woodlands without incurring transportation costs. In Site B and other parts of Khayelitsha, however, people are able to

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collect wood from nearby bush areas. Although potentially dangerous, women and men can be seen crossing the highways to and from the woodlands. For those who prefer to buy wood, there are many vendors who sell wood in various quantities at reasonable prices. The price ranges from R2 for a small bundle, to R50 for a load (either a truckload or donkey-pulled cart).

	Total	Khayelitsha (n=15)	Site B (n=15)	Langa (n=14)	Joe Slovo (n=15)
% of HH in micro enterprises	34%	27%	73%	7%	27%
Wood	40%	25%	64%	0%	0%
LPG	5%	0%	0%	0%	35%
Electricity	20%	50%	18%	0%	0%
Paraffin	35%	5%	18%	100%	75%

Table 10.1 Percentage of income-generating activities by fuel type (\*Percentages have been rounded off)

Secondly, activities associated with wood are often looked down by urbanites. They associate the use of wood with traditionality, backwardness and rural areas. Sizeka (#S01), a young woman in Site B said, 'I cannot collect wood in rural areas, and collect wood again in the city. I cannot'. It is perhaps this association of wood with rural lifestyles that has lead to the use of wood for specialised functions in urban areas. The brewing of beer for generating income is not common in established townships. It takes place only on special occasions when a ritual is performed. Social pressures prevent even the poorest from being involved in chicken plucking, selling sheep heads or amathumbu (sheep intestines). For instance, although there is no reliable source of income in Thozama's household (#K01), she does not consider selling amathumbu because people will look down on her household and 'people of Khayelitsha are gossip mongers'. In contrast, householders in Site B are not faced with those pressures. The majority of households in our sample still maintains their rural connections and is even proud of them. It is a common sight to see groups of young and old women carrying bundles of wood on their heads in Site B and other nearby informal settlements, taking pride in the volumes of wood they carry. Likewise, it is expected for a woman to know how to brew 'traditional' beer. A woman who lacks this knowledge is not considered a 'proper' Xhosa woman.

The third reason that wood-related activities are found more in Site B than in other sampled settlements is related to the degree of permanence of Site B households. Some householders in Joe Slovo and backyarders in Langa share the worldview of Site B households. Yet, even if they wanted to, Joe Slovo and backyard resident are unable to use wood. When Nokwakha (#J16) was living in Site C, she was involved in brewing 'traditional' beer. When she came to Joe Slovo, however, she realised she could not continue with this activity not because of the absence of wood – as there are plenty of waste pallets – but because making open fires is discouraged in Joe Slovo. The backyarders are not considered to be full urban residents since they do not own the land on which their shacks stand. They cannot light open fires to brew beer or to pluck chickens on their landlords' sites. In comparison, the open plan of Site B – shacks are far apart – does not make open fires hazardous.

The energy intensive nature of most income-generating activities reduces the impact of electricity on household micro-enterprises. Only 20% of the recorded income-generating activities use electricity. The costs of electrical appliances and fuel appear to prevent people from using electricity for these activities. In households where electricity is used for incomegeneration, refrigeration is the main function for which it is utilised.

Also, of significance is the number of households that are involved in the sale of paraffin.

Paraffin trade at household level has been observed in the entire metropolitan centres involved in this project (see also Jones & Aitken, 1996: 124-126). The sale of paraffin at this level extends the paraffin distribution chain beyond the well-recognised spaza shops.

It is also important to note the apparent low levels of gas utilisation for income-generation purposes. By way of contrast, many people who are involved in the sale of cooked food, for profit in Cape Town's wealthier suburbs are mainly reliant on gas. To a large extent, the difference can be explained in terms of affordability. For many people in low-income households basic survival is an issue, and lack of access to affordable energy services locks them into a cycle of poverty. The case of Nosandile (#S04) below illustrates this point.

## Case 10. 1

Nosandile stays with her wheelchair-bound husband, Edinburgh and five children. Due to Edinburgh's disability, the household receives a monthly welfare grant. To supplement this income, Nosandile has been involved in various informal businesses such as the sale of tripe, fruit, sheep intestines and heads, since 1990 – when her husband began to be ill. When the business gets tough, she looks for domestic work. She would work only for short periods and when she makes enough money to attend to her urgent problems, she would return to her business. She said, 'I have been selling sheep intestines for a while, but things have changed. The price of sheep intestines has gone up. It is now difficult to gain profit.' It is even difficult to mark-up the prices too high because there is so much competition. Customers have a wide choice so they will simply go elsewhere.

In 1990 when her husband was hospitalised for the first time, she sold sheep intestines. With the money she received from this activity she was able to feed her children, travel to hospital to visit her husband and to bring him food. At present, however, she cannot even afford to buy more sheep intestines to sell. She sold sheep intestines for a few months in 1996 until her friend advised her about a potential new market in Cape Town. She suggested that a new construction site in Cape Town offered a lucrative market for sheep heads. In October 1996 she started selling sheep heads in Cape Town. After sometime, she realised that it would help her to add fat cookies to her business.

In her determination to maintain her family, she underestimated the demands of her work. She buys sheep heads and prepares them in the evenings. Apart from the time spent on cleaning them, they take approximately four hours to cook. Owing to her failing health, she does not collect wood anymore – she buys it. Due to severe strain in 1992, she collapsed and subsequently had a brain operation. For this reason she is not allowed to carry anything heavy on her head.

Nobuzwe, her eldest daughter helps her to prepare the dough. She works very late at night, and wakes up early in the morning to prepare fat cookies. When finished, she leaves for Cape Town by train. On the way to the station she carries the sheep heads and fat cookies on her head. When she returns home in the evenings late in the afternoon, she buys more sheep heads. She prefers to clean them herself to make sure they are properly cleaned.

Nosandile has to extend her day to meet the demands of her work, albeit compromising her health. She relies on the support of her eldest daughter for other domestic tasks such as cooking and cleaning. This enables her to invest much of her time in the preparation of her products for sale. That her market is located at a distance from her home creates problems for her. Firstly, part of her income is used to pay for travelling expenses. Secondly the location of her market means that she has to rely solely on the amount of stock she is able to carry. Regardless of the demand for her items in a particular day, if she runs out of supplies, her customers have to wait until the following day. However, if she had access to fuels such as gas, this could be avoided. In addition, she would not have to sell cold fat cookies or sheep heads. Of significance also, is that the income from the income-generating activities is measured not only by the amount of profit gained, but also by her ability to provide for her

family. For Nosandile and many other women in desperate situations, family survival is a major priority.

