

Women's fuel choices and fuel stacking practices in urban households: A narrative study

by

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Abstract

Due to a number of complex interactions between economic, social and cultural factors some households consume a portfolio of energy sources such as coal, biomass fuel, paraffin, liquid petroleum gas (LPG) and solar power at different points. This phenomenon has been shown to characterise these households irrespective of their electrification status. Women are regarded as household energy managers because they perform most of the household duties which require the use of energy, yet research on women's fuel choices has not received much attention in the literature. The aim of this paper is to present the participants' stories on how they utilise multiple fuels within the household and on the stories they tell about allocating these fuels to various household activities. Nine women were purposefully selected from the Soshanguve area in the City of Tshwane. Data was collected through individual in-depth interviews and narrative analysis was used to generate findings in the form of themes which emerged from the stories. Five themes about women's decision making with regard to using multiple fuels in their households were identified: the availability of a choice of fuels in the vicinity, various challenges with using electricity (including free basic electricity), strategies for managing the use of household fuel, the safety of using various fuels, and having access of the free basic electricity. The participants' stories portray how household fuel choices can contribute towards changing residential behaviour related to energy production and consumption. In addition, they show how local knowledge can be employed in the design of new energy solutions.

Keywords

Household energy managers, household fuel choices, multiple fuels, narrative analysis, new energy solutions

Table of Contents

Acknowledgements	i
Abstract.....	ii
Keywords	ii
Chapter 1: Introduction of the study.....	1
1.1 Introduction	1
1.2 Background and context of the study.....	1
1.3 Problem statement	3
1.4 Rationale and significance.....	4
1.5 Aim of the study and research questions	5
1.6 Overview of methodology	5
1.7 Organisation of the dissertation	7
1.8 Conclusion	8
Chapter 2: Review of literature.....	9
2.1 Introduction	9
2.2 Context of South Africa's energy use.....	10
2.2.1 Historical background.....	10
2.2.2 Energy demands	13
2.2.3 Current energy supply and its future prospects.....	16
2.2.4 Household fuel use context	18
2.3 Models for household fuel choice and fuel stacking	20
2.3.1 Energy ladder model	20

2.3.2	Energy transition model.....	25
2.4	Role of women in household energy use.....	32
2.4.1	History of women’s role.....	32
2.4.2	Studies indicating women as energy managers in their households	33
2.5	Bridging the gap in scientific literature	36
2.6	Conclusion	38
Chapter 3: Theoretical framework.....		40
3.1	Introduction	40
3.2	Conceptualising Narrative Inquiry.....	40
3.3	History of Narrative Inquiry	42
3.3.1	Narrative Turn 1: Relationship of the researcher and researched	42
3.3.2	Narrative Turn 2: From numbers to words as data.....	44
3.3.3	Narrative Turn 3: From the general to the particular	45
3.3.4	Narrative Turn 4: Blurring knowing	46
3.4	Application of Connelly and Clandinin’s commonplaces of narrative inquiry	49
3.4.1	Temporality	50
3.4.2	Sociality.....	52
3.4.3	Place.....	53
3.5	Potentials and limitations of narrative inquiry.....	55
3.5.1	Potentials of narrative inquiry	55
3.5.2	Limitations of narrative inquiry	56
3.6	Conclusion	59
Chapter 4: Methodology.....		61

4.1	Introduction	61
4.2	Research design	62
4.3	Description of research site	65
4.4	Research sample	67
4.5	Data collection.....	70
4.6	Data analysis.....	74
4.7	Ethical considerations.....	78
4.7.1	Physical harm and the researcher's attitude	78
4.7.2	The researcher's dual role.....	78
4.7.3	Consent.....	79
4.7.4	Privacy	80
4.7.5	Ethics on report writing.....	81
4.7.6	Data storage.....	82
4.8	Research quality.....	82
4.8.1	Dependability	83
4.8.2	Confirmability	84
4.8.3	Credibility	84
4.8.4	Transferability.....	85
4.9	Conclusion	86
	Chapter 5: Research findings.....	88
5.1	Introduction	88
5.2	Description of participants	88
5.3	Narrative stories	90

5.3.1	Ms “M’s” story.....	90
5.3.1.1	<i>Background</i>	90
5.3.1.2	<i>Past</i>	90
5.3.1.3	<i>Present</i>	90
5.3.1.4	<i>Future</i>	92
5.3.1.5	<i>Ms M’s narrative structure and themes</i>	92
5.3.2	Ms “L’s” story.....	93
5.3.2.1	<i>Background</i>	93
5.3.2.2	<i>Past</i>	93
5.3.2.3	<i>Present</i>	93
5.3.2.4	<i>Future</i>	95
5.3.2.5	<i>Ms “L’s” narrative structure and themes</i>	96
5.3.3	Ms “P’s” story	97
5.3.3.1	<i>Background</i>	97
5.3.3.2	<i>Past</i>	97
5.3.3.3	<i>Present</i>	97
5.3.3.4	<i>Future</i>	100
5.3.3.5	<i>Ms “P’s” narrative structure and themes</i>	100
5.3.4	Ms “B’s” story	101
5.3.4.1	<i>Background</i>	101
5.3.4.2	<i>Past</i>	101
5.3.4.3	<i>Present</i>	102
5.3.4.4	<i>Future</i>	103

5.3.4.5	<i>Ms “B’s” narrative structure and themes</i>	103
5.3.5	Ms “S’s” story	104
5.3.5.1	<i>Background</i>	104
5.3.5.2	<i>Past</i>	104
5.3.5.3	<i>Present</i>	105
5.3.5.4	<i>Future</i>	106
5.3.5.5	<i>Ms “S’s” narrative structure and themes</i>	106
5.3.6	Ms “D’s” story	107
5.3.6.1	<i>Background</i>	107
5.3.6.2	<i>Past</i>	107
5.3.6.3	<i>Present</i>	108
5.3.6.4	<i>Future</i>	110
5.3.6.5	<i>Ms “D’s” narrative structure and themes</i>	111
5.3.7	Ms “K’s” story	112
5.3.7.1	<i>Background</i>	112
5.3.7.2	<i>Past</i>	112
5.3.7.3	<i>Present</i>	113
5.3.7.4	<i>Future</i>	115
5.3.7.5	<i>Ms “K’s” narrative structure and themes</i>	115
5.3.8	Ms “T’s” story	116
5.3.8.1	<i>Background</i>	116
5.3.8.2	<i>Past</i>	116
5.3.8.3	<i>Present</i>	117

5.3.8.4	<i>Future</i>	119
5.3.8.5	<i>Ms “T’s” narrative structure and themes</i>	119
5.3.9	Ms “O’s” story.....	120
5.3.9.1	<i>Background</i>	120
5.3.9.2	<i>Past</i>	120
5.3.9.3	<i>Present</i>	120
5.3.9.4	<i>Future</i>	123
5.3.9.5	<i>Ms “O’s” narrative structure and themes</i>	123
5.4	Core Narratives.....	124
5.4.1	Availability of multiple fuels.....	125
5.4.2	Challenges of using electricity.....	127
5.4.3	Strategies for managing use of household fuel.....	128
5.4.4	Safety of using various fuels.....	129
5.4.5	Access to free basic electricity “POP”.....	130
5.5	The three levels of contextual story analysis.....	131
5.5.1	Personal level.....	131
5.5.2	Interpersonal/group level.....	132
5.5.3	Societal level.....	132
5.6	Conclusion.....	133
	Chapter 6: Discussion of findings	134
6.1	Introduction.....	134
6.2	Availability of multiple fuels.....	134
6.3	Challenges of using electricity.....	137

6.4	Strategies for managing the use of household fuel	139
6.5	Safety of using various fuels.....	141
6.6	Access to free basic electricity “POP”	142
6.7	Summary of interpretation	144
6.8	Limitations of the study.....	146
6.8.1	Limitations in sampling	146
6.8.2	Limitations in the data collection method	146
6.8.3	Limitations in the data analysis.....	147
6.9	Recommendations for future research.....	147
6.12	Conclusion	148
7.	References.....	150
8.	Appendix A: Participant information sheet.....	170
9.	Appendix B: Consent forms.....	171
10.	Appendix C: Interview discussion guide.....	172
11.	Appendix D: Info-graphic representation of the demographic data.....	177
12.	Appendix E: Global themes which emerged in the study.....	181

List of Tables

Table 1	The three common places in narrative inquiry
Table 2	Participant characteristics

List of Figures

Figure 1	Eskom's vision to achieve universal access by 2020
Figure 2	Average electricity price in South Africa 2002-2017 (c/kWh)
Figure 3	Energy ladder model
Figure 4	Energy transition model (multiple fuels)
Figure 5	Four themes indicating the movement toward narrative inquiry
Figure 6	Flowchart indicating the research design process
Figure 7	Principles of passive solar design
Figure 8	The three levels of contextual story analysis
Figure 9	Trustworthiness in qualitative research
Figure 10	Ms "M's" narrative themes
Figure 11	Ms "L's" narrative themes
Figure 12	Ms "P's" narrative themes
Figure 13	Ms "B's" narrative themes
Figure 14	Ms "S's" narrative themes
Figure 15	Ms "D's" narrative themes
Figure 16	Ms "K's" narrative themes
Figure 17	Ms "T's" narrative themes
Figure 18	Ms "O's" narrative themes
Figure 19	Overall study's core narratives

Chapter 1:

Introduction of the study

1.1 Introduction

This study seeks to understand household residential energy use by exploring women's fuel choices and fuel stacking practices in urban households, specifically through the stories they tell on how they make choices to utilise multiple fuels and how they allocate these fuels to various household activities. Multiple fuel use is argued to result from a number of complex interactions between economic, social and cultural explanations. Furthermore, women perform most household duties which require the use of energy and are thus seen as household energy managers. Therefore, the current study will be specifically focused on women because they are embedded within the context of understanding fuel choices and fuel stacking practices in urban households. The research study is qualitative in nature and it specifically used narrative inquiry. Data was collected through conducting in-depth interviews from nine participants living in Soshanguve.

This chapter will begin with an overview of the background and context to which the study is framed, followed by: the rationale and significance, problem statement, purpose, research questions and methodology. The chapter ends with a section on the organisation of the dissertation.

1.2 Background and context of the study

Residential energy use plays an important role in achieving greater sustainable development especially when focusing on the provision of adequate, reliable and affordable energy (Smith & Rees, 1998). This has created interest amongst researchers to explore various dimensions of household energy use in order to design strategies to provide secure access to modern energy services (Kowsari & Zarriffi, 2011). Multiple fuel usage has become a

norm in some households due to households consuming a portfolio of energy sources at different points (Heltberg, 2005).

Despite the significant investment in understanding multiple fuel transition patterns in households through the use of various economic models, there is still a neglected question pertaining to reasons why households might prefer to make choices to utilise multiple fuels. Hence the current study is based on the energy transition model which attends to various reasons shaping the environment in which households make their decisions on fuel, some of these reasons include household income, family size, cultural preferences, taste, dependability of supply (fuel availability), cooking and consumption habit (Mekonnen & Kohlin, 2009).

In developing nations of sub-Saharan Africa, the provision of modern energy services in households is critical towards sustainable economic and environmental development (Schlag & Zuzarte, 2008). Various countries are facilitating this shift from traditional fuels (i.e. wood) to the cleaner and more efficient fuels (i.e. electricity). Access to modern energy services and the use of clean fuels is associated with less adverse environmental, social and health impacts (Farsi, Filipini, & Pachauri, 2007). In spite of the efforts made towards accessing modern fuels, there is a continued reliance to use traditional fuels. This reliance is driven by various factors which include, among others, the cost of clean fuels, cooking preferences, and the cultural notations associated with traditional fuels. Traditional fuels however have long been associated with negative health, as well as social and economic impacts. For instance, indoor air pollution is associated with a number of respiratory diseases. Additionally, the environmental challenges may result in soil erosion, desertification, loss of bio-diversity, micro-climatic change and flooding (Remigios, 2014). It is therefore important for households using traditional fuels to be proactive and think of ways to use these energy sources (in a safe way) to safeguard the environment and their health (Remigios, 2014).

The study is conducted within a township area called Soshanguve (situated in The City of Tshwane about 25 km north of The City of Tshwane in Gauteng). The researcher lives in Soshanguve and has observed many households in the area (both formal and informal) making use of various energy sources (e.g. electricity, solar power, wood, paraffin and liquid petroleum gas) in order to meet their basic needs. Thus, this is an ideal site to study multiple fuel use patterns in urban households.

1.3 Problem statement

Several studies (e.g., Davis, 1998; Gupta & Kohlin, 2006; Hosier & Dowd, 1987; Kawsari & Zerriffi, 2011) on household energy use patterns in developing countries have quantified energy use patterns in households through the use of household data and identified causal factors, or factors affecting fuel choice decisions. These studies were found to be limited because they only considered the influence of income level on consumer decision making of fuel choices. A neglected question pertains to reasons why households might prefer to make choices other than those predicted by income alone (Farsi et al., 2007).

Although income is clearly relevant, it is far from the sole driver of fuel choice patterns. Studies have found that there are other factors, excluding household income, that contribute to understanding multiple energy fuel use in households (Department of Mineral Resources, 2012; Farsi et al., 2007; Heltberg, 2005; Van der Kroon, Brouwer, & Van Beukering, 2013). These studies have reported that households tend to choose a combination of high-cost and low-cost fuels, depending on their budgets, preferences, and needs. This led to the concept of fuel stacking (multiple fuel use), as opposed to fuel switching (single fuel use substitution).

Some of these factors include family size, high costs of electrical appliances, and maximising fuel security in events whereby the primary fuels are temporarily unavailable due to fuel supply problems (Hosier & Kipondya, 1993; Masera, Saatkamp, & Kammen, 2000; Soussan, O'Keefe, & Munslow, 1990). The above-mentioned studies on household energy

consumption patterns were on a broader level of understanding and thus neglected studying women in particular.

It is problematic that women energy consumers are not being studied in particular because they are the main users of household energy in developing and industrial countries. They not only influence or make many family purchases related to energy (Ceceiski, 2000, 2002; Farhar, 1998), but they make critical decisions about fuel substitution based on their fuel preferences and budget constraints. The acquisition of energy sources, management and its use is therefore a woman's responsibility by virtue of her traditional gender role (Balmer, 2007). The neglect of studying women's fuel choices and fuel stacking patterns has contributed little information about why the phenomenon occurs. Hence the focus of the current study is on women because the primary responsibility for managing the home and family activities continues to rest with them. Therefore, through their shared stories, participants revealed their everyday experiences and this enabled the research study to better understand household fuel choices and fuel stacking practices.

1.4 Rationale and significance

The rationale for this study emanates from the researcher's interest in multiple fuel use patterns in urban households which is inspired by the household decision-making environment which represents a complex and interactive web of explanations that influence behaviour (van der Kroon et al., 2013). There is a need to uncover other forms of explanations to better understand women's household fuel choices and fuel stacking practices; this can only be explored on a qualitative level. Using women's stories will enable the study to explicitly contextualise the particular lived experience the study seeks to understand. Although stories are obviously not providing a transparent account through which we learn truths, storytelling stays closer to actual life events than methods that elicit explanations (Smith, 2003). The proposed research study will be attempting to bridge the

gap in literature because the topic on women's fuel choices and fuel stacking patterns has not received much focus.

1.5 Aim of the study and research questions

The aim of this dissertation is to explore women's fuel choices and fuel stacking practices in urban households through their narratives. This research study aims to answer the following two questions, namely:

1. What stories do women tell about their fuel choices within the household?
2. What stories do women tell about allocating multiple fuels to various household activities?

1.6 Overview of methodology

The researcher studied nine women's fuel choices and fuel stacking practices in the Soshanguve area using a qualitative methodology. The particular qualitative method used was narrative inquiry. Narrative inquiry implies the study of stories. The stories themselves are used to capture phenomena overlooked or only partly apprehended by science. Narrative inquiry is also a way of understanding and inquiring into experience through collaboration between researcher and participants, over time and in social interaction with milieus (Clandinin & Connelly, 2000). The researcher used narrative inquiry because narratives tend to focus more on the participants, therefore; in the case of the research study, women's stories surrounding the decision making on the use of multiple fuel sources were captured (Kirkman, 2002). Furthermore, using narrative inquiry enabled the researcher to understand how multiple energy sources are employed in complex ways, each for specific purposes by women (Hiemstra-van der Horst & Hovorka, 2008). Narrative (in-depth) interviews were used as a method of data collection.

There are five types of approaches to qualitative research that the researcher could have possibly used. These include ethnography, field research, phenomenology, grounded theory and case study (Willig, 2008). Firstly, the ethnographic approach is characterised by participant observation. Here the researcher is actively immersed in the culture of a group or organisation under study and takes extensive notes about observations and impressions. Secondly, field research, where the researcher observes a phenomenon in its natural setting and takes field notes which will be coded and analysed in a variety of ways (Willig, 2008). Thirdly, phenomenology, which focuses on people's subjective experiences and interpretations of the world – and understanding how the world appears to others (Willig, 2008). Grounded theory may have been the fourth possible approach. It is used to develop theory about a phenomena of interest. The theory itself is grounded or rooted in observation and does not rely on abstract theorising (Willig, 2008). Lastly, case study could have been used as it analyses in detail a specific case (i.e. person, group process or activity); hence a variety of different theories and concepts can emerge when it comes to interpretation (Willig, 2008).

The current study was not only interested in making observations and exploring subjective experiences of participants on the phenomenon in question, but it needed a conceptual framework which would specify the dimensions of its inquiry. Therefore it is for this reason that a narrative approach was suitable for this study over other possible qualitative approaches because it consists of three commonplaces that the researcher was interested in, namely temporality, sociality, and place. These commonplaces are what distinguish narrative inquiry from other methodologies (Connelly & Clandinin, 2006) and rendered this approach most appropriate for this study.

The sample was purposively selected. The information obtained from these interviews subsequently formed the basis for the findings of this study. All interviews were tape recorded and transcribed verbatim; participants were given pseudonyms to protect their identities. Narrative analysis was used to highlight the main issues in the form of themes. In

generating the main issues, the researcher used a coding frame similar to that of thematic analysis.

1.7 Organisation of the dissertation

In this chapter the researcher introduced the background and context, problem statement, rationale and significance, the purpose, research questions and the overview of methodology for the study. In Chapter Two, the researcher reviews literature on the context of South Africa's energy use, the studies conducted on fuel choice and fuel stacking, studies about the role of women in household energy use. Lastly in light of the latter review, the section concludes with the section about bridging the gap in scientific literature.

Chapter Three provides the theoretical background for the study and it covers the history of narrative inquiry, the application of Connelly and Clandinin's (2006) commonplaces of narrative inquiry, the significance of using narratives for the study and lastly the potentials and limitations of narrative inquiry.

In Chapter Four, the researcher provides the methodology of the study; where features such as the design, the description of the research site, the sample, data collection method and data analysis method are described in detail.

Chapter Five presents the study's findings as characterised by the participants' stories and emergent themes which are grouped into the five core narratives. Finally, in Chapter Six, the researcher discusses the findings, provides the limitations of the study and makes recommendations for future research that could be fruitful in helping other researchers in the field to better understand women's multiple fuel use and fuel stacking practices in the urban area.

1.8 Conclusion

In this chapter, the researcher introduced the background and context, the aim of the study and the research question. Furthermore, the researcher also provided the rationale for the study, problem statement, and the methodology. The remainder of this study is organised into five additional chapters (as discussed previously under the organisation of the dissertation section).

The next chapter reviews the literature on the following: the context of South Africa's energy use, studies related to fuel choice and fuel stacking, studies on the role of women in household energy use, and lastly a brief description of how the study will contribute towards bridging the gap in scientific literature.

Chapter 2:

Review of literature

2.1 Introduction

It is common for various households to consume a portfolio of energy sources at different points. This is called multiple fuel use which is the choice to use a combination of traditional solid fuels and modern non-solid fuels; this has also been termed fuel stacking (Heltberg, 2005). Understanding household decision-making environment on energy choice represents a complex and interactive web of explanations. The aim of this chapter is to review literature on fuel choices and fuel stacking practices in urban households. The first section of this chapter introduces a brief historical overview of South Africa's energy use. The section outlines energy demands, current energy supply and its future prospects, and household fuel use context. The second section reviews studies conducted about household fuel choice and fuel stacking. These studies use two types of energy models as part of their theoretical/conceptual framework to explain fuel choices. The potentials and limitations of each energy model will be discussed in line with their underlying empirical studies. The third section centres on the role of women in household energy use. Understanding this role requires an understanding of the history of women's role in society. Studies indicating women as energy managers will be discussed together with their potentials and limitations. The last section of this chapter will indicate how the current research study will bridge the gap seen in literature and further contribute to the scientific knowledge on household fuel choices and fuel stacking practices in urban areas. To end off the discussion, an overall summary in the conclusion section will be provided.

2.2 Context of South Africa's energy use

2.2.1 Historical background

The electricity supply sector plays an essential role in the South African economy. Its post-apartheid significance lies in its role not only as a key input to industrial development, but also in improving the quality of life for the previously disadvantaged majority (Spalding-Fecher & Matibe, 2003). It is important to take note that since the democratic government of South Africa assumed office in 1994, it was faced with a myriad of infrastructural and service-delivery backlogs. The apartheid government deliberately neglected provision of basic services to black people, including electricity (Madubansi & Shackleton, 2007). This resulted in paraffin, gas and wood serving as the main source of domestic energy in the country well into the 20th century. Whilst the rest of the developing world continues to be primarily dependent on fuel wood (Madubansi & Shackleton, 2007), South Africa's situation cannot be viewed in the same way, given the efforts and funds that have been injected into infrastructure development since 1994. The National Electrification Programme (NEP) was part of government's energy policies to widen access to adequate and affordable energy services for urban and rural households (Davis, 1998). The policies were also aimed at providing cleaner and safer forms of energy for low-income households (Spalding-Fecher & Matibe, 2003). Much of the population of South Africa before 1994 came from the rural areas and the locations were far from the current and much anticipated electricity grid connections. In the period 1994–1999, about 2.5 million households were newly connected to the national electricity grid (Madubansi & Shackleton, 2007). The Integrated NEP indicated that 87% of households in South Africa were electrified in 2012 (Department of Minerals Resources, 2012). Eskom has long been involved with the programme, supporting the government's objective of advancing electrification. Hence it aims to connect the remaining households, approximately 2.5 million, to the electricity grid. Eskom's vision is channelled towards achieving universal access in South Africa by 2020 (see Figure 1).

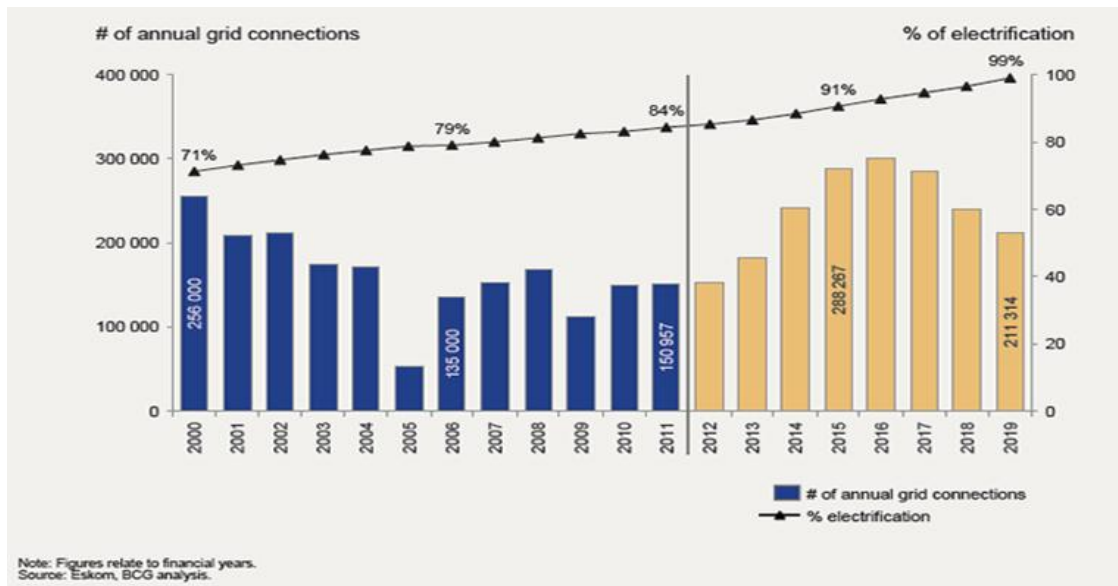


Figure 1 Eskom’s vision to achieve universal access by 2020 (Adapted from “Eskom: the Eskom factor” 2011, p.53. Copyright by Eskom Holdings Limited).

Eskom funded the NEP out of its own resources and subsidies for electricity provided by municipalities were derived from the utility’s generated revenues. This meant that connection fees for poor customers were kept low. The NEP was divided into two phases. Phase one was launched during 1994-1999. Within a period of 10 years (1995-2005), the programme achieved an outstanding success (Winkler, 2006). This is due to Eskom installing 1.75 million connections and municipalities installing a further 0.75 million connections. This rate of electrification was amongst the highest ever achieved in the world and was done without external funding (Department of Minerals and Energy, 2001). Phase two of the programme started in 2000 with a target to provide 300 000 additional households with electricity every year, a target which has been met for the past five years (Winkler, 2006).

It was understood that the primary motivation for the massive electrification of disadvantaged communities was not only to achieve economic benefits, but for socio-political reasons. The aim was to improve the quality of life of millions of South Africans while at the same time creating opportunities for jobs and prosperity. In spite of this, the National Electrification Coordinating committee realised that some people in South Africa would probably not have

access to grid electricity in the foreseeable future. This is due to the high costs of grid supply to households in remote places together with the low income levels of most rural people. The above meant that any electrification programme would have to be non-grid (Winkler, 2006). Non-grid electrification means that households are not connected to the main or national electricity grid in areas where the population is scattered or distant. These households are provided with various kinds of electricity generation such as solar home systems by the service provider (on a small scale). The service provider expects that consumers pay a service fee because they do not own the solar systems (Energy Research Centre, 2004).

Eskom played a facilitating role in the non-grid electrification, in that it was asked to identify areas that were prime for non-grid electrification (solar panels). Eskom recognised non-grid electrification as part of the solution in achieving universal access to electricity in South Africa. Their intention was that this would be a stop gap while such areas waited to be electrified to the national grid (DMR, 2012). This meant that those households would have to continue using non-electric fuels for thermal energy, particularly for cooking, which is the largest energy need (Winkler, 2006).

Therefore many households were only able to cover the costs of electricity for lighting and media. Gaunt (2005) argued that very poor households cannot spend much on energy and the appliances that benefit from electricity. This may cause these households to use wood and other biomass methods, even when electricity is available. Therefore, electrification's benefits of improving health and reducing environmental degradation may not be achieved (Gaunt, 2005). Unfortunately, the NEP collapsed in 2004, as it proved to be non-viable. The Department of Energy took over the management of non-grid electrification from the National Electricity Regulator of South Africa and appointed new service providers to continue with the programme (DMR, 2012).

Despite the agreement for households to continue using non-electric fuels, the electrification programme contributed to the welfare of communities through social benefits, beyond

economic growth (Winkler, 2006). Electrification allowed for additional hours of light for educational purposes, it reduced the domestic burden for women, electric lighting enhanced people's perception of safety and it supported improved health outcomes such as enabling refrigeration for medicines and food and lastly reduced indoor pollution through displacing domestic wood and coal burning (Eskom Factor Report, 2011). Small enterprises benefited as well, for example retailers and workshops were able to remain open for longer hours in the evening. This has been helpful to communities, even though the provision of electricity alone is only one factor necessary for local economic development (Winkler, 2006).

Valuable lessons were learned and innovative approaches and technologies were pioneered by the NEP. One of the innovations was pre-payment meters – which entails a fee for service, meaning consumers pay a monthly service fee in exchange for access to power. When consumers cannot afford to purchase credits for power, they will simply go without electricity. The above households are not penalised by the municipality (provided that the rent was paid beforehand and it is inclusive of property rates, waste management, water and sanitation fees) (Energy Research Centre, 2004). This meant paying for electricity before consuming it and gives households better control over electricity expenditure and avoids the accumulation of household debt (Winkler, 2006). Households using prepaid electricity are provided with the opportunity to monitor their electricity usage on a daily basis. They also no longer have to wait for the municipality to inform them about their electricity usage at the end of the month. Individual households are thus in control and responsible for using electricity more efficiently (IOL Property News, 2012).

2.2.2 Energy demands

Historically, in South Africa energy demand has been dominated by heavy industry and mining sectors. These energy intensive industries have become an important cornerstone of the economy. They directly and indirectly provide employment and contribute approximately 23% of South Africa's Gross Domestic Price (GDP) (DMR, 2012). South Africa's low energy price is due to its coal-generated electricity which has been one of the country's key

competitive advantages, and continues to a large extent to drive new investment in the industry (Winkler, 2006). During the 17-year decline in real electricity prices, South African consumers came to benefit from some of the most inexpensive electricity in the world. This simply means electricity prices have been low and have not kept up with inflation (DMR, 2012). Winkler (2006) predicted that due to a lack of knowledge about the market structure and the absence of specific data, the country's low energy price conceals inefficient energy use and accelerates national reserve depletion. Low energy costs also have the effect of retarding the development of new energy sources, thus limiting the diversity of the fuel mix, its associated supply security, and possible efficiency improvements (Winkler, 2006).

The country's energy demand is relatively high and the primary energy supply is electricity; which is derived largely from coal. Although coal is not a clean form of energy; the country continues to invest in it. Evidence of this is the construction of the Kusile and Medupi coal-fired power stations. In producing electricity, the increased extraction and transformation processing, have led to significant increases in pollution which damages the environment through carbon emissions. This process contributes to global warming. Currently, demand for energy remains highest for the industrial sector (41%), followed by the transport sector (28%) and then the residential sector (20%) (Department of Minerals and Energy, 2009). The demand for electricity in South Africa continues to increase and Eskom's selling price has also risen dramatically in order to fund capital expansion to meet future demand (Ramayia, 2013).

Pricing of electricity has become a critical topic in the national dialogue (DMR, 2012). The National Electricity Regulator of South Africa (NERSA) announced that the price of electricity will increase by 8% each year for the next five years (from 2013-2018). The increase is half the increase of 16% originally requested by the national electricity utility (Ramayia, 2013). The approved tariff increase allows Eskom revenue of R906.6-billion between 2013 and 2018. This means that many residents and businesses will pay a higher rate for electricity as they purchase electricity from local municipalities who in turn purchase from Eskom. The

former Minister of Finance, Pravin Gordhan in his 2013 budget speech said, although electricity increases are lower than expected, the increases are still higher than consumer inflation which is forecast to be at 5.5% per year over the next few years (Ramayia, 2013). A study conducted by the DMR (2012), indicated that electricity price increases forced 41% of South Africans to reduce electricity use, while 26% opted to use other energy sources to cope with the situation. This is said to encourage energy switching and multiple energy use. Furthermore, the South African Social Attitudes Survey (SASAS) was used for measuring energy-related behaviour and perceptions in South Africa and the statistics indicated that 8% of electrified households continue to depend on wood fuel as a main cooking source, with marginal shares reporting gas, solar, electricity, paraffin and coal (DMR, 2012). According to Ramayia (2013), it is estimated that the prices for the next four years based on the 8% annual increase would be as follows, illustrated in Figure 2. The figure illustrates that the electricity price in South Africa (c/kWh) will have increased from 20 c to 89.13 c between 2002 and 2017 (Ramayia, 2013).



Figure 2 Average electricity price in South Africa 2002-2017 (c/kWh) (Adapted from “NERSA allows yearly 8% electricity price increase for 2013-2018” by J. Ramayia, 2013. Copyright by Urban Earth).

Within the residential sector, energy use is characterised by a multiplicity of fuel types. With its increasing rate of domestic electrification, electricity is the largest source of energy, although many other fuels are also used, such as kerosene, coal, fuel wood and liquid petroleum gas (LPG) (Winkler, 2006). These alternative energy sources are used for a variety of reasons in households. Some of the examples include lighting, cooking and heating (Winkler, 2006). Multiple energy use remains an enduring feature of the energy consumption patterns of both electrified and non-electrified households in South Africa. It is also said to be common in developed and developing countries worldwide, both within industrial and residential sectors, and among richer and poorer households (DMR, 2012).

According to the study conducted by Winkler (2006) on the energy policies for sustainable development in South Africa, he found that the residential sector consumes 16% of final energy, of which biomass contributes 14%, electricity 62%, coal 8%, paraffin 12%, and LPG and candles 2% each. Electricity contributes a larger share of household energy use in urban areas than it does in rural areas, while the reverse is true for fuel wood. Due to electrification connections taking place rapidly, recent estimates suggest that by 2025, 92% of households will be electrified, with 87% using electricity only, and 5% using electricity together with other fuels (Winkler, 2006).

2.2.3 Current energy supply and its future prospects

Winkler (2006) predicted that the rising demand for coal worldwide, especially the demand from China, were likely to increase coal prices markedly in the medium term. Therefore it will have significant effects for South Africa's energy economy, particularly in electricity generation (Winkler, 2006). From 2005 there was a discrepancy between supply and demand of energy; the country experienced a shortage of energy supply which eventually led to the occurrence of load shedding in 2007 and 2008 (Eskom Factor Report, 2011) and again in 2014/2015. During that period the DMR (2012) announced that the country was faced by serious electricity difficulties, which were related to capacity, supply, and maintaining an appropriate reserve margin. Eskom thus was in need of increased financial

resources to resolve these problems. Load shedding was a major disruption for the wider public and furthermore it harmed South Africa's competitiveness as an investment destination. According to the Eskom Factor Report (2011), reliable and sufficient supply of electricity is vital in attracting new fixed investments and to provide an environment in which the economic growth of our country can be promoted.

Since April 2008, the national utility has improved its demand and supply management, through customers' efforts and major industrial customers reducing their electricity intensity during peak demand periods. An example of energy conservation is illustrated by a study conducted in the Western Cape on modelling the impact of energy efficiency initiatives. The study designed various strategies to encourage consumers to improve energy efficiency and to reduce energy costs; one of the strategies included the use of alternative energy sources (Nyatsanza, Davis, Merven, & Cohen, 2010). Eskom has also embarked on building the two new coal-fired stations, a pumped-storage station, utilising stations that were suspended and upgrading a number of key transmission lines (Eskom Factor Report, 2011). The gap in energy supply is only projected to be closed by 2017. In addition, Eskom bears in mind that its existing fleet is aging, and some existing stations will need to be de-commissioned in the 2020s, requiring new capacity to replace them. The above initiative by Eskom indicates that the country is on a path of infrastructure expansion which will continue for many years to come. In addition, Eskom continues to support government in its endeavours to meet the economic development needs of the country (Eskom Factor Report, 2011).

