ZERA

ZIMBABWE ENERGY REGULATORY AUTHORITY

Customer Satisfaction Survey & Alternative Energy Baseline Survey 2016

The views that are expressed in this report are those of **Probe Market Research** and do not necessarily reflect those of the Zimbabwe Energy Regulatory Authority.

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EXECUTIVE SUMMARY

INTRODUCTION

This report presents the results of the Customer Satisfaction and Alternative Energy Baseline study which was commissioned by the Zimbabwe Energy Regulatory Authority (ZERA).The study was undertaken by Probe Market Research an independent research company, from September to November 2016. The primary objective of this study was to gauge the level of customer satisfaction with respect to the supply of electricity, petroleum and petroleum products across the country. It also sought to get an insight of alternative energy and its demand in Zimbabwe. In addition, the survey gathered views on the visibility and effectiveness of ZERA as the energy sector regulator as well as its various programs.

The research used both qualitative and quantitative methods. Twenty in-depth interviews were conducted. A national representative sample of 6 428 face- to -face interviews were held in the ten provinces of the country. (the total takes into consideration that individuals who were interviwed for both house to house and motorists questionnaires are not double counted). Face to face interviews were undertaken and targeted: a total of 291 direct customers, 4 220 domestic users, 2 006 motorists (includes households who were interviewed for both motorist and house to house modules) and 770 respondents from the industrial sector were interviewed (excluding social institutions and informal businesses). For this survey, direct customers are defined as customers that are licensed by ZERA (namely IPPs, Oil Companies, Petroleum retailers/wholesalers, ZETDC, ZPC and LPG wholesalers/ retailers) while indirect customers (i.e. motorists, productive sector and households) are those who receive a service or product from the licensees (direct customers).

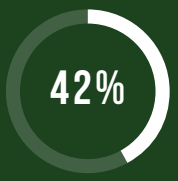
*A national representative sample of **6,432** face-to-face interviews were conducted*

AWARENESS OF ZERA

Customer awareness of ZERA was an important variable of the study as it is an indicator of the visibility of ZERA. Only 25% of indirect customers were aware of ZERA. This was probably due to the fact that they are not directly linked with ZERA. The respondent's level of awareness varied in the following manner;

MOTORISTS

HOUSEHOLDS



PRODUCTIVE SECTORS