## 10.3 Examples of wood-related income-generating activities

There are two ways in which wood is used to generate an income in low-income urban households. Firstly, it is through the sale of wood by vendors. Secondly, wood is used in the preparation of foods and beers for sale, as occurs in Site B households. These activities are mostly energy intensive: the sale of sheep heads, beer brewing, and chicken plucking requires large volumes of heated water.

## 10.4.1 Sustaining livelihoods through wood sales

Several studies have demonstrated the predominance of the sale of wood in the Western Cape townships (for example, Masondo, 1989; Munnik, 1992). Some of these studies have even quantified the amount of income gained from this activity. For instance, the income made from the informal firewood industry based on the alien Port Jackson, is almost the same as that made from the wildflower industry; about R28, 5 million (Munnik, 1992: 22). Men dominate firewood collection and sales in Khayelitsha due to their access to capital and transport resources and, presumably, spare time (Masondo, 1989). Women collect wood only for 'domestic' uses including fuelling their income-generating activities — although we observed others selling wood in the form of head bundles. These women were, however, not directly involved in our sample except that some of the respondents bought wood from them. Below is a case study of Sam (#K03) who is involved in the sale of wood in 1996.

#### Case 10.2

Sam, a pensioner and traditional healer, shares a two-roomed Khayelitsha house with his wife, seven children, and a grandchild. Although he would not tell us how much he receives from healing, it appears that his monthly pension of R410 and money he gets from healing is not sufficient. In January 1996, he went into a joint venture with a friend who is of the same age (both are in their late 70s) to sell wood. They pooled money and bought two donkeys at R50 each and a cart at R150. They bought donkeys because horses, even though stronger, are expensive – a horse costs about R1 700.

Wood is collected at a 'forest' near Blackheath about eight kilometres away, and access to transport is essential. The men usually leave at 8 a.m. to collect wood and return late in the afternoon. When they arrive home, they cut small logs into small pieces and sell them to people involved in income-generating activities using wood. They collect wood five times a week, allowing themselves time to rest over the weekend. When the sales go well, he generates R400 a month as an additional income for his household. This money is used to buy essentials, and the first priority is to buy food. They sell wood at R50 to R60 a load. The men divide the income generated from wood sales between them.

In February 1997, the two men stopped selling wood because it had become too far to travel. Sam can no longer walk long distances due to his age. Also, one donkey died and it is difficult for one donkey to pull the cart. Indeed when they tried to use one donkey they were fined R500 for maltreatment of the animal. They did not pay it. Their donkey is pregnant, they reckon that after it delivers, they may restart to collect wood.

This case study raises crucial issues regarding the impacts of wood sales on households' survival. Firstly, it is clear that for any income-generating activities, there is a need for a stable or reliable customer base. In this case, women who are involved in income-generating activities that are dependent on the use of wood, are the main customers of wood vendors. Secondly, many people who use wood prefer to collect it. The option of buying is utilised only by those who can afford it, and those forced by circumstances such as ill-health (see Case study 10.1 above). At present, however, the woodland that many of them use, is being cleared to accommodate housing and other development projects. This means that woodlands will be further and further away from the people. The implication of this is explained by

Mawawa (#S02) who is involved in beer brewing for sale:

Now that they are clearing the woodland, it is going to be difficult. Wood is going to be far and only people with *bakkies* will be able to collect wood. These people are going to charge more for wood ... this is going to be bad for our business.

Many low-income households may therefore find themselves trapped in a cycle of poverty. Wood is not only used because it is affordable, but primarily because it offers the option of collecting it in times of tight financial constraints. At the same time as this opportunity disappears, wood prices will increase and few households will be able to afford it. Women will be particularly hard hit. Already, women involved in wood sales find it difficult to compete with men. Women sell head bundles while men sell in bigger quantities. For women to generate as much income as men, they are required to make many trips to the woodlands in a day, which is practically impossible because of the time constraints. In addition, many women have other responsibilities within their homes. Wood is sold for as little as R2 for a small bundle, R10 for a supermarket trolley or head bundle to R50 for a truckload or donkey cart. People in the low-income group are forced to buy in small quantities due to their limited financial resources. Most people buy wood to the value of R10. Women vendors who collect head bundles for sale therefore face tough competition from their male counterparts who collect wood using other means of transport.

## 10.4 The economy and exigencies of wood use

Whether for space-heating or income-generating activities, wood is used in many households to save money. This is borne out by four of the sampled households who prefer to collect than to buy wood. As Mawawa said, 'today I borrowed this trolley from my neighbour so that I could go to collect wood. I decided to collect wood because I wanted to save myself R10, which I can use to buy other things needed in the house.' Budgeting for energy is made within the confines of household budget priorities. When households are experiencing tight financial constraints, savings on energy become a first priority. For example, in 1995 Virginia (#S14), who sells plucked chickens, used to buy wood in small bundles of R2 each. At the time her husband contributed towards the household's financial resources. However, her husband deserted her and the children for the second time at the end of 1995. She stopped buying wood. As she explained:

I have not bought wood for a long time. You see, sometimes I just take dried tree branches that make the yard and use them to make fire. Sometimes people from the neighbourhood come and drop things, say if someone is dismantling or building a house, they bring waste material such as planks here, I use these to make fire.

The other advantages of using wood include the use of open fires and the availability and cost of cooking materials. These two issues are related. It is economical to use wood because people use open fires, hence scrap wood, such as pallets, is used. Unlike other energy sources, the use of wood does not require a big investment in appliances. As shown in previous chapters the cost of appliances inhibits the use of other energy sources. One of the barriers preventing optimal utilisation of electricity in low-income households is the high cost of electrical appliances. Households that are dependent on wood, use cooking utensils such as half-cut drums and 20-litre paraffin or paint containers that are easily available within the community. According to research participants, people can obtain paraffin containers at petrol stations or collect paint containers left by construction workers in community buildings such as schools during construction or painting. Similarly, drums can be found in construction sites. These are often stolen by workers and sold for about R7. Given that wood is accessible and the cooking utensils easily obtainable, wood usage becomes more economical than other energy sources.

#### 10.4.1 The social costs of wood collection

Wood collectors around Khayelitsha walk more than 5 km to collect wood. People often spend five hours of the day collecting wood. This makes it difficult to collect wood and sell it

on the same day, particularly in households that have limited labour resources. For this reason women often wake up at the break of dawn. As Lumka (#S16) said:

I wake up early in the morning so that by 6 a.m. I leave the house. I do this because I want to be among the first people to collect wood. Also I want to be there before there are many cars on the freeway.