Eskom recently announced that it plans on providing maintenance for existing power stations that will result in unplanned power outages. This means that the utility will struggle to keep South Africa powered up (Mantshantsha, 2014). Blaine and Seccombe (2014) reported on the recent power outages across large parts of South Africa, including the country's economic centre, Johannesburg, on the 06th March 2014. The state power utility cut power supply for the first time since April 2008 (Blaine & Seccombe, 2014; Eskom Factor Report,

2011). Eskom declared a power emergency. Municipalities were informed about reducing electricity and they would decide in which suburbs to cut power. Load shedding of this kind will affect all of South Africa, including large industries (Blaine & Seccombe, 2014). In addition, the utility will be shutting down more units of power stations, depleting spare generating capacity. The struggling power producer said it had removed 14% of its total generating capacity, the equivalent of 6,000MW, from the network to do preventative maintenance ahead of the 2014 winter season. The latter may force industries to suspend activity to help it cope with its mandate of supplying electricity to the nation (Mantshantsha, 2014). The above event is said to be temporary because the R105bn project is on track to generate power by the second half of the year (Mantshantsha, 2014).

Eskom nevertheless continues to tighten its energy efficiency implementation by reducing the rate at which demand for electricity increases and reducing its negative environmental footprint. In terms of creating awareness around energy saving measures, ESKOM's 49M campaign is a step in the right direction. The campaign attempts to create an energy literate society that will make well-reasoned decisions about energy options and use the national resources more optimally (Eskom Factor Report, 2011). More campaigns to assist with energy awareness and energy-saving strategies at a micro household level needs to be done (Department of Minerals Resources, 2012). The 49m campaign is characterised by partnership; it receives support from the government, leading corporations, NGOs and the media (Eskom Factor Report, 2011).

2.2.4 Household fuel use context

It is common for various households to consume different fuels at different points; such as coal, biomass fuel, paraffin, liquid petroleum gas (LPG), electricity and solar power in order to meet their daily energy needs (Heltberg, 2005). The latter is called fuel stacking which means the choice to use a combination of traditional solid fuels and modern non-solid fuels (Heltberg, 2005). It has been argued that some households in developing countries do not switch to modern energy sources but instead tend to consume a combination of fuels

(Heltberg, 2005). Multiple fuel use patterns in several urban households result from a number of complex interactions between economic, social and cultural explanations (Van der Kroon et al., 2013; Masera et al., 2000). Therefore multiple fuel use in some households has become a norm and the promotion of modern fuels may not necessarily displace traditional fuels (Heltberg, 2005).

In discussing multiple energy use, it is important to consider different purposes for which households employ energy sources, this include amongst others lighting, cooking, heating, and entertainment (such as watching television and listening to the radio). Warde (2005) also indicated that energy in the household is not used for its own sake but as part of accomplishing social practices (i.e. cooking and watching television). There are various reasons shaping the environment in which households make their decisions, some of these reasons include household income, family size, high costs of electrical appliances, cultural preferences, taste, dependability of supply (fuel availability), cooking and consumption habits (Mekonnen & Kohlin, 2009). Osioloppt (2005/6) in addition argued that fuel choice is affected by economic (household income) and non-economic (gender, education, type of dwelling, household age, distance to fuel source, and access to electricity) factors. Therefore multiple fuel use influences fuel choices and fuel substitution decisions (Osioloppt, 2005/6). In addition, Shove and Walker's (2014) study about *What is energy for? Social practice and energy demand* was able to identify the link between energy and practice and suggested that "understanding the patterns in energy demand is in essence a matter of understanding how social practices develop, change and intersect" (p.47).

The rapid growth of urban areas in developing countries has been accompanied by a huge surge in the demand for household fuels and electricity. Fuel use vary between rural and urban areas. In rural areas, choices are constrained not only by low incomes, but also by the lack of access to more commercial fuels and markets for energy using equipment and appliances. Often, the choice of fuel is determined more by local availability and opportunity costs involved in gathering the fuel (mostly wood, dung, and other biomass) rather than by

household budget constraints, prices, and costs. In contrast to rural households, urban ones often have a wider choice and greater availability and accessibility to modern commercial fuels, electricity, and energy using equipment and appliances. This means that there is a greater potential for fuel switching in urban areas (Farsi et al., 2007).

Chambwera's study in 2004 titled *The economic analysis of urban fuelwood demand: the case of Harare in Zimbabwe* noted that whenever circumstances about a particular fuel change, the household changes its fuel mix. For example, when a household moves to a house without electricity, it changes its fuel mix; when kerosene becomes unavailable, it changes to another combination (Chambwera, 2004). This means that the use of multiple fuels is not static, but it constantly changes. The argument brought forth here is that different sources of energy are adopted or dropped, increased or reduced in any period when factors pertaining to the household or the fuels themselves change (Chambwera, 2004).

In the next section, the underlying objectives of both the energy ladder model and the energy transition model will be discussed. Each model is represented by various empirical studies which provide the necessary support or evidence towards the model's underlying assumptions.

2.3 Models for household fuel choice and fuel stacking

The energy ladder and transition models used to understand household fuel choice and fuel stacking will be defined and also discussed in line with the empirical studies which support their theory. Furthermore, the section will outline the two models' knowledge contribution in the field of energy and also identify some limitations.

2.3.1 Energy ladder model

The first theory, which is the energy ladder, focuses on the empirical findings on the correlation between household income and fuel switching. The energy ladder model predicts

that households switch from the use of traditional biomass fuels because of economic growth which is associated with urbanization and industrialization (Kowsari & Zarriffi, 2011). This means growing income in conjunction with relative fuel prices is seen as determining factors for the speed with which households fuel switch (by moving up the energy ladder) (see figure 3). Switching to fuels such as kerosene, coal, and charcoal are said to be in response to higher incomes, urbanization, and biomass scarcity. The theory implies that a major switch from the use of traditional biomass fuels is a basic feature of economic growth (Kowsari & Zerriffi, 2011).

The theory further argues that residential energy consumers are presumed to have an inherent ranked preference for different fuels based on physical characteristics including cleanliness, ease of use, cooking speed and efficiency. This means that bio-fuels are ranked to be at the bottom; while electricity is ranked at the top, see Figure 3 (Heltberg, 2004). Due to the pervasive influence of energy ladder efforts to account for these trends have largely focused on how consumer decision making can be restricted rather than examining why households might prefer to make choices other than those predicted by the model (Hiemstra-Van der Horst & Hovorka, 2008).

Household energy studies that portray the energy ladder model imply a strong correlation between income and fuel choice. Evidence supplied by cross-country comparison studies has revealed a positive correlation between economic growth and modern fuel uptake, suggesting that “as a country progresses through the industrialization process, its reliance on petroleum and electricity increases and the importance of biomass decreases” (Van der Kroon et al., 2013, p.505).

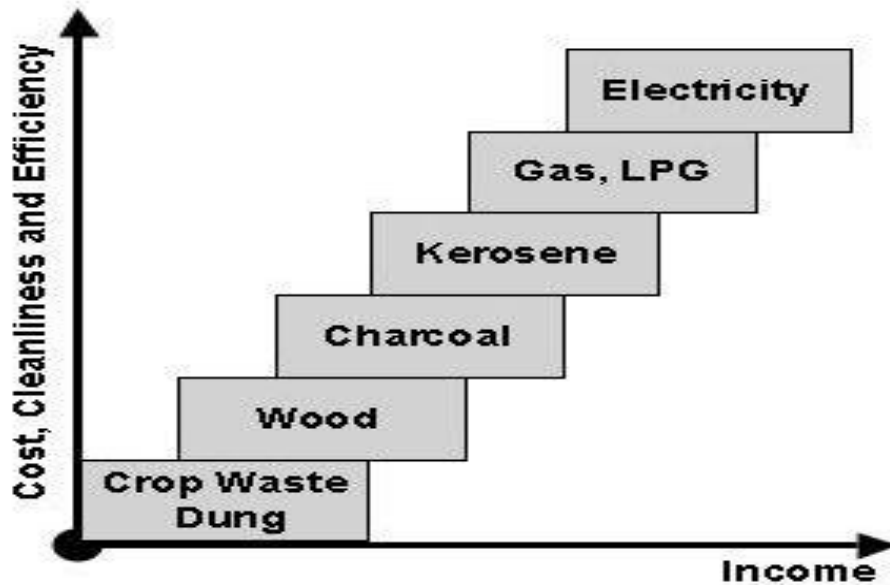


Figure 3 Energy ladder model (Adapted from “Market barriers to clean cooking fuels in sub-Saharan Africa: A review of literature” by N. Schlag & F. Zuzarte, 2008, p.2. Copyright 2008 by the Sage Publication Stockholm Environmental Institute).

The energy ladder model stipulates that households move from using primitive fuels (i.e. firewood and animal waste), to transition fuels (i.e. coal and kerosene) and end up using advanced fuels (i.e. electricity and LPG) because of the increase in their socio-economic status. In short, as household income rises, households climb the energy ladder towards using advanced fuels.

The industrial revolution brought a dramatic change in the energy systems, away from traditional fuels to commercially traded fossil fuels (Davis, 1998). With the experience of rapid urbanization in urban areas, efforts at encouraging households to make fuel substitutions that will result in more efficient energy use and less adverse environmental, social and health impacts are advocated in many countries (Farsi et al., 2007). The focus is on understanding household energy patterns because factors that determine energy transition do not readily appear to be well understood. Therefore lack of solid knowledge concerning energy use in developing countries translates into uncertainties when formulating energy

policy (Heltberg, 2004). The studies presented in this section explore the relationship between income and the energy transition. Income is seen as a major contributor that influences household fuel choices.

The similarities found within these studies (Davis, 1998; Elias & Victor, 2005; Farsi et al., 2007; Gupta & Kohlin, 2006; Heltberg, 2004; Heltberg, 2005; Kowsari & Zarriffi, 2011; Rao & Reddy, 2007) firstly are that all are quantitative in nature and use large-scale surveys (mostly national). They also measured the Household Living Standards using comparable household survey data. In most cases, the methods used for analysis were multinomial logit and multivariate regression analysis. Multinomial logit is a standard regression technique for assessing how different variables affect multiple fuel choices; it therefore enables systematic analysis of household switching behaviour between different types of fuels (van der Kroon et al., 2013). Hence there was a common belief that income of the household is the single largest determining factor of household fuel choice. The only differences were with the Elias and Victor (2005) and Gupta and Kohlin (2006) studies. The Elias and Victor study reviewed a large body of literature that relates to the causes and consequences of modern energy transition. Hence it focused on the macro and micro energy pattern, especially at household level. The Gupta and Kohlin study used a model for urban domestic fuel demand. The aim was to investigate the choice of fuel and the quantity used. The choice of framework model analysed cooking fuels such as firewood, kerosene and LPG. The common element in Elias and Victor's study together with that of Gupta and Kohlin is that they did not collect data from human participants.

Gupta and Kohlin (2006) stated that although there is a positive correlation between growth in per capita income and the household demand for commercial fuels, it should be noted that such linearity is questioned. This means there are other factors which are equally or more important than price in affecting fuel choice and quantity consumed. Household fuels need to be understood within a specific historic and cultural context. Multiple fuel perspective is able to explain a number of fuel-related characteristics except price, which seem to be important

for the choice of fuel that have previously been ignored or unexplained by the traditional energy ladder (Masera et al., 2000). Rather than a smooth process driven by increasing household incomes, the rate and pace of inter-fuel substitution is the result of the interplay between structural macro-economic conditions, like government investment in rural road and service infrastructure, and the local cultural and economic circumstances of households (Masera et al., 2000).

The results found in these studies are consistent with the energy ladder theory. On a micro-level, these empirical studies confirmed the relation between income and fuel choice (Davis, 1998; Gupta & Kohlin, 2006; Hosier & Dowd, 1987; Kawsari & Zerriffi, 2011). Correlations between energy transition and economic growth are high (Elias & Victor, 2005). Modern cooking fuel use was seen to be positively correlated with electrification of the household; this meant that usage of solid fuels declined in response to electrification (Heltberg, 2004). Farsi et al. (2007) have also confirmed that lack of sufficient income is one of the main factors that delays households from using cleaner fuels. A study conducted by Davis (1998) on rural household energy consumption in South Africa indicated that as income rises, there is a trend away from collected wood and towards other fuel sources. Access to electricity therefore influenced the nature of energy transition.

Urban households are more likely to use Liquid Petroleum Gas as its usage generally increases with expenditure (implicitly income) and rural households are more likely to use wood (Heltberg, 2005). As household income increases, the probability of choosing is more in favour of LPG. Therefore other fuels are said to become inferior goods (Rao & Reddy, 2007).

The theory provides valuable insight regarding household energy transition patterns and fuel choices. The biggest achievement is realising the correlation relationship between income and modern fuel uptake illustrated in the literature. The significance of income acts as a foundation or a starting point towards understanding the complexity of household fuel

choices. In short, such information enables future studies to continue exploring the field of household fuel patterns (Heltberg, 2004).

Although the correlation between energy transition and economic growth is high, the cause and effect relationship has proved difficult to establish (Elias & Victor, 2005). It is also suggested that the linkages between fuel choice and income level are rarely as strong as assumed by the energy ladder model. It is further argued that the model implicitly assumes that residential consumers use the most sophisticated fuels they can afford, that wood is thus the energy of the poor and that price differences have little effect on fuel selection. As such, it effectively dismisses the agency of residential consumers in fuel selection and employment; and the influence of broad-scale structural factors such as price on their choices (Hiemstra-Van der Horst & Hovorka, 2008).

The theory provides only a limited view of reality in actual households (Masera et al., 2000). Fuel choice is not determined purely by economic factors. Other factors such as education, gender, cultural preferences, food taste, accessibility and affordability should be taken into consideration. The above factors will enable the energy ladder model to avoid overemphasizing income as the major determinant of energy consumption (Kowsari & Zarriffi, 2011). There is a need to look beyond cost factors to understand household energy choice patterns. This is the case especially in households which continue to use wood and other biomass fuels (which are said to be inferior) simultaneously with modern fuel (Heltberg, 2005).

2.3.2 Energy transition model

The second theory, the transition model, argues that household income is not the determining factor in household decision making to fuel switch, but there are other factors as well that should be taken into consideration (see Figure 4). In contrast to the single-fuel substitution pattern anticipated by the original energy ladder model, it has become apparent that multiple fuel use is the norm in most households. Thus transition theory is not driven by

the emerging desire for modern fuels which are due to socio-economic changes. In addition, the transition theory argues that by using the energy ladder theory (model), knowledge on consumer decision making will be restricted (Heltberg, 2004).

The theory advocates examining why households might prefer to make choices other than those predicted by the energy ladder model. This is where factors such as (availability/accessibility, family size, high cost of electrical appliances, increased security supply, minimizing risk strategy and occupation of the head of the household) come into play. The latter factors may affect the willingness of households to switch from the traditional bio-fuels to commercial alternatives. Transition theory believes that multiple energy sources are employed in complex ways, each for specific purposes. Modern fuel uptake should be viewed as complementing the traditional fuel, rather than abandoning the traditional fuels altogether (Hiemstra-van der Horst & Hovorka, 2008).

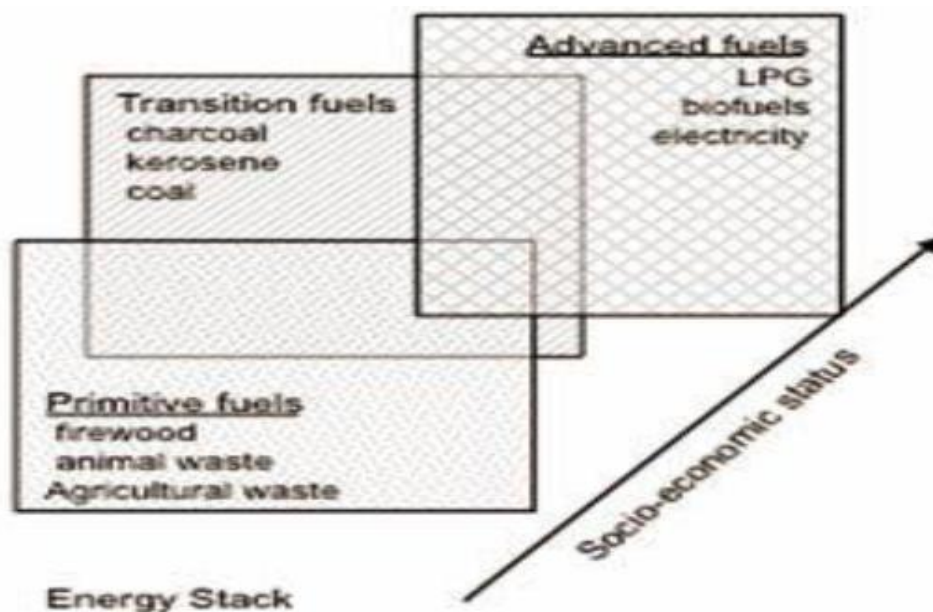


Figure 4 Energy transition model (multiple fuels) (Adapted from “Market barriers to clean cooking fuels in sub-Saharan Africa: A review of literature” by N. Schlag & F. Zuzarte, 2008, p.2. Copyright 2008 by the Sage Publication Stockholm Environmental Institute).

The energy transition model advocates that households do not necessarily switch from one fuel to another, but they prefer using a combination of primitive fuels, transition fuels and advanced fuels for varying reasons. Therefore, traditional fuels are not abandoned but they are used to complement advanced fuels.

Urban growth is characterized by rapid urbanization which has led to a shift from biomass to modern fuel usage (Hiemstra-van der Horst & Hovorka, 2008). Modern fuels are an important enabler of social and economic development; hence an improved insight into urban energy use is important (Van der Kroon et al., 2013). Attention in literature is moving towards understanding the use of multiple fuels or fuel stacking practices in household fuel choices because it is commonly used and not a topic much explored in literature (Mekonnen & Kohlin, 2009). Understanding fuel choice behaviour within the given context will enable policies on energy to consider the possibilities of inter-fuel substitution and also to consider that other factors apart from income contribute towards fuel consumption patterns in households (Hosier & Dowd, 1987).

Empirical studies about the energy transition model (Brouwer & Falcao, 2004; Department of Minerals Resources, 2012; Farsi et al., 2007; Gupta & Kohlin, 2006; Heltberg, 2004; Heltberg, 2005; Hiemstra- Van der Horst & Hovorka, 2008; Hosier & Dowd, 1987; Kowsari & Zarriffi, 2011; Maconachie, Tanko, & Zakariya, 2009; Masera et al., 2000; Mekonnen & Kohlin, 2009; Rao & Reddy, 2007; van der Kroon et al., 2013) have mostly employed quantitative methods. However there were three cases which used mixed methods (Maconachie et al., 2009; Masera et al., 2000; Van der Kroon et al., 2013). For example, household questionnaire surveys, coupled with focus group discussions and in-depth interviews were used in order to investigate the determinants of fuel consumption. In some cases for the qualitative part, meta-analysis of existing choice models was used to analyse energy transition. Most quantitative methods used multinomial logit estimates to analyse fuel stacking together with assessing how different variables affect multiple fuel choices as well as linear regression (nominal and ordinal data, crosstabs and percentage counts were used

in many cases) for quantitative data analysis. Studies which made use of models, focused mostly on the choice of household cooking fuels, which indicated clear fuel preferences by cooking practices (Masera et al., 2000). Some of the questions included in questionnaires were about appliance ownership and utilisation, fuel use, fuel procurement, demographics, income and landholding. Furthermore, Masera et al. (2000) did a longitudinal study which made use of household energy use surveys and health surveys and Brouwer and Falcao (2004) used ad hoc surveys to estimate urban wood fuel consumption in one study.

The majority of studies have criticised the energy ladder model (which views income as a major factor that determines fuel switching) by stating that other factors exist which can explain multiple fuel use in households. Fuel switching is not unidirectional and people may switch back to traditional biomass even after adopting modern energy. Energy transition does not occur as a series of simple, discrete steps; instead multiple fuel use is common. Therefore, multiple fuel models have observed patterns of household accumulation of energy options rather than energy ladder (van der Kroon et al., 2013).

Multiple fuel use/fuel stacking better describes fuel choice behaviour of households in developing countries (Mekonnen & Kohlin, 2009). A survey conducted by Mekonnen and Kohlin in 2009 about the determinants of household fuel choice in major cities in Ethiopia found that as households total expenditures rise, there is an increase in the number of fuels used, even in urban areas. The fuels that were included in the study consisted of both solid fuel (fuel wood and charcoal) and non-solid fuels (kerosene and electricity). Households increased consumption of each fuel type as their total expenditure increased, a result that is statistically significant for all fuel types, except charcoal. The study suggests that households consumed different fuels (including traditional fuels) even at higher income levels due to preferences, taste, dependability of supply, cooking and consumption habits, among others (Mekonnen & Kohlin, 2009).

A recent survey of energy-related behaviour and perceptions in South Africa in the residential sector by the DMR (2012) indicated that South African households tend to rely on multiple energy sources in order to ensure that their day-to-day energy requirements are adequately met. Importantly, this phenomenon has been shown to characterise households irrespective of their electrification status. In addition, it was found that even those with a high living standard rely on a range of energy sources other than electricity to meet their energy needs such as candles, paraffin, firewood and gas (DMR, 2012).

Although households do move away from wood to kerosene and electricity as their economic status improves, a large number of other factors such as family size, education, age, gender, price and availability have been found to be important in determining household fuel choice (Hosier & Dowd, 1987). A study conducted by Mekonnen and Kohlin (2009) found that as family size increases, the likelihood of a household using solid fuels only or a mix of solid and non-solid fuels as the main fuel is increased. Households with more educated members were more likely to have non-solid fuels as their main fuel. Age of the head of the household was not significant in explaining the choice between non-solid and a mixture of solid and non-solid fuels. Female-headed households were more likely to choose either solid fuels only or a mixture of solid and non-solid fuels as their main fuel (Mekonnen & Kohlin, 2009). Price and availability were seen to be major factors in determining fuel choice; there was a relationship between price, availability and energy choice (Maconachie et al., 2009). Elias and Victor (2005) also highlighted the importance of taste preferences and the familiarity of cooking with traditional fuels. In India, for example, many wealthy households retain a biomass stove for baking traditional breads (Malhotra, Pal, Shishupal, & Venkata, 2000). In certain regions of Mexico, even high-income households cook tortillas over an open wood fire rather than using an LPG stove because they prefer the taste and texture provided by wood fuel cooking (Masera et al., 2000).

Strong correlations were found between fuel consumption and socio-economic factors such as household size, area of residence and income (Brouwer & Falcao, 2004). Similar to

poorer families, higher income households tend to use charcoal in combination with non-woody fuels, contradicting the energy ladder theory (Brouwer & Falcao, 2004), which has typically assumed a straight forward, unidirectional shift from traditional to modern energy use once households are provided with an electrical connection (DMR, 2012). Households decide between domestic cooking fuels given their own decision environment (Maconachie et al., 2009). Furthermore, fuel switching does not imply improvements in energy use or household expenditures (Masera et al., 2000).

At first glance, the energy ladder appears to hold, meaning households at higher income levels show a greater tendency to utilise higher quality energy fuels. However, by itself it does not go a long way toward explaining the observed patterns (Hosier & Dowd, 1987). Masera et al. (2000) also found in their study that it is unusual for households to make a complete fuel switch from one fuel to another; rather they begin to use an additional fuel without abandoning the old one. The argument brought forth is that, multiple fuel use patterns in households result from a number of complex interactions between economic, social and cultural factors (Masera et al., 2000). Contrary research report from Maputo, Mozambique and South Africa illustrated similarities between poorer families and higher income households using charcoal and wood consumption. The use of such fuels does not appear to be influenced by household income because even wealthier households that are capable of affording other forms of energy still rely on fuel wood in order to save money (Dovie, Witkowski, & Shackleton, 2004).

In addition, studies in developing countries show that fuel wood can be an important energy source for both urban and rural households at all levels of income (Bhagavan & Giriappa, 1995; Brouwer & Falcao, 2004; Hiemstra-van der Horst & Hovorka, 2008; Hosier & Kipondya, 1993; Mirza & Kemp, 2009). For example, Hiemstra-Van der Horst and Hovorka found in Maun, Botswana, that despite the common use of commercial alternatives, fuel wood was chosen by households across the income spectrum and wood was the most common domestic fuel (employed by 86% of respondents). The above indicate that energy

use patterns are driven by active decision making on the part of the individual households according to their preferences and broader lifestyle considerations, which, moreover, are diverse rather than uniform (Hiemstra-Van der Horst & Hovorka, 2008). It is acknowledged that energy use patterns of the rich and poor are certainly not identical, the per capita modern fuel consumption among high-income households is far greater than that of low-income households (Elias & Victor, 2005). However, the above suggests that the characterization of wood energy as the fuel of the poor is an over simplification (Van der Kroon et al., 2013). Wood is not inferior goods as suggested in the literature, particularly by the energy ladder hypothesis (Mekonnen & Kohlin, 2009).

The potential contribution made by the model was that households do not switch to cleaner fuels as their income rises, but increase the number of fuels as their income rises (Mekonnen & Kohlin, 2009). These findings have significant implications for the improvement of urban household fuel choice theory and better understanding of the persistence of wood energy use (Hiemstra-Van der Horst and Hovorka, 2008). The study on Maun contributed most theoretically through its illumination of the importance of consumer choice (Hiemstra-van der Horst and Hovorka, 2008). The persistence of fuel wood is due to its unique role within the strategic combinations of fuels used for individual applications within different end-uses (Hiemstra-Van der Horst and Hovorka, 2008). Multiple fuel use remains an enduring feature of the energy consumption patterns of both electrified and non-electrified households in South Africa (DMR, 2012). Several factors which have been identified from the framework model which influence fuel switching namely; household internal factors (income, cultural background and customs, age and labour activity) and household external factors (price levels of fuels) (van der Kroon et al., 2013). The use of multiple fuel energy sources is a phenomenon that has been shown to characterise households, irrespective of their electrification status; hence the above contradicts the energy ladder theory (DMR, 2012).

Little attention has been devoted to the decision context and the external environment such as consumer markets and existing government policies which play an important role in the

decision-making behaviour of households regarding fuel choices (Van der Kroon et al., 2013). Emphasis should be more on energy transitions which combine social characteristics with a better understanding of fuel choice preferences (Van der Kroon et al., 2013). There is a need to abandon ad hoc surveys and move on towards a system monitoring consumption at a regular basis (Brouwer & Falcao, 2004). Research on multiple cooking fuels should be strengthened and the entire process of linear fuel switching must be re-examined (Masera et al., 2000).

2.4 Role of women in household energy use

In this section, the role of women in household energy use is explored. The history of women's role and evidential support from empirical studies which indicates that women are energy managers in their households is discussed.

2.4.1 History of women's role

The industrial revolution changed family roles where in the past men left their homes for waged work and became breadwinners, while women stayed in the home and were seen as caregivers (Hook, 2006). This increased participation in paid labour led to the view that men do not share household and child-rearing responsibilities at an equivalent rate (Kunovich & Kunovich, 2008). An explanation for this gap between attitudes and behaviours is the continued belief that housework and parenting remains to be a woman's work. Maintaining a belief that men and women belong in separate spheres is a stronger measure of traditional beliefs. It is further argued that this gap between attitudes and behaviours is smaller in egalitarian countries (Kunovich & Kunovich, 2008).

Even today women are the centre of the family in most cases; evidence suggests that women do more housework and childcare even in full-time employment (Erickson, 2015; Yapp, 2015). An example can be given by a study conducted by Shefer et al. (2008) on gender power and resistance to change among two communities in the Western Cape,

South Africa. The study found that traditional constructions of gender roles and gendered heterosexual practices are still dominant in those communities, where women are focused on the family and domestic reproduction and men fulfilling the traditional role of breadwinner. It is these discourses of culture and tradition which have illustrated that they are significant in the rationalisation and naturalisation of gender roles and power relations. Evidence was further given by the dominant construction of men as leaders and authorities in the public sphere; it was seen as still being strong in both communities (Shefer et al., 2008).

The latter suggests that women are still responsible for the cooking in households which occurs mostly with modern fuels. They make critical decisions about fuel substitution and the purchase of stoves and other appliances, based on their fuel preferences and budget constraints. In short, women are seen as both energy managers and consumers (Cecelski, 2000, 2002).

2.4.2 Studies indicating women as energy managers in their households

In many households, energy is a woman's responsibility. She needs energy to cook and heat water, and she is responsible for fetching wood and paying for electricity or buying prepaid electricity. The price of energy, and the ease of access, is directly relevant to her life. Studies on women and energy in other developing countries, including South Africa, described women as the managers of domestic fuels in households (Annecke, 2000). Women have largely taken control of managing electricity as with any other energy service (Annecke, 2005). Moreover, women are key actors in any policy which aims to change residential behaviour regarding energy production and energy consumption (Yuval & Veturi, 2010). Women are important consumers of energy who, up until now, have been largely overlooked. The Energy and Resources Institute, TERI (2011) stated that although it is widely acknowledged that women are the key managers of water and energy in the household, they argued that conventional development interventions in energy and water have largely overlooked women's activities that they take charge of themselves. However, the International Centre for Integrated Mountain development (ICIMOD) implemented a

project to specifically study how women can be empowered to meet their water and energy needs. Hence their objectives were centred on addressing gender imbalance and promoting the integration of women in decision making, implementation and subsequent management of household energy and water initiatives (TERI, 2011). Annecke (2005) argued that there are few studies that have assessed the gendered impact of electrification in urban areas. Those that have been conducted were in rural areas on the decision-making about appliance purchasing as an indicator of intra-household power relationships (Annecke, 1998; Annecke, 2005; James, 1998). They acknowledged the bargaining and negotiations which may have led to the decisions, but were unable to track them over time because of little knowledge of the shifts taking place which may have affected negotiations (Annecke, 2005).

Internationally speaking, there are strong trends towards urbanization, and future population growth will be in urban centres (UN-Habitat, 2003). Research suggests that women are energy managers in urban as well as rural settings. Annecke (2005) documents the following finding from a survey of 250 homes in Khayelitsha, Cape Town: “Women manage electricity much as they managed wood: they supply the money, they walk to buy credits (for the pre-payment meters) and they are the heaviest users of electricity – albeit mostly for family rather than personal activities, such as cooking or ironing” (p.21). It is thus important that urban studies are conducted as well (specifically on women managing household energy) because women perform different tasks to men; they require energy for different things and from different sources. This means that their priorities in terms of energy and appliances may be different from men’s (Balmer, 2007).

Mohammed and Oyeniyl (2012) in their study on the role of rural women in household energy indicated that the role of rural women in the management of household energy is vast and cannot be underestimated. Women in the area of Tofa local government area participated actively in decision making on household energy management. They are primarily responsible for the use of biomass resources and they demonstrated that they are good managers (Mohammed & Oyeniyl, 2012). Women in the developing world are said to

invest 90 percent of their earnings back into their households (Plan, 2009). This means an empowered woman, both in an economic sense and at home is a catalytic force for establishing the kind of world that ought to be left to future generations (Hart, 2014).

Hart (2014) argued that women are champions of sustainable energy who are eager to employ local knowledge to design new energy solutions. Women represent a powerful force that must be leveraged if the vision of sustainable energy for all is to be fulfilled. This means, sustainable energy solutions cannot be designed without the full participation and input of women around the world (Hart, 2014). It is important also to understand that women and men often view energy issues differently. For example, some surveys have found that men tend to emphasise the cost of savings of energy whereas women tend to emphasise time savings and health benefits (Hart, 2014).

Research studies (Mekonnen & Kohlin, 2009; Rao & Reddy, 2007) on women's fuel choices in urban areas indicate that women make decisions on fuel choices and use a variety of fuels in their households. Therefore, a greater proportion of women could increase the likelihood of choosing in favour of solid fuels and a mixture of solid and non-solid fuels (Mekonnen & Kohlin, 2009). Masera et al. (2000) argued that fuel switching in the above context has been beneficial to women because of its convenience in obtaining, storing, and using the fuels (cleanliness, versatility and a large and easily controlled range of power output). The above opportunity has been shown to have a major impact particularly for those women who work outside the household.

The two empirical studies mentioned above (Mekonnen & Kohlin, 2009; Rao & Reddy, 2007) were similar in accounting for the variable of gender (women) when examining the determinants or factors that influence household fuel choice. Both studies were quantitative in nature; Mekonnen and Kohlin (2009) used panel data (sample of approximately 3 000 households) and Rao and Reddy (2007) used the National Survey data (118 000 households). Multinomial logit was used to analyse data for both studies. In both studies,

women from rural and urban areas were included in the sample. The findings from both studies on fuel choices made by women differed. Mekonnen and Kohlin (2009) found that female-headed households are more likely to use either solid fuels or a mixture of fuels as their main fuel, while Rao and Reddy (2007) found an opposite trend which suggests that households headed by women are more likely to choose modern fuels over traditional fuels. Nonetheless women both in rural and urban areas preferred to use cleaner fuels (Rao & Reddy, 2007).

Both studies provide valuable information regarding what women prefer as their main fuel choice. They also indicated that there is a difference in the way women make fuel choices in their households. However, the research findings were limited to women who are heads of the households and did not report on those who are not. Therefore, it is important to also understand other women's (who are not heads of the households) energy choices to see if findings can be generalised. In addition, the studies did not investigate in detail women's reasoning or explanation for preferences of fuel choices. Household fuel choice was studied in a broader or general sense. There is still a need for a deeper, holistic understanding of women's explanations for their fuel choice and fuel stacking experiences in urban households. Literature has yet to tap into such a perspective.

2.5 Bridging the gap in scientific literature

Understanding fuel choice behaviours according to Van der Kroon et al. (2013) is important. It has been indicated that household fuel choice depends on various factors; this makes knowledge of the determinants of urban households' choice of fuel important (Mekonnen & Kohlin, 2009). The household decision-making environment represents a complex and interactive web of explanations that influence behaviour patterns (Van der Kroon et al., 2013). The description and further explanation of these patterns of fuel use (combining traditional and modern technologies) has, however, received much less attention compared

to general studies on the fuel transition process itself (Masera et al., 2000). There is a general consensus among researchers that household energy-use patterns are poorly understood and further theoretical and empirical studies are required to formulate meaningful policies and intervention strategies (Elias & Victor, 2005; ESMAP, 2003; Farsi et al., 2007; Heltberg, 2004; Leach, 1992; Masera et al., 2000; Pachauri, 2007).