Thus, although it is makes economic sense for householders to collect their own wood, there are hidden social costs that cannot be ignored. For instance, the freeway that wood-collectors have to cross is not safe and accidents involving wood-collectors and speeding cars have been reported. Recently, a woman was killed in an accident on her return from collecting wood as she tried to cross the busy freeway with a bundle of wood on her head (Cape Argus, 9 July 1997). Furthermore, it is generally acknowledged that people who are involved in informal sector activities invariably work long hours. The use of wood extends these even further. The steps involved in the preparation of sheep heads for sale illustrates this below.

## 10.4.2 The task of preparing sheep heads for sale

Sheep heads are bought near the Site B station, which is 15 minutes walk from the sampled households. At times, however, there are vendors who come with trucks to sell sheep heads in the settlement. In April 1997, the sheep heads cost R5.50 each and the selling price was R6 per half sheep head in all the households involved in this activity. Once the sheep heads have been bought, a fire is prepared, which usually requires a great deal of wood. Iron rods are put in the fire and a drum of water is placed on the fire to boil.

Meanwhile, wool from the sheep heads is removed using a pair of scissors. Nolindile (#S14) says that if the wool is not cut short, it takes longer to burn, 'wasting wood'. When the iron rods are red-hot they are ready for use. They are then interchangeably to burn the wool. Using the red-hot flat iron rods, the vendors go over the stubble until the surface is smooth to touch, and use cylindrical rods for all apertures. This process leaves the sheep heads smooth, oily and black (cf. Magona, 1990: 171). They are then immersed in a bucket of almost boiling water and are scrubbed using a pot-scraper. Any remaining wool is burnt off; following the previous steps until the surface is smooth. Once cleaned, they are divided into two equal halves using a sharp knife and an axe.

The sheep heads are cooked in a half-cut drum or the paraffin container using the same fire. Water is added to cover the heads, and sometimes salt is also added. However, salt is usually left for customers to add according to their tastes. It takes approximately three to four hours to cook sheep heads. Once they are cooked, they are placed in a tray covered with a clean cloth. The whole process of preparing these heads could take up to the whole day. Depending on customer preferences, the heads can be warmed up before they are sold. For re-heating purposes, householders prefer to use paraffin, because it is quicker than preparing a wood fire. Also, re-heating does not consume too much fuel. Only if the fire is till burning, are the heads re-heated in it.

Alternatively, use of a blowtorch can shorten the process of preparing sheep heads. The flame from this torch is strong enough to burn the wool so there is no need to use iron rods. This is quicker thus saving time and labour. The disadvantage is that the blowtorch is fuelled by paraffin and many householders feel this is expensive. As a result, Mayedwa (#S17) uses the blowtorch rarely, only when there is sufficient income.

It is clear that lack of financial resources force people to resort to labour-intensive activities to ensure the survival of their households. All the products that are selected have a good market in the township, even though they may not necessarily generate profits because there are many people involved in the same activities and there is a lack of product variation. Daily sales are unpredictable therefore vendors prefer to buy in small quantities in case few customers buy. There is no access to refrigerators that would make it possible for householders to store items that have not been sold.

We have also seen how allocating fuels strategically to various functions conserves energy. Wood – an affordable energy source – is used for energy intensive activities while expensive fuels such as paraffin and gas are used for re-heating purposes. Since affordability is one of the crucial factors determining fuel use in low-income households, fuels other than wood are used when there is sufficient income or for activities that are not highly energy intensive.

## 10.5 Refrigeration is a popular choice for micro enterprises

It is clear that there is a need for refrigeration to store perishable products such as sheep heads. Although these households are dependent on wood for the preparation of their products, access to refrigeration would make it possible for them to buy in bulk. This would save them time and money. Presently, householders buy in small quantities to reduce waste, since items that are left over (sheep heads and chickens) can only be prepared for household consumption. As the process of preparing products is time consuming and tedious, buying in bulk would enable householders to concentrate more on actual sales.

Even for householders that are not involved in income-generating activities, access to refrigeration would enable them to buy in bulk thus reducing household expenditure caused by daily buying. For many householders, refrigeration is mainly associated with electricity, and few householders buy gas refrigerators. Once households are electrified, electric refrigerators could replace gas ones. Nosidima (#S08) 'I bought a gas fridge at Lewis [furniture and appliance store] in November 1994. In December 1994 Site B was electrified so I returned it for an electric one.'

Nokwakha (#J16) who is involved in the sale of 'western' beer said:

People come to my shebeen because it is winter. It is too cold and people do not care whether the beer they drink is cold or not. But, who would want hot beer on a hot summer day? Surely in summer people will go to places where they will get cold beers. I do not have money to hire bakkies to fetch ice for me. If I had electricity maybe I would not worry because I would buy a second hand fridge and store my beers.

In this sample only one household was found to have a gas fridge and this household was in Joe Slovo informal unplanned settlement. Adelicia (#J10) bought a second-hand gas fridge for R800 in October 1996. She explained thus:

I have decided to buy a fridge because, to have a successful business especially in Joe Slovo where almost everyone is involved in business, one has to be ahead of one's competitors. In summer my business will grow because of my fridge, my drinks will be cold and I will also sell meat. Also in summer everybody wants cold drinks, so people will come here.

Adelicia feels that she will have a competitive edge due to her access to a refrigerator. Owing to a lack of access to refrigeration, people involved in beer sales in Joe Slovo buy ice cubes to cool their drinks. This requires access to transport, which many do not have. There are people who deliver ice cubes, but they do not come frequently. When they do come, the ice melts before the end of the day. An individual that has access to a refrigerator may optimise the use of this appliance in various ways, and may even hire out space to their neighbours (cf. James, 1997: 21). Adelicia, for example, hopes to sell drinks and meat. In Site B two households started selling cool drinks in 1996, once they acquired refrigerators. These refrigerators are used to store household items and also drinks for sale. According to Nosidima the sale of cold drinks is not affected by seasonal variations, 'people always want cold drink after meals'. In Joe Slovo, people who do not have access to cooling facilities find it difficult to maintain their sales levels in summer. Customers prefer to go to *izimokolo* (shebeens) that sell cold beers.