An overview analysis of literature has indicated that the majority of studies have used quantitative methods (mostly surveys) to generate findings about household fuel choice patterns in urban areas (Arnold & Persson, 2006; Brouwer & Falcao, 2004; Campbell, Vermeulen, Mangono, & Mabugu, 2003; Davis, 1998; DMR, 2012; Heltberg, 2004; Kerekezi & Majoro, 2002; Martins, 2005; Mekonnen & Kohlin, 2009; Rao & Reddy, 2007). The influence of time is a limitation on surveys; this means, surveys only provide a snapshot or a partial image taken at a certain moment in time. However, all societies and behaviour are subject to change. Effects of variables such as the allocation of women's time, gendered perspectives on expenditure priorities and social power relations within the household are difficult to incorporate (Davis, 1998). Qualitative analysis is likely to provide a more textured analysis of fuel choice patterns (Davis, 1998). In most studies reviewed, household fuel choice was broadly discussed with the use of model frameworks to determine fuel use patterns. Only two studies (Mekonnen & Kohlin, 2009; Rao & Reddy, 2007) included women's perspectives on the main household fuel preference. It is argued that women are mostly invisible in the energy sector as consumers, suppliers, and decision makers. This is in contrast to their substantial roles as household energy managers (UN-Habitat, 2014). Therefore by incorporating the importance of active (and strategic) decision making by urban consumers (women) and their responsiveness to other structural factors such as relative fuel prices is key (Hiemstra-Van der Horst & Hovorka, 2008). In some studies, multiple fuel use was limited to cooking fuels. Hence there is a need for future studies to include other household fuel-use activities in order to get a better understanding of the phenomenon in question.

Based on the reviewed studies, in the current study the researcher will focus on women to understand specifically their decision making in using multiple fuels. Exploring their decision making together with factors that maintain the success of this practice (multiple use of energy) as a narrative study will provide a rich understanding of energy use by consumers themselves in urban households.

In addition, using women's stories will enable the study to explicitly contextualise the particular lived experience that the researcher wants to understand. Although stories are obviously not providing a transparent account through which people learn truths, storytelling stays closer to actual life events than methods that elicit explanations. There is a large gap in the literature regarding the behavioural aspects of energy use. Although some research has attempted to include cultural and habitual factors and has confirmed their importance, there is almost no research that explores these variables and their dynamics in detail (Kowsari & Zarriff, 2011). The proposed research study will be attempting to bridge that gap, especially with the inclusion of women because such an angle in research on household fuel choices has not received much interest.

2.6 Conclusion

The literature review section shows that energy is essential for South Africa's economy. Having invested into infrastructure through its Integrated National Electrification programme, it improved people's quality of life. As the national power utility Eskom seeks to achieve a universal access of electrification in the country by 2020 (Eskom Factor Report, 2011). The primary energy supply is electricity derived largely from coal (not a clean form of energy) and the country continues to invest in it through the construction of coal-fired stations. Energy demand continues to be dominated by heavy industry and the mining sector (DMR, 2012). It is argued that low energy costs from the use of coal has the effect of retarding the development of new energy sources; limiting the diversity of the fuel mix, supply and security

(Winkler, 2006). Electricity demand in the country is high and will probably require a price increase of 8% each year for the next five years (Ramayia, 2013).

Although literature on household fuel choice and fuel stacking shows that most household energy debates draw from the concepts of the energy ladder and energy transition theory in understanding both household fuel switching patterns and energy choices. Household energy use in the urban areas of developing countries remains poorly understood because of the complexity of the fuel switching process. There is a large gap in literature regarding the behavioural aspects of energy use that needs to be addressed. This study will be investigated from the energy transition theory's standpoint; especially from the standpoint of women who are said to be household energy managers and consumers. Exploring women's decision making on multiple fuel use together with factors that maintain the success of this practice as a narrative study will provide a rich understanding of household energy choices and multiple fuel usage.

In the chapter that follows, the researcher will discuss the theoretical point of departure of the study, namely, narrative inquiry. The discussion will cover the background and history of narrative inquiry, the application of Connelly and Clandinin's commonplaces, the significance of using the inquiry and lastly the potentials and limitations of using narrative inquiry.

Chapter 3:

Theoretical framework

3.1 Introduction

Narrative inquiry is a way of understanding experience and also a “collaboration between the researcher and the participant, over time, in a place or series of places, and in social interaction with the environment” (Clandinin & Connelly, 2000, p. 81). Narrative inquiry refers to stories lived and told. The first section of the chapter will begin with the background of narratives. The second section will explore the four themes/turns which indicate the movement of narrative inquiry. The four themes focus on the relationship between the researcher and the researched, a move away from numbers to words as data, a move away from the general to the particular and lastly the acceptance of alternative epistemologies. In short, narrative inquiry is characterised by a move away from a positivistic perspective toward a research perspective focused on interpretation and the understanding of meaning (Clandinin, 2007). Three commonplaces of narrative inquiry are then discussed: namely, temporality, sociality, and place. These commonplaces are what distinguish narrative inquiry from other methodologies. Next the chapter will consider the significance of narratives which will enable the researcher to understand how multiple energy sources are employed in complex ways, each for specific purposes by women. The last section of this chapter will indicate the limitations of the theory and how the study will overcome them. To end off the discussion, an overall summary of the theoretical background will be provided.

3.2 Conceptualising Narrative Inquiry

The researcher will use narrative inquiry for the proposed study. Firstly, “a narrative is an organized interpretation of a sequence of events; this involves attributing agency to the characters in the narrative and inferring causal links between events” (Smith, 2003, p.113). Narrative inquiry denotes the study of stories themselves and the use of the story to capture

phenomena overlooked or only partly apprehended by science. Narrative inquiry is a way of understanding and inquiring into experience through collaboration between researcher and participants, over time and in social interaction with milieus (Clandinin & Connelly, 2000). Clandinin (2007) also supported the latter by stating that narratives began as living things created in the moment-to-moment action and interaction of particular people, at a particular time, engaged in particular events. Polkinghorne (1988) suggested that narratives are the most important means by which our experiences are made meaningful. Using narratives, according to Sarbin (1986), will allow for the inclusion of participant reasons for their acts, as well as the causes of happening. Furthermore it is through narrative that "...we can begin to define ourselves as having some sense of temporal continuity and as being distinct from others" (Smith, 2003, p.114). In short, narrative "...is a form of living and a way of life" (Clandinin & Connelly, 2000, p 78).

Narrative inquiry begins in experience as expressed in lives and told stories (Clandinin & Connelly, 2000). There is a growing interest in narrative across fields such as psychology, sociology, anthropology, linguistics, organisation studies and history. It is further indicated that the narrative approach is gradually gaining recognition even in disciplines outside the social sciences (Australian Government Department of Defence, 2003). Although it is commonly understood that narrative inquiry is the study of stories or descriptions of series of events; what counts as stories, the kinds of stories chosen to study, and the methods being used will vary amongst researchers who using this method of inquiry. Narratives offer the potential to address ambiguity, complexity, and dynamism of individual, group, and organisational phenomena (Australian Government Department of Defence, 2003).

In the next section, the study maps out the historical movement of narrative inquiry in the social sciences and different ways of thinking when engaging in inquiries are illustrated. The movement is characterised by four themes which highlight the relationship between researcher and participant, the use of words as data, focus being shifted from generalisation towards the particular and lastly the acceptance of various epistemologies.

3.3 History of Narrative Inquiry

The historical emergence of narrative inquiry for the purpose of this dissertation will be discussed under what Clandinin (2007) described as the four themes (turns) which are indicators of the movement toward narrative inquiry both in the researched lives of individuals and in the social sciences' discipline. The narrative turn involves the search for new models of truth, method, and representation. It encourages some scholars to develop a standpoint or perspective on research. This means explicitly using one's social position as a reference from which to interpret and analyse information (Ospina & Dodge, 2005). In discussing narratives as turns, the researcher is referring to the change in direction from one way of thinking to another. It is argued that the latter change in thinking is based on the experiences of a particular researcher in the process of designing, studying, and engaging in inquiries. The path towards narrative inquiry is concerned with humans, experience, recognizing the power in understanding the particular, and taking into consideration broader aspects which bring about insight. What is of importance is the realization that old ways of researching and strategies for research seem inadequate to the task of understanding humans and human interaction (Clandinin, 2007).

The four narrative turns include the following: Firstly, it addresses the relationship of researcher and researched, secondly, the turn from numbers to words as data, thirdly, moving from the general to the particular and lastly wide acceptance of alternative epistemologies (see Figure 5) (Clandinin, 2007).

3.3.1 Narrative Turn 1: Relationship of the researcher and researched

An important movement in the social sciences occurred in the late 19th century, prior to such movement, social individuals such as Comte, Mill and Durkheim and others were convinced that social scientists could use physical science methodologies to study human learning and interaction (Smith, 1983). Hence the latter would enable them to identify facts and then to

use them to develop social laws (just like physical laws) whereby they would be able to articulate invariant relationships among social objects. This meant that social scientists could also control causation and make accurate predictions about the social world. Therefore the above asserts that objects of study in the social sciences (human relationships, interactions, dispositions and culture) could be treated as if they were physical things (Clandinin, 2007).

Social scientists would have an independent view of reality, meaning they stand apart from their subjects and that research of social world could be constituted as a neutral activity. Researchers here are said to be objective and they wholly distance themselves from the researched. Findings from studies conducted under such a view are considered to be systematic, reliable and unbiased (Clandinin, 2007). Therefore, since the knowledge of the researcher and researched are separate and distinct from each other (even when they interact), the distance between them can be maintained. It is further argued that such a systematic way of conducting research can insert sufficient distance between the researchers and researched. Researchers act on a premise that context can be controlled during the research process and that findings are considered outside time. Time itself is a neutral and controllable entity (Clandinin, 2007)

The turn from an objective stance highlighted above enabled researchers to acknowledge that humans and human interactions they study exist in a context which exerts influences. Researchers also recognise that participants who are being researched exist in time and that time itself is a socially constructed concept (Slife, 1993). Humans and human interactions are not static (Clandinin, 2007). With regard to the researched, they became to be known as participants and researchers are interested in what they are saying. Attention given to the meaning of participants' responses led to an in-depth understanding of varying social phenomenon. The goal of research is on the value of meaning and understanding. The above developed a relationship between the researcher and the researched. The current research study acknowledges that researchers differ in their personality, interaction skills,

and access to particular community members; which will result in them having a different experience in their field work (Clandinin, 2007).

It is also important to note that the turn also highlighted the relevance of voice: not only the voice of the researchers and their subjects in general, but also the voices of groups previously excluded from social texts, such as women, people of colour, and others in the social margins (Lincoln & Guba 2000; Ospina & Dodge, 2005). Researchers recognize as well the improbability of being able to truly distance themselves from what they come to know; and they continue to act in integrity, demonstrate trustworthiness, virtuosity and rigor in their relationship with participants studied (Clandinin, 2007).

3.3.2 Narrative Turn 2: From numbers to words as data

Clandinin (2007) argued that the turn from numbers to words does not mean a general rejection of numbers, but recognition that translating experience to numeric codes by researchers makes them lose the nuances of experience and the relationship in a particular setting that is of interest to them; especially when examining human experience. Narrative inquirers find the use of numbers as the exclusive way of representing data increasingly dissatisfying. This is because they question the ability of numbers (especially those collected in standardized ways) to reveal deep understanding about human interaction. In addition, participants in research that elicits only numeric responses are given little space to provide their own understanding of the phenomenon being studied (Clandinin, 2007).

Although numbers hold out great promises of validity for human science researchers, there are some questions raised on their exclusive use in social science. Clandinin (2007, p. 21) summarised the following emergent questions, such as:

- The sterility of numbers in representing the complexity of human interaction;
- The arbitrary or imposition nature of the assignment of numbers to observations;
- The increasing desire of researchers to understand better the meaning of human interaction; and

- Hesitancy about the integrity and trustworthiness of data where a number is recoverable.

This turn towards words as data also led to the turn to language across the arts, humanities, social and behavioural sciences (Denzin 1997; Gill 2000; Riessman 2002). This turn represents a radical shift (a paradigm shift) in thinking about and the doing of research in each field. It challenges research practices that focus on explaining and predicting behaviour; and opens up new pathways for research in the social sciences and applied fields that focus on interpreting social events (Ospina & Dodge, 2005).

3.3.3 Narrative Turn 3: From the general to the particular

One of the powers which quantitative methodology holds out for researchers is the potential for generalizing findings. This methodology asserts that if one can remove the impact of the particular, then the findings of a study can be generalized beyond that setting. Findings from such studies are not context bound, but are generalizable under certain conditions. The shift towards the particular demonstrates that the researcher understands the value of a particular experience, in a particular setting, involving particular people. People's experiences vary and are unique to the individual in question. In the humanities, the social sciences, and applied fields (such as law and public administration), scholars have used narratives to move beyond efforts to describe a universalized, orderly social world and to put themselves in touch with local knowledge, or aspects of experience that are unique to specific contexts and tell us something important about the human condition (Ospina & Dodge, 2005).

Geertz (1983) studied the relationship of law and facts in four different cultural settings; his analysis indicated that it is possible to use facts as the basis for developing laws. Since facts might be seen to determine law, law can actually bring facts into existence. The point made from his study is that this uneasiness about the actual relationship of facts and law turned them from a study of the general to a study of the particular. Embracing the power of the

particular enables researchers to broaden their understanding on the concept investigated (Clandinin, 2007).

Another example illustrating the significance of studying the particular is a social movement, which strives to bring about change through understanding a phenomenon by listening to people's stories. In addition, personal stories add richness to social scientific works and they become the basis for innovation in theory. These stories have meaning and provide evidence into an issue discussed. This is because issues that had once been considered personal or private become central public concerns. Therefore, giving attention to the minorities allows for space in which narrative could flourish (Clandinin, 2007).

3.3.4 Narrative Turn 4: Blurring knowing

A narrative works from a post-positivist assumption. It takes a postmodernist approach which came into use during the late 20th century. Postmodernist scholars rejected the core ideas that gave shape to the Enlightenment, such as the emphasis on the scientific method and rationality and mechanistic applications to other areas of social life (Ospina & Dodge, 2005). Postmodernism emphasises that knowledge is value-laden, and reality is based on multiple perspectives, with truth grounded in everyday life involving social interactions amongst individuals (Australian Government Department of Defence, 2003). The assumptions made about the nature of the world (ontology), emphasize the diversity of interpretations about reality especially unique experiences of individuals. Hence it does not assume a single story to be truer than others, nor does it accept a given story as a fact. It is argued that there is no static and everlasting truth; instead there are different subjective positions from which we experience and interpret the world (Peshkin, 1988, 1991). Acceptance of multiple ways of knowing the world is a turn towards establishing findings through authenticity, resonance, or trustworthiness (Clandinin & Connelly, 2000; Denzin & Lincoln, 1994). The context plays a crucial role in the social construction of reality and knowledge. In short, postmodernism emphasises the social nature of knowledge creation (Australian Government Department of Defence, 2003).

Narrative inquiry on the ontology of experience asserts that reality is relational, temporal and continuous. Therefore the narrative inquirer takes the sphere of immediate human experience as the first and most fundamental reality we have. Narrative inquirers also argue that knowledge of human experience remains within the stream of human lives. This means that narrative inquiry does not merely describe this or that feature of human experience; it is simultaneously a description of, interpretation of, and an intervention into human experience (Clandinin, 2007). Narrative inquirers work with an attitude of knowing that other possibilities, interpretations, and ways of explaining things are possible. For them, a sense of tentativeness in representing their own experiences or the experiences of others is the necessary condition for conceiving a form of inquiry whose object is the transformation of lived human experience (Clandinin, 2007).

Narrative inquiry rests on the epistemological assumption that we as human beings make sense of random experience by the imposition of story structures. That is, we select those elements of experience to which we will attend, and we pattern those chosen elements in ways that reflect the stories available to us (Duff & Bell, 2002). What constitutes true or valid knowledge is how people experience events (Willig, 2008). Understanding experiences will shape ways in which the inquiry is lived and shared with a broader audience (Clandinin & Rosiek, 2007).

Ferrier (1998) summarised postmodernism philosophy with the following points which placed emphasis on:

- The contextual construction of meaning;
- The validity of multiple perspectives;
- That knowledge is constructed by people and groups of people;
- That reality is multi-perspectival;
- Truth is grounded in everyday life and social relations;
- Life is a text but thinking is an interpretive act;

- Facts and values are inseparable; and
- Science and all other human activities are value-laden.

It is important not to assert that researchers ought to or must make these turns if they are to be considered researchers. Clandinin (2007) recognises that there are multiple ways of knowing and studying the world and the interactions of people. However, he specifically stated that:

We become narrative inquirers only when we recognize and embrace the interactive quality of the relationship between the researcher and the researched, the primary use of stories as data and analysis, and to understand the way in which what we know is embedded in a particular context – and that narrative knowing is essential to our inquiry. The blurred nature of knowing provides narrative inquirers space and tools for exploring the concerns associated with modernist assumptions. It is important also to know that the challenge for the narrative inquirer, therefore, is less one of achieving the highest possible grade of epistemic clarity, but on how to integrate ethical and epistemic concerns (p. 7).



Figure 5 Four themes indicating the movement toward narrative inquiry (Adapted from “Handbook of narrative inquiry: mapping a methodology,” by D. J. Clandinin, 2007, p.9-28. Copyright 2007 by Sage Publication, Inc).

The following section applies some of the elements of the study to the three commonplaces of narrative inquiry (serving as conceptual framework), namely, temporality, sociality and place. The researcher indicates how she will be attending to the participant’s experiences through the use of narrative inquiry’s three commonplaces.

3.4 Application of Connelly and Clandinin’s commonplaces of narrative inquiry

It is argued that “although narrative inquiry shares features with other forms of qualitative inquiry such as the emphasis on the social in ethnography and the use of story in phenomenology, it is distinct from other methodologies” (Connelly & Clandinin, 2006, p.479). There are three commonplaces of narrative inquiry: temporality, sociality, and place. The above-mentioned commonplaces specify dimensions of an inquiry and serve as a

conceptual framework. Commonplaces are our check points and direct one's attention in conducting a narrative inquiry. Inquirers are able to study the complexity of people's lived experiences. Therefore attending to experience through inquiry into all three commonplaces is, in part, what distinguishes narrative inquiry from other methodologies.

Connelly and Clandinin's (2006) work was based on a foundation laid by other researchers in the field of narrative inquiry (Josselson, 1993; Lieblich, 1995; McAdams, 1996; Mishler, 2000). The two authors reviewed the writings of others (i.e. Josselson, Lieblich, McAdams and Mishler) and came up with the three commonplaces (refer to Table 1 for a short summary):

3.4.1 Temporality

Temporality entails that "events under study are in temporal transition" (Connelly & Clandinin, 2006, p.479). In the quest of understanding the nature of human experience, narrative researchers need to think of events as happening over time; each event or thing has a past, present as it appears to us, and implied future (Clandinin, 2007). Temporality is "the notion of continuity of experience; meaning every experience both takes up something from the present moment and carries it into future experiences" (Clandinin, 2007, p. 69). Historians also have made clear that narrative has an inherently temporal thread in that current events are understood as rising out of past happenings and pointing to future outcomes (Carr, 1986).

It is important for a narrative inquirer to understand people, places, and events as in process, as always in transition. This is because narrative illuminates that temporal notion of experience and it recognizes that one's understanding of people and events changes (Ollerenshaw & Creswell, 2002).

Narratives tend to focus on the participants, therefore; in the case of the proposed research study, women's stories surrounding the decision making on the use of multiple fuel sources will be captured (Kirkman, 2002). Using narrative inquiry will enable the researcher to

understand how multiple energy sources are employed in complex ways, each for specific purposes by the participants (Hiemstra-van der Horst & Hovorka, 2008).

The research study aims to understand the participants' fuel choices and fuel stacking practices as an event which is constantly in transition. Hence the study will investigate its past, present and future progression by focusing on the following elements:

I Past

With regard to the past, the researcher will focus on how the participants' mother (and/or other significant role players) used to take care of the household as they were growing up. The question of when these women first saw the use of multiple fuels together with the duration their households that have been using multiple fuels will be significant to explore. The researcher will specifically probe for the following: (i) What fuel types are being used? (ii) Which fuels did the mother and/or other significant role players prefer to use and why? (iii) How is traditional food prepared compared to the way the mother used to prepare it and is there a specific fuel preferred to cook such a meal? And, lastly the question of (iv) What lead the participant to use more than one type of fuel in her household?

II Present

The researcher will tap into the participants' roles and responsibilities within their context and also explore the types of fuel they prefer using in their households. The current study will try to understand if there are gender differences (as told in the stories of the participants) in fuel preferences. The researcher's interest is also to explore whether the participants' fuel choices are influenced by conversations they have with their neighbours. An important aspect is also on fuel choices in preparing traditional meals. Lastly the researcher will explore how the increases in electricity tariffs have affected their household life. In that regard, the researcher will probe for the following aspects: (i) Who is mainly responsible for making household fuel choices based on activities such as: cooking, cleaning, buying pre-

paid electricity and ensuring that overall energy in the household is used wisely (ii) For which type of household activity does each preferred fuel serve? (iii) Which types of fuel do the men in their household prefer to use and for which types of household activities? (iv) When cooking traditional foods is there a difference in taste when using an alternative fuel and not the preferred one? (v) Participants have associations of being a good mother when they make similar household fuel choices as their mother did? And whether if (vi) the use of multiple fuels have benefited their households?

III Future

The researcher will ask the participants if see themselves continue using multiple fuels the following year. Additionally, the researcher will inquire about whether the participants would recommend others to use multiple fuels in their households.

3.4.2 Sociality

Narrative inquirers attend to both personal conditions and, simultaneously, to the social conditions. People are always in interaction with their situations in any experience. Personal conditions for the purpose of the study refer to “feelings, hopes, desires, aesthetic reactions and moral dispositions” (Connelly & Clandinin, 2006, p.480) of the inquirer and the participants. Narrative inquiry involves working with people’s consciously told stories, recognizing that these rest on deeper stories of which people are often unaware. The stories they tell are relatively unimportant because the inquiry goes beyond the specific stories to explore the assumptions inherent in the shaping of those stories. They provide a window into people’s beliefs and experiences (Ollerenshaw & Creswell, 2002).

Social conditions in this study refer to the environment, the conditions under which people’s experiences and events are unfolding. After all, describing the way people go about making sense of their experience lies within various contexts. The purpose of narrative making furthermore contributes to the on-going sense making (Clandinin, 2007). Therefore understanding the context in which individuals are embedded, in this case, Soshanguve

township, will be crucial for this study because participants' explanations of the event itself are based on a specific place that impacts upon their experiences.

Taking into account both the personal and social conditions of women's experiences of the choices they make to utilize various fuels for their households will provide better insight and enrich the study. People's lives matter, however much research looks at outcomes and disregards the impact of the experience itself (Ollerenshaw & Creswell, 2002).

3.4.3 Place

Place refers to "the specific concrete, physical and topological boundaries of place or sequences of places where the inquiry and events take place" (Connelly & Clandinin, 2006, p.480). This commonplace draws attention to the centrality of place. For narrative inquirers, the specificity of location is important. In addition, "the quality of place and the impact of places on lived and told experiences are essential" (Clandinin, 2007, p.70). In narrative inquiry, multiple contexts are beyond the researcher's control such as spatial contexts, cultural contexts, social contexts, institutional contexts, place contexts and people contexts which are always present (Clandinin, 2007).

The key to this commonplace is recognizing that "all events take place some place" (Connelly & Clandinin, 2006, p.481). Our experiences of things are embedded in a particular place, hence that is linked to the stories we tell of these experiences. To understand any phenomenon, we must understand the way it plays out in particular contexts for particular actors. Bringing to the forefront by giving attention to the local knowledge and people's perspectives makes our understanding more grounded and, therefore, more complete. In addition, context lends texture to our interpretations of events, relationships, challenges, and triumphs. Narrative inquiry is appropriate for learning about social phenomena in context because it allows people to tell stories that reflect the richness and complexity of their experience (Ospina & Dodge, 2005).

The study of any one or a combination of these three commonplaces might well take place in some other form of qualitative inquiry. Hence to undertake a narrative inquiry, there needs to be a “simultaneous exploration of all three commonplaces” (Connelly & Clandinin, 2006, p. 479). We cannot focus only on one to the exclusion of others. (Clandinin, Pushor, & Murray Orr, 2007).

Table 1

The three commonplaces in narrative inquiry

Temporality			Sociality		Place
<i>Past</i>	<i>Present</i>	<i>Future</i>	<i>Personal</i>	<i>Social</i>	
Look backward to remembered experiences, feelings, and stories from earlier times.	Look at current experiences, feelings, and stories relating to actions of an event.	Look forward to implied and possible experiences and plot lines.	Look inward to internal conditions, feelings, hopes, aesthetic reactions, moral dispositions.	Look outward to existential conditions in the environment with other people and their intentions, purposes, assumptions, and points of view.	Look at the context, time, and place situated in a physical landscape or setting with topological and spatial boundaries with characters' intentions, purposes, and different points of view.

Note. Adapted from “Handbook of narrative inquiry: mapping a methodology,” by D. J. Clandinin, 2007, p.69-70. Copyright 2007 by Sage Publication, Inc).

Multiple fuel use and fuel stacking practices are complex and ought to be understood as an event (which is not static but fluid) by exploring its past, present and future. Therefore in achieving the latter understanding, the section that follows demonstrates the significance of

using narratives; since the focus is on understanding participants' experiences (with multiple fuel use and fuel stacking).

Like any other theoretical paradigm in the social science context, narratives consist of both potentials and limitations. In the section that follows the researcher firstly presents the potentials of the inquiry and then juxtaposes them with the limitations in the sub-section thereafter.

3.5 Potentials and limitations of narrative inquiry

The aim of the following subsections is to highlight both the potential and critical limitation points associated with narrative inquiry in research.

3.5.1 Potentials of narrative inquiry

Ospina and Dodge (2005) indicated five essential characteristics of narratives. Firstly, narratives are accounts of characters and selective events occurring over time, with a beginning, middle, and an end. Secondly, narratives are retrospective interpretations of sequential events from a certain point of view. It is argued that the researcher orders these events in a way that makes sense to a reader; Creswell (2006) called it the chronology of experiences. Thirdly, the focus is on human intention and action; those of the narrator and others. Interest is in exploring the experiences of individuals (Creswell, 2006). Fourthly, is the fact that narratives are part of the process of constructing identity (the self in relation to others). Lastly, narratives are co-authored by the narrator and the audience (Ospina & Dodge, 2005).

As stated above, these characteristics suggest that narratives are quite suitable for understanding social events and social experiences, either from the perspective of participants or from the perspective of an analyst interpreting individual, institutional, or societal narratives (Ewick & Silbey, 1995; Riessman, 2002; Schram & Neisser, 1997;

Soderberg, 2003). Furthermore Savin-Baden and Van Niekerk (2007) mentioned four critical points which serve as an advantage in using narratives in research as follows:

- Firstly, it is relatively easy to get people to tell stories, since most people are pleased to share a story about themselves;
- Secondly, gaining in-depth data (thick description) is possible because this often occurs with ease in narrated events;
- Thirdly, it is possible to gain in-depth meaning and reflection because participants are content to reveal themselves in stories and to reflect on their accounts; and
- Lastly, people tend not to hide truths when telling their stories, or if they attempt to it usually becomes apparent in thorough data interpretation.

Narratives offer researchers appropriate methods for answering theoretical questions generated by interpretive approaches. In addition, researchers are able to pay more attention to the ways that experience, attitudes, and knowledge develops in particular times and places. The above highlights the multiple representations of experience and phenomena that different people or groups of people make. It is important lastly, for the researcher to be reminded of the importance of tapping into the particular kind of knowledge that is communicated through these told stories (Ospina & Dodge, 2005).

3.5.2 Limitations of narrative inquiry

Although narrative inquirers most often experience the collection of stories as being straightforward, there are some challenges pertaining to the use of narrative inquiry that will be outlined. The choices made concerning data management, presentation and trustworthiness seem to be the most troublesome. The difficulty with narrative inquiry is in ‘managing’ the story, in terms of how participants in the story are represented and ‘spoken’ for in the presentation of data. The other difficulty pertains the way in which researchers present themselves in data, whether they are present, absent or backstage; the “difficult questions regarding validity have been explored, questions such as how researchers make

claims about the meaning when conducting inquiries in living alongside and interacting with others in the construction of meaning about human interaction and understanding?” (Clandinin, 2007, p. 249). Lastly the researcher is required to have a keen eye to identify in the source material gathered the particular stories that capture the individual’s experiences (Creswell, 2006).

Savin-Baden and Van Niekerk (2007) explored these issues further and mentioned four critical points which serve as limitations in using narratives in research:

- Firstly, stories can be difficult to interpret in terms of the relationship between the storytelling in the interview and the story-making in the presentation of data.
- Secondly, decisions need to be made about whose story it is and how it is interpreted and reinterpreted. The latter becomes complicated if the participant disagrees with the presentation or he/she wishes to include data that may cause him/her more harm than he/she understands. Creswell (2006) supported this criticism by providing questions such as who owns the story? Is the participant’s voice lost? And does the researcher gain at the expense of the participant?
- Thirdly, it is often difficult to decide on what is the relationship between the narrative account, the interpretation, and the retold story.
- Lastly, the negotiation of data interpretation and presentation of data can be continually troublesome.

The researcher will discuss ethical guidelines in the methodology chapter which will deal with some of the above-listed challenges. In using the information provided by the participants, the researcher will also be reflective about her personal views. The relationship between the researcher and the researched will be through active collaboration whereby stories will be discussed (Creswell, 2006). The researcher’s interpretation of the events will to some extent influence the way in which the data will be represented in the report. Furthermore it is also important to acknowledge that if disagreements between participant

(narrator) and listener (researcher) occur, they can add depth of understanding or at least highlight potential misinterpretation that might not otherwise be discerned (Savin-Baden & Van Niekerk, 2007).

In overcoming the issue of validity, McNiff and Whitehead (2005, 2006) argued that validity is intimately linked with ideas about goodness, meaning a good practice and good research accounts are valid and meaningful. Besides “doing good means trying to live one’s values and communicating what one is doing in honesty, sincerity, and truthfulness and in a form that is appropriate to the context” (Clandinin, 2007, p. 249). Although stories are never full-blown, either in living or telling; researchers ought to be reminded about the quality of narratives as living story. Although we are always in the midst of such work, “we experience ourselves across these living narratives as a unity, and in this unity we ground our meaning making” (Clandinin, 2007, p. 249).

In the end, the researcher in the current study will need to collect extensive information about the participants. She will also need to have a clear understanding of the context of the individual’s life in order to capture their experiences. The researcher grew up in the area chosen for this study (Soshanguve) and has some background understanding of the context, which is an added advantage in this research process. This could also be a disadvantage causing blind-spot, biases, and assumptions. To counteract the above, the researcher will be reflective about own personal and political background which shapes how the stories will be interpreted (Creswell, 2006). In addition, Willig (2008) argued that reflexivity should be maintained throughout the research process. In that way the researcher will be acknowledging the impossibility of remaining outside of one’s subject matter while conducting research (Willig, 2008).

3.6 Conclusion

Narrative inquiry is understood to be the study of stories and the use of the story to capture phenomena overlooked or only partly apprehended by science. It is argued that its historical emergence is characterised by a move away from positivistic, realist perspective toward a research perspective focused on interpretation and the understanding of meaning (Clandinin, 2007). This post-positivist assumption rejects the core ideas of positivism which placed emphasis on the application of scientific methods to areas of social life. For some researchers, an understanding of the limits of validity within a quantitative paradigm precipitated a move toward narrative inquiry (Clandinin, 2007). Narrative inquiry is a way of understanding and inquiring into experience. The above is made possible especially when embracing the four turns in the movement of narratives which highlights the collaborative relationship between researcher and participants, the move from numbers to words as data, the shift away from the general to the particular and lastly the acceptance of alternative epistemologies. The three commonplaces are used in the study, namely: temporality, sociality, and place which specify dimensions of an inquiry and serve as a conceptual framework. Therefore to undertake a narrative inquiry, there needs to be a “simultaneous exploration of all three commonplaces” (Connelly & Clandinin, 2006, p. 479).

Using narrative inquiry will enable the researcher to understand how the participants in this study make their choices on the use of multiple energy sources in complex ways, each for specific purposes (Hiemstra-van der Horst & Hovorka, 2008). The ease of getting people to tell their stories about themselves, gaining that in-depth data (thick description) together with narrated events are some of the advantages of narrative inquiry highlighted in the study. There are challenges, however, pertaining to data management, presentation and trustworthiness within the inquiry. Especially managing the story, in terms of how participants in the story are represented and spoken for in the presentation of data. In addition, questions regarding validity have been explored. The study has devised ways in which the above challenges will be overcome. The main aspects that the researcher will use to overcome

these challenges will be to protect participants and be reflective about own personal views. Maintaining the quality of narratives as living stories through good practice and good research accounts will also be important. It also relates to meaning to live one's values and communicate what one is doing in honesty, sincerity, and truthfulness (Clandinin, 2007).

In the next chapter, the researcher provides the methodology used in the study. The chapter discusses in detail elements such as the study's design, the description of the research site, the sample, data collection method and data analysis method.

Chapter 4:

Methodology

4.1 Introduction

The purpose of this study is to understand household multiple fuel choice patterns in urban areas, through participants' storytelling. In particular, the study's aim was to understand how participants make choices to utilise multiple fuels together with the stories they tell about allocating multiple fuels to various household activities. The decision-making environment on household fuel choices is complex; hence the research study lends itself to a qualitative approach. This method of inquiry was appropriate to use because it provided an in-depth understanding of women's fuel-use practices; furthermore, it enabled the researcher to acquire rich and detailed data (Willig, 2008). The researcher studied the phenomenon under investigation in its natural setting, attempted to make sense of, and interpreted the data which emerged (Denzin & Lincoln, 2011).

The first section of the chapter outlines the study's research design which includes the research questions, the discussion of narrative as method of inquiry and the sequence used to carry out the research. The second section will describe the chosen area for the study. The third section will indicate the type of research participants and specify the selection criteria used. Section four is centred on how the researcher collected data by means of conducting individual interviews with participants; using five steps to acquire in-depth information. Section five describes the process of data analysis and data synthesis. In the analysis the researcher highlighted the descriptive information regarding the context and key themes found in all narratives. Furthermore, interpretation focused on the personal, interpersonal and societal level of analysis. Ethical considerations in section six were adhered to for the duration of the study. The last section clarifies to the reader how the researcher accounted for trustworthiness. The researcher used Lincoln and Guba's (1985) proposed criterion for evaluating trustworthiness which included dependability, confirmability,

credibility and transferability. In conclusion, an overall summary of the methodology chapter was provided.

4.2 Research design

The two research questions the study aimed to answer were as follows: (1) What stories do women tell about their fuel choices within the household? (2) What stories do women tell about allocating multiple fuels to various household activities? These research questions prompted an understanding of women's multiple fuel use and fuel stacking practices in urban households. The researcher used a qualitative methodology for the purpose of this study. This method of inquiry provides an in-depth understanding of people's experiences. Qualitative research involves an interpretive, naturalistic approach to the world. This means that "qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them" (Denzin & Lincoln, 2011, p. 3). Hence, the researcher will acquire rich and detailed data (Willig, 2008). The objective of a qualitative methodology is to describe and possibly explain events and experiences from the participants' viewpoint, but never to predict (Williams, 2007). Therefore both participants' (and the researcher's) interpretation of events itself contributes to this process (Willig, 2008).

The researcher conducted qualitative research because the problem or issue of household fuel choices and fuel stacking practices in urban households needed to be explored holistically. Women's social worlds were made explicit through the stories they provided. Quantitative measures and the statistical analyses simply would not have fitted as these measures would not have been sensitive enough to capture issues such as interactions between people, gender differences, race, economic status, and individual differences (Creswell, 2007). The researcher also conducted qualitative research because of the need to understand the complexity of the study's problem. Qualitative research was also conducted

because of the need to understand the participants' context or setting because the researcher cannot separate what participants say from the place where they reside, whether this context is their home or family (Creswell, 2007).

The particular qualitative methodology which was used in the study was narrative inquiry. It is an interpretive approach, which according to Deem (2002) involves using issues, language, and conducting research that empowers the participants, recognises their silenced voices, honours their individual differences, and positions both the researcher's and the participants' views in a historical/personal/ political context. Hence, the interpretive approach in the social sciences involves using storytelling as a method. The story becomes an object of study, focusing on how individuals or groups make sense of events and actions in their lives. This method is said to be well-suited to study subjectivity and the influence of culture and identity on the human condition. Narrative lends itself to a qualitative enquiry in order to capture the rich data within stories (Australian Government Department of Defence, 2003). Hence the researcher was able to capture women's stories about their fuel choices and fuel stacking practices in urban households. Riessman (2002) argued that narrative inquiry as a methodology can be considered as integral to the production of unalienated knowledge and allows the depth of women's lived experiences to be better understood. Hence women's narratives became an effective and powerful method of transferring and sharing such knowledge.

Narrative inquiry was much more than the telling of stories. It was concerned with making more apparent the complexities surrounding all phases of its inquiry; in this study, the researcher took on the challenge of paying particular attention to why women preferred making choices to use multiple fuels in their households together with how they allocated multiple fuels to various household activities (Clandinin, Pushor, & Murray Orr, 2007). In support of this, Hiemstra-Van der Horst and Hovorka (2008) said that multiple energy sources are employed in complex ways and each for specific purposes. It is argued that one cannot study experience narratively, that is, through narrative inquiry, without understanding

experience as a storied phenomenon. The interwoven relation between narrative as phenomenon and narrative as methodology is central to the understanding that it is a relational inquiry. Engaging in narrative inquiry meant that the researcher thought narratively about both the phenomenon under study and the methodology through which experience is studied (Clandinin, Murphy, Hurber, & Murray Orr, 2009).

According to Creswell (2008) there is a common sequence of steps involved in conducting narrative research. The researcher used those steps he indicated. The first step was to identify the problem, and then it was followed by careful selection of individuals from whom the phenomenon that is being studied can be understood. Next, the goal was to collect information from participants through semi-structured interviews, which provided stories about their experiences. Then the researcher examined and coded the data. The latter was meant to address the issue of dependability. This was followed by the researcher retelling the stories in order to create a chronology of events that may include story elements of setting, problem, actions, and resolution. Active collaboration between the researcher and participants was vital during the research study. Finally, the researcher composed the stories of the participants' practices, which included an analysis of themes which emerged and became evident within the stories told (refer to Figure 6) (Bloomberg & Volpe, 2012).

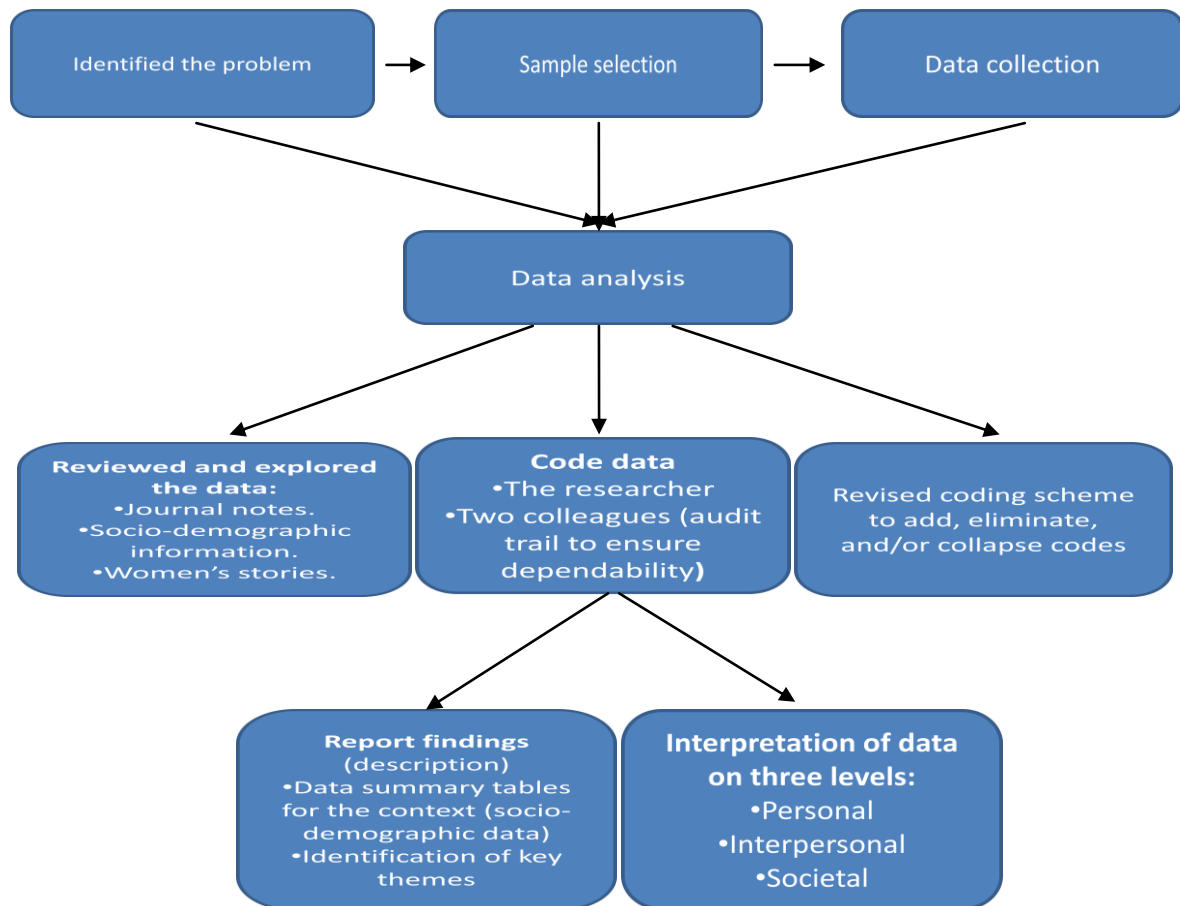


Figure 6 Flowchart indicating the research design process (Adapted from “Educational research: planning, conducting, and evaluating quantitative and qualitative research (3rd ed.),” by J. W. Creswell, 2008, p.511-550. Copyright 2008 by Pearson Education, Inc).

4.3 Description of research site

The target population for this study were women from the Soshanguve area (situated about 25 km north of Pretoria in Gauteng). The forming of Soshanguve can be traced as far back as 200,000 years, but the formal creation of the township with its name as it is known today is as recent as 1972. The township owes its name “Soshanguve” to the mixture of ethnic groups that the apartheid government forcibly re-located to this area in 1972 namely Sotho, Shangaan, Nguni and Venda, hence “So” for Sotho, “Shan” for Shangaan, “Gu” for Nguni

and “Ve” for Venda (Nkemngu, 2012). Today the township falls under the municipality of the City of Tshwane, formerly known as Pretoria.

The population of Soshanguve was projected in 2006 to stand at 509,094 people with a fairly balanced gender distribution of 51.1% males and 49.8% females. Most of the residents in this area are black and 40% of the population is younger than 20 years (Prinsloo, 2008). According to Nkemngu (2012), 14% of the population has attained tertiary education, 45.5% secondary education, 29.9% primary education and 10.6% of the population does not have any formal education. With a workforce of 11,651 people, only 44.7% of the population is employed. Prinsloo (2008) found that 34% of the economically active people are employed in white collar and 21% in blue collar occupations. The median household income is between R3 000 and R5 000 per month. Sixty-one per cent of the total population live in formal houses (Prinsloo, 2008).

Although township areas were formally planned, they are unable to support the large number of residents in terms of housing and economic activity. This resulted in the organic, spontaneous and unsanctioned formation of informal settlements in the township areas (Zondi, 2011). In Post-Apartheid South Africa, townships and the informal settlements within them have persisted. The township areas are in constant flux between formal and informal, permanent and temporary and serviced and non-serviced. The continued influx of people (rural-urban, intra-urban, refugee) to these areas has happened much faster than housing and infrastructure could be provided (Weakley, 2012).

The township of Soshanguve also consists of both formal and informal areas. The formal areas have standard services like water, electricity, sewage systems and tarred roads while the informal areas only have basic services (Mjoli-Mncube, 1998). Infrastructure development is said to be good with 53.1% of the population having access to telephone connections in their homes, 96.9% sanitation and 90.2% having electricity (Nkemngu, 2012). However challenges faced by residents are closely linked to their vulnerabilities such as

crime, environmental hazards including fire and flood, and general conditions associated with poverty (Weakley, 2012).

In the researcher's observation many households in Soshanguve make use of various energy sources (e.g. electricity, solar power, wood, paraffin and liquid petroleum gas) in order to meet their basic needs. The latter context was deemed an ideal area to study fuel choices and multiple fuel use. In addition, combinations of multiple fuels are also seen to be used during certain occasions like in weddings, funerals and parties.

4.4 Research sample

The purposive sampling method was used to select a sample for this study. Patton (1990, 2001) argued that in qualitative research, selection of the research sample is purposeful. This type of sampling is sometimes referred to as judgement sampling (Gay, Mills, & Airasian, 2006) which lies in selecting information rich cases with the objective of yielding insight and understanding of the phenomenon under investigation (Johnson & Waterfield, 2004). The selection of participants was specific and predefined in order to meet specified criteria determined by the research study (Newig, 2011). The criteria for selection included the following:

- Female participants only.
- Participants were 18 years and older.
- Participants lived in a household that used two or more energy fuels thus multiple fuel use in this context was a deliberate choice, it was used in parallel and not as a back-up plan.
- The dwelling type was a brick house. Most brick houses encompass basic components of what is called a passive solar design which is a brick house that has a high thermal mass and makes it capable to store heat during the day and releases this heat slowly at night. Therefore brick houses of such design achieve thermal

comfort with minimal conventional energy input. Some of the basic components of a passive solar design include the orientation of the house, optimising the use of direct natural sunlight and utilising thermally efficient building materials (refer to Figure 7 below). The researcher was interested in using these types of brick houses as they are said to be energy efficient (Klunne, 2002).



Figure 7 Principles of passive solar design (Adapted from “Energy efficient housing to benefit South African households,” by W. Klunne, 2002, p.27. Copyright 2007 by Boiling Point).

Brick houses are designed to reduce energy requirements and they are based on three passive solar design principles. These principles consist of the house’s point of reference, optimisation of direct sunlight and building materials which enable the house to be energy efficient.

- The electricity supply within each respective dwelling was legal and supplied by the municipality of the area.
- Households used prepaid electricity which enables the inhabitants to monitor their electricity usage on a daily basis as they buy electricity as needed and do not have to wait for the municipality to inform them about their electricity usage at the end of the month.
- The household consisted of two or more permanent residing members (excluding the participant, and this related to a spouse, a partner, children or relatives).

The size of the sample was also an important consideration. According to Ritchie, Lewis, and Elam (2003), a small qualitative research project should consist of not more than 50 participants in the sample. As stated earlier the sample size in qualitative research is usually relatively small, but consists of information-rich cases (Bloomberg & Volpe, 2012). Furthermore, in-depth interviews and immersion in the culture make a large sample size unnecessary because qualitative researchers do not seek to generalise. Generally speaking, the longer, more detailed, and intensive the transcripts are, the fewer the number of participants. The chosen sample size should not be too big to prohibit the researcher from extracting thick, rich data; nor is it too small to achieve data saturation (Collins & Onwuegbuzie, 2007). Josselson and Lieblich (2003) agree that saturation (stopping data collection when the results start to become redundant) is the key determinant of sample size. They caution, however, that real saturation never occurs because each new participant has something unique to contribute to the study. They noted that it is usually the researcher who becomes saturated. It is important for the researcher to collect sufficient data that will represent the breadth and depth of the phenomenon without becoming overwhelmed. Hence it is generally recommended that researchers use their judgement regarding the numbers in the sample (Bloomberg & Volpe, 2012). Saturation was reached when nine participants had been interviewed.

The following section will describe how the researcher went about collecting participants' stories by using semi-structured interviews. During the interviews the researcher organised a systematic procedure to insure quality in how the data was obtained from the beginning until the end of the interview session.

4.5 Data collection

Using interviews for this study was appropriate because they generated detailed stories of experience, not generalized descriptions (Riessman, 2003). Individual interviews were useful because the researcher wanted to explore in-depth experiences or views of individuals (Petty, Thomson, & Stew, 2012). Interviews are said to be used extensively in qualitative research as a method of data collection, they may be structured, semi-structured or unstructured (Robson, 2011). The study used semi-structured interviews because it involved few pre-determined areas of interest with possible prompts to help guide the conversation (Rudestam & Newton, 2007).

The researcher identified potential participants through the use of a social group (church members) to inquire about which houses they saw utilising multiple fuels and fitted the study's criteria regarding where they lived. The researcher is young and did not have sufficient contact with the type of participants that the study required, thus she relied on older women's help from the church to find appropriate participants. The church members pointed out specific houses where the researcher should go and these houses were located within various sections of Soshanguve (i.e. Block BB, DD, F, P and the extensions). The researcher went to these specified houses. Some of the people who lived there were not available, so the researcher had to move on to the next one where there was someone available. Upon arrival the researcher asked the participants the question on who is responsible for managing household energy use? The participants identified themselves as energy managers. The researcher then interviewed those participants who identified

themselves in that way. In addition, the researcher asked each participant about the types of energy fuels they were currently using in their households, explained the purpose of the study and asked if they would participate. The researcher negotiated with participants who agreed to be interviewed to set the time and date best suited to them. Participants who fitted the study's criteria and who were willing to participate signed the consent form before the interview started. These participants identified themselves as either the head of the household, the spouse of the head of the household and in some cases it was anyone who was available at the time. The type of interview which took place with all participants was a face-to-face in-depth interview.

The interview took place at each participant's home. The interviews were conducted in the afternoons during the week to ensure that the participant in the household was available for the interview. Furthermore the home is seen as a comfortable place to hold the interview Härmäläinen (2013) and it provides the researcher with an opportunity to get to know the participants in their normal environment. The researcher becomes embedded in the personal worlds of those being studied. Härmäläinen (2013) argued that interviews in the participants' homes are more likely to succeed, because the fact of being invited into the interviewee's home is evidence that the participant is committed to the interview and ready to trust the researcher. To ensure the richness of the data, enough time was allowed to explore the participant's experience fully (Ncho & Wright, 2013).

An interview guide with open-ended questions (attached as Appendix C), made it possible for the researcher to obtain the participants' explanations for their fuel choices and fuel stacking practices. A carefully constructed interview discussion guide can go some way towards ensuring that the interviewer does not lose site of the original research question (Willig, 2008). The researcher used the literature from previous studies to develop or write the questions found in the discussion guide. This was made possible through identified gaps in knowledge as well as weaknesses found in those studies. In addition, socio-demographic data (such as age, employment status, type of dwelling, number of household occupants

and the types of fuels utilised in the household) was collected during the interview session (see section A of interview guide). The researcher verbally read the questions to participants and filled in the first section on their behalf. In addition to the existing open-ended questions (found in section B) of the interview guide, other questions also developed as the session proceeded.

The interviews were conducted by the researcher which allowed her to get closer to the perspective of participants (Silverman, 2005). The interviews were conducted in the participants' preferred language (in this case English, Sotho and Nguni languages spoken in the area and languages that the researcher is fluent in). Each interview session lasted for a maximum period of 60 minutes. The researcher conducted the interview using the following five steps:

- *Step 1:* Firstly, the researcher arrived at the participants' homes, introduced herself and got to know participants before conducting background noise checks, setting up the audiotape and settling down.
- *Step 2:* Then she introduced the purpose of the research, explained why participants were chosen, and also indicated the expected duration of the interview. The researcher moved on to seek consent from the interviewees. Once the consent was granted, the researcher began to conduct the interviews.
- *Step 3:* The researcher started the interview gradually, unhurried and relaxed by asking participants to tell her about themselves. The researcher also allowed questions to flow naturally, based on information provided by the respondent. In fact, the flow of the conversation dictated the questions asked, and those omitted, as well as the order of the questions. It was the researcher's questions that drove the interview. Through these questions and comments, the interviewer steered the interview to obtain the kind of data that answered the research questions. In encouraging the participants to speak freely and openly, and to maximise their own understanding of what was being communicated in the interview, the researcher had

to consider the possible effects of her own social identity (gender, social class, ethnicity, nationality, age etc.) on the interviewee. She had to familiarise herself with the participant's cultural milieu, and the status of the interview within this milieu.

- *Step 4.* Keeping focused during the interview meant that the researcher had to use probing questions in order to get a better understanding and interpretation of the topic studied. It was important for the researcher to interpret what she was hearing, as well as to seek clarity and a deeper understanding from the respondent throughout the interview. The researcher remained conversational yet always kept in mind her primary role of being a listener. She also did not force or push the pace unnecessarily, or put words into the participant's mouth. There was a smooth transition from one topic to the next.
- *Step 5.* The researcher by all means finished on time. When ending the interview, she made sure that everything had been covered sufficiently. Lastly the researcher thanked the participants for their valuable time.

All interviews were tape recorded. According to Opdenakker (2006), using a tape recorder has an advantage that the interview report will be more accurate than taking notes. However, the researcher also took notes during the interviews in order to check if all questions had been answered and in case of a malfunctioning recorder (Opdenakker, 2006). It is argued that when an open-ended interview is properly recorded, it will have high trustworthiness.

The primary advantage of in-depth interviews is that they provide much more detailed information than what is available through other data collection methods, such as surveys. The ability to ask some spontaneous questions is a sensitive matter as participants need to express themselves. Interviews also provide a more relaxed atmosphere in that when collecting data, people may feel more comfortable having a conversation with the researcher as opposed to the filling out a survey (Woods, 2011). However, conducting an interview can be time consuming.

Interviews were transcribed verbatim and translated into English. The purpose of translating the interview transcripts was to create uniformity and allow significant others (the supervisor and examiners) to read and understand the material presented. Some of the implications which are involved in translation include the translator's tendency to engage in over-interpretation, reformulating the meaning of an expression and translating a vague expression; all of which would affect the interpretation (Prandi, 2010). The researcher addressed these potential problems by consulting a translating company to check if her translations were accurate.

Using narrative analysis conveyed detail on stories generated. Hence the researcher will discuss in the next section how she managed the data that was collected during the interviews and from field notes and how she synthesised it in a meaningful way.

4.6 Data analysis

The researcher used narrative analysis to analyse the data. In narrative analysis, the focus is on getting the main narrative account and for this reason the aim was to convey the detail and tenor of the stories (Smith, 2003). According to Birch (2011), narrative analysis also focuses on the sequence of stories, narrative spoken (written), the structure of the speech a narrator selects, the audience, the local context that generated the narrative and the complexities of transcription (Petty et al., 2012). Bloomberg and Volpe (2012) argued that obtaining a coherent understanding from narratives requires the researcher to take the following points into consideration:

- a) How the research questions were answered by the findings;
- b) How the findings from the interviews were supported from data collection methods;
- c) How findings related to the literature; and
- d) How findings related to the researcher's going-in assumptions about the study.

The hallmarks of analysis stemmed from the recognition that people make sense of their lives according to the narratives available to them, that stories are constantly being restructured in the light of new events, and that stories do not exist in a vacuum but are shaped by lifelong personal and community narratives (Duff & Bell, 2002). It is furthermore argued that putting women's fuel choices and fuel stacking practices into words, either verbally, in writing, or in thought will transform the way the phenomenon is understood. Hence, narrative analysis was used as a strategy to recognise the extent to which told stories by participants provided insights on their everyday fuel use practices (Thorne, 2000).

Analysis of data was divided into three phases. Firstly the researcher analysed the context or provided basic description of the socio-demographic information from the interview discussion guide (section A) on the participants. Secondly, the researcher provided a short descriptive summary of all the narratives and identified key features such as the beginning (past), the middle (present) and the end (future). In short, the summary highlighted main issues which were emphasised in the form of themes and how elements in narrative were linked together (see Appendix E). A theme in this context of study is a “. . . patterned response or meaning within the dataset” (Braun & Clark, 2006, p. 82). However, the significance of a theme is not determined by its frequency but by its “substantive significance” (Patton, 2002, p. 467). This refers to the consistency of themes across and within study participants. It is also significant when findings deepen understanding of our knowledge on the object of inquiry (Floersch, Longhofer, Kranke, & Townsend, 2010). In generating the main issues (in the form of themes), the researcher used a coding frame similar to that of thematic analysis. Thematic analysis is commonly used to identify, report, and analyse data for the meanings produced in and by people, situations, and events (Braun & Clark, 2006; Patton, 2002; Riessman, 2008). The study only used four steps of the six steps Braun and Clarke (2006) proposed, namely:

- Step 1. The researcher familiarised herself with the data: transcribed data, read and re-read the data and also noted down initial ideas.

- Step 2. The researcher generated initial codes or identified meaning units. She coded interesting features of the data in a systematic fashion across the entire data set, and also collated data relevant to each code.
- Step 3. The researcher searched for themes that emerged from the data: This was made possible through collating codes into potential themes and gathering all data relevant to each potential theme.
- Step 4. In reviewing themes: The researcher checked if the themes work in relation to the coded extracts and the entire data set and generated a thematic map of the analysis.

Third was the interpretative phase which was divided into two parts of analysis. The first part of analysis connected narratives (in the form of themes extracted from the process of thematic analysis) with the broader theoretical literature in order to interpret the stories, meaning it went beyond the descriptive phase to develop the interpretation. The second part of analysis focused on connecting the stories with the context. The context according to Smith (2003) is divided into three parts of analysis, namely:

- Part 1. The personal level of analysis: here the narrative reflected the different experiences of women's fuel choices and fuel stacking practices in their households.
- Part 2. The interpersonal level of analysis: the narrative analyst was interested in how participants conveyed their stories to the interviewer. For example, in her story what issues she emphasised.
- Part 3. The societal level of analysis: women's narrative accounts meshed with the broader societal issues. For example, women's perspectives on the issues of power supply and tariffs implemented by the government.

For the purpose of this research study, the researcher specifically customised the three levels of analysis as depicted in Figure 8:

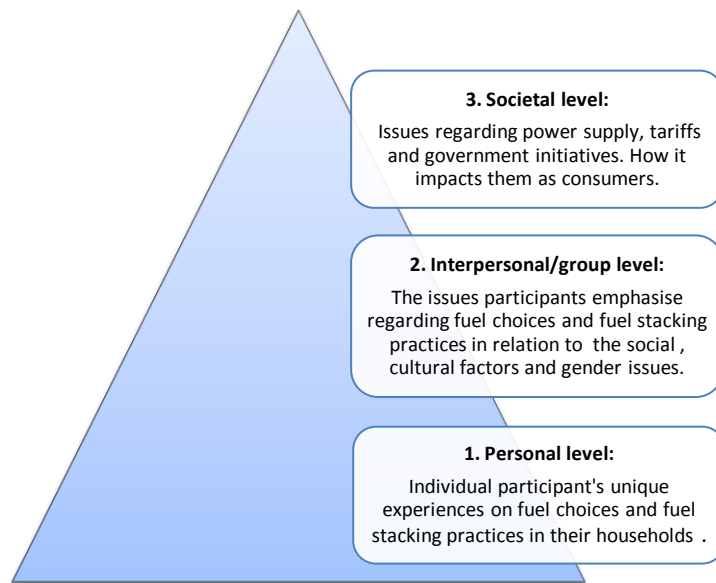


Figure 8 The three levels of contextual story analysis (Adapted from “Qualitative psychology: a practical guide to research methods (ed.),” by J. A. Smith, 2003, p.127-129. Copyright 2003 by the Sage Publication).

Overall, data analysis began with the researcher putting in place a plan to manage the large volume of data she collected and reduced it in a meaningful way. Coding was used to indicate patterns and themes. The researcher preferred to manage and analyse the data manually in order to see visual displays of the data as she moved through the analytical process. Another reason pertains to the perception of a limitation related to mechanical handling of data (Berg, 2004; Merriam, 2009). The researcher made use of visuals, such as charts, tables and/ figures in order to help organise thinking in preparation of writing. This will help the reader clearly understand how and in what ways the researcher reduced and transformed the data (Bloomberg & Volpe, 2012).

The next section will indicate how the researcher addressed ethical issues which arose in all phases of the research process: data collection, data analysis and interpretation and dissemination of the research findings. For the most part, issues of ethics focused on establishing safeguards that protected the rights of participants and included informed

consent, protecting participants from harm, and ensuring confidentiality (Bloomberg & Volpe, 2012).

4.7 Ethical considerations

The study was approved by the Faculty of Humanities Research and Ethics Committee on 14 May 2014. Clandinin (2007) stated that narrative researchers have an ethical duty to protect the privacy and dignity of those whose lives we study to contribute to knowledge in our scholarly fields. This ethical attitude involves thinking through such matters and deciding how best to honour and protect those who participate in research while maintaining standards for responsible scholarship. Narrative researchers do their work by (politely) intruding on people in the course of living real lives and asking them to help them learn something. This is done in the hope that researchers will learn, benefit others and also contribute basic knowledge on human aspects. Therefore, ethics in narrative research is not a matter of abstractly correct behaviour but of responsibility in human relationship (Clandinin, 2007).

4.7.1 Physical harm and the researcher's attitude

The researcher was obligated to protect participants from physical or psychological harm; hence the study did not contain any risk of harm towards participants (Gravetter & Forzano, 2006). In addition, the researcher displayed an attitude of empathetic listening, not being judgemental and also suspended any feelings of disbelief that occurred when attending to participants' stories (Clandinin & Murphy, 2007). The latter is argued to ensure a good interview (Clandinin, 2007).

4.7.2 The researcher's dual role

The ethical conundrum in narrative research derives from the fact that the narrative researcher is in a dual role. The researcher is in an intimate relationship with the participant and also in a professionally responsible role in scholarly community; hence "fulfilling the

duties and obligations of both of these roles simultaneously is what makes for the slippery slopes” (Clandinin, 2007, p. 538). The only solution is for the narrative researcher to demonstrate a clear recognition of the inherent dilemmas. This means the researcher’s self, fantasies, biases, and horizons of understanding should be reflected (Clandinin, 2007).

4.7.3 Consent

Before the interview it was the researcher’s responsibility to inform participants that participation in the study was voluntary, therefore they had a right to withdraw at any stage of the process. A participant information sheet which contained all relevant information regarding the study, including the researcher’s credentials to perform the study (Willig, 2008), was given to participants together with a consent form to sign (see both Appendix A and B). It was important for participants to sign the consent form, which allowed the researcher permission to interview them. The participant information sheet was in English (which was simplified and did not make use of abstract terms) but was translated when approaching the participants, where necessary, by the researcher. The researcher requested permission for the interviews to be tape recorded for research purposes. As the topic of this study does not require the use of deception, no deceptive techniques (when a researcher purposefully withholds information or misleads participants with regard to information about the study) were used (Gravetter & Forzano, 2006). The research situation treated interviewees as experts with the task being to effect change in the researcher’s understanding of the phenomena being studied. Nevertheless, the perceived power differential in the narrative research interview generally favours the researcher, who is often believed by the participant to be an expert in something (Clandinin, 2007).

The researcher obtained data from a deeply human, genuine, empathetic, and respectful relationship with the participants about significant and meaningful aspects of their lives. This involved both an explicit and implicit contract. According to Clandinin (2007) an “explicit contract refers to the purpose of the study which was explained to participants and the use of consent form; while implicit contract rests on the development of the individual, personal,

intimate relationship between the researcher and participants” (p. 539). The nature of the material disclosed in the study was not influenced by the explicit contract but by the trust and rapport the researcher was able to build with the participant. Hence the data reflected the degree of openness and self-disclosure the participant felt was warranted and appropriate under the relational circumstances she experienced. Furthermore, it is said that “the greater the degree of rapport and trust, the greater the degree of self-revelation and, with this, the greater degree of trust that the researcher will treat the material thus obtained with respect and compassion” (Clandinin, 2007, p. 539).

4.7.4 Privacy

Because the complexity of participant’s lives was made visible in the research texts it was important for the researcher to maintain confidentiality and anonymity (Clandinin & Murphy, 2007). According to Gravetter and Forzano (2006), this means keeping strictly secret and private the information or measurement obtained from an individual during a research study. The researcher did not use participants’ names on the transcripts, but assigned a number and a letter of the alphabet to each participant and her data. Only the researcher had access to the list that connects the participants’ names to the numbers and letters. This ensured that information cannot be traced back to the individual.

Semi-structured interviews which were conducted required sensitive and ethical negotiation of rapport between the interviewer and the interviewee. The interviewer in this case did not abuse the informal atmosphere of the interview to encourage the interviewee to reveal more than they may feel comfortable with after the session (Willig, 2008). It is unethical to provocatively use confrontation to elicit more data. The interviewer also refrained from overt and subtle judgement about the participant’s life, example, saying “that’s good” and/or “that’s bad”. The researcher at some point shared some of her experiences with the participant. According to Clandinin (2007), there is nothing unethical about it, provided if it does not embarrass the participant. He furthermore argues that it may encourage a sense of collaboration and build rapport. The researcher became sufficiently acquainted with the

social and cultural world of participants and that enabled her to engage appropriately in interaction with the participants (Clandinin, 2007).

The researcher ended the interview on a positive note. This “is a time of vulnerability for interviewees who have just exposed important aspects of their lives and may feel intimately connected to the interviewer who they now realise they will likely never see again” (Clandinin, 2007, p. 544). Therefore it became important for both the interviewer and the interviewee to voice how they felt about the experience and to note its meaningfulness. For example, the question: “how was it for you to be talking to me in this way?” (Clandinin, 2007, p. 545) was asked. The latter is argued to be equivalent to debriefing, inviting participants’ reflections on the experiences as a way of beginning the process of saying goodbye. The researcher also invited the participants to ask whatever questions they had for her. For example, “what questions do you have for me as we end our time together?” (Clandinin, 2007, p. 545).

4.7.5 Ethics on report writing

Reporting to the academic community on what the researcher learned advances knowledge in the field. Hence the researcher’s goal was to relate meanings of individuals’ stories to larger, theoretically significant categories in social science. While the task of the researcher in the data-gathering phase was to clarify and explore personal meanings of the participants’ experiences, the task in the report phase was to analyse the conceptual implications of these meanings to academia. Clandinin (2007) emphasised that “what was once participants’ stories now became co-constructed text, the analysis of which falls within the framework of the interpretive authority of the researcher” (p. 548). The primary ethical attitude in the report rests in the researcher’s authority, stressing that the report is the researcher’s understanding or interpretation of the text.

From the above point of view, the report is not about the participants but about the researcher’s meaning making. It is argued that researchers who work from this point of view

tend not to involve participants in the interpretation/publication phase of the project. Hence, “from the moment of arranging to meet, through the interview or observation, through the transcription, through the analysis, the researcher’s interpretation is omnipresent” (Clandinin, 2007, p. 549). Every narrative contains multiple truths. Therefore, whatever narrative emerged in the final report was a construction of the interpreter (Clandinin, 2007).

4.7.6 Data storage

Lastly, the findings of this study were submitted in partial fulfilment of requirements for the degree of Master’s in Research Psychology, in the Faculty of Humanities at the University of Pretoria. The data will be stored for 15 years in a secure place in the Department of Psychology at the University of Pretoria.

In the section that follows, the researcher will discuss how she accounted for the issues of trustworthiness (confidence and trust one has regarding the research study’s findings) through the use of four criteria, namely, dependability, confirmability, credibility and transferability.

4.8 Research quality

Criteria for evaluating qualitative research differ from those used in quantitative research. A qualitative research criterion objects to terminology that is used by mainstream science (traditional terms such as validity and reliability) to ensure rigor. The focus is on how well the researcher has provided evidence that her descriptions and analysis represent the reality of the situations and persons studied. The researcher used trustworthiness as an evaluating criterion for the study (Bloomberg & Volpe, 2012). According to Robson (2011), trustworthiness refers to the confidence or trust one can have regarding a study and its findings. Therefore it was important to clarify to the reader how the researcher has accounted for trustworthiness in the study. Lincoln and Guba (1985) proposed criteria for evaluating trustworthiness in qualitative research that the researcher made use of (see figure

9). This includes dependability, confirmability, credibility and transferability. Firstly is dependability, which parallels reliability. Secondly, is confirmability which corresponds to the idea of objectivity. Thirdly, is credibility which parallels the criteria of validity. Lastly is transferability which illustrates the fit or match between the research context and other contexts as judged by the reader. These criteria allow researchers to have confidence or trust in the story and its findings.

4.8.1 Dependability

This criterion parallels reliability, although it is not assessed through statistical procedures, it refers to whether one can track the processes and procedures used to collect and interpret the data (Bloomberg & Volpe, 2012). Guba (1981) noted the following:

A qualitative study accepts that variations between people and contexts as well as the passage of time will not enable a study to be replicated elsewhere; therefore, data analysis is a dynamic and creative activity carried out by the researcher where insights develop and change throughout the process (p. 81).

Measures used in the study to ensure dependability were as follows:

- The researcher provided detailed and thorough explanations of how data was collected and analysed. This is known as an audit trail. Although it was not possible to include all data in the findings chapter, the researcher's data is available for review by other researchers. The audit captures the inevitable change and variation in the researcher's perspective to provide 'trackable variance' (Guba, 1981, p. 81). The study offered transparency of method used which depended on the researcher's interview transcripts (Bloomberg & Volpe, 2012).
- Inconsistencies which emerged that could not be supported by the data were not discarded but the researcher reviewed and reconciled those differences in

interpretations. The goal was not to eliminate inconsistencies that emerged but to ensure that the researcher understands when they occurred (Bloomberg & Volpe, 2012).