## 10.6 Sustaining livelihoods through the sale of paraffin

Paraffin is the main energy source used by low-income households for lighting, cooking, water heating, and heating irons. It is also the preferred fuel for space heating in the Western Cape townships. Here, paraffin provides an average of 50% of the delivered energy for all

non-electrified households (Williams, 1994: viii). Due to the high demand for this fuel, many householders sell paraffin to supplement household incomes. There are people however, who survive solely on paraffin trading. For instance, in a Durban study, a woman lived off her meagre paraffin sales (Aitken & Jones, 1996: 124). Ivy (#J15) began her business by selling paraffin after her attempts to find employment failed. Her case shows the emotional strain that lack of sufficient income to sustain a household can cause. When she became involved in selling paraffin her husband supported her. He supported her financially and by giving her access to his transport. The growth of her business was made possible because she was able to maintain a rigid distinction between the business and her home – a distinction that many spaza owners are unable to sustain. Even though her business expanded to other items, paraffin sales remained the core item of her business.

## Case 10.3

In 1995 Ivy lived in a small caravan in Joe Slovo with her husband, a divorcee with five children, all staying in Transkei with his parents. In 1995 Ivy had a baby and it became difficult for her husband to maintain both families. Ivy says, 'there were quarrels between my husband and me. The cause of those fights was frustrations because my husband was not able to support all of us with the meagre income he received'. Ivy began looking for a job towards the end of 1995.

In March 1996, after several months of futile searching, she realised that she was not going to find employment. She then decided to sell paraffin. Her husband provided the initial capital. She first bought two 25 litres of paraffin at R32.50 each and five litres at R6.50 from a well established and bigger spaza shop in Langa hostels. This spaza shop is believed to be the cheapest in the area. She sells paraffin in small quantities – her prices in 1996 were R1.50 for a litre and R1.30 for a 750ml bottle. Her business went well and she had to replenish her supply every third day.

She exercised strict discipline in saving the profits, and resisted the urge to use her paraffin for domestic consumption. Her business has been successful only because she separates her domestic expenditure from her business. Also if she wants something from her spaza shop, she buys it like any other customer. After two months of saving, she bought other basic items such as soaps, bread, and cigarettes for sale. In her view, the ability to sell other items indicates the growth of her business. Every Saturday she buys her stock using her husband's car when it is available. When it is not available, she uses a supermarket trolley. The walk takes 20 minutes.

To succeed one needs a stable customer base, especially where competition is high. Ivy, therefore, gives credit to ten householders in Joe Slovo – all of whom are pensioners or have stable sources of income. They pay her at the end of the week or month depending on when they receive their incomes. One pre-condition is that her prices remain reasonable. In this case she says, 'I check prices in other spaza shops to make sure that I do not over-charge or under-charge my customers'.

At first she used to give paraffin on credit but she soon realised that some people would not pay her in time to enable her to renew the stock. She says she learnt from this experience, 'now I give credit only to people that I know very well, people that support me all the time. I do not give credit to people who play double standards'.

Spaza shops, individual householders and other outlets such as supermarkets and garages that sell paraffin compete for the same customers. Customer preferences regarding these paraffin outlets vary. People who buy paraffin in bulk use bigger spaza shops, supermarkets or filling stations. Those who cannot, buy from spaza shops in their neighbourhoods where they are involved in intricate credit relationship with the owners. As seen in Case 10.3, spaza shop owners need a stable customer base, and this is sustained through the provision of credit facilities, which are only given to people who are trustworthy friends, neighbours and relatives. Spaza shops that sell paraffin are preferred for convenience, as they are found

within reach and have flexible operating hours. People who run out of fuel while cooking in the evening are able to get more supplies, and adults are able to send children to buy paraffin.

Very few householders, however, can afford to buy paraffin in bulk. Bulk buying depends on two factors: the availability of income and on the availability of storage space. Householders who earn regular monthly incomes are able to buy paraffin in bulk at the end of the month. During the month however, they tend to buy in small quantities, mostly from small traders. Paraffin is said to be more expensive in supermarkets especially when one buys in small quantities. Although buying in small quantities is on its own more expensive, this is the only option available to people who earn low incomes. For instance, if a person buys 750ml at R1.30, this works out to R9.10 for five litres of paraffin instead of R6.50. Backyard dwellers are also affected by lack of storage space, which compels them to buy paraffin in small quantities. Most backyard shacks in Langa are one-roomed structures because the site owners are trying to maximise earnings from backyard renting and this demands optimum allocation of space. In many cases, paraffin containers are kept underneath the tables.

In Pesika's (#L13), backyard shack (a household involved in paraffin trading), for instance, several paraffin bottles occupy a large space at one side of the shack. Some of these bottles are not closed and are filled and ready for potential customers. Such behaviour poses a potential risk since there was a small child in this household. However, the size of the shack makes it impossible to hide paraffin and other utensils from the child. To cope with this problem, parents watch the child all the time to ensure that she does not gain access to the paraffin.

#### 10.7 Conclusion

This overview of the fuels used for income generating activities shows that people use a variety of fuels and these fuels are allocated strategically according to functions. Wood, for instance, is used for energy intensive activities such as the sale of sheep heads, and beer brewing. The main reason for the use of wood is that is affordable. People collect wood or buy it from wood vendors at reasonable prices. However, we have also shown that woodlands are being destroyed to address the housing backlog. People who are dependent on this fuel for their survival are therefore facing a problem of lack of access. Only people who have access to transport will be able to collect wood in future, and this will mean a rise in wood prices. Therefore, many people will be forced to quit their businesses. In a situation where unemployment levels remain high, the above is clearly undesirable.

We have also pointed out that the use of wood has negative social effects. Wood collection impacts negatively on the health of people who engage in this activity. Women, in particular, are affected since most of them carry head bundles; resulting in back pains. Some people are killed in road accidents on their way from the woodlands. The use of wood dominates income-generating activities in the Site B area. The absence of refrigerators impedes further development of these activities. As many of these activities are labour intensive, access to refrigeration would allow householders to buy in bulk, thus saving time and labour. Refrigeration is associated with electricity and, as a result, very few households own gas refrigerators. People in Joe Slovo rely on the use of ice cubes to cool their wares, but this requires access to transport.

The issue of transport is important to people who are involved in income-generating activities. Access to transport makes it easier to collect wood, buy stock, buy other tools required, and to follow markets.

It is important to emphasise that these activities are mainly survival-oriented. Their success is not measured in crude financial terms alone, but is also measured by the ability to provide for one's family. In many cases the money that is generated is used to buy fuels and food. For this reason, it was not possible to quantify the amount of income-generated or that could potentially be made if efficiency was improved.