4.8.2 Confirmability

This criterion corresponds to the notion of objectivity in quantitative research (Bloomberg & Volpe, 2012). This is the extent to which the findings reflect the focus of the enquiry (Lincoln and Guba, 1985) and not the bias of the researcher (Guba, 1981).

Measures used in the study to ensure confirmability were as follows:

- The researcher recognised that her own experiences and subjectivity influenced her interpretations (Guba, 1981).
- The way in which the researcher has made interpretations, implications and conclusions is made explicit through an audit trail. In short, data can be traced back to its origins (Bloomberg & Volpe, 2012).

4.8.3 Credibility

This refers to whether the participants' perceptions match up with the researcher's portrayal of them. In short, that the researcher accurately represented what the participants think, feel and do. Credibility parallels the criterion of validity (Bloomberg & Volpe, 2012). One should also bear in mind that this qualitative study does not attempt to control the multitude of factors involved in the phenomenon under investigation, but it seeks to explore the whole in all its complexity. Hence interpreting such complexity was challenging for the researcher.

Measures used in the study to ensure credibility were as follows:

- The researcher engaged in the field (built rapport) to get in-depth information and also conveyed details about the site (Bloomberg & Volpe, 2012).
- The researcher presented negative instances or discrepant findings; this is because real life is composed of different perspectives that do not always coalesce. It is

argued that discussing such contrary information adds to the credibility of the researcher's account (Bloomberg & Volpe, 2012).

- Interpretation of findings was based on interview transcripts. The quality and rigor with which the researcher interprets and analyses data was in relation to the research design (Bloomberg & Volpe, 2012).

4.8.4 Transferability

In a qualitative study it is assumed that the findings are context specific and for that reason the study does not aim to generalise findings. However it is likely that the lessons learned in one setting might be useful to others. Transferability refers to the fit or match between the research context and other contexts as judged by the reader (Bloomberg & Volpe, 2012). This transferability to other settings is also referred to as analytical or theoretical generalization (Robson, 2011). Patton (1990) promotes thinking of “context-bound extrapolations” (p.491) which is defined as “speculations on the likely applicability of findings to other situations under similar, but not identical conditions” (p. 489). The responsibility for determining transferability is with those who might apply the findings to their own setting (Lincoln & Guba, 1985; Sandelowski, 1991). It is worth noting that assessment of the quality of naturalistic research, or indeed quantitative research, with or without socially constructed criteria, is in the end a social judgement (Hammersley, 1990). There is no given external reference point with which to measure against (Robson, 2011).

Measures used in the study to ensure transferability were as follows:

- The researcher enhanced the deep understanding of the phenomenon under investigation by using purposive sampling that consisted of specified criteria for selecting the participants. In addition, detailed, thick descriptive data was collected of the phenomenon to enable others to determine the degree to which the findings may be applied to their own setting. Thick descriptions are said to be a vehicle for communicating to the reader a holistic and realistic picture (Bloomberg & Volpe,

2012). Detailed information regarding the context and/or background of the study also offered an element of shared experience (Schram, 2003).

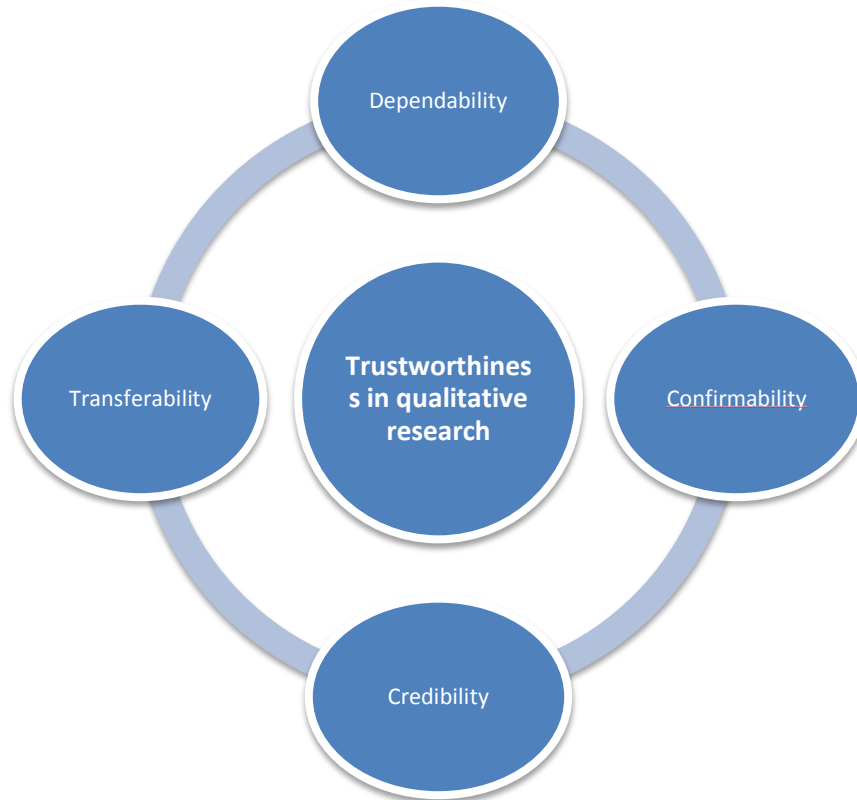


Figure 9 Trustworthiness in qualitative research (Adapted from “Criteria for assessing the trustworthiness of naturalistic inquiries,” by E. G. Guba, 1981, 29 (2), 75-91. Copyright 1981 by the Educational Communication and Technology Journal).

4.9 Conclusion

In this chapter the researcher provided the rationale for the research approach used, which was qualitative. This methodology provides an in-depth understanding of people’s experiences and it involves an interpretive, naturalistic approach to the world. Conducting a qualitative research enabled the researcher to explore the problem or issue of household fuel choices and fuel stacking practices in urban households together with understanding the complexity of the study’s problem. Stories became an object of study. Hence the researcher

made use of narrative inquiry which makes use of storytelling. The research sample was drawn from the population of Soshanguve using purposive sampling. In-depth semi-structured interviews were used to gather data by means of an interview guide developed for the study. Data was analysed in three phases. It was important for the researcher to identify significant patterns (themes) and construct a framework for communicating the essence of what the data revealed, given the purpose of the study. Some of the major ethical considerations which were involved in the study included the following: The ethical duty to protect the privacy and dignity of participants whose lives were studied, including protection from physical or psychological harm and the researcher displaying an attitude of empathetic listening, not being judgemental and also suspending any feelings of disbelief that occurred when listening to participants' stories. The confidence or trust one can have regarding a story and its findings (trustworthiness) was important for the study to establish. Hence the study dealt with issues of trustworthiness by using Lincoln and Guba's (1985) proposed criterion for evaluation. The criterion includes dependability (which parallels reliability), confirmability (which corresponds to the idea of objectivity), credibility (which parallels the criteria of validity) and transferability (which illustrates the fit or match between the research context and other context as judged by the reader).

The chapter that follows presents the study's research findings. Firstly, information on the description of participants will be provided. Secondly, the researcher will provide a short descriptive summary of all the narratives and identified key features which emerged. Key features are divided into the beginning (past), the middle (present) and the end (future). Lastly, the researcher will interpret the key themes by connecting them with the broader theoretical literature and connect the stories with the context on the personal, interpersonal and societal level of analysis.

Chapter 5:

Research findings

5.1 Introduction

The purpose of this study was to examine women's fuel choices and fuel stacking practices in urban households. It was important to understand women's stories about the multiple fuels they use and for which type of household activity each fuel would serve respectively. This chapter presents the key findings obtained from nine in-depth interviews. In the first section the demographic information for the sample used in the study is presented. Next the participants' narrative stories which are temporal events in transition that have a past, present and a future are described. Subsequently, the narrative structure and themes for each participant are presented. Lastly, core narratives which emerged from the study are outlined.

5.2 Description of participants

This section outlines background information about the participants in the study. As shown in Table 2, the study consisted of nine female participants who used various types of fuels in their households. In this study fuels which were used include amongst others wood, solar geyser, paraffin, Liquid Gas Petroleum (LPG), electricity and coal. All participants used electricity. The most commonly used fuels, excluding electricity; by the participants were paraffin and wood. The least used fuels were the solar geyser and coal. The age of the participants ranged from 32 years to 69 years of age. Five of the nine participants were employed either on a full-time or part-time basis while four out of nine were unemployed. Regarding the participants' highest level of education, only four participants obtained a tertiary qualification. See Appendix D for the info-graphic summary of this section.

Table 2

Participant characteristics

Participants	Types of fuels used	Household activities and specific fuels	Number of household members	Relationship status	Position in the household	Age	Employment status	Highest level of education
Ms M	Electricity Paraffin Wood	Cooking Lighting Heating Other	2	Single	Head of the household	62 years	Unemployed and not looking for work	No schooling or some schooling
Ms L	Electricity Paraffin	Cooking Lighting Heating Other	4	Divorced	Head of the household	58 years	Unemployed and looking for work	No schooling or some schooling
Ms P	Coal Electricity LPG Paraffin	Cooking Lighting Other	10	Married	Spouse of the head of the household	56 years	Unemployed and not looking for work	No schooling or some schooling
Ms B	Electricity Paraffin Other	Cooking Lighting Other	6	Single	Other (dependent)	43 years	Employed full-time	Bachelors or honours degree
Ms S	Electricity LPG	Cooking Lighting Heating	5	Single	Other (dependent)	32 years	Employed full-time	Matric/grade 12
Ms D	Electricity Paraffin Wood Other	Cooking Lighting Other	5	Single	Other (dependent)	44 years	Employed part-time	Certificate or diploma
Ms K	Electricity LPG Wood Other	Cooking Lighting Other	4	Married	Spouse of the head of the household	50 years	Employed full-time	Master's or doctoral degree
Ms T	Electricity Paraffin Wood	Cooking Lighting Other	7	Widowed	Head of the household	69 years	Unemployed and not looking for work	No schooling or some schooling
Ms O	Electricity LPG Solar Wood	Cooking Lighting Other	5	Married	Spouse of the head of the household	50 years	Employed full-time	Bachelors or honours degree

5.3 Narrative stories

In this section, participants' stories about fuel choices and fuel stacking practices are presented. These stories represent temporal events that have a past, present and a future and in so doing, reveal their experiences across time. Direct quotations from the interview transcripts are included in each narrative. Additionally, the narrative structure and themes for each participant are discussed.

5.3.1 Ms "M's" story

5.3.1.1 *Background*

Ms M is a 62 year old pensioner who lives with her son. She grew up in the rural areas of Wallmansthal and moved to Soshanguve in 1977 where she has been living for the past 37 years. After the passing of her father, she became the head of the household and managed fuel choices in her parents' home. She only got introduced to using electricity while residing in Soshanguve. Currently, she makes use of electricity, wood and paraffin.

5.3.1.2 *Past*

Growing up, Ms M's mother took care of her and used to enjoy cooking traditional foods using wood fuel. Her mother preferred using wood because "during those times you would find that paraffin was unavailable". Ms M's household has been using multiple fuels ever since they moved to Soshanguve.

5.3.1.3 *Present*

Ms M's role in the house is to cook and wash laundry. She also purchases the prepaid electricity units. Ms M has conversations with her neighbours on using multiple fuels. The discussions are mostly about saving electricity and how electricity today is "...not the same as in the past...in terms of units" meaning it is "...minimised to become less (has been cut)". Ms M mentioned that electricity is expensive and runs out quickly, "...when I use electricity I feel like I am using it over I see it quickly finishing up and it is consuming time..." She uses a

paraffin stove or wood fuel in the household to try to save electricity. She said “electricity lasts me longer when I use other fuels as well”. Ms M will never use electricity to cook foods which require a longer time to cook; she said “electricity needs something light”. Hence she uses electricity mostly for lighting the house. Another challenge with using electricity is that it “...can go off while you are busy cooking”. Therefore she avoids using electricity; in her experience it is scarce and not to be wasted.

Ms M receives free electricity provided by the government called Free Basic Electricity (FBE). It is referred to as ‘POP’ by the locals, meaning poorest of the poor. The free electricity she receives reasonably lasts her longer especially when supplemented with other fuels. Multiple fuel use has benefited Ms M’s household. Hence multiple fuel use in her household remains the same throughout the year.

Ms M prefers using wood fuel and she uses it for cooking and boiling water. She cooks traditional foods using wood fuel and she said that such foods taste different as compared to being cooked on the electric stove: “it’s nice, the pap cooked with wood fuel is delicious” and “Its fully cooked ...” Ms M’s fuel preferences are not similar to that of her son, she said he prefers using electricity because “when we arrived here (referring to Soshanguve) there was electricity”. Furthermore she said “The life I used to live when I was growing up in the rural areas is unknown to him - when he started to open his eyes there was electricity”. When Ms M makes use of wood fuel, which is similar to that of her mother, she said “It reminds me of my childhood where I grew up and that we used to use wood fuel and also fetching/carrying wood from the fields”.

The electricity price hike has affected Ms M and she said “It really hurt me... this is because sometimes you cannot even go outside and make wood fire to cook because of illness”. The increase has also influenced her fuel choices in that she opts to use wood and paraffin. Whenever she uses paraffin stove inside the house, she normally opens the windows

because it creates a smell that can make anyone sick. Hence the latter practice is a way in which Ms M safely uses paraffin fuel in her household.

5.3.1.4 Future

Ms M does not mind to continue using multiple fuels as they help her save electricity; however, she indicated that if the price may just go down a bit; she will stop using multiple fuels. The government can assist by increasing the value of the electricity units.

5.3.1.5 Ms M's narrative structure and themes

Ms M's multiple fuel choices and fuel stacking practices are characterised by five themes which emerged from her story: electricity currently is a scarce resource, cooking traditional food with wood fuel, supplementing FBE with other fuels, poor electrified households and the quantity of units they receive and good practices when using fossil fuels inside/outside the house (see Figure 10). Ms M's past experience with household fuel choices and multiple fuel use informed her current fuel choices. The availability of multiple fuels has enabled her to not only have access to these fuels, but to become flexible in her fuel choices. The electricity price hikes continue to be a problem for her.

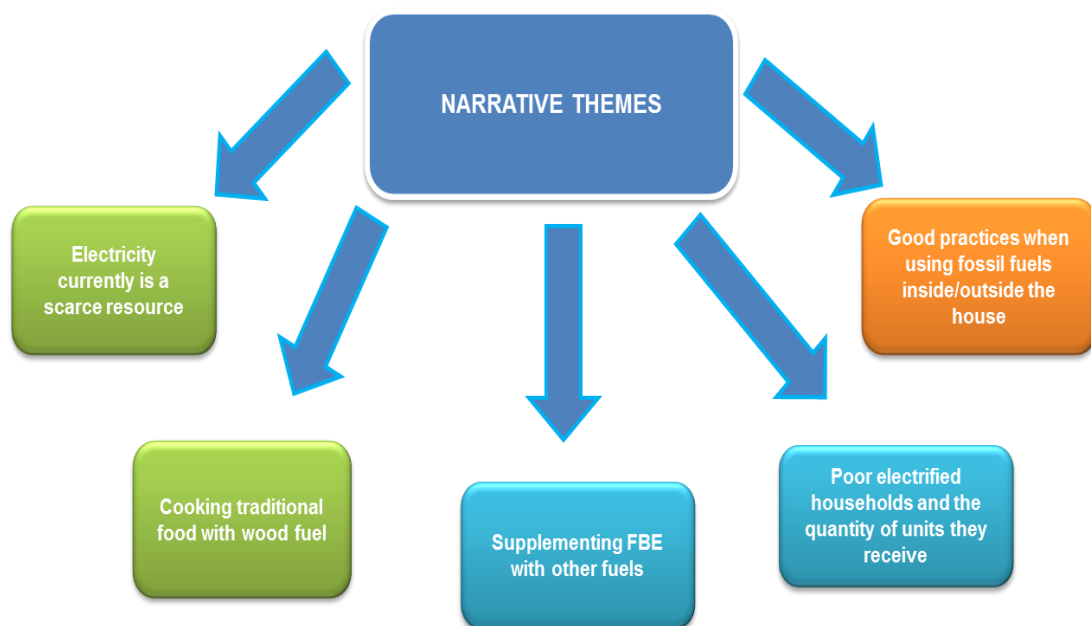


Figure 10 Ms “M’s” narrative themes

5.3.2 Ms “L’s” story

5.3.2.1 *Background*

Ms L is a 58-year-old mother who is unemployed, but is looking for work. She lives with her unemployed sister’s child who has a son. Ms L likes going to church and attends the local ANC meetings. She grew up in Wallmansthal and moved to Soshanguve in 1977 where she has been living for the past 37 years. She enjoys cleaning her house and loves a spotless environment.

5.3.2.2 *Past*

While growing up, both of her parents took care of her. Ms L’s mother was a domestic worker and in her home she used wood, cow dung and coal as sources of energy to care for the household. Ms L said that “...coal was very cheap at that time”. Ms L said they used to “go out to the veld and pick up cow dung together with wood and then make fire so to cook”. She however preferred cow dung over wood for cooking. Cow dung was also used to plaster on the floor and “...they would even decorate with it” she said. A three legged pot was used to cook traditional pap called Semphemphe, which is a combination of wild melon and mealie meal. They would take out the seeds, chop it up and then mix it with the mealie meal. Ms L’s household has been using multiple fuels ever since they moved to Soshanguve.

5.3.2.3 *Present*

Ms L’s role in the household is to clean, wash and purchase household fuels like electricity and paraffin. Ms L stated that “we don’t buy wood as it’s always available” (it comes from chopping down the trees in her backyard). Furthermore, she sometimes asks her neighbours as well for wood whenever she sees them chopping down a tree. They chop the trees into pieces and allow them to dry out first before they make use of them. Ms L receives free basic electricity in her home because she is unemployed and no-one else in her household is in formal employment. Ms L said that her household receives 100 electricity units free. As

a beneficiary of free basic electricity, Ms L's rent payment¹ per month amounts to approximately R100 excluding VAT. Ms L said that "most of the time we survive in this house with the provision of POP". Ms L prefers to use electricity as she complained that the paraffin smells and that it is used only in the garage: "it smells the whole house, that's why it is not needed in the house; you cannot use it in the house".

Ms L uses a three legged pot to cook her favourite traditional foods like tripe which requires time to cook properly using wood and paraffin fuel. She makes use of other fuels in order to save electricity, "this is my way of life and how I live". She found no taste difference from the traditional foods cooked outside using wood fuel from those cooked with paraffin or on the electric stove.

Her fuel choices are not the same throughout the year. She mentioned that in summer it is not necessarily a big issue when electricity is not enough. Ms L said that in summer, her entire household if they want to bath, they put "water inside the bucket and place it outside to be heated up by the sunlight". It is only in winter when she mostly uses the paraffin stove to boil water for bathing. Ms L saves electricity by cooking light meals which will last her for three days. Ms L does not cook every day and she said whenever she is finished cooking, she puts the food into containers and stores them in the fridge. Hence, when she wants to eat, she just warms the food using the microwave. Also, in winter her household use blankets for heating, she said "If you bath, apply vaseline and then cover yourself with a blanket, you will feel okay". Ms L said that her past experiences has informed the way in which she makes fuel choices in that her mother used various fuels as a way of saving other fuels in the house. She said "I told myself let me do the same thing".

She is very close to one of her neighbours and has conversations about fuel choices. They talked about electricity price hikes and that they should use wood fuel to boil water. Ms L is

¹ Payment of rent in this context entails a billing system for rates, water, sanitation, waste removal and electricity enforced by the municipality of Tshwane. The municipality acts as a service provider and has the authority to disconnect electricity as a penalty for non-payment of other charges by residents of the City of Tshwane.

concerned about the increase in electricity prices and said that it's just going to cause more problems. She said people are no longer going to be able to cope with the situation, already they are complaining about electricity being expensive and finishing quickly because of the limited quantity of units. She said "...the units we buy that come from the R50, they are limited/small, I also heard that they will soon be shortening them again". Ms L knows about another individual who said that this shortened quantity of electricity units in their homes is killing them. Indeed "electricity price hike is a serious problem" she said. She also shared a story of her child who spends roughly R700 per month on electricity. Hence one cannot rely on using electricity only in their homes, because it is bound to finish up quickly, there is a need to save electricity. Electricity increases have affected Ms L's household in that she now has to use other fuels in order to save money and be able to purchase household goods and pay the stokvel (society scheme). Hence she said it is for the latter reason that she ought to save electricity.

Ms L also acknowledged that the use of multiple fuels has benefited her household in that she is now able to educate others on ways to use and save electricity. She manages her household fuel use by constantly informing other occupants to buy paraffin in order to cook with as electricity is used for lighting and watching television. She furthermore said "in that way, things become more manageable and the situation is better because we will only be using electricity for lighting and watching television...so it's better". Furthermore, she continued to state that "one should not complain and say electricity is finished and not doing anything about it".

5.3.2.4 Future

Ms L said the government can assist with adding more of the free units because they "really last longer, I would look at the prepaid meter and be amazed about how long they have lasted...". She said if they add another 100 or 120 units on top of what they are currently giving them, they would last even longer. Currently, the free units she is receiving last for the whole month, she said "you will find that 19 units are left before receiving another 100 units

for the following month”. Using electricity on its own today is not viable, Ms L emphasised the latter in saying “oh forget it, if you only going to use electricity on its own it’s never going to last you, it will just finish up”.

5.3.2.5 Ms “L’s” narrative structure and themes

Ms L’s multiple fuel choices and fuel stacking practices are characterised by eight themes which emerged from her story, namely, processing of wood fuel, cooking traditional food with wood fuel, the limited quantity of electricity units, cooking strategies to save electricity, household heating strategies, supplementing FBE with other fuels, poor electrified households and the quantity of units they receive and good practices when using fossil fuels inside/outside the house (see Figure 11). Ms L’s story on fuel choice decisions in her home is driven by a need to save electricity. Ms L takes initiatives and seeks out ways to care for her household through multiple fuel choices she makes. She learnt to use multiple fuels from her mother.

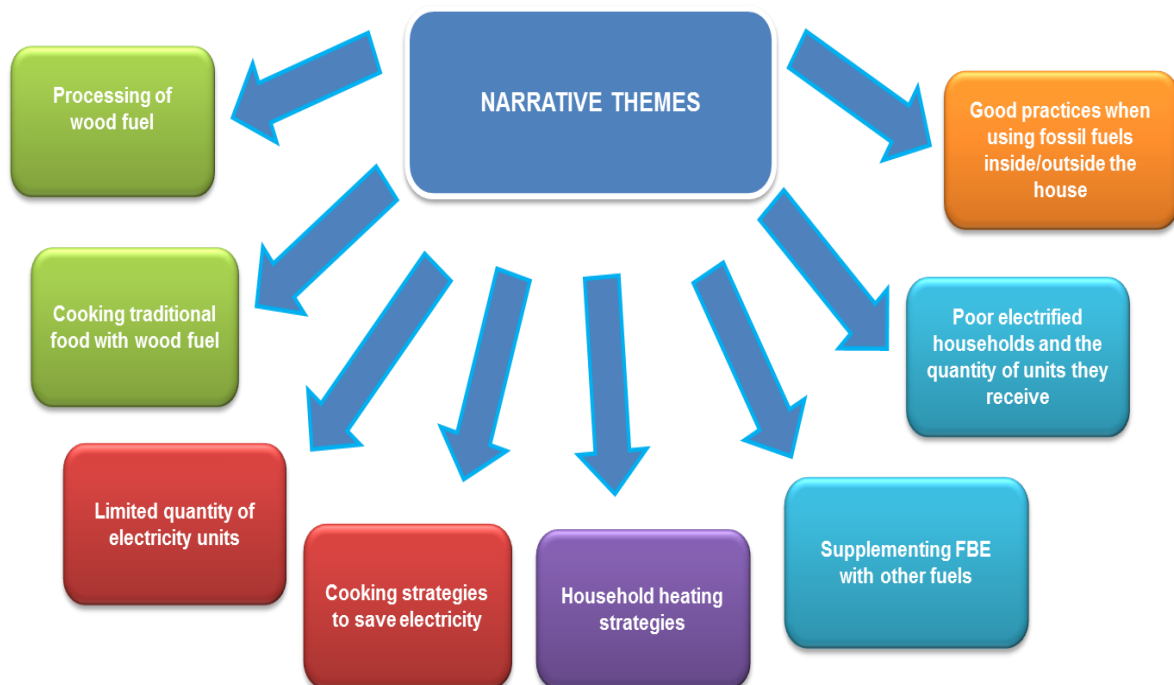


Figure 11 Ms “L’s” narrative themes

5.3.3 Ms “P’s” story

5.3.3.1 *Background*

Ms P is 56 years old; she is a married woman who lives with her husband, children and grandchildren. In total her household consists of 10 members. Ms P is unemployed and is not looking for work because she cannot work anymore because she believes that “I am old”. She has lived in Soshanguve since 1988, which makes it 26 years. Ms P grew up in Standerton, Maboloka. She said that she grew up during good times.

5.3.3.2 *Past*

While growing up in the rural areas, both her parents took care of her. Ms P’s mother took care of the household. They used to farm which she says is not the same as living in the township area. They had a garden where they planted morogo (an indigenous green leafy vegetable), pumpkin, spinach, cabbage, potatoes etc. Women back then used to “go to the veld and gather wood and going to fetch water carrying buckets”. She, however, said that “household duties remain the same” as today like washing dishes, cleaning and doing laundry. Their home used wood and coal fuels. She said that her mother preferred using wood fuel as it is very fast to cook with. Ms P said that she has been using multiple fuels in her home for a while: “I took care of my children while making use of electricity and gas in the house”. What led Ms P to use multiple fuels in her house was to cook food which takes time to prepare, this is because when cooking such foods using electricity “yes they will cook, but you must know that the electricity will also be finished...”. This is also a way in which Ms P saves electricity. Multiple fuel use has helped Ms P to know which fuel cooks faster and which fuel finishes quickly. This led Ms P into educating her children on using energy efficiently within the household.

5.3.3.3 *Present*

Ms P performs household duties such as cleaning and her children also help her out. Household fuel choices and the purchasing of prepaid electricity is managed by Ms P and

her husband. Her household fuel choices are the same throughout the year. Ms P has discussions with her neighbours about electricity matters. They spoke about the issues of electricity being expensive, rent payments, and also shared their experiences of rent fluctuations and how they cannot afford it. Ms P said “there is no truth there in the way we pay, sometimes the rent reflects R1 500 and sometimes almost R2 000”. In that regard, Ms P shared the following story regarding her personal experiences on the issue of fluctuations in rent payments. She mentioned that her household spends a lot on purchasing various energy fuels together with paying rent and outstanding electricity credit. In settling the credit amount, Ms P’s husband had to take out a loan to pay for it. However, their rent was still increasing and no progress was reflected on the municipal bill they receive monthly. Ms P went to the municipality offices in town to settle the matter. She mentioned that “if you do not fix it they will cheat you”. She was assisted by one of the consultants who told her that the reason why the amount is high is due to Ms P’s household water problem. Ms P denied having any water problems in her home as there was no sign of leakages. One of her neighbours was also complaining about the electricity rent fluctuating. After she went to address the matter at the municipal office, she stated that currently “the way we are paying, I am satisfied”. Although she is happy with how her problem was fixed, she still has uncertainties about the matter and this is evident in her stating that “I guess we shall see what the future holds”.

Ms P also knows some of her neighbours use multiple fuels in their homes. These neighbours cook traditional foods such as tripe using wood fuel. Ms P also cooks traditional foods with wood fuel or “foods that would use too much electricity”. Whenever she makes a wood fire, it reminds her of when she was young and how they used to sit around the fire. Using other fuels to cook traditional foods is beneficial for Ms P in that those foods are cooked properly and that she does not have to “keep checking time to say eish I’ve been cooking for a while now”. Furthermore she said that “once you cook using firewood, you will be satisfied with how the food will be cooked”. She loves pap which is cooked with wood fuel

because “it’s delicious...tastier than if one cooked it with electric stove...indeed it tastes different...it comes out nicely and ...you will eat it I tell you”. Additionally, growing up using wood fuel enabled Ms P to see that using wood fuel to cook tripe and samp is quick. Ms P stated that “those who grew up in rural areas can be able to differentiate the taste difference on the pap which is cooked using firewood or on the electric stove”. Using multiple fuels in this context is a way of saving electricity and making sure that it does not run out quickly. Hence she emphasised that, “one of the optional fuels should be purchased and available in the house”.

Ms P also shared her experiences of using the electric stove alone to cook traditional foods which require more time to cook. She said in using the latter, “you think about time and decide to switch it off” quickly even when the food “it’s not properly cooked the way you would want it to be”. You “end up looking and counting the hours it took to cook”. Hence, using electricity in that way will not last you even a month, so “yes they will cook, but you must know that the electricity will also be finished (laughing)”. Ms P said that “we are starting to run away from using electricity much in that context” and opting to use paraffin and gas fuel.

Ms P tries to use electricity to cook only “foods that do not require much time to cook, like chicken feet, chicken pieces etc.” Furthermore she teaches her children to save electricity and use it efficiently. She also said that through educating her children, they “can also see the ways in which energy is saved” in the household.

Electricity increases have put a strain on Ms P’s household and she said that “it has really hurt us”. Hence the only way to cope with the situation is to use other fuels, like gas and paraffin. She fills up the gas cylinder at the industrial site, however, when the gas is finished she buys paraffin at the garage or the local tuck shops nearby. Furthermore, she continued to state that today’s electricity does not last like in the past because “in the past, you knew

that when you bought R300 electricity, it would last you a month”. Therefore, using multiple fuels has benefited Ms P’s household life because other fuels are readily available.

5.3.3.4 Future

Ms P said that her household will continue to use multiple fuels as these are some of the strategies used to save electricity. Also she mentioned that one cannot just rely only on using electricity in the home. Therefore, she recommends that others use multiple fuels. She believes that the government can assist by making it clear as to how much rent one needs to pay per month.

5.3.3.5 Ms “P’s” narrative structure and themes

Ms P’s multiple fuel choices and fuel stacking practices are characterised by three themes which emerged from her story, namely, cooking traditional food with wood fuel, pricing/cost of electricity and household energy educators (see Figure 12). Ms P’s fuel choices are driven by the need to save electricity. She is well informed about the various fuels which she could choose from to cook foods that require time to cook. Electricity fluctuations in her rent payment remains a concern as there is lack of clarity as to what exactly she is paying for.

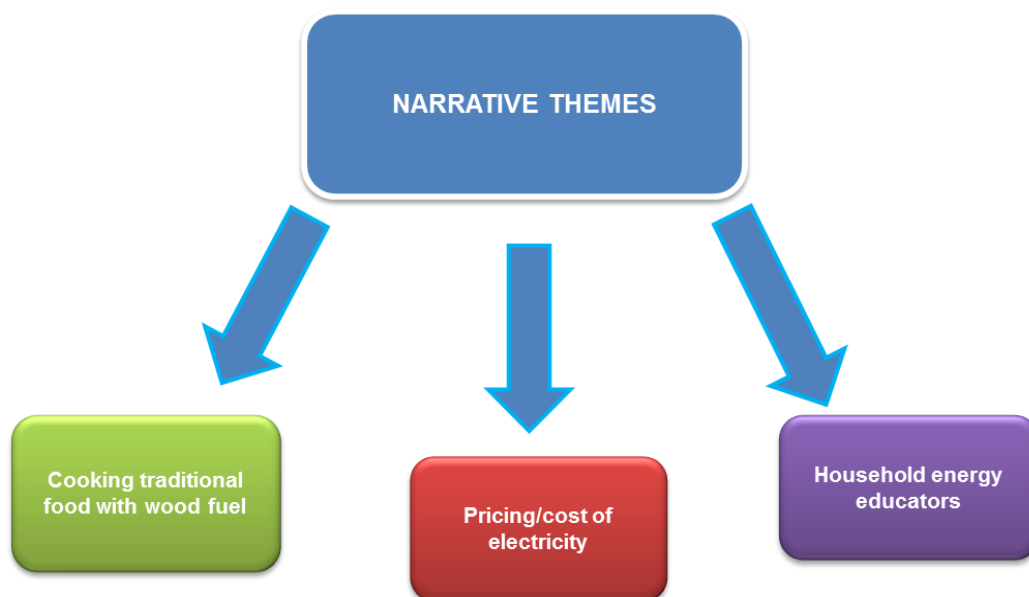


Figure 12 Ms “P’s” narrative themes

5.3.4 Ms “B’s” story

5.3.4.1 *Background*

Ms B is 43 years old and lives with her mother. She was born in Cullinan and grew up in Soshanguve. She enjoys being indoors and spending most of her time at home where she cooks and cleans. During her childhood as well, she enjoyed coming back from school and cooking, washing and cleaning for everybody in the household. Ms B loves people who are respectful. She laughs a lot and likes jokes.

5.3.4.2 *Past*

Ms B grew up with both of her parents, however the father was not around or staying with them in the same house. Her mother was unemployed and a housewife. She mentioned that life back then was difficult as she grew up with nine siblings. In addition, Ms B’s cousins also lived with them hence they used to cook with big pots. Furthermore she emphasised that the situation was so bad that “there was no one working” at the time. She stated that the conditions back then did not allow her mother to afford using electricity all the time. Ms B’s mother used wood and coal to cook for the household. She preferred using wood fuel because it was used outside and that it’s quick to prepare the fire compared to coal. In addition “there were rumours about that the smoke emitted by the mbaula (brazier which is a container that holds hot coal) kills, for instance if she can forget to take the mbaula outside the house, it will kill her children”. Her mother used to cook pap and morogo. She said that they had a garden where they planted corn and water melon. Ms B said that she has been using multiple fuels “ever since I grew up, we used to even alternate”. What led her into using various fuels was to try to save electricity as it was expensive and no one was employed at the time. She furthermore stated that “sometimes we would be like, let us not use electricity give it a rest for a while and make use of wood fire”. Ms B’s experiences of multiple fuel use in the past has educated her to know that even if there is no electricity, children will not go to bed hungry as there are other alternatives. Ms B’s associations when using wood were sad, she described it as “my heart bleeds”. For her, it’s a painful feeling as

she remembers “going out to seek wood even when it was raining” and “you would be sick”. Therefore she said “in my case, it pains me especially when I have to do it again”.

5.3.4.3 Present

According to Ms B the responsibilities of being a woman are to care for the family as a whole. She purchases electricity and manages household fuel choices. She prefers using electricity because it is fast and saves time. Furthermore it is convenient to use. This is because “anytime you would want to use it is readily available, unlike wood, you will have to go out and look for them and then start the fire”. In her case, she also pointed out that “poverty pushed me into using multiple fuels”. Ms B said her brother’s fuel choices are similar to hers. In her home, fuel choices differ throughout the year, for example, wood fuel is mostly used in winter for heating. However, she likes cooking traditional foods such as tripe and dry beans using wood fuel. Ms B does not have discussions with her neighbours about fuel choices. She has observed in the area where she lives that households which find themselves in the dark are mostly characterised by members who are unemployed. Hence she stated that if those households would use other fuels in addition to electricity, it would enable them to at least save electricity and use it for lighting. Ms B chooses not to use wood fuel or paraffin to cook with as it creates a smell in the food.

The electricity price hike has affected her household budget and making it no longer sufficient for her to pay for her two children’s university fees. The electricity units are currently different from what they used to be “I don’t even know whether if we are cheated...”. Ms B tries to save electricity by sometimes saying that “let us not use electricity give it a rest for a while and make use of wood fire”. Therefore, multiple fuel use has benefited Ms B’s household and she said it’s because “we can be able to use some of the money which was supposed to be allocated in buying electricity to use it into something else” such as making contributions to the stokvels (society schemes) and depositing the money in the bank.

5.3.4.4 Future

Although she recommends that others use multiple fuels in their households, Ms B does not see herself in future using multiple fuels. She said that it is because in the near future she will be financially stable. She said “right now the school fees are strenuous” and that is one of the reasons why she uses other fuels. She does not like using other fuels because they create a smell in the food one cook and that “it’s hot and you will be darkened in complexion and smell of the smoke”. The government can assist by “reducing the price of electricity and also provide us with free units, for example if I buy R50 then I get R50 free units”.

5.3.4.5 Ms “B’s” narrative structure and themes

Ms B’s multiple fuel choices and fuel stacking practices are characterised by five themes which emerged from her story, namely, electricity currently is a scarce resource, cooking traditional food with wood fuel, pricing/cost of electricity, fuel choices are controlled by time and household heating strategies (see Figure 13). Ms B uses multiple fuels in her household because she is not able to afford using electricity on its own as she has other responsibilities to take care of, like paying for her children’s university fees. Hence at the moment, her budget is constrained.

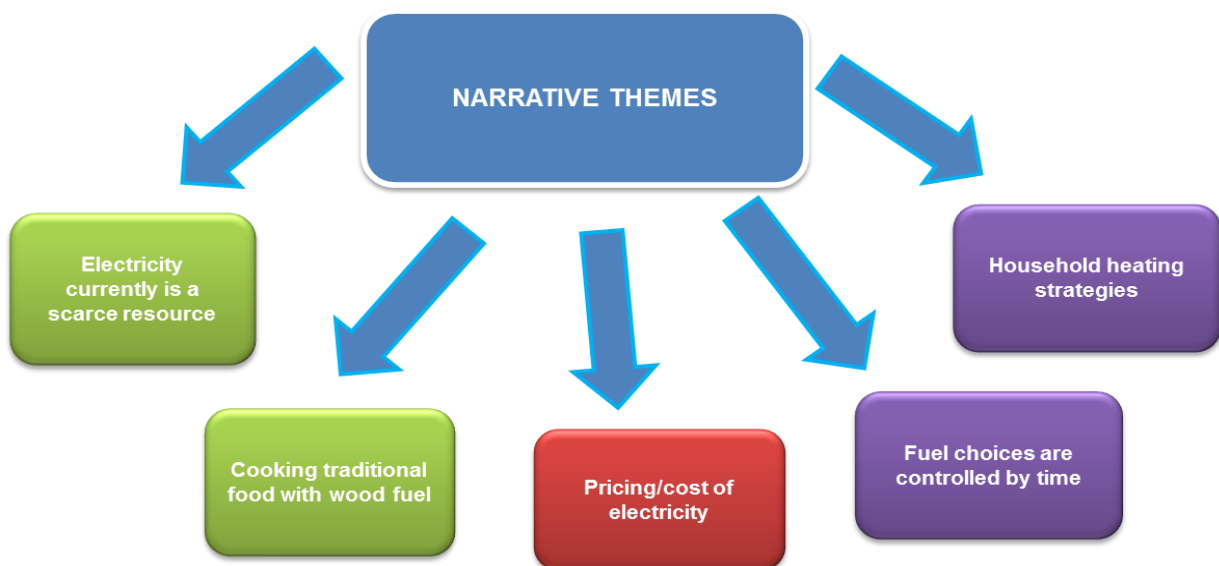


Figure 13 Ms “B’s” narrative themes

5.3.5 Ms “S’s” story

5.3.5.1 *Background*

Ms S is 32 years old, employed full time and lives at her parents’ house with her child. She arrived in Soshanguve in 1990, and has been living there for 24 years. Prior to living in Soshanguve, her family lived in Kwazulu-Natal (KZN). Her family left KZN because of the war that was going on. Upon their arrival in Soshanguve, there was not much accommodation available so they had to squat in the backyard of a house in Soshanguve until they received their own stand.

5.3.5.2 *Past*

Ms S did not recall anything about fuel choices when living in KZN, but her household has been using multiple fuels ever since they moved to Soshanguve. Her mother took care of the entire household and she was self-employed: “she used to sell fat cakes, idombolo (steamed bread) and tea in town”. She used the money she made from her sales to care for them. Ms S and her sister did the cooking and household work especially during the week because their mother woke up early in the morning and returned home tired late in the evening. They enjoyed cooking idombolo, tripe, samp and phuthu (meaning a mixture of crumbly pap and sour milk). Ms S’s mother only cooked for the household over the weekends. Living conditions were not so good in that there were no roads, electricity and water supply. Ms S said that they “used to go to the streets to fetch water” and that “toilets were also situated next to the street”. Ms S mentioned that before they were connected to the electricity grid, they used candles and paraffin stove. Electricity was very scarce and both of her parents were not working at the time; she said “sometimes we would be in the dark without electricity”. Her household makes use of multiple fuels because electricity finishes quickly, hence the simultaneous use of electricity and gas.

5.3.5.3 Present

For Ms S, a woman's or a mother's responsibility is to care for her children, wash, cook, clean and even go to work to ensure that the children have something to eat. Additionally, a woman or a mother needs to put the children in school "so that they can have a brighter future". Currently, Ms S helps her mother out in the household with purchasing the prepaid electricity. The household makes use of gas fuel to cook and boil water, mostly in winter. Ms S said she prefers cooking her traditional foods using gas. Her household has become dependent on using gas fuel and when they are unable to purchase it they experience difficulties. However, she expressed her fears of using gas fuel, but she has become used to it. These fears are due to the stories she heard when growing up, like gas being dangerous and exploding. Hence, she constantly has those thoughts in mind and checks to see if the cylinder is tightly closed.

Ms S said her fuel preferences differ from that of her brother. He prefers boiling water using electricity while the rest of the household uses the gas stove. Ms S did not ask him why he does that; she said "maybe he is bored with gas as it's slow? I just don't know". Furthermore, she spoke to one of her friends about her household fuel choices. The friend tried to challenge her by saying that Ms S's household is wasting money on buying other fuels. It is unclear whether the friend was implying that using electricity alone is cheaper. Ms S argued her case by saying that "according to her because we use both fuels she feels like we are spending a lot of money, but if I seriously look into it, for me it's the same...It makes no difference because even if you use electricity on its own, I mean in our house we would buy electricity three or four times before month end".

Although her household receives free units every month (POP) (because her mother was not working at the time when she applied for it) Ms S said electricity these days "...does not last, a lot of people are crying over that". She copes with the situation by using electricity and gas simultaneously: "when I buy R50 electricity units, it will only last us when used in conjunction with gas". Hence, electricity in this context is mostly used for lighting purposes.

5.3.5.4 Future

Ms S recommends others to use multiple fuels because “most of the people are unemployed and using electricity is strenuous”. Furthermore, you sometimes find that “...their houses are dark because they are without electricity”. This situation affects children the most because they are unable to study in the dark. However, using multiple fuels has her life: “the children are happy now that there is lighting in the house, there is electricity...they are very happy”. She stated that the government can assist by “making sure that not everything in the household is run by electricity” because electricity is expensive and everything runs on electricity, that is why it does not last. Ms S said that she sees her household continuing to use multiple fuels because they are now accustomed to it, especially gas.

5.3.5.5 Ms “S’s” narrative structure and themes

Ms S’s multiple fuel choices and fuel stacking practices are characterised by five themes which emerged from her story, namely, multiple fuel use - a way of life, limited quantity of electricity units, supplementing FBE with other fuels, poor electrified households and the quantity of units they receive and dangers associated with the use of fossil fuels (see Figure 14). The main reason behind the use of multiple fuels in Ms S’s case is that electricity in itself is expensive and it does not last long. Furthermore she emphasised the importance of exploring alternative fuels and to stop relying on electricity alone.

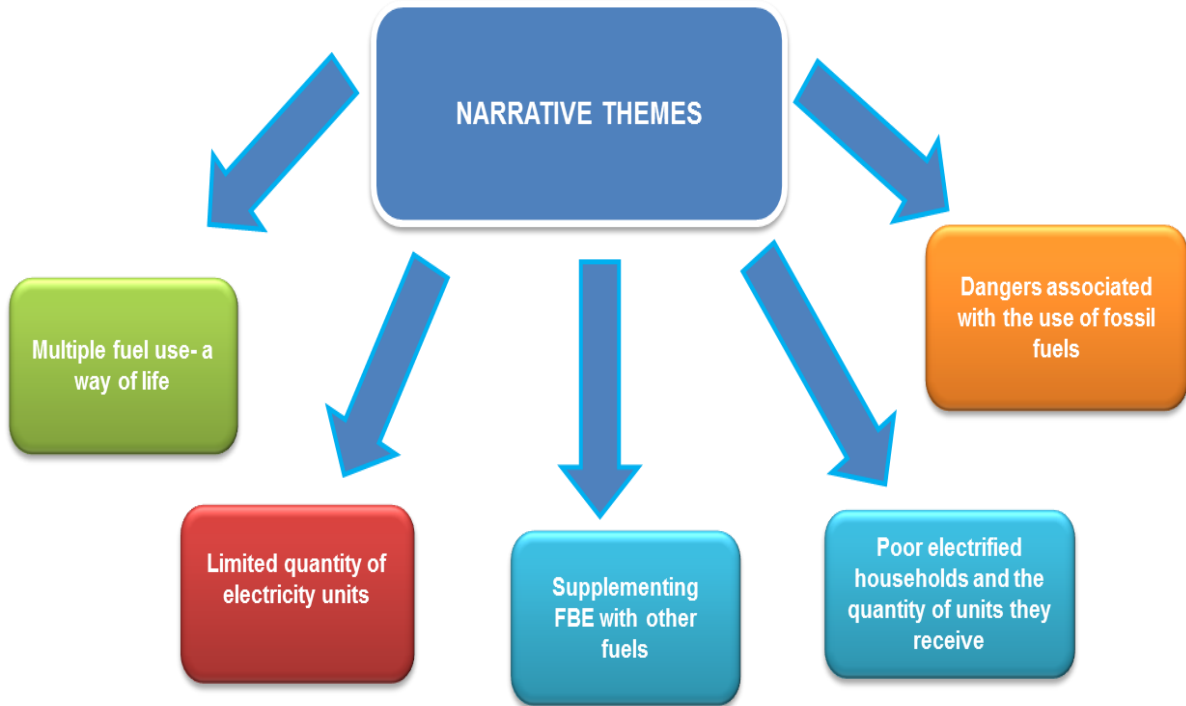


Figure 14 Ms “S’s” narrative themes

5.3.6 Ms “D’s” story

5.3.6.1 Background

Ms D is 44 years old and lives with her mother and her two children. She works on a contract basis. Ms D has been living in Soshanguve since 1993, which makes it 21 years. She was born at Moime, which is in the Bela-Bela area. Life was not nice during the apartheid years. Her mother was a domestic worker and did not stay with her and her siblings.

5.3.6.2 Past

Ms D said that growing up without her mother around was not nice. Once she got back from school, she had to leave her books and fetch wood. There was no time to study, yet failing was not acceptable at home. During her mother’s absence from home, her aunts did not treat her and her siblings well. She said that this is “what normally happens when your mother is not around...you will have to work in the house for your aunts” also “sometimes you would find that you cannot go to school because you have to take care of the younger children”. All the household chores had to be performed by her and the siblings. This

included fetching water from the dam, chopping wood, cleaning and also cooking. In short, while growing up, Ms D and her siblings took care of themselves. They used wood and coal fuel for cooking purposes. However, they preferred using wood rather than coal because the coal stove would waste time: “if you use the stove, you would have to wait for the coal to get heated up first before its ready”. Wood fuel was preferred because it was plentiful, you would also find that even during celebrations “they will find a person with a van to go and get those chopped wood from the field”.

Ms D said the coal stove was mostly used in winter as it created heat inside the house. One could also leave the kettle on the stove all night and in the morning the water would still be hot. The hot water was then used for washing before leaving for school. So the coal stove was very useful especially in winter. However, Ms D had a near death experience when she was growing up using coal as fuel. She heated the mbaula and then took it inside the house; she had finished cooking on it and then inhaled the gas and passed out. Luckily her mother came in time to help her regain conscious. From that day on, Ms D tried to use other fuels such as wood and paraffin to warm her house during winter. However, those fuels also created smoke and children wanted to play with them, so it posed a danger as well. From the latter experience, she said that “we went back to our old ways of using blankets” for warmth. Some of the traditional foods which were cooked back then include mabele pap (sorghum), tripe, morogo and beans. In the past she said they used “molo-peter” (it functions like a paraffin lamp, however glass can be substituted by a tin or a peanut butter container, filled with paraffin and attached to a string) for lighting the household. She did not provide an explicit reason why she stopped using it; however she mentioned that they moved on to use candles. Ms D has been using multiple fuels in her home ever since she arrived in Soshanguve.

5.3.6.3 Present

Ms D decided to take the full responsibility of caring for her children. Hence she would do anything for them and putting them through school is important for her. In addition, she said

that even if it meant selling things or making arrangements with the school principal, her children will be in school. Her home receives free basic electricity from the government. This is because of the area she is living in (it is still populated by shacks and everyone who lives in a shack qualifies for it). Ms D prefers using electricity because “it’s ever ready, you do not need to go elsewhere to fill up or buy”. When Ms D’s household uses wood fuel, she mentioned that they use wood from the trees in the yard. She explained the process of obtaining such by saying that “you have to chop it down first and then break it into pieces, and then place it under the sun to dry out”. Ms D uses wood fuel and a three-legged pot “drie voet” to cook some of her favourite traditional foods such as tripe, samp and beans which require time to cook. She said that when cooking with wood fuel, “you never lose patience” because traditional foods “do not require you to cook with high heat”. Food cooked with firewood tastes different compared to when it is cooked with paraffin and on an electric stove, “it cooks steadily and to perfection”. She also said wood from different trees vary in that some of them will create a smell in your food while others do not. Trees such as Moselesele (sickle bush), Mogocono/Mosusu (silver cluster leaf) and Mosehla (weeping wattle) can be used to cook food without creating that wood smell. In short, “trees that smell themselves will make your food smell”, she said. Ms D learned to differentiate between usable and non-usable types of trees while growing up in the rural areas. When using a wood fire, Ms D remembers how her grandfather used to bring home bush meat and that they all sat around the fire where he used to tell them stories.

Ms D’s fuel choices during winter and summer seasons remain the same. It is mostly during winter when her household makes use of firewood to keep warm. Ms D talks to her neighbours about her fuel choices and it is “like news... it’s our daily bread”. She is close to one granny in the community and assists her to make a wood fire. She makes use of such fuels in her life because she is a proud African woman. Being an African woman means continuing to do things as they were done in the past, it is one’s tradition. In this case, the old ways of using multiple fuels defines who she is. Furthermore, she said that no one will

change her in that regard. Burning wood fuel is like how things were done back then and she is used to it. She added to say “this thing goes back to where we come from”.

According to Ms D, when cooking with electricity “one will always be checking the electricity meter to see if it does not change to orange or red colour you see”. Electricity finishes quickly, hence when cooking foods which require time to cook, you are “forced to switch off or remove the pot when the food is not even cooked properly”. Furthermore, electricity usage and its demand is too much “I mean it’s the heater, the stove you are cooking with, it’s electric blankets...” So “after we have heavily used it, it will disappoint us by being cut off”. Ms D noticed that in her area they experience power outages during winter. She also complained about electricity not being the same as in the past, in the past it was plenty of units compared to today. Electricity units are minimised and that “has hurt us a lot”. Multiple fuel use in this regard has benefited Ms D’s household life, she said “we have the option of having another fuel on standby if we feel that electricity is too much, rather than only focusing on electricity”, In addition; she mentioned that “if we use them together with electricity the situation is much better”.

For Ms D, using both wood and paraffin fuel is not problematic because they are used outside. She said it’s the only way to ensure that you are using them in a safe way. When it’s raining and she wants to use the paraffin stove, she “will be forced to open the windows”. Regarding the safety of using various fuels, Ms D said that “paraffin has caused my children to have asthma” so that is another reason why she uses the stove outside the house. Furthermore she said that “we are constantly being educated about these things” at work (she is a lay counsellor at one of the local clinics in Soshanguve).

5.3.6.4 Future

Ms D recommends others to use multiple fuels in order to save electricity and avoid heavy usage of electricity which would result in power outages. She said that if one does not have an alternative fuel available at home, one will be in trouble especially when load shedding

hits “it’s a mess”. She also mentioned that she sees herself continuing to use multiple fuels. Ms D said that the government is already doing something; it has provided people with free electricity units which are enough as others do not receive it. So she said it has helped already and there is no need for it to provide assistance any further. Ms D said that one cannot talk to neighbours about the free units (POP system) because they become suspicious and think that you will report them. This is because some households continue to receive POP even after one of the members receives formal employment. Ms D said that in such a case, that specific household no longer qualifies for the free units. Furthermore she said that “I have never seen or heard of the government conducting research to investigate such households”.

5.3.6.5 Ms “D’s” narrative structure and themes

Ms D’s multiple fuel choices and fuel stacking practices are characterised by five themes which emerged from her story, namely, processing of wood fuel, cooking traditional food with wood fuel, a limited quantity of electricity units, simultaneous use of fuels within the household, supplementing FBE with other fuels and good practices when using fossil fuels inside/outside the house (see Figure 15). Ms D enjoys using multiple fuels in her household. Her past experiences on the use of various fuels has both informed and educated her on saving fuel. She continues to use fossil fuels (i.e. wood) because that was the way in which things were done in the past; she is an African woman who will continue preserving her culture. Electricity usage on its own is not a solution, but having various other fuels available to choose from in the home makes life better.

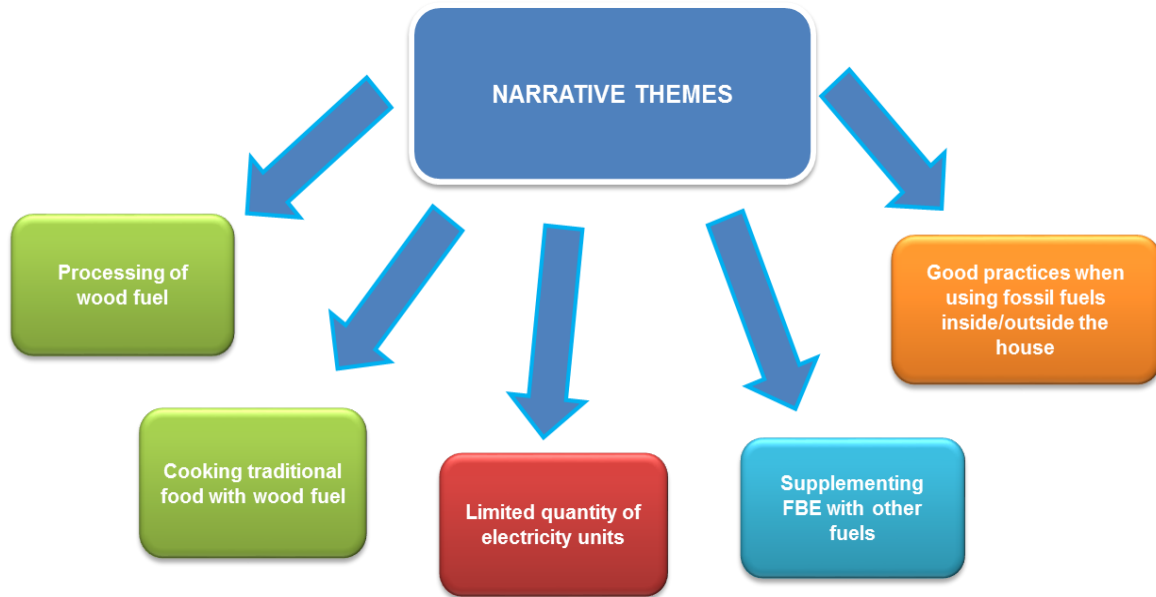


Figure 15 Ms “D’s” narrative themes

5.3.7 Ms “K’s” story

5.3.7.1 Background

Ms K is a 50-year-old woman and in full-time employment. She is the spouse of the head of the household and has three children. She has been living in Soshanguve for 13 years. Prior to that, she grew up in Hammanskraal, Suruman. Ms K stated that growing up “everything was nice compared to now... the cost of living, crime, you can name them”.

5.3.7.2 Past

While growing up, Ms K was cared for by both her parents. She described her mother’s role at that time as being “a housewife, she was not working, she was there for us, guiding us and caring for us”, hence “everything that needed to be done in the house she would do it”. Ms K’s mother used to cook tripe and kgogo ya sesotho (slaughtered fresh chicken which is cooked and only seasoned with salt). When she was growing up there was no electricity, so her mother used coal instead. Ms K’s mother preferred using coal because in winter the coal stove was used to warm up the house, so for her mother “this fuel was number one”. In addition, coal was also preferred because “the heat from it lasts longer”. An additional fuel that was used by Ms K’s mother was wood; she used it in order to save coal. Wood fuel was

only used during the day while coal was used in the evening. Coal was the only fuel in the household which was purchased. Wood fuel was collected from the veld; chopping wood in this case was mainly work done by girls. Ms K stated that “it was routine that we get up early in the morning before going to school to fetch wood and water”. Ms K said using wood fuel reminds her of “weddings, parties, funeral ceremonies at the villages...people coming together around the fire outside and taking turns to check the pots (to specifically stir the pap) while having conversations”.

5.3.7.3 Present

Ms K mentioned that as a woman you do women’s things: “to raise kids, make sure that they eat daily, make sure that they go to school, and help them with their home-works etc”. In her household, both herself and her husband are responsible for making household fuel choices “we are both responsible...we are sort of sharing the responsibilities”. She reasoned by saying “this is because we don’t receive our salaries on the same date, hence I get paid on the 15th while my husband on the 26th of every month...so say I buy some when I get paid, he will add on top of that once he gets paid as well”. Ms K has been using multiple fuels in her household for the past two years. Her household uses electricity, gas and wood fuels. Fuel use is not the same throughout the year “there is more usage in winter”. Furthermore Ms K stated that “you know that in winter we use fuels for so many things, like using heaters and you know the kids enjoy playing with hot water”. She said that the children tend to be wasteful in winter when it comes to electricity usage. Therefore in winter, her household would use more gas than in summer. Ms K also mentioned that the electricity bill is higher during winter compared to summer.

Her husband bought a gas stove; however, he prefers using wood fuel when he cooks tripe: “he is the one who cooks tripe in this house; he even has a small three-legged pot”. Using wood fuel cooks the meat perfectly: “it is superb... you cook it to the point that you are satisfied with it” this is because you never say “...iyo electricity is finishing”. Wood is readily available from the trees they chop down in their yard. Ms K sees the use of wood fuel as a

practice of doing things the old way and that it is a cultural heritage that should be preserved.

Ms K does not have conversations with her neighbours on multiple fuel choices she makes because "...where I am staying, it's like they call it the suburbs but it's not. It's purely a mind-your-own-business type of area. You do not even get the opportunity to go next door to sit and talk...". She prefers using gas. Ms K did not consider using coal or wood fuel because of medical reasons; she stated that "my younger child together with myself are asthmatic", furthermore "those other fuels block us...gas as well, but if you use it nicely that smell it's like it does not exist".

Through observations she has been able to see other households making use of multiple fuels in her area. Ms K said "I know of one house which makes use of solar and with others you will just observe smoke from the chimneys as they have fireplaces inside their homes". Foods which take longer to cook are either cooked outside with wood fuel or inside the house using gas. Having said that, Ms K mentioned that there is a taste difference with the pap cooked using wood fuel compared to other fuels; she said "it's because of its burn yes; another reason is that you leave it out there to cook properly... yes such things". Therefore, Ms K prefers pap cooked using wood fuel as "it's delicious, very delicious". Ms K indicated that whenever they opt to cook foods which require time to prepare on the electric stove, she said "the minute the meat is chewable; you immediately switch off the power as you know by now that you will be trying to save electricity in that way".

The electricity increases have affected her household budget; she said "at the end of the day we don't even save... do we have money in the bank? No! We just work-eat-work-eat". Ms K stated that one of the reasons pertaining to the use of various fuels in her home is that electricity is expensive. Electricity units currently are not the same as in the past, she said "when I started working and living here, electricity worth R100 it was about 300 and something units back then, now R100 electricity you won't even get 100 units, its 50

something or 60 something units”. Hence in that way electricity is expensive. The use of multiple fuels in Ms K’s household was beneficial, she said “at least we never sit in the dark because the electricity is finished and then we don’t have lights”. In her household lighting will always be there, Ms K furthermore stated that lighting “will enable the kids to do their homework and not have excuses of not doing it”. Also, her household budget is adjusted “...to accommodate these increases that do not cease”. Ms K also said that even if electricity gets cut, “we know that there is something else to use”.

5.3.7.4 Future

Ms K stated that as long as she lives with her children, she will continue using multiple fuels. Hence she will only discontinue when her children move out of her house. In addition, Ms K mentioned that she will discontinue when she gets old because she will be receiving free basic electricity which will be enough and her fuel consumption will be less. Ms K stated that the government can help with installing solar geysers as “this will be a way of meeting us half way”. Furthermore, the government can help by allowing Eskom to supply them directly with electricity and “to remove the middle man” (referring to the municipality), “because I have recently discovered that people who get their supply of electricity directly from Eskom, do not pay more compared to us”. Ms K believes that they receive more units in comparison because her mother, who resides in Hammanskraal, buys electricity straight from Eskom and pays less. Although she makes use of gas fuel, she is afraid of it because “people will tell you that it will explode and stuff... I mean it’s not safe”. However, Ms K recommends others to use other fuels on the basis of saving electricity; she said people are free to use any fuel which they can tolerate.

5.3.7.5 Ms “K’s” narrative structure and themes

Ms K’s multiple fuel choices and fuel stacking practices are characterised by three themes which emerged from her story, namely, cooking traditional food with wood fuel, limited quantity of electricity units and dangers associated with the use of fossil fuels (see Figure 16). Ms K is stating that as the cost of living is high the use of other fuels helps save

electricity. Foods that require time to cook are perfectly cooked using alternative fuels available in the household other than electricity. In her case, she will discontinue using multiple fuels once her children move out of the house and when she starts receiving free basic electricity.

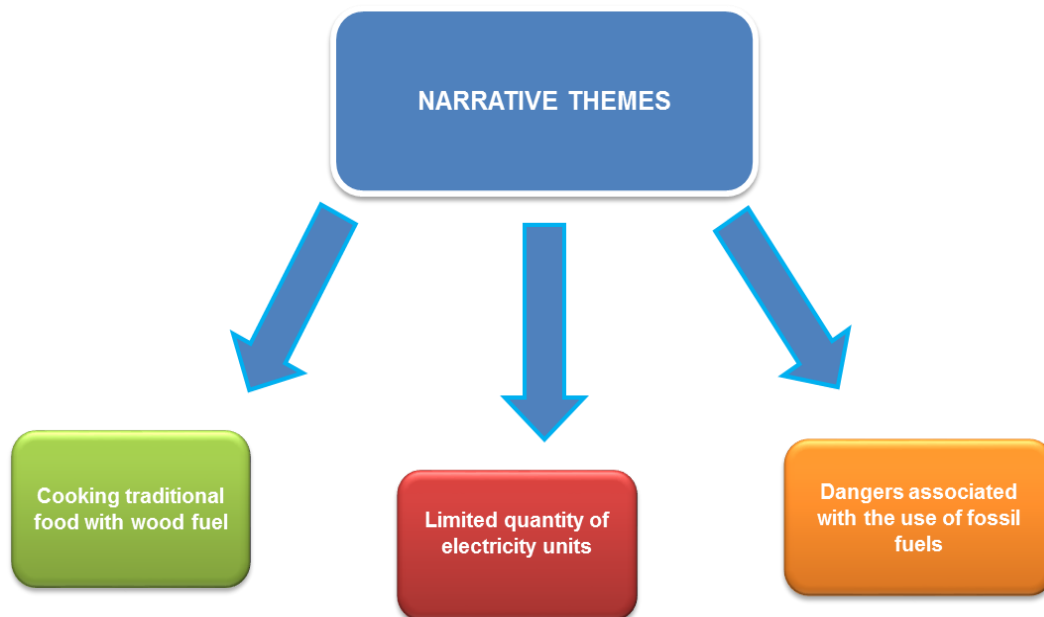


Figure 16 Ms “K’s” narrative themes

5.3.8 Ms “T’s” story

5.3.8.1 Background

Ms T is a 69-year-old widow and a pensioner who lives with her three male grandchildren. She has been living in Soshanguve for 26 years. She was born in Giyani, but grew up in Hammanskraal, Bossplaas. While growing up, she remembered her home using wood fuel. The girls’ responsibilities were to fetch water from the river and wood from the veld while the boys herded the cattle.

5.3.8.2 Past

Ms T grew up with both parents who cared for her and her siblings. Her mother cared for them by ploughing the fields and during harvesting they helped her. When it came to

cooking, Ms T's mother preferred using wood; however, Ms T stated that she did not know why but "all I know is that the area was full of wood...those types of wood that fall from trees on their own, we just had to carry them". There was no access to electricity during those times. Ms T's mother also used dried cow dung; especially in cases where coal was not enough. Traditional foods such as Semphephe; samp, beans and roasted nuts were prepared by Ms T's mother at that time. She cooked the latter foods using three-legged pots.

5.3.8.3 Present

Ms T believes that the woman's responsibility is to find employment. If this is not possible, then "she can do laundry and clean the house". In her household, she is the one responsible for fuel choices and how different fuels should be used. Ms T has been using multiple fuels in her home ever since she can remember. She stated that she prefers using wood fuel because it makes her cooking nice. When she uses wood fuel, her food cooks to perfection compared to using an electric stove. Ms T said that if one cooks foods like tripe using the electric stove one ends up removing the meat quicker from the stove because of "constantly looking at the electricity units on the meter finishing off". Furthermore, Ms T said that electricity in such a context as follows: "it will not last me" because "the meter will be moving faster. I mean you have on the one hand the pot boiling while on the other hand the electricity meter running (billing you)... [laughs]". Although electricity forms part of today's life, Ms T said that she budgets for electricity and at times when she is really desperate or in a tight spot, she makes a wood fire outside. She defined 'tight spot' to be any point in time where she sees that the electricity she has will not last her. However even when electricity is available in the household she would use wood fuel to cook her favourite traditional foods (tripe and samp) because she prefers them to be prepared in that manner. The wood that she uses is from her backyard: "I chop down the peach or avocado tree, I use that wood". Hence, she uses wood fuel to cook foods which require time to prepare. By doing so, she said it would help her save electricity and have enough to light the house. Ms T stated that multiple fuels are not used during summer as often as in winter. In winter, multiple fuels are

mostly used at Ms T's house because this is the time where she cooks food which requires time to cook like Semphemphe which she referred to as "winter foods". Semphemphe helps her household to keep warm.

According to Ms T her three male grandchildren's fuel preferences differ from hers. They prefer using electricity, but she does not know why. Furthermore, she stated that "other fuels in the house are only used by me". Although she does not own the three legged pot, her neighbour lends her one whenever she wants to cook outside with wood fuel. Ms T talks to her neighbours about electricity increases; one of her neighbours whom she talks to make use of multiple fuels similar to hers. Ms T indicated that not all the trees are suitable to be used for cooking; this is because some of them will create poison in the food. She has experience in working with trees as a fuel for cooking hence she feels fairly knowledgeable and can confidently identify suitable trees in the veld to use for cooking.

The electricity tariff increases have affected Ms T's household especially because she is a pensioner, she said "it hurts". Additionally, she said that "when I use up that money to pay expensive electricity bills, I still will need some money to pay for the stokvel (society scheme) I am in. At the same time I still need to eat". The increase in electricity prices is also another reason that led Ms T to use multiple fuels in her household. For her, electricity is scarce because it is expensive and does not last in her home; hence "one needs something in addition to patch those times". Multiple fuel use has benefits for Ms T's household. One of them has to do with having enough electricity for lighting. Also, when using multiple fuels, the household will never go to bed hungry because electricity is absent. Ms T said, "due to the lack of financial means, one is forced to make such choices". Ms T experiences fluctuations in her rent payments, she said that "it does go up and sometimes comes down a bit...sometimes it increases really drastically".

5.3.8.4 Future

Ms T said her household will continue to use multiple fuels. She also recommends others to use multiple fuels in their homes in order to save electricity. Ms T suggested that the government can help by minimising the rent payment, especially for pensioners whose households use free basic electricity. Although Ms T is grateful for receiving free electricity units, she said it does not help much.

5.3.8.5 Ms “T’s” narrative structure and themes

Ms T’s multiple fuel choices and fuel stacking practices are characterised by four themes which emerged from her story, namely, cooking traditional food with wood fuel, pricing/cost of electricity, fuel choices are controlled by time and lastly poor electrified households and the quantity of units they receive (see Figure 17). Ms T’s case highlights the importance of saving electricity by means of using other fuels. It is not necessary to cook foods which require time to cook on an electric stove. Saving household electricity will enable the household to always have lighting. Lack of money is one of the issues which led Ms T to consider using various fuels in her household.