## The user-driven energy policies: summary, policy recommendations and conclusions

#### 11.1 Introduction

The main focus of this research has been to extend knowledge of factors that influence energy use at a household and community level. We have approached this by investigating the context in which energy-related decisions and activities are carried out over time. We contend that sound energy policies are based on holistic and in-depth research. Such a qualitative approach allows for the tracking and prediction of energy policy impacts.

In summary, the research project has, over its life span, been able to trace the effects of existing and new policies or interventions on domestic energy use and needs. The current electrification drive, the paraffin safety cap campaign are some of the intervention strategies or policies that were partially tested in the sample. The project's life span was, however, very short to comprehensively review these interventions. Time constraint, on the other hand, has made it not possible to create feedback between policy-makers and users to refine policies and work towards the generation and implementation of appropriate policies and technologies. This is the area that we feel should be particularly addressed in future research projects.

The strength of this research lies in its comprehensive recording of household energy consumption and end-use application patterns over a three-year period; its monitoring of the fuel substitution process over time. The information about backswitching, multiple-fuel uses and fuels substitution provided in this report (see Chapters 5 and 6, for example) must be fed into the integrated energy planning.

In order to have a holistic view of domestic energy use; it is crucial that we examine the 'household' – an arena where energy is used – in its social context. In Chapter 5 we have given an account of processes, changes in decision-making and constraints that operate on energy use at the household level. Our aim for doing this, as reported in that chapter, is to discover the processes through which end-users can participate in decision-making on energy-related matters.

## 11.2 Summary of issues and policy recommendations

Policy in the South African energy sector has shifted in its emphasis away from the energy security concerns of the apartheid government to more universal goals of social equity, economic efficiency and environmental sustainability. Meeting basic needs is a central objective of the RDP; it is for this reason that households have been placed high on the energy policy agenda. Energy is required to meet a wide range of household needs and services such as cooking, water heating and space heating, lighting, entertainment, the provision of services (water, health care and education), informal home-based productive activities, and in rural areas for associated small-scale agricultural production.

Energy is not a basic need in itself; however, its end-uses and the services it provides often meet basic needs, without which life can not be sustained. To illustrate this, it is not enough to say that the basic food needs of a household are met without ensuring that they have the necessary energy to cook the food. Similarly, it may not be possible to meet a household's basic water needs without using energy to pump the necessary water. It is therefore apparent that sustainable energy security for poor households is a vital element in the reduction of poverty, and the fostering of livelihood security for these households.

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Current patterns of energy consumption by South African households mirror the inequality, which has characterised the country's social, political and economic order, the differentiation being defined largely along racial lines. Most of the black population still do not have electricity in their homes nor have access to it, whilst almost all whites, even many on remote rural farms, are connected to the national grid. Unelectrified households rely instead on wood, coal, paraffin, gas, candles and batteries for cooking, heating and lighting, and are denied the convenience and flexibility of electrical appliances such as kettles, irons, refrigerators and the multitude of other time-saving devices found in high-consumption homes.

Looking at the important findings from the research documented in this report, it is clear that many of them underline the energy issues that have already been identified as facing poor urban households. However, there are certain findings that reveal issues that have not been given sufficient attention to date. It is particularly apparent that patterns of energy use in poor households have deep socio-economic roots and implications, and are not as simple as energy planners would like them to be. It is therefore imperative that policy options be demand-driven, flexible and broad enough to give household decision-makers and energy-users, primarily women, sufficient space within which to operate. Below, we list some policy recommendations based on our findings.

## 11.1.1 Fuel use patterns

Apart from income, there are other reasons that contribute to the multiple fuel use, fuel substitution and backswitching. Particularly, these reasons are responsible for the underutilisation of electricity by households, the increased use of paraffin, investment in LPG and the use of candles (although householders often dispute the latter). In terms of minimal use of electricity, reasons such as inadequate or no wiring in Site B and Khayelitsha houses, unfamiliarity with the electricity dispensers and expensive down-payment of appliances, cause people to use other fuel types. As far as the backyard dwellers are concerned – since they do not have independent access to electricity – their informal access to electricity depends on the goodwill of the landlords. Having access to electricity in this way has the potential of dislocating the tenant-landlord relationships.

While the use of electricity is low, the corresponding use of paraffin has been found to be increasing. Some of the reasons for the continued use of paraffin are its accessibility. In any given settlement, there are many spaza shops that open flexible hours. Although they are more expensive than formal retailers, they offer credit to customers. Indeed, we have also observed that paraffin (and its appliances) could be exchanged between the households in what we have called balanced reciprocity. It is not possible to share electricity and gas.

#### ☐ Policy recommendation

(1) Householders should be informed of end uses for which electricity is the most efficient. While electricity is undoubtedly the best in domestic end uses such as lighting, powering radios and television, it is expensive for cooking or heating water.

Granted, electricity is the most desirable energy carrier in urban areas. Yet, it is often too expensive for people to afford the benefits it offers. In the study it has been found that this energy source is under-utilised in low-income households that have access to it. The current marketing of electricity use by utilities tends to be supply-orientated: the need to 'sell' electricity to the users. The marketing strategy, therefore, places too much emphasis on consumerism. Electricity is portrayed as the best energy source that householders should use, although, in reality, electricity is good for some domestic activities, it is inefficient, expensive and not the best energy source for other activities. At present an 'urban culture' which places huge importance on appliance possession has been created. The quest for ownership of 'modern' and expensive appliances is further putting a strain on the already impoverished households. A household's status is invariable measured by the number and sophistication of its appliances. There is a therefore a need for the

revision of the marketing strategy of electricity and the emphasis providing an energy mix.

## □ Policy recommendation

(2) Basic wiring should be supplied for new connections at small incremental costs payable over a stated period. These costs should be added on the purchase price of electricity, but should be stopped after the wiring costs have been paid up.

Related to the cost of using electricity are the costs of wiring the dwellings. The current policy of providing only the readyboard is fraught with problems. Since many households have low incomes, their expenditure is highly prioritised and basic wiring is expensive. They would be forced to use only the readyboard that is located in one room and there are two problems related to this. First, the possibility of overloading, with many appliances being attached by adapters; secondly, the extension cords running to different destinations. In addition, the inconvenience of always having to go to the readyboard to switch off appliances is also a problem. There is a need to revise the current installation of dwellings. The poverty of the households should taken into account when they are provided with electricity.

## □ Policy recommendation

(3) Backyard shacks should have access to electricity and be provided with separate meters.