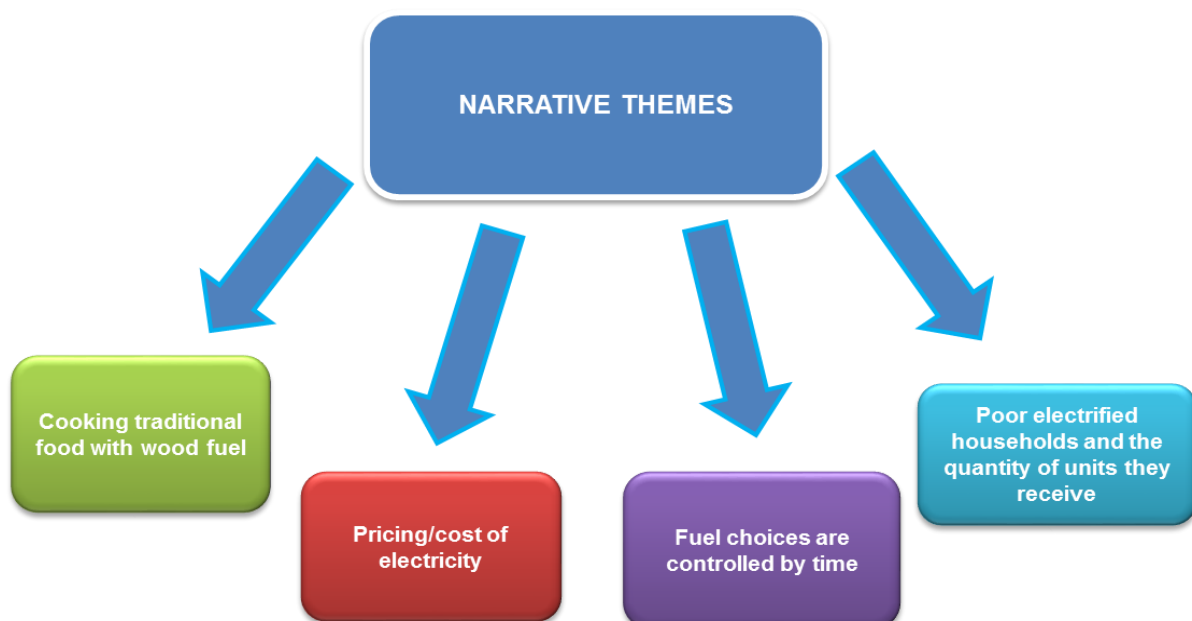


Figure 17 Ms “T’s” narrative themes

5.3.9 Ms “O’s” story

5.3.9.1 *Background*

Ms O is 50 years of age, employed full-time and lives with her husband and children. She has been residing in Soshanguve since 1996, which makes it 18 years. Ms O was born in Limpopo, in a village called Madowa and the area was dominated by Venda-speaking people. She grew up in poverty. Although her mother worked at one of the factories in Hammanskraal, she did not have the opportunity to check on Ms O’s school work to see if she was performing well or if she could read. Ms O stated that learning took place through playing indigenous games such as ‘diketo’ (a game played with stones) and ‘kgathi’ (rope skipping), i.e. education through play. As she was growing up, both her parents made a decision to separate.

5.3.9.2 *Past*

Ms O’s mother used to take care of her household and children through selling goods such as vegetables and tripe. The money she generated from her sales was used to buy mealie meal and salt. Ms O stated that her mother enjoyed her sales business and sometimes she helped her. Days of selling were not the same, she said that “sometimes business was good or it was bad”. Ms O stated that whenever she sold something, she would rush home and give her mother money to buy food for the household. She added to say that, “back then there was no such a thing as buying grocery”, they only bought necessities. For lighting, Ms O’s mother used the ‘molo-peter’ and for cooking, she used wood and coal. At that time, Ms O’s household did not have electricity available in their home because they could not afford it. Ms O’s mother preferred using the ‘mbaula’, which uses coal. Her household has been using multiple fuels ever since they moved to Soshanguve.

5.3.9.3 *Present*

Ms O reported that she still enjoys traditional foods such as tripe, samp, beans and ‘morogo’. In addition, she has a vegetable garden at home, just like she did when she was growing up.

She mentioned that there is a taste difference between traditional foods cooked with wood versus electricity. Ms O still enjoys such a taste and it reminds her of her childhood, when she was still a little girl. She also has a three-legged pot that she uses for cooking. During weekends she makes sure to cook her traditional foods using wood fuel. Ms O does not buy wood, but trims her trees, stacks them and allows them to dry out in the sun and “when the time comes and we have the need to use them, we do”. Ms O said she will continue using multiple fuels in her household because for her there is no any other way, “it’s about your roots, where you come from”. Furthermore she was proud about using wood fuel and said “eh you know I am an African woman, African girl and I am not ashamed...I am where I am now because of my culture” and that is why “I am saying you cannot remove that rural child in me”.

Ms O feels strongly about saving electricity in her home and she takes it further by educating her children about various ways of using electricity efficiently and saving it. Her children can now make a wood fire by themselves without supervision. Ms O encourages her co-workers to cook with wood fuel at her school, especially at functions. On one occasion, it happened that all the school teachers came together to host a function and managed to hire three-legged pots for cooking. Using wood fuel meant that they could use bigger pots enabling a large number of people to be properly fed. Ms O’s school makes use of multiple fuels like a combination of electricity and gas. Ms O takes an active role at her work place when it comes to making fuel choices. In addition, as a home economics teacher, she educates her pupils to use other fuels in the absence of electricity. In her household, she is the one who buys prepaid electricity. Ms O saves electricity in many ways, for example, by not cooking every day. When she does cook, she makes enough food that will last them for a few days: “making gravy to last you for two days; beetroot maybe for the whole week” this is because “you just can’t cook every day”. When she uses the electric stove for cooking, she would cook foods which do not require a lot of time to cook. It is interesting to note that in Ms O’s household, both wood and gas fuels are used to cook foods that require more time to cook.

For heating water she uses a hose pipe which she places on the lawn to be heated up by sunlight: “that hose pipe releases hot water when the tap is opened”. Additionally, her household uses blankets and hot water bottles to keep warm during winter.

Ms O’s fuel choices are controlled by time. Whenever she has time (i.e. during the weekends or school holidays) she can cook with wood fuel outside, but during the week she has work commitments and uses electricity instead. Hence she prefers using electricity because, for her, time is limited: “I have to get up and go to work so I am forced by such circumstances to use electricity”.

Ms O’s fuel choices are similar to that of her husband. She had conversations in the past with one of her neighbours about the use of various fuels and said that her neighbour used coal as a way “to make the household run... as she does not have enough money to buy electricity”. In addition to talking to her neighbour, she also learned things about multiple fuel use while residing in Soshanguve: firstly, that she is not the only one using it and secondly that it is a way of survival and coping especially when an individual cannot afford electricity. Ms O plans to build an outside kitchen which will have a built-in coal stove which she will only use during winter to serve the purpose of cooking, boiling water and for heating. Also, Ms O is in the process of installing a fire place (which will use wood fuel) in her house and this will mainly be for heating during winter. The issue of electricity price hikes affected her household: “you end up using canned foods a lot... for example, say you cook rice, you will end up eating it with tinned fish because it does not require too much time to prepare”.

With regard to the safety of using various fuels, Ms O said with gas, it “just needs you to be careful that you have screwed properly those things, but it’s clean”. Additionally, she said one can use paraffin stove or mbaula carefully by firstly heating them up outside and once the smoke is finished they can be used inside the house for cooking. However, she acknowledged that such fuels create smoke which pollutes the environment and that is not good. Back then when she was growing up, when they used molo-peter; she said that when

she inhaled its smoke, whenever she sneezed, “you could see the smoke residues on the mucous”. Hence it was not healthy.

5.3.9.4 *Future*

Ms O mentioned that using multiple fuels in her household has benefited them in that “it’s there when you need it... I have a choice to choose whatever I want to use”. Hence, she recommends others to use multiple fuels as it saves electricity. She also sees herself in the future using multiple fuels: “I will continue using them; this is because whenever there is a benefit in whatever you are doing, you will continue”. Ms O said it matters not where she might go or move to because she will continue using wood fuel; provided that the area in question will allow it. Ms O has a solar geyser which the municipality has installed for free. She believes that the government is already doing something, like providing free basic electricity to some households and also free installation of solar geysers. Although Ms O does not receive free basic electricity in her household, she is well informed about who qualifies for it; this was indicated in her statement when she said the “government is already helping out, you know with the POP, poorest of the poor where people apply... like your pensioners or those who cannot... they can apply and they insert/supply for them a certain percentage of water also with electricity...”

5.3.9.5 *Ms “O’s” narrative structure and themes*

Ms O’s multiple fuel choices and fuel stacking practices are characterised by seven themes which emerged from her story, namely, multiple fuel use- a way of life, cooking traditional food with wood fuel, cooking strategies to save electricity, fuel choices are controlled by time, household heating strategies, household energy educators and good practices when using fossil fuels inside/outside the house (see Figure 18). Ms O is fascinated about multiple fuel use and fuel choices she makes in her household. She takes pride in using wood fuel because to her it’s a way of going back to her roots and being an African woman. Furthermore, her fuel choices are also applied at her work place and she continues to

educate others (i.e. colleagues, pupils and her children) about the significant use of multiple fuels in their lives.

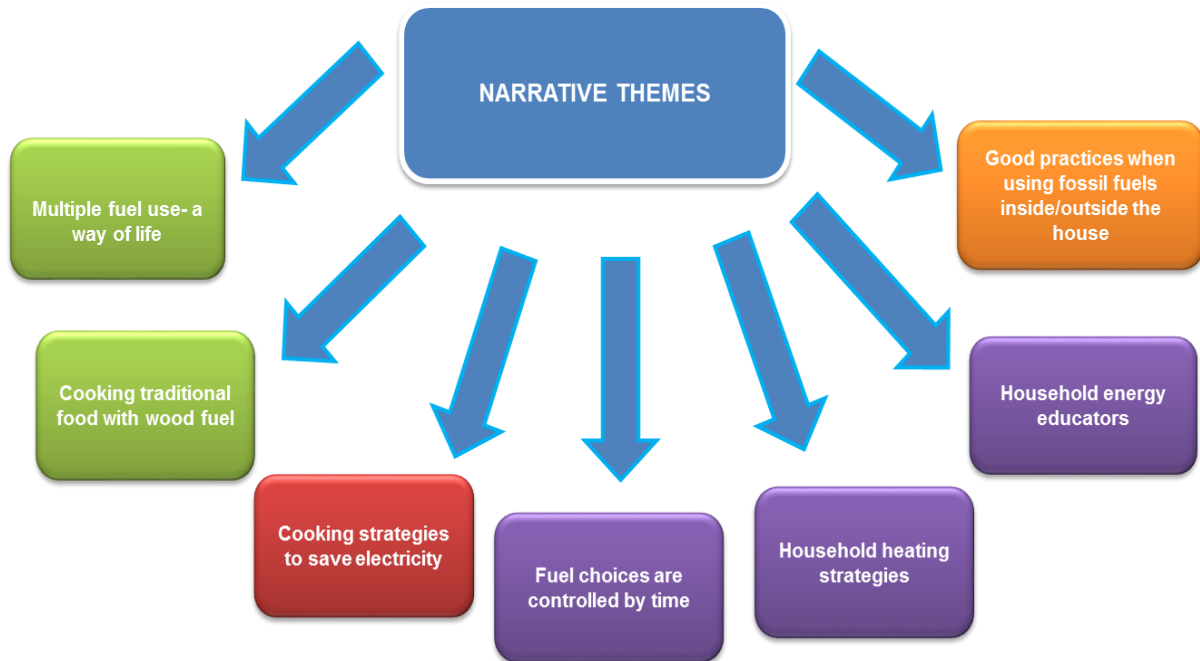


Figure 18 Ms “O’s” narrative themes

5.4 Core Narratives

The discussion in this section is based on the overall common or core narratives that emerged in the study. There are five narratives, namely: Availability of multiple fuels, challenges of using electricity, strategies for managing the use of household fuel, safety of using various fuels and access to free basic electricity “POP” (see Figure 19).

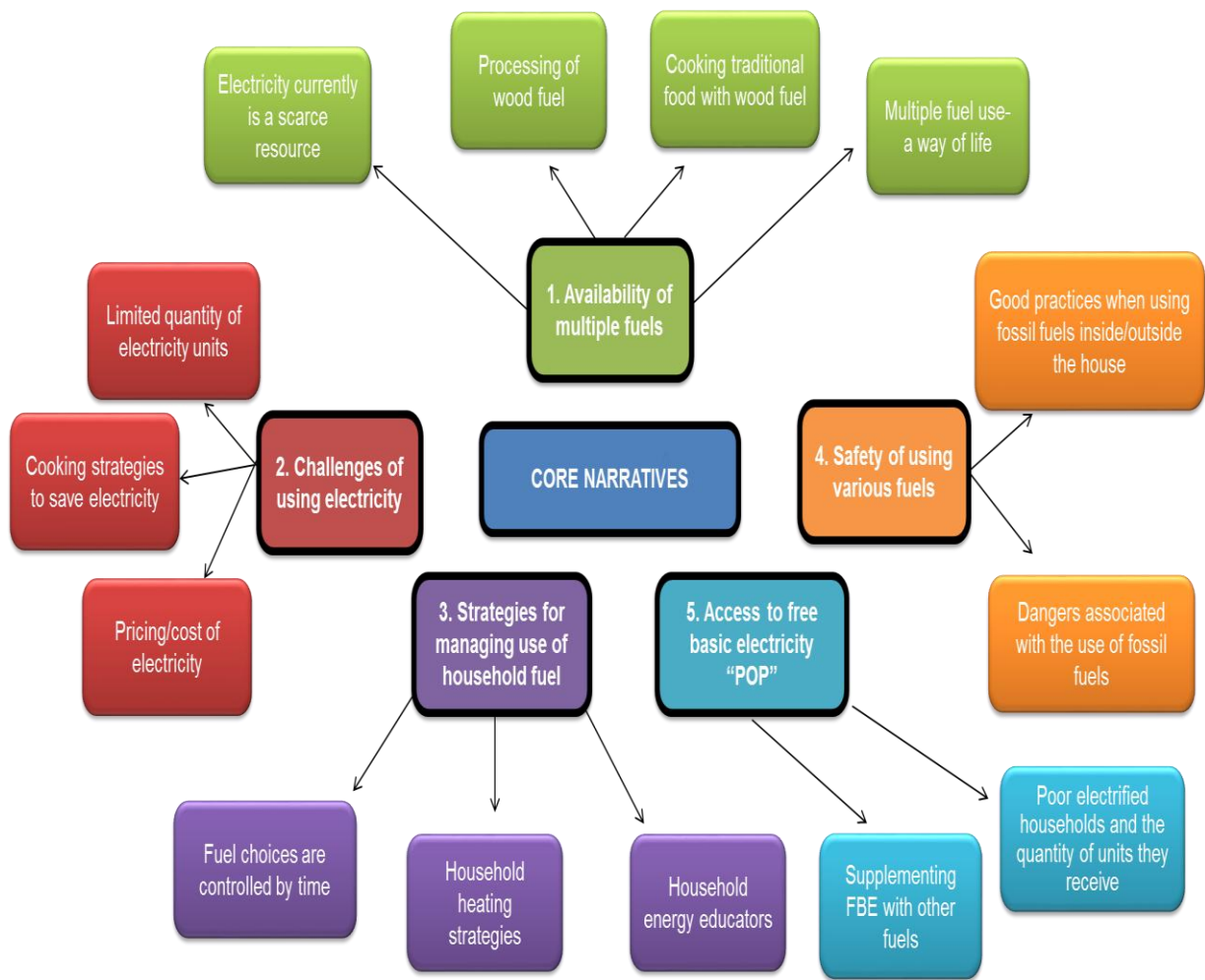


Figure 19 Overall study's core narratives

Each of these core narratives will be discussed in the section that follows. The stories will specifically address what happened in the participants' past, how that lead to what they are doing at present and what the future holds.

5.4.1 Availability of multiple fuels

Various fuels like wood, coal, paraffin, and in some cases electricity, were used by the participants' households in the past thus the phenomenon of multiple fuel use in households has existed for some time. These fuels were used for cooking, lighting and heating. For example, wood fuel and coal were preferred mostly for cooking traditional foods and for household heating; while the molo-peter and in some cases candles and electricity were

used for lighting. Wood fuel was collected by the participants in the veld and this was done before or after school. Wood, together with cow dung fuels, were the only fuels not purchased. Electricity was limited to households connected to the grid and those who could afford it. Although various fuels were available, there were challenges relating to accessing them. Participants had to travel for distances to obtain them as not all fuels were in the vicinity.

Participants' current fuel use is informed by their past experiences and they continue to use multiple fuels. Skills which were learned from using multiple fuels in the past are now transferred into the present with regard to household fuel decision making. Various fuels are easily accessible from the local spaza/tuck shops, garages and at the industrial side (where gas is refilled).

Wood fuel is freely available in the yard or the area in which the participants live and is therefore not purchased. Typically, participants trim or chop the trees at their households, break them into pieces and leave them to dry in the sun. In addition, wood fuel is preferred to cook traditional foods such as cow hooves, beans, samp and tripe. Food prepared in this way is said to be fully cooked/ well prepared, tastier, enjoyable, superb and cooked to perfection. Cooking traditional foods requires a low heat to cook; hence such foods cook slowly and do not require constant checking. A three-legged pot "drie voet" is usually preferred by the participants when cooking traditional foods. All the households are currently connected to the grid and use electricity in their households. Electricity was described to be fast, ever ready, convenient and forming part of today's life. However, electricity is a scarce resource because it is expensive, it does not last, the units are minimised, there are power outages and not to be wasted. The lack of affordability for purchasing electricity continues to be a problem, there is not enough money and many households have to adjust their budgets to accommodate electricity increases. It is for that reason that most of the participants continue to use other fuels in their households to save electricity. Using these is beneficial, not only does it save electricity but life becomes much better.

The availability of multiple fuels enables the participants to exercise fuel choices. Multiple fuels cater for the participants' fuel cooking preferences, in this case using wood fuel to cook traditional foods. Furthermore, some of the participants believe that using multiple fuels is about "your roots and where you come from". Therefore it's a way of practicing traditions. The latter practice is also observed from various local events such as weddings, parties and funerals. It is also about conserving the cultural heritage of being an African woman. The participants are satisfied with having various fuels available in the area and they are likely to continue with this practice.

5.4.2 Challenges of using electricity

Electricity usage was introduced to some of the participants who did not have access to it prior moving to Soshanguve area. They stated that the quantity of units they received was enough to sustain their household needs for the month. Electricity during those times was said to be reasonable and cheap.

Currently, there are a number of challenges regarding the use of electricity which the participants identified. Firstly, the demand of electricity is great due to heavy usage, resulting in power outages. Other challenges include the aspect of electricity being finishing quickly due to units being minimised, it is not the same as in the past and it does not last when used on its own. Electricity is expensive and one of the participants said that she avoids using electricity. This is because housekeeping money is used up to pay high electricity bills and one cannot save money. Using electricity is said to be strenuous especially for the unemployed. Houses are sometimes darkened without electricity.

Additionally, electricity will not last when you use it to cook foods which require time to cook. When cooking using an electric stove, you will constantly check the meter, be conscious about cooking time and end up removing food from the stove even when it's not cooked properly (to one's satisfaction). One of the participants emphasised that she is forced to use

electricity due to her current working lifestyle; hence she does not have time to use other fuels on a daily basis, only during the weekends.

There are issues regarding fluctuations in rent payment which were raised by two of the participants. They felt strongly about the issue and stated that they feel cheated by the municipality and that this problem is hurting them. Therefore, the only way to resolve the latter issue was to go to the municipal offices to lay a complaint and to constantly do follow ups on the matter.

From the participants' accounts on the challenges of using electricity, some of them indicated that they will continue using other fuels in order to save electricity. Multiple fuel use is a coping mechanism for all the challenges listed earlier, in particular, the price/cost of electricity, minimised electricity units and the power outages. The participants made a suggestion that the government can assist by reducing the rent payments, increase the electricity units and also allow them as consumers to purchase electricity directly from Eskom as it was said to be cheaper compared to buying from the municipality.

5.4.3 Strategies for managing use of household fuel

Managing household fuel use in the past meant that some of the participants' mothers had to use other fuels (those that they do not purchase, like wood and cow dung) to save fuels which they had to purchase or those that were temporarily unavailable like coal, paraffin and in some instances electricity. Coal stoves were used in the house for heating, especially in winter.

At present, various fuels except electricity are used to cook foods which require time to cook and to boil water. Electricity is only used to cook lighter meals which do not require much time to cook, for lighting and for appliances (i.e. television). For heating purposes, blankets and hot water bottles are mostly used in winter by the participants to warm up themselves. In heating up the water for bathing purposes, participants mentioned using direct sunlight, solar geysers and the coal stove. Another strategy used by the participants relates to informing or

encouraging other household members to use multiple fuels. This includes educating children to save electricity and to use it wisely. Learning in this context takes place through observation and by practically engaging others to use such fuels themselves.

Using various strategies to save energy creates a better living situation in the household. The participants are able to actively manage the household fuel consumption. As such, the participants stated that they will continue educating the future generation on such practices. One of the participants said she is in the process of installing a fireplace (which will use wood fuel) and to build a coal stove outside the house. The fireplace together with a coal stove will be used only in winter for heating. Some of the participants mentioned that the government can assist also with installing solar geysers.

5.4.4 Safety of using various fuels

In the past, a number of participants' households used mostly traditional fuels such as coal, wood, paraffin and cow dung. There were stories regarding the use of an *mbaula* inside the house, where the smoke could kill if inhaled. As a child one of the participants was a victim of inhaling the smoke when she was asleep with the *mbaula* inside the house. She was fortunate to be rescued and survived. After that incident, her household never used the *mbaula* again in the house.

Participants are knowledgeable about the safety of using various fuels. For example, when using paraffin stove inside the house, they open windows. However paraffin stoves were reported to be used mostly outside the house because of their smell. Furthermore, one of the participants mentioned that "smoke from the paraffin stove used in the house could cause asthma". There are also stories going around about gas fuel being dangerous and explosive. Therefore, participants using gas fuel indicated that they always have the potential danger of gas in mind.

Safety measures adopted by the participants include amongst others, heating either the paraffin stove or wood outside and once the smoke is finished, it is taken inside the house.

Next, when using the gas stove, participants make sure that the gas does not leak and that it is closed tightly. The latter indicates ways in which various fuels are used carefully in households.

The use of fossil fuels (i.e. paraffin and LPG) and solid bio fuel (wood) in the household environment can be dangerous, however, the participants indicated that they were educated on various safety measures to minimise the potential hazards.

5.4.5 Access to free basic electricity “POP”

According to participants free basic electricity is allocated to poor households who are characterised by individuals living in areas populated by shacks, pensioners and households with all members being unemployed or having no formal employment. These households used to receive 50 units of electricity free in the past.

The participants said that currently they receive free basic electricity which approximately is 100 units per month. One of them said such units “reasonably lasts” and other recipients felt that the units are insufficient. Electricity in this context is also said to last longer when supplemented with other fuels.

Information about the free basic electricity is known to members who do not receive it. There was also a concern raised about households which continue to receive free basic electricity even if they no longer qualified. The participant that raised this concern indicated that she has not seen or heard of any investigations conducted on that matter.

The recipients said they would continue to find more ways to save free basic electricity and this will be made possible through using other fuels available to them. They also requested that the government add more units on top of what they are currently receiving.

5.5 The three levels of contextual story analysis

The following section provides an analysis of participants' fuel choices and fuel stacking practices on the three contextual levels. Firstly, the personal level of analysis will address the main challenges experienced by participants regarding their household fuel choices and multiple fuel use. Secondly, is the Interpersonal/group level analysis which highlights issues participants emphasised regarding fuel choices and fuel stacking practices in relation to the social, cultural factors and gender issues. Finally, is the societal level of analysis which focused on how the issues of power supply, electricity tariffs and some government initiatives have an impact on the participants.

5.5.1 Personal level

At the personal level of analysis, the narratives reflect the different experiences of participants' fuel choices and multiple fuel use in their households. The main challenge expressed by participants on this level relates to electricity being expensive. Hence participants who receive free basic electricity indicated that they survive on it. Electricity was preferred to be used for lighting and powering household appliances. Participants make smart choices by using whatever fuel is available in the household to make sure that the household continues to function. Even in the absence of electricity, children will never go to bed hungry. Children and other members of the household are educated to use energy wisely. Although multiple fuel use enabled the participants to have enough money to pay for the stokvel (society scheme) and buy food; fuels such as coal, paraffin and wood continue to be regarded as unhealthy and are also associated with poverty. Multiple fuel use was not only limited to the challenge of using electricity, but it was about practicing old ways of doing things. This is the case when cooking traditional foods like tripe, samp and beans using a wood fire. The method of cooking on an open flame contributes a unique taste in the food and some of the participants argued that such a unique taste cannot be easily achieved when using an electric stove.

5.5.2 Interpersonal/group level

At the interpersonal level, the researcher was interested in how the participants conveyed their stories regarding the social, cultural and gender issues. The use of multiple fuels was a way of life and something which the participants grew up exposed to on a daily basis. Although the energy mix was different, the concept of saving and availability of certain fuels remained the same. In this study, using multiple fuels enabled some of the participants to have social conversations with their neighbours. One of the participants even told the interviewer that her fuel choices are the same as that of her neighbour and she borrows her three-legged pot whenever she cooks outside with firewood. Socialisation in this context created opportunities for the participants to educate and learn from one another. It was a platform for sharing information about what is happening out there regarding the issues of using electricity. Multiple fuel use in this context was not limited to household activities, but it was also used during funerals, parties, and wedding celebrations. In some households, fuel choice and decision making was a partnership between the husband and wife. What was interesting regarding this aspect of gender was that husbands preferred to purchase and install energy equipment (i.e. a gas stove), while wives were mostly the users (i.e. cooking on gas stove).

5.5.3 Societal level

At the societal level, the following narrative accounts were addressed, namely, the power supply, tariffs and some of the government initiatives. Electricity units were said to be limited or shortened. Some of the participants could even recall the total number of units they used to receive before the electricity price increase. Power outages are another challenge related to the use of electricity which households experienced. However, due to the availability of other energy fuels like gas, paraffin, solar geyser and wood; these households were better equipped to cope with the situation. Electricity price hikes severely affected the participants' household budgets. A number of participants were confident that the government could assist them; two of the participants have indicated that the government is already doing

something to help through, for example the provision of free basic electricity and the installation of solar geysers in some areas. However, they said it can still do more to help, like increasing the quantity of electricity units, installing more solar geysers for heating, installing gas stoves and helping residents to receive direct supply of electricity from Eskom and not through the municipality.

5.6 Conclusion

This chapter presented findings in the form of narratives about nine women's stories underlying how they make choices to utilise multiple fuels and how they allocate multiple fuels to various household activities. Each story represents a participant's journey and takes into consideration the past, present and the future events on fuel choices and fuel stacking practices within the household. Five common themes were generated that represent the core narrative structure of the study. Firstly, participants were able to access most of the fuels in their area, hence the theme availability of multiple fuels. Secondly, women indicated that there are various challenges pertaining to the use of electricity. The third theme was on strategies women utilise for managing the use of household fuel. The fourth theme described ways in which women ensured safety when using various fuels. The last theme addressed households that qualify to have access to free basic electricity or "POP".

The next chapter will discuss and interpret the findings in relation to the theoretical framework and literature about multiple fuel choices and fuel stacking practices. Additionally, stories will be connected with the context; which in this case relates to personal, interpersonal and societal level of analysis.

Chapter 6:

Discussion of findings

6.1 Introduction

As explained in Chapter One, the purpose of this study was to explore women's stories of fuel choices and fuel stacking practices in urban households, a topic that has not received much attention in the literature. Qualitative data was collected by conducting individual in-depth interviews with nine participants. The data was coded from the interview transcriptions to generate themes and stories using narrative analysis. The study was based on the following two research questions, namely, (1) What stories do women tell about their fuel choices within the household?; and (2) What stories do women tell about allocating multiple fuels to various household activities? In the first part of this chapter five core narratives which form part of the study's findings outlined in Chapter Five will be discussed and connected to various insights from literature. The section that follows will then focus on the three levels of contextual story analysis. The summary for the interpretation, which answers the two research questions, is then provided. The chapter is concluded with sections that outline the limitations and recommendations for future research.

6.2 Availability of multiple fuels

When the participants moved to Soshanguve, there were more fuels available in their vicinity and that changed the way that they used multiple fuels. Whenever circumstances about a particular fuel changed, the household would change their fuel mix. This indicates that the use of multiple fuels is not static. Therefore, different sources of energy are adopted or dropped, increased or reduced in any period when factors pertaining to the household or the fuels themselves change (Chambwera, 2004). Living in urban areas enables households to have a wider choice and accessibility to a variety of fuels, either modern commercial fuels or traditional fuels (Farsi et al., 2007). The high usage of wood fuel in this study is influenced by

its availability within the participants' backyards and/or is collected in the veld. Wood is not purchased by the participants because it is freely available.

The prevalence of using wood fuel in many developing countries is explained by the fuel's availability, affordability, familiarity, cost-free cooking, better tasting food, and heating (Maconachie et al., 2009; Sepp, 2014). Hence, using wood fuel is a reality and not only in rural areas, but also in urban areas of South Africa (Balmer, 2007). Participants typically processed the wood fuel themselves which included cutting, chopping and pruning or trimming of trees found either in their household or in the veld (Mohammed & Oyeniyl, 2012). It emerged from the study that using wood fuel and other fuels available in the household is a way of life for the participants. The use of wood fuel is often described as being part of the participants' roots and where they come from. Hence, the emphasis is on conserving the cultural heritage of being an African and practising old ways of doing things. Using wood fuel has a symbolic cultural meaning.

All the participants' households had access to electricity which is supplied by the municipality on behalf of Eskom. Electricity contributes a larger share of household energy use in urban areas than it does in rural areas (Winkler, 2006) and it is "...generally viewed as the cleanest energy source for households, thereby reducing health risks, but also bringing other gains such as providing a more efficient lighting source for children to perform homework tasks" (DMR, 2012, p. 23). The participants reported that they use electricity mainly for lighting, cooking light foods and for television. Electricity was viewed as a scarce source of energy which is not to be wasted. Hence, it is used sparingly and the participants opt to use other fuels to supplement it. The participants see energy conservation in their context as essential (Nyatsanza, Davis, Merven, & Cohen, 2010).

Behavioural and cultural practices, lifestyles and food preferences were important in the continued reliance on fuel wood as a cooking energy form (Remigios, 2014). The participants in the current study preferred to cook traditional foods using wood fuel; such foods are said to be "delicious, fully cooked/ well prepared, tastier, enjoyable, superb and

cooked to perfection”. A study conducted by Akpula, Dasmani, and Aglobitse (2011) indicated that a household will buy a relatively higher quantity of a specific fuel on the basis that it contributes to the taste of food cooked. There are clear fuel preferences with regard to cooking practices. Elias and Victor (2005) found that taste preferences and the familiarity of cooking with traditional fuels and technologies contribute to the tendency of cooking to be the last energy service supplied by modern fuels. In India, for example, many wealthy households retain a biomass stove for baking traditional breads because it is crispier and tastier (Malhotra et al., 2000; Masera et al., 2000). Bank (2010) also observed that the type of fuel used in the preparation of a particular meal is frequently determined by the content and nature of the meal itself. The study’s findings confirm those of other studies (see e.g. Elias & Victor, 2005; Hiemstra-Van der Horst & Hovorka, 2008; Masera et al., 2000; Mekonnen & Kohlin, 2009) that cooking traditional foods is a cultural practice which requires the use of traditional fuels because they contribute towards the taste of food cooked. Some of the participants could even identify certain trees that are suitable for cooking; these trees are not poisonous and they do not create too much smoke.

The participants indicated that for as long as they are able to have access to these fuels in their households, they will continue with this practice. It is not only benefiting the household, but it makes life more manageable. They do not have to rely on one fuel especially when the main fuel is unavailable (i.e. power outages). It is for this reason that multiple fuel use influences fuel choices and fuel substitution decisions (Osilo, 2005/6). In addition, alternative fuels cater for the household’s cultural practices and food preferences. The latter characteristics are important to households and create a continued reliance on fuel wood as a cooking energy form (Remigios, 2014).

The importance of alternative fuels being made available enabled households to exercise fuel choices. Household needs (i.e. cultural preferences and saving electricity) were met. Multiple fuels were used by different households with different income levels. The availability of multiple fuels in this context meant that participants were able to survive and ensure that

their household needs were met. Using multiple fuels was a way of coping when the main fuel was unavailable. The latter indicated that the participants were not passive but active when it came to making household energy decisions.

6.3 Challenges of using electricity

All participants reported that electricity was expensive and the number of units they get in terms of what they pay is low. One of these participants (who did not receive the free basic electricity) argued that the electricity bought from the municipality is more costly compared to that supplied by Eskom. Furthermore, she proposed that the government should allow Eskom to supply them with electricity and to remove the middleman, the municipality. The same issue is experienced by residents from Soweto and Tembisa. The residents complained that since the municipality was acting as the 'middleman' in selling prepaid tokens; it was costing them much more than buying directly from Eskom (Makonese, Kimemia, & Annegarn, 2012). When they buy a token for R50 they get 44 units from the municipality and 85 units for the same amount from Eskom. The units they receive for what they pay for is lower when purchased through the municipality.

The participants also noted that the challenge of electricity being expensive is worse for households where the occupants are unemployed. This is because they are unable to afford electricity and such households at times find themselves in the dark with no electricity. Hence, the use of multiple fuels in this context is seen as a way of coping with the electricity price hikes. Cassim, Ewinyu, and Sithebe (2012) argued that having alternative sources of energy imposes an additional cost on the household and that various households will respond differently to the increase in the price of electricity, see (Farsi et al., 2007; Mzini & Lukamba-Muhiya, 2014) studies presented in Chapter Two. In contrast to the latter argument, Sepp (2014) stated that fuel stacking does provide a sense of energy security because dependence on a single fuel can leave households vulnerable to price variations

and unreliable services. Although the residential sector is sensitive to electricity pricing, the tariffs according to the Human Sciences Research Council (2008) would motivate a strong reduction in demand. In the current study, multiple sources of energy were used by different levels of household income for various household activities. Hence, the practice of multiple fuel use remains an enduring feature of the energy consumption patterns in the participants' households.

Two of the nine participants shared their stories on the issue of fluctuations of rent payment they experienced. They both felt hurt that they are paying too much and that the municipality might be cheating them. In a study conducted on energy related behaviour and perceptions in South Africa (DMR, 2012), it was found that people's perception about the price they pay for electricity is skewed towards the feeling that they are paying too much for electricity. Thus 70% of the people in the study were of the opinion that they are paying too much for electricity. Additionally, the study found for gender that larger proportions of females, 73% than males (66%) were of the opinion that electricity prices are too high.