Regarding the backyard dwellings, there needs to be clear policies regarding the status of backyarders. It should be acknowledged that the population of backyard dwellings is a symptom of the housing backlog and this constitutes a significant number of the population in South Africa. Their energy needs need to be addressed in one way or the other, if energy policies want to address the problem of the on selling of electricity in low-income households. There is no clear policy at present concerning their access to electricity. Their only option is to obtained electricity through the landlord – often, however, at extortionate prices. There is therefore a need to look at electrification of dwellings as opposed to sites in areas where there are backyard shacks.

## ☐ Policy recommendation

(4) Paraffin should be viewed as the energy of poor household in the similar manner that bread and milk are seen as basic foodstuffs. Therefore, paraffin price should be stable, zero-rated and not follow the oil price.

Based on data that we have collected, we can safely project that the use of paraffin by low-income householders is not going to be dramatically reduced. Also, while access to electricity reduces the fuel expenditure of higher income groups, the same cannot be said of low-income households. Electricity does not make telling impact on their fuel use patterns. What it does, is to increase the households' budgets. Partly because of limited choice and familiarity with paraffin, the use of paraffin is still very high. There is a need for policy not to wish it away, but to begin to investigate how it could be made a better fuel. There is also a need to look at the embeddedness of paraffin in people's social relations. Existing relationships are utilised to channel energy-related activities and resources. This sharing between households has an impact on the actual constitution of the household: because of sharing of resources, especially fuels, the boundaries of households become fluid. The cases presented in this report show that sharing of energy related activities in some household leads to the disappearance of boundaries.

However, inter-household sharing should not only be understood in terms of the notion of *ubuntu* (humanity), but should also be seen as a resulting from poverty. Thus the context within which sharing occurs is equally important to consider. Most of the sampled households have erratic incomes, which cannot sustain or meet all their energy needs. In

this context, sharing of resources provide households with adaptive strategies, resourcefulness and resilience under the conditions of perpetual poverty and instability they face in their everyday lives.

## ☐ Policy recommendation

(5) While it would not be advisable to shorten the paraffin distribution chain, however, the chain needs to be monitored as to protect the final consumer (the household) from extraordinary, inconsistent and unfair mark-ups.

Related to the importance of paraffin in people's relationships, there are also credit relationships, which are often found between spaza shops and households. These relationships are based on a socially defined credit system. Although the relationship could be viewed as exploitative because spaza prices are generally higher, this relationship is in many instances symbiotic. Credit is seldom if ever extended to households not known to the spaza owner, and very often based on kinship relations. The spazas provide credit to households at critical times, which is particularly important given the nature of cash flows of many households. Therefore, even though spazas may be expensive, people continue to rely on them especially for energy-related needs because of the credit they give. Thus, for a holistic understanding of the prevalence of spazas it is important to go beyond classical economic explanations. It is important to understand this socially defined credit system and the type of resources that are frequently exchanged. As a result of precarious economic conditions of most of the sampled households, relationships that they have with spazas are crucial for their survival, and it is important that policies should take cognisance of the relationship between spaza shops or paraffin sellers and households. For instance, while the shortening of paraffin distribution chain could reduce the price of paraffin, it could also undermine the important role that spaza shops and paraffin sellers play in the sustenance of many households. This intervention action could not only be counter-productive but would have negative impacts on the existence of most households.

## 11.1.2 Appliance purchase patterns

The ownership of appliances is often explained in terms of income. However, there are other reasons too. Firstly, appliance purchase is also linked to the availability of fuel. In areas where fuel accessibility is limited, like in Joe Slovo, the appliance owned are also limited. In the Khayelitsha sample, the number of appliances owned reflects the different types of energy source that are available to householders.

The ability of an appliance to perform more than one task simultaneously influences its purchase. A paraffin heater, for example, is not only purchased because it provides heat, but because of its ability to provide a surface for baking, warming water or leftover food, and a surface for simmering pots.

The gender and age of the purchaser influences the kind of appliance bought. As far as gender is concerned, one should be careful of not drawing assumptions that relate certain appliances to men and others to men. Our study has, for instance, demonstrated that it is misleading to explain the apparent prioritisation of entertainment appliances with reference to gender of the purchaser alone.

Fourthly, the social pressures of township life place emphasis on material possessions. Ownership of 'modern' appliances therefore measures the status of a household.

#### ☐ Policy recommendations

(6) Householders should be encouraged to use energy and appliances in a most efficient manner.

(7) Incentives should provided for householders to use of energy mix – that is, to buy and use appliances according to their performance other than its symbolic importance.

Different meanings are placed in different household appliances. In this way, appliances are not important only for the services they provide, but with symbolical meaning of a certain appliances. This explains why householders would replace their portable black and white televisions with bigger, colour televisions. Although the latter provides an improved picture quality, they are also seen as 'ornaments'. As shown above, some householders go to the extent of storing dysfunctional appliances because they hide poverty.

## □ Policy recommendation

(8) Special subsidies should be provided for essential appliances that will contribute to the reduction of energy expenditure and free people's time, like gas appliances, solar water heaters (in urban areas) and quality paraffin appliances.

Electrical appliances, in particularly, are expensive so people can seldom afford to buy more than the most basic appliances. Although there is an option to buy them on HP, the criteria for determining creditworthiness excludes most people, quite apart from the fact that the interest charges make it expensive.

## ☐ Policy recommendations

(9) There is a need to be a concerted and exhaustive effort to popularise the use of gas.

Gas appliances, although safe and efficient to use are not accessible to many households. In addition, there is a stigma attached to the use of gas.

## 11.1.3 Household management and decision-making processes

Households' budgets are determined in part by the amount of pooled income of household members. In low-income households, spending of household resources, notably income, is highly prioritised. Fuel expenditure is balanced against other basic household needs such as food, rents, transport, etc. As a result, very little of income goes into buying fuels. Although decisions about income are based on income, gender, age also play an important part. In households where women do not have independent means of income, women play a limited role in budgeting and spending.

The (economic) power relations in many households influence who makes the decisions or manage the households. Although in some instances, men (because of their 'traditional' role as 'providers' of their households) 'control' the decision-making processes, working women and children – by virtue of their economic power – are able to exert more power. Small children, as well, influence decisions about the management of the household and, indeed, in the purchase of household appliances.

## □ Policy recommendation

(10) Intervention strategies need to take the position of women seriously, and actively involve the 'average woman' in policy formulation of domestic energy use.

The principal end-users and managers of household energy and indeed household budgets are generally women. Yet we know very little about how they make decisions on expenditure, particularly when survival is an issue. Furthermore, little is known about women's perceptions of energy and the use of energy appliances. In short, household management and survival strategies in poor households are complex, and deserve serious consideration when formulating household energy policy.

## ☐ Policy recommendation

(11) Children should also be included in policies on domestic energy use through curriculum development where energy, as a study, can be introduced in school's curricula

Most of the energy policy issues relating to children have focused on health and safety aspects particularly concerning paraffin, but have not addressed the issues of children using energy in the household. In the study it has been found that children play an important role in both energy use and in performing energy-related activities. Thus it is important that policy-makers consider them particularly if educational campaigns are run around energy use. Particularly in female-headed households it has been found that children play an active role in domestic activities like cooking and fuel purchase, sometimes with no adult supervision.

## 11.1.4 Domestic activities and the use of energy

The daily use of energy familiarises the users with the best fuel-appliance combination. As we have shown, for instance, electricity is mostly used for functions that do not require huge amount of energy. Paraffin and wood are used for energy-intensive activities such as cooking, space-heating and informal business. The choice of the best fuel-appliance combination also depends on the type of meal prepared by householders.

At different times of the year, month week and day, the fuel-use patterns are different. Most cooking and other domestic chores that require energy are done at month- and weekends. This, as we have argued, is caused by the income flows of households and the time most householders are likely to be at home.

## ☐ Policy recommendations

- (12) The householders should be informed on the costs and benefits of using different fuels (see also 11.1.9 below).
- (13) The policies should be sensitive and responsive to these contextual frameworks. There is a tacit realisation by householders that electricity alone cannot meet all their energy need different energy sources should be available to all.

Gender prescribes that certain domestic tasks are reserved for women and others for men. Cooking in men-only households for instance follows a particular pattern. The same is true for women-only or women-dominated households. In the latter households, food is mostly cooked in a different way.

Food prepared in households has a symbolical as well as nutritional value. For instance, meat (mutton or chicken) is a sign of affluence, while frequent eating of staples (maize) and 'lower order' meat (offal) is indicative of poverty.

The generational and ideological differences impact on some domestic activities such as cooking. Older generation and households which cling to their rural background, some cultural importance is attached to certain foodstuffs and they way they are prepared. The so-called 'country food' tends be juxtaposed with 'town food'.

Like fuels, appliances are reserved for certain types of food or activities. Paraffin stoves are generally reserved for cooking samp or tripe or space heating. There is a further subdivision of paraffin appliances according to the characteristics of a certain appliance. Wick stoves are normally reserved for such activities that take longer time, for instance, baking bread, or cooking samp, while pump stoves are reserved for boiling water for beverages or space-heating. Gas and electrical appliances (for those who have them) are

only to be used by householders only on certain occasions, like preparing weekend meals or 'fast foods'.

We have emphasised that the choices that people make should be seen in the context of households' daily coping strategies. They are conscious choices, which are influenced by the broader social, economical and even political frameworks.

## 11.1.5 Energy efficiency

Energy efficiency in poor households is determined by a host of factors. The latter influences whether householders use their energy efficiently or are engaged in wasteful practices. The overriding factor that determines energy use is poverty. Energy efficient appliances come at high costs. The inability to purchase energy appliances forces householders to use cheap fuels and appliances which in many instance, are not energy efficient. Besides poverty, there are other reasons that can be addressed by policies in the short to medium term.

The use of energy in low-income areas is influenced, to a large extent, by urban legends. We have outlined in Chapter 7 some of the strategies that people employ in order to maximise their energy use. These strategies are spread from one householder to another by word of mouth. They are mostly not based on scientific fact and, as it happens more often, contribute to energy inefficiency.

Another important factor, which contributes to energy inefficiency, is the lack of incentive to use energy sparingly. Elsewhere in the report, we have shown that backyarders pay a flat rate of electricity to their landlords. The backyarders feel that they are overcharged for the use of electricity. This creates a situation where they use electricity inefficiently so that they can get their 'money's worth'.

## □ Policy recommendations

- (14) Raise the level of awareness of energy saving practises at the household level by appliance labelling, training programmes and the extensive marketing of energy efficient fuels and appliances (cf. Clark 1997).
- (15) Improve co-operation and interaction between service providers and householders so as to enhance the information flow between supply and demand.

Some practices that can be observed at household level are energy efficient, but people may not consciously be aware of them. One example is the housing materials that people use – these materials are selected for their ability to protect inhabitants from external elements such as wind, rain and cold. However, people are not aware of the potential energy savings that can be gained by using thermally efficient materials. People's awareness regarding this issue needs to be raised.

## 11.1.6 Health, safety and energy

Some strategies that people employ to reduce the costs of fuels or to maximise their benefit constitute health and safety hazards. These include the mixing of methylated spirits and paraffin to 'stop' paraffin stoves from smoking. Other strategies include the storing of paraffin in plastic containers to prevent children from mistaking paraffin for drink. The latter has been successful (at least in our sample) as we did not record paraffin ingestion in the three years of study.

Health and safety issues occur mostly in informal unplanned households where the prevention of disastrous fires is a top priority. These fires are caused mostly by handling of paraffin and paraffin stoves and, in some instances, householders as causing fires cite the use of candles. The flame stove is cited as the single most dangerous appliances. Some of the dangers of the flame stove including its very short life span, is its cause of

indoor pollution, which causes health hazards. However, a flame stove is prone to burst and thus causing fires. It needs careful and close supervision when in use. Considering that children perform the bulk of household duties, fires caused by flame stoves are unavoidable.

The fires have both material (as further strain is put on already impoverished communities) and social costs. The latter is a subtle and often unrecognised cost, as it is difficult to be quantified. Including material loss, fires bring social dislocation, feuds and condemnation in the community.

## □ Policy recommendations

- (16) Health and safety aspects of energy use must be monitored.
- (16a) The quality of paraffin and paraffin appliances should be monitored to ensure that people receive quality fuels and appliances.
- (16b) The government should commission research on safe and cleaner paraffin stoves and provide incentives for production of safe and efficient appliances.

Concerning informal unplanned settlements, the poverty of people generally found in these settlements forces them to use fuels that are unsafe particularly given the settlements' overcrowded nature. The fires which can result from the use of these fuels have both social and economic costs, since people lose their belongings and as the fire may spread from one shack to another this has the potential to damage people's social relationships. Some people have been forced to leave shack settlements as a result of the damage caused to other people's property through fires.