Cooking traditional foods in this context was not limited only to the taste preference as discussed earlier; but it was a strategy used towards saving electricity. The participants indicated that cooking traditional foods takes time and requires low heat to cook. Hence, they use other fuels like paraffin and sometimes gas to save electricity. The cooking of staples and other foods varies greatly both in terms of time and the rate of heat input required (Balmer, 2007). For example, cooking light meals (i.e. rice) will require less time; compared to kidney beans which would require four or more hours to cook. The study conducted by Rugumayo (2010) confirms the study's findings in that cooking traditional foods (i.e. in this case 'matooke' or beans) required time to cook on slow burning fires that allow simmering. Furthermore it was indicated by one of the participants that time influences the type of fuel that can be used; for example it is more convenient for people who work to use electricity during weekdays and wood fuel during weekends.

The participants' challenges with using electricity were important to understand because they provided an overview of how different households react from the electricity increases, their coping mechanisms and also their fuel consumption during this period. In this context, electricity was the main fuel used by most households, but they raised concerns about the number of units they receive for what they pay for being low. It is important to understand the consumer's concerns because the need for using electricity in future will remain.

6.4 Strategies for managing the use of household fuel

Participants mentioned that electricity needs to be managed properly in the household for it to last longer. Some of the strategies utilised to heat spaces and to keep warm, mainly included using hot water bottles, wearing warm clothing and using blankets in contrast to using electric heaters. This mainly occurs in winter. The energy needs for end-uses such as space heating are likely to be influenced by prevailing climatic conditions, especially during winter months (DMR, 2012). A number of participants in this study opted to not use the electric geyser for heating water for bathing purposes but instead to use wood fuel, paraffin and sunlight. There are benefits which could be derived from installing solar heaters for these types of households. Solar water heaters would contribute positively to the alleviation of energy poverty through providing a constant source of heated water (Wlokas, 2011). South Africa after all has one of the highest insulation rates in the world and abundant sunshine throughout the year (Munzhedzi & Sebitosi, 2009).

Educating other members to use energy wisely to save electricity was another strategy used by the participants to manage fuel use in the household. The participants were well informed and aware about the potential danger of using various fuels like paraffin and gas. Educated households are more aware of the negative health impacts associated with the use of wood fuel and also the advantages of modern fuel use, in terms of efficiency and convenience (Farsi et al., 2007). However Schlag and Zuzarte (2008) argued that people who continue

using traditional fuels are often ignorant of the effects of their consumption choices. An example of such an effect is indoor air pollution which is characterised by hazardous pollutants (i.e. carbon monoxide, sulphur, nitrogen oxides and particulate matter) that is associated with a number of respiratory diseases in developing nations.

In this study, participants who were married received help from their husbands in terms of managing household fuel use. They indicated that household fuel choice is a joint decision. One participant revealed that it was her husband who bought and installed the gas stove. Roehr (2002) found a clear gender separation regarding energy equipment and environmentally friendly energy use in private households. Men were mainly responsible for the technical side of the household in the areas of electricity, thermal insulation of the building, boilers, and hot water installations. In contrast, women are expected to educate the family to save energy based on their behaviour. This means women transfer necessary rules to other members of the family. Another study by Mohammed and Oyeniyl (2012) indicated that the rural women of Tofa local government area were primarily responsible for the use of biomass resources and demonstrated that they are good managers; the involvement of men was strongly felt when decisions were required for the energy supply. Therefore the latter studies clearly show that the actual operational duty for the use of energy fuel and education in the household is left in the hands of the women (Mohammed & Oyeniyl, 2012).

The strategies used for managing use of household fuel proved to be important because it lowered the household electricity consumption, offered other household energy saving tips and how electricity was used sparingly. The study was able to identify various types of energy fuels used for specific household activities. In this context, households are able to demonstrate some of the smart fuel choices they incorporate to reduce their electricity bills.

6.5 Safety of using various fuels

Schlag and Zuzarte (2008) stated that there are numerous hazards associated with the use of biomass and petroleum fuels like the toxicity, flammability, indoor pollution from burning of solid fuels for either cooking or heating, death or illnesses which disproportionately affect women and children in developing regions. Furthermore, biomass and petroleum products also have negative environmental impacts because of their carbon emissions. If the latter fuels are not managed properly, the environment and human health can be harmed in many ways (Akpula et al., 2011). In this study, the use of biomass and petroleum fuels (for the purpose of saving electricity and cooking preferences) remains part of the household fuel consumption practice. Thus this practice exposes the participants to the risk of being affected or infected by diseases such as chronic bronchitis, emphysema, and chronic obstructive pulmonary disease. One participant said her child has asthma and this is due to the use of and inhalation of smoke from the *mbaula* she used in the past. Akpula et al. (2011) mentioned several studies which linked childhood exposure to the smoke with asthma, while others have concluded that there is no association.

The participants in this study acknowledged the potential harm that can be caused by biomass and petroleum fuels (i.e. gas, paraffin, and wood fuel). Hence, they used various strategies to minimise the harm and this include amongst others, heating wood fuel and paraffin outside the house or opening the windows whenever paraffin is used inside the house. With gas, two participants said they are always conscious and constantly check to see if the gas cylinder is properly closed and not leaking. Participants who use gas fuel reported having fear whenever they use it as they have heard many stories from other people about gas exploding. The latter is one of the challenges regarding the use of gas fuel and it resonates with what two of the participants said the fear of accidents which could occur (Sepp, 2014).

The knowledge that participants had on the safety of using various fuels was important in this context because households were better able to reduce potential health related harm

which could have resulted into illnesses or physical injuries. Furthermore, there is a need for manufacturers of fuel products to know that consumers are aware of the dangers associated with their use and which platform of communication can be used to share this information. The latter can also contribute towards eliminating some of the misperceptions people have over the use of gas fuel.

6.6 Access to free basic electricity “POP”

The participants who received the free basic electricity in this study said they get approximately 100 units per month. The characteristics of recipients included two pensioners, an individual who still lives in an area populated by shacks and one individual whose household does not have any member in formal employment. Thus the provision of basic electricity enabled these low-income households to increase their electricity consumption and lessen the impact of energy poverty (Mzini & Lukamba-Muhiya, 2014). Households that are poor generally have a low demand for electricity. Hence, consumers who consume more than the allocated free basic electricity per month would imply an ability to afford full electricity services and can be charged the normal tariff for excess consumption above the free basic allowance (Makonese et al., 2012).

The beneficiaries of free basic electricity had to register first with the municipality to see if they qualified. The City of Tshwane uses a new targeting scheme whereby people who are registered by the Department of Social Welfare as indigents receive 100 kWh of free basic electricity per 30-day period (Makonese et al., 2012). The latter process has been established to ensure that the free basic electricity is reaching all of its intended beneficiaries. However, the latter approach is not the same for all municipalities. Other municipalities provide free basic electricity based on the electricity consumption thresholds (i.e. households which use less than 450kWh per month qualifies for the service). Therefore, the difference in definition and implementation approach by the municipalities has resulted in

other qualifying poor households not to receive the free basic electricity. It has also given rise to some wealthy households benefiting from this service because of their low consumption levels (Sustainable Energy Africa, 2014). Furthermore, there is a high level of inconsistency in terms of the roll-out of free basic electricity project across the country. This is due to Eskom and municipalities not following the same principles, guidelines and standards, and pricing. For example, cities like Tshwane and Johannesburg are providing 100kWh of free electricity per month and some small towns and cities registered with the municipality are sticking to the proposed 50kWh per month (Makonese et al., 2012).

Some of the participants mentioned that free basic electricity units lasts reasonably in their households. The amount of free basic electricity (which is 100kWh per month) was regarded as sufficient by the government, stating that it is enough to meet the needs for lighting, media access, limited water heating, basic ironing and cooking (DMR, 2012). However, all the beneficiaries of this service indicated that the electricity lasts them provided they use it in conjunction with other fuels. This illustrates that the provision of free basic electricity has not changed poor households' reliance on alternative fuels for heat-intensive thermal purposes. The quantity of free basic electricity provided to poor households is inadequate to meet basic needs and improvement of the quality of life. Even the 100 kWh per month given in cities like Tshwane and Johannesburg, is not sufficient to cover basic living needs. Therefore, households will continue to rely on paraffin, coal and biomass to meet their daily energy needs (Makonese et al., 2012). Hence some of the participants in the study said that the government can help by adding more electricity units on top of what they are currently receiving.

Access to free basic electricity was important for the recipient households; they survived on it because they could not afford to buy it. Also, it added to their household energy mix. It was evident that such households continue to use other fuels in conjunction with electricity in order for the electricity to last them for the month. There were concerns about the units received not being sufficient to meet their basic household needs. Hence, some participants

proposed as part of the policy, that the government should re-evaluate whether if the current free electricity provided is sufficient to meet the needs of the household; if it is not sufficient, they would like the government to increase the electricity units.

6.7 Summary of interpretation

This research study aimed to answer the two research questions, namely: (1) What stories do participants tell about their fuel choices within the household? And (2) What stories do participants tell about allocating multiple fuels to various household activities? The researcher provides a holistic picture in this section of each question and summarises the answers by means of points.

Firstly, explanations derived from the narratives about fuel choices within the household were given by the following:

- The availability of multiple fuels in the participants' households gave them an opportunity to exercise fuel choices. Available fuels in this context included electricity, paraffin, gas and wood fuel. All these fuels were easily accessible in the community (i.e. spaza shops, garages and industrial sites where gas is refilled) should the participants wish to purchase them. Wood fuel was not purchased, but freely available from the participants' backyards and it was also collected from the veld.
- The challenges of using electricity contributed towards the participants' decisions to opt to use multiple fuels. The cost or price of electricity usage is expensive. Electricity is used up quickly and the number of units they receive for what they pay is low. The heavy usage of electricity results in power outages, especially when the supply does not meet the demand. Hence electricity was seen as scarce and the use of it being strenuous for households characterised by unemployment.

- Being knowledgeable and educating themselves about the potential dangers of using fuels such as paraffin and gas in the household enabled the participants to broaden their choice of fuels that eventually forms part of the energy mix they use.
- Multiple fuel use is about practising the old ways of doing things and preserving a person's cultural heritage. Some of the participants in the study said it is what makes them an African woman. It is their roots and a way of life.

Secondly, explanations derived from the narratives about allocating multiple fuels to various household activities were given by the following:

- There are several strategies for managing the use of household fuel. This theme enabled the researcher to identify from the participants' stories various fuels used for a specific household activity. For instance, cooking traditional foods like tripe, samp and beans was preferred to be cooked using wood fuel, gas or paraffin. There were two reasons for the latter choices of energy fuels, namely, the time required to cook traditional foods and the taste derived from using wood fuel.
- Electricity was used in most cases for lighting, powering appliances and watching television. The latter application was found in all households, including households which received free basic electricity. When light is available in the household, children are happy and able to do their homework. Lighter meals which do not require time to cook (i.e. chicken feet and rice) were cooked using electricity.
- Fuels which were commonly used for heating the water for bathing purposes, especially during the winter season included paraffin, gas, direct sunlight and solar geysers.

6.8 Limitations of the study

The following section provides the limitations of the study which are associated with sampling, data collection methods used and data analysis.

6.8.1 Limitations in sampling

The researcher used the non-probability sampling technique called purposive sampling. The latter method of data collection is subject to researcher bias because the selection of the sample is based on the judgement of the researcher (Gay, Mills, & Airasian, 2006). However, the researcher's judgements were based on clear criteria set out in the method chapter. The small sample size and the specific context used is not representative of the sample population. Hence, the findings of this study cannot be generalised outside of its context (Robson, 2011). Qualitative research is not interested in generalisability but on acquiring rich and detailed information about people's experiences (Willig, 2008). The study's findings can, however, be generalised in certain ways as in other similar contexts (i.e. lessons learned in one setting might be useful to others). The latter form of generalisation is called transferability; also referred to as analytical or theoretical generalization (Robson, 2011). Transferability also refers to the fit or match between the research context, in this case Soshanguve and other contexts (outside Soshanguve) as judged by the reader (Bloomberg & Volpe, 2012).

6.8.2 Limitations in the data collection method

Although the interview guide that was used during the interviews was designed to be flexible, other related topics emerged from the conversations that the researcher did not have time to delve into. These topics could be expanded on in future interviews. Some examples include the question of where did the participants learn about the safety of using fuels to reduce potential harm, men's fuel choices versus those of women and if government initiatives like prepaid meter boxes are user friendly and help the users see on a monthly basis how they saved. Having stated the latter limitations of an in-depth interview, the research study was

not concerned with generalising findings, but to explore various unique experiences of participants (Woods, 2011).

6.8.3 Limitations in the data analysis

Narrative analysis is a very time-intensive analytical procedure and involves the researcher's interpretation of the data. Narratives which emerged from the study were a construction of the interpreter (Clandinin, 2007). When deriving meaning from the participants' stories, is a subjective process whereby the researcher applies own understanding and interpretation of the text. Thus, the researcher's interpretation was omnipresent and others may have analysed the data differently.

6.9 Recommendations for future research

Future research on the topic of women's fuel choices and fuel stacking practices in urban households can be investigated on a larger scale, using quantitative methods to reach conclusive evidence and random sampling techniques in order to generalise the findings. Additionally, researchers can look into the following five topics for future research: Firstly, from the study it was indicated that there is a need for the government to put in place a programme for evaluating and monitoring FBE beneficiaries. This would be in order to ensure that eligible people indeed receive it, and those who are not supposed to are withdrawn from the supply system. Secondly, to investigate the impact of electricity price hikes in households which are already using multiple fuels. Thirdly, to investigate whether household education does relate to behavioural change; and whether this behavioural change is sufficient to reduce health risks. Fourthly, to look into effective platforms for communicating and reducing the health risks associated with traditional fuels that contribute to behavioural change. Lastly, there is a need to conduct a study on households receiving free basic electricity, to see if the current supply of 100KWh is still sufficient to meet their

basic household needs. The latter could inform policy makers in future to revise the current units (100KWh) received by these households.

6.12 Conclusion

This dissertation presented women's stories on how they utilise multiple fuels within the household and how they allocated these fuels to various household activities. This was made possible by conducting in-depth interviews. Findings were in the form of five core narratives which represented the participant's journey and took into consideration the past, present and future events on fuel choices and fuel stacking practices. How women utilise multiple fuels in their households was addressed by three narratives, namely, the availability of fuels in their vicinity, challenges of using electricity and the safety of using various fuels. Allocation of various fuels to household activities was answered by two narratives, namely, the strategies for managing the use of household fuel and the choice of fuel for cooking certain foods, in this case traditional foods.

This study does not in any way dispute the importance of factors proposed in literature such as income, education and household size as important determinants of energy choice in Soshanguve households. The study deliberately indicated the importance of behavioural, cultural attributes, preferences, practices and lifestyles which tend to be neglected in understanding the household energy environment. Multiple fuel use is not a new concept as it also existed in the past; the differences lie with the combination of varying energy mixes in specific contexts. Household energy mix is not static but constantly changes.

The participants are active decision makers when it comes to household energy. They are not only aware of the available fuel alternatives, but also have a clear understanding of what their purchasing options are. The decisions they make are guided by their household preferences; which are characterised by affordability, behavioural, cultural practices and lifestyles. Multiple fuels have benefits for these households and it is for that reason that more

of these fuels will be used in future. Women are household energy managers who have the potential to contribute their indigenous knowledge towards informing future energy solutions or technologies designed towards sustainable energy in the residential households.

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8. Appendix A: Participant information sheet



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Participant Information Sheet

Women's fuel choices and fuel stacking practices in urban households

Dear Participant

In an effort to develop a mini-dissertation study on the topic of household fuel choices and fuel stacking practices, we would like to talk to you to understand your personal opinions and experiences on making household fuel choices together with how you allocate these fuels to various household activities in the effort of ensuring that your family's day-to-day energy requirements are effectively met.

You are free to decide if you would like to participate in the interview or not. It is important to know that you will not be punished in any way, if you decide not to participate. Anything you talk about in this research study is private and confidential, and your name will not be used or written about. Your personal experiences will contribute valuable information towards a growing body of scientific knowledge on this topic because it has not received much attention. The benefit comes with you having been the primary source of information and making it possible for the study to better understand household fuel choices and fuel stacking practices.

If you choose to participate in the research, we will be asking you questions about how you make choices to use multiple fuels and how you allocate multiple fuels to various household activities. The interview will not take more than 60 minutes. The interview will be audio-recorded with your permission so that we have an accurate record of the information. There is no risk involved in participating. If you feel uncomfortable to answer a question, please know that you do not have to. You may stop and withdraw at any stage.

The research results will be submitted in partial fulfilment of requirements for the degree of Master's Research Psychology in the Faculty of Humanities at the University of Pretoria. The results may be published in a confidential way without revealing your identity. The data will be stored for 15 years at the University of Pretoria for research purposes.

If you have any questions or need more information about the research, please feel free to contact me, Tebogo Sole on 073 325 1508 or email me on tebogobrendasole@yahoo.com or contact my supervisor, Professor Claire Wagner at the Psychology Department of the University on (012) 420 2319 or email her on claire.wagner@up.ac.za

9. Appendix B: Consent forms



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Informed Consent Form

Women's fuel choices and fuel stacking practices in urban households: a narrative study

By signing this form I accept and agree to the following:

- That I choose willingly to take part in the study.
- I know that there are no risks involved in the research study.
- That the interview will be audio-recorded and transcribed.
- That anything I talk about in this research study will be kept private and confidential.
- That my name will not be used or written about when publishing the results.
- That the results from the study will be used for research purposes.
- The research results will be submitted in partial fulfilment of requirements for the degree of Master's Research Psychology in the Faculty of Humanities at the University of Pretoria. The data will be stored for 15 years at the University of Pretoria for research purposes.

Therefore I hereby agree to participate in this research.

(Participant)

.....signature.....date

(Researcher)

.....signature.....date

10. Appendix C: Interview discussion guide



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Interview Discussion Guide

Women's fuel choices and fuel stacking practices in urban households: a narrative study

Interview # _____

Notes by _____; date _____

Section A: Socio-demographic information

What is your age?

18-35 years	
36-59 years	
60 years or older	

What is your highest level of education?

No schooling or some schooling	
Matric/Grade 12	
Certificate or diploma	
Bachelors or honours degree	
Master's or doctoral degree	

What is your long-term relationship/alternative relationship?

Married	Single	Divorced	Separated	Widowed	Partner died
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What is your position in the household in traditional terms?

Head of the household	
Spouse of the head of the household	
Partner of the head of the household	
Other (e.g. cohabitating or dependent)	

What is your employment status?

Employed full-time	
Employed part-time	
Self employed	
Unemployed	

How many members living on the premise (who eat, sleep and occupy the space for more than 3 months) including yourself, does your household have?

--	--

Types of fuel used in the household?

Charcoal	
Electricity	
Liquid gas petroleum (LPG)	
Paraffin	
Solar	
Wood	
Other	

Which type(s) of household activities do you use the following fuel choices for in your household?

Fuels	Household activities
Charcoal	
Electricity	
Liquid gas petroleum (LPG)	
Paraffin	
Solar	
Wood	
Other	

**The above section will be useful in analysis as it will be providing context or basic description of the sample used looking at the socio-demographic information.*

NB: The researcher will verbally read the questions to participants and fill in the section on their behalf

Section B: Interview questions

Part I: Background

We'll start with some background information about you and about living in your household.

- 1. Tell me about yourself.**
- 2. Tell me about the stories of living at home.**

Part II: The Past

Next, we'll talk about your past experiences on fuel choices and fuel stacking practices

- 4. Tell me about how your mother used to take care of the household when you were growing up** [*Probe: (i) Which fuel types were being used? (ii) Which fuels did she prefer to use and why? (iii) How traditional food was prepared and was there a specific fuel preferred to cook such a meal?*].
- 5. When did you first see the use of multiple fuels?** [*Probe: (i) Tell me about fuel choices in your life; (ii) What lead you to use more than one type of fuel in your household?*].
- 6. How long has your household been using multiple fuels?**

Part III: The Present

The next section looks at your current personal stories based on fuel choice and fuel stacking practices.

- 7. Tell me about the roles and responsibilities of being a woman in Soshanguve** [*Probe: (i) Whose mainly responsible for making household fuel choices based on the following activities: cooking, cleaning, buying pre-paid electricity and ensuring that overall energy in the household is used wisely; (ii) Is it still expected of you to work and make household fuel choices?*].
- 8. Which types of fuel do you prefer using in your household?** [*Probe: (i) For which type of household activity does each preferred fuel serve?*].
- 9. Is your fuel choice and fuel use preferences different from that of men in your household? If so how?** [*Probe: (i) Which types of fuel do they prefer to use and for which types of household activities?*].

10. When making decisions to use multiple fuels in your household, do you discuss it with your neighbours? [*Probe:* (i) Are your neighbours using more than one fuel type in their households? (ii) Did you ever have a conversation with them as to why they use multiple fuels?].

11. When preparing traditional foods do you prefer using traditional fuels (e.g. wood) or modern fuels (e.g. electricity) and why is it so? [*Probe:* (i) Is there a difference in taste when using an alternative fuel and not the preferred one?].

12. Would you say your current household fuel choices and fuel stacking practices are influenced by your past experiences? [*Probe:* (i) Do you have associations of being a good mother when you make similar household fuel choices your mother did?].

13. Tell me how has the electricity tariff increase affected your household life? [*Probe:* (i) How has it affected your household fuel choices?].

14. How has the experience of using multiple fuels benefited you and your household?

Part IV: The Future

We have one final section, a chance for you to make recommendations based on household fuel choices and fuel stacking practices.

15. Do you see yourself continuing to use multiple fuels in your household next year?

16. Would you recommend others to use multiple fuels in their households?

**More open-ended questions will develop as the interview session proceeds*

Field notes: based on the experience of interviewing #1

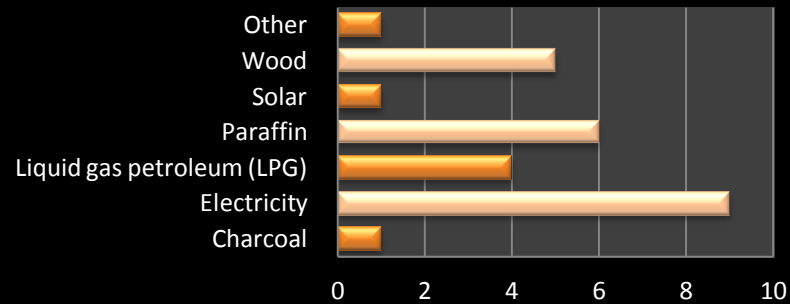
(The researcher's reflection)

Summary:

Comments:

11. Appendix D: Info-graphic representation of the demographic data

Types of fuels used in the household



All women used electricity. Most commonly used fuel following electricity was wood and paraffin.



Solar geyser

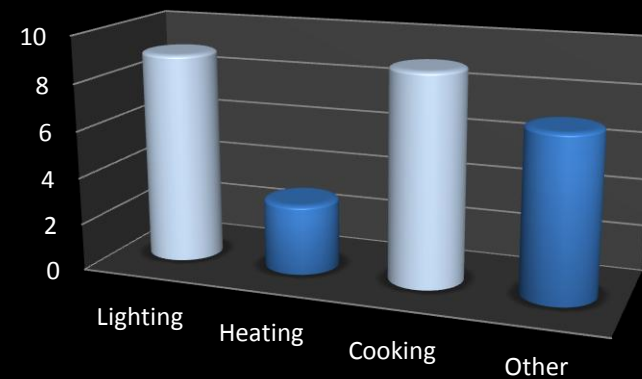


Paraffin



Coal

Household fuel activities



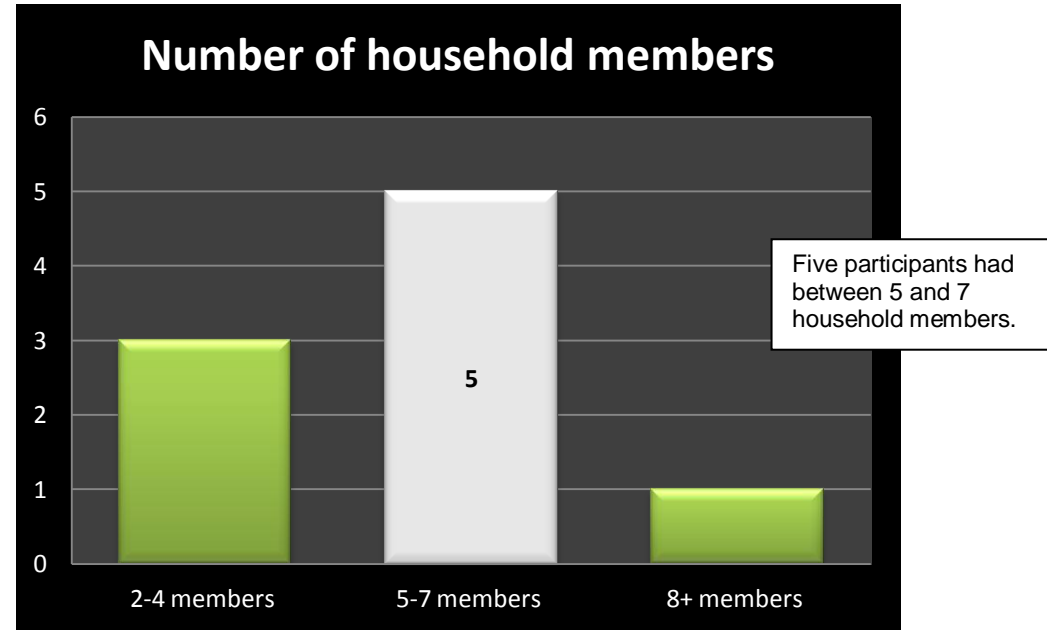
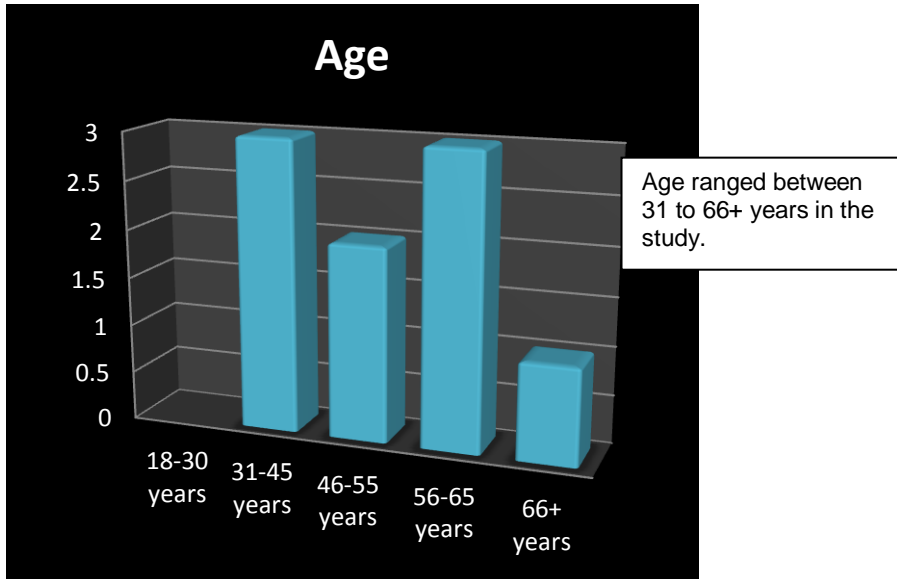
Lighting and cooking household activities were common in all participants.



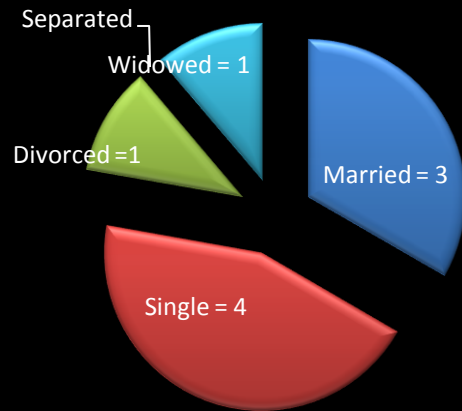
Lighting



Cooking



Relationship status



Participants were represented in four categories, namely: single, married, divorced and widowed.

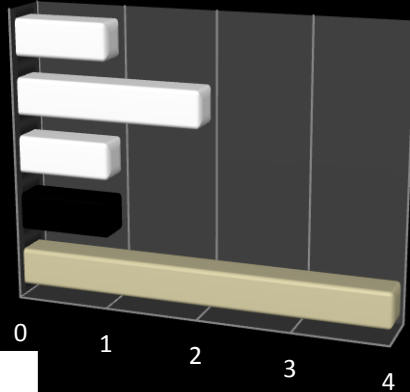
Employment status



5 of the 9 participants were in formal employment.

Highest level of education

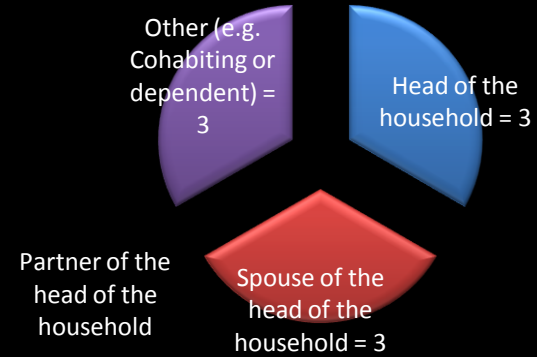
- Master's or doctoral degree
- Bachelors or honours degree
- Certificate or diploma
- Matric/Grade 12
- No schooling or some schooling



Four out of the nine participants were equally represented in two categories, namely: the "no schooling or some schooling" and those with tertiary qualifications.



Position in the household



There was an equal representation by participants on all the categories pertaining to their position in the household.



12. Appendix E: Global themes which emerged in the study

Themes	Sub-theme	Global codes
Availability of multiple fuels	1. Processing of wood fuel	1. Wood is available/ trees/ wood in the yard, area, don't buy wood/ sharing wood with neighbours/cook using wood fire /Chop tree/ trim trees/ break tree branches into pieces/ leave tree branches to dry in the sun/ fetch dried wood from the veldt/ carry wood/ stack wood.
	2. Electricity is a scarce source	2. Electricity is expensive/ not to be wasted/ does not last/ power outages/ household in the dark without electricity/ electricity always increases/ minimised electricity units/ not enough money to buy electricity/ adjusting household budget to accommodate electricity increases.
	3. Cooking traditional food with wood fuel	3. Pap and tripe cooked with wood fuel is delicious/ fully cooked/ well prepared/ enjoyable/ loved/ cooks steadily and to perfection/ superb/ food has smoke taste/ tastier/ the food comes out nicely and smell nice/ its burnt (pap only)/ satisfaction of the outcome/ those who grew up in rural areas are able to differentiate the taste difference on pap cooked using wood fire versus on electric stove.
	4. Multiple fuel use- a way of life	4. A way of saving electricity/ never stopped using multiple fuels/ used to it at home/ will continue to use multiple fuels/ one has various options available to choose from/ multiple fuels have benefits/ life is much better/ educating children about multiple fuel use/ other people use various fuels/ it's about your roots- where you come from/ practice old ways of doing

		things/ use past experience skills learned from using various fuels/ there is no other way/ conserving the cultural heritage- being an African woman/ multiple fuels used in various events such as weddings, parties and funeral ceremonies.
Challenges of using electricity	1. Limited quantity of electricity units	5. Electricity finishes quickly/does not last when used on its own/ does not last when cooking foods which require time to cook/ not the same like in the past/ units are minimised/ constant check the meter when cooking with electric stove/ conscious about cooking time/ remove food from the stove even when it's not cooked properly (to satisfaction)/ forced to use electricity due to current life style- no time/ demand too much due to heavy usage- result to electricity being cut off (power outages).
	2. Pricing/cost of electricity	6. Electricity is expensive/ opt to use other fuels which are available in order to save electricity/ running away from using electricity/ electricity payment issues- fluctuations of rent money/ feeling cheated by the municipality over fluctuations of rent payments/ it's hurting/ household money used up to pay expensive electricity bills/ cannot save money/ using electricity is strenuous for the unemployed/ budget not sufficient/ electricity price hike is a serious problem/ houses in the dark without electricity.
	3. Cooking strategies to save electricity	7. Cooking foods which requires time to cook properly/ traditional foods normally cooked outside/ wood fuel, gas and other fuels (except electricity) are used to cook such foods/ food is well prepared/ never lose patience/ use of three legged pot "drie voet"/ wood from trees that smell will make your cooked food smell/ traditional foods require low heat to cook/ food

		<p>cooks slow/ does not require constant checking/ some of the traditional foods cooked include; cows feet, beans, samp and tripe/ electricity used to cook lighter meals which do not require much time to cook/ other fuels are used to cook foods which requires time to cook.</p>
<p>Strategies for managing use of household fuel</p>	<p>1. Fuel choices are controlled by time</p>	<p>8. Whenever she has time (i.e. during the weekends or school holidays)/ during the week she has work commitments and uses electricity instead/ time is limited/ forced by circumstances to use electricity/really desperate or in a tight spot (i.e. any point in time where the participant sees that the electricity will not last)/ prefer electricity because it is fast and saves time/ electricity is convenient to use/ anytime you would want to use electricity it is readily available.</p>
	<p>2. Household heating strategies</p>	<p>9. Using blankets and water bottles in winter to keep warm/ using direct sunlight to heat the water/ using hot water from the solar geyser/ used coal stove in the past to warm the household/ using wood fire to warm ourselves or for heating.</p>
	<p>3. Household energy educators</p>	<p>10. Informing or encouraging other household members to use multiple fuels/ teaching children how to save electricity/ how to use it efficiently and wisely/ children observe the ways in which energy is saved in the household/ other fuels are used to boil water/ the situation is much better or manageable when using various fuels together/ electricity lasts longer when used with other fuels/ have options to choose from even in the absence of the other/ electricity is saved for lighting the household and watching television.</p>

Safety of using various fuels	1. Good practices when using fossil fuels inside/outside the house	11. Open the windows as paraffin smells/ use paraffin stove inside the garage/ use them outside- when used outside they are not problematic/ heat outside, once smoke is finished, take it inside to cook with/ taking safety precautions prior use/ using them carefully.
	2. Dangers associated with the use of fossil fuels	12. Use of traditional fuels not healthy/ cause pollution which is not good for the environment/ stories about gas fuel being dangerous and explosive/ consciously have in mind the potential danger of gas fuel/ smoke from the paraffin stove used in the house will cause asthma/ educated on the health hazards associated with fossil fuel usage.
Access to free basic electricity “POP”	1. Poor electrified households and the quantity of units they receive	13. Receive approximately 100 units for free from the government/ area one resides in populated by shacks/ pensioners/ when household members are unemployed/ have no formal employment/ reduced rent payments/ indicated on the municipality bill “POP client”.
	2. Supplementing FBE with other fuels	14. Free basic electricity reasonably lasts/ when supplemented with other fuels/ they are too small for my household, unless if I used with other fuels in order to save electricity/ simultaneous use of electricity and gas/ exploring alternative fuels and stop relying only on electricity.