## 11.1.7 Small business development and energy

We contend that the understanding of domestic energy should be broadened in order to include a range of income-generating activities, as the latter is central to households' livelihood strategies. Wood is the most common energy source used for income-generating activities. This is facilitated mainly by the close proximity of woodlands. Wood collection, however, has social costs. Firstly, it is time-consuming to collect wood, as women and men have to travel between five and ten kilometres. Secondly, women and men crossing the highways are vulnerable to motor accidents. Lastly, since women carry heavy loads of wood-bundles on their heads, they are prone to suffer from backaches and other similar injuries.

The activities, which use wood, are also time-consuming. There is very little use of electricity for these activities partly because of cost factor.

Other income-generating activities include the popular selling of paraffin both by householders and spaza shops. In most cases the selling of paraffin shows little profit motive, especially by private households. The income generated from the sale of paraffin is usually used to finance other household needs, like buying bread, paying for transport and medicine. The sale of paraffin is mostly sustained by operating flexible hours and giving credit to customers.

#### ☐ Policy recommendations

(17) Wood must be recognised as a popular fuel for income-generating activities in urban areas. Therefore, portions of land should be set aside so that wood can be easily available for households in a sustainable manner.

Most people in the Western Cape are engage in income-generating activities as part of a strategy to maintain a livelihood. As main fuel used for these activities is wood, it is fast becoming a scarce commodity in the urban areas. More importantly, we have shown that the viability of some of these income-generating activities is dependent on the availability

and affordability of energy sources. In addition access to transport seemed to be the most important aspect of these activities.

## 11.1.8 Thermal performance of dwellings

Indoor environment and the provision of a minimum level of comfort are every important for people. However, there are constraints that inhibit people from attaining these characteristics. The insecurity is probably the key constraints for squatters and backyard dwellers. Because of the temporal and insecure tenure, there are no incentives for them to buy or use more costly and thermally efficient building materials. Secondly, the availability of materials within short distance influences the type of materials people use to build their houses. The close proximity of timber industries in Langa, for instance, contributed in many dwellings using timber. Thirdly, concerns of safety, durability and reusability of materials are also important in determining the dwelling materials of informal dwellings. Concerns about fires, for instance, prevent many householders from using papers and cardboards to plaster the dwellings' walls. The use of corrugated iron is preferred because it can be reused after fire. Lastly, insulating formal dwellings is very costly.

As the results, householders spend a significant proportion of their energy budget on space heating. We contend that the poorly insulated dwellings, which become cold in winter and hot in summer, exacerbate the need for space heating.

## □ Policy recommendations

- (18) There is a need of an integrated planning, which recognises that energy-use patterns are clearly linked with housing.
- (19) Stringent policy guidelines should be set where building of new houses should follow clear standards which recognise the use of thermally efficient materials.

One of the most important factors determining energy use in poor households is the thermal efficiency of their houses. The research has confirmed what has previously been observed of the link between thermally inefficient dwellings and energy consumption. The consensus is that poor people continue to spend proportionately more on energy for heating their dwellings. This is particularly relevant in the Cape Peninsula, which is very cold in winter and windy most of the year. This is one of the areas that integrated energy planning should address. There is a need for a policy that will not only address the energy poverty of low-income households but also the acute housing shortage in these communities, with thermally efficient dwellings.

## 11.1.9 Capacity building and information dissemination

A cornerstone of this project has been that of 'dialogic representation'. This means that the research findings have to be reported to the community at large, not only to the sampled households. This allows for constructive criticisms of the findings because at times what researchers tend to prioritise may not be the priority of the community under study. This provides a test for the findings from a larger audience. The ancillary aim of information dissemination is also to bring together larger groups of people to talk about energy problems and find some solutions. In so doing, the awareness about energy efficiency and conservation, and empower users with knowledge so that they can make informed decisions about the best fuel to use. The third objective of information dissemination is initiate future interactions between the communities and service providers.

## □ Policy recommendations

(20) It should be a standard policy that research projects should be made to report back the findings to the community.

(21) Energy intervention strategies and campaigns should be visible at grassroots level and essentially be determined by demand (community or the need for services) other than by the supply (utilities and service providers or the need to maximise profits)

It is important that policies and intervention strategies not only be relevant at grassroots level, but also be visible and felt by householders. Intervention strategies such as 'paraffin safety cap campaign' and Eskom's Electro-wise, which are aimed at addressing the problem of paraffin ingestion and giving people useful ideas about efficient and safe use of electricity, respectively are unheard of by other householders. We underscore that lack of knowledge about these useful interventions is not the question of people's selective amnesia, but a genuine lack knowledge that is partly caused by the way these interventions are introduced to communities. The aim of intervention strategies is to bring about change to the better (that is, development). A key component of development should, therefore, be consultation. Any initiative irrespective of its good intention could backfire if the people it is targeting are not properly consulted.

(22) Energy policies should take into consideration the subjective (users) knowledge of energy issues and needs after a careful consultation with the principal users of energy.

Closely related to the question of need-based intervention strategies is the consultation and end-user prioritisation of issues. Policymaking requires prioritisation of problems or needs to be addressed. In some instances, researchers or policy makers' prioritisation of issues is not in line with the people's. It is important to consult and involve people in the identification of the problem and also in the prioritisation of what needs to be done. It is also important that research should be transparent and accountable. Community research need to be evaluated, not only by research peers, but also by the community being research to ensure that what is in the report is the actual reflection of community issues.

## 11.3 Conclusion

The points that we have raised in this research and the recommendations that we have offered highlight the most important point that is central to our investigation. We have argued all along that the 'kitchen' – as the terrain of domestic energy use – is a complex unit that needs complex investigative techniques and method. When we say the field of domestic energy use is complex we do not, however, mean that it is so complicated that we cannot understand it and draw generalisations. If we view energy use in low-income as complicated, it is tantamount as saying that the policy intervention should be complicated as well. Complicated policies tend to lead to a general confusion and oversimplification of issues. The latter contributes to the drawing of a wish list of recommendations that cannot be implemented.

We argue that we should recognise the complexity of domestic energy use so that intervention strategies and policy direction should be both inclusive and holistic. Policy and strategies should be sensitive to societal issues, such as gender, generational and cultural issues, as energy use is embedded in people's social lives. We have argued in various parts of this report that policies that take into consideration contextual issues could go a long way in proving strategic interventions that are empirical, dynamic, as well as being relevant to the target group.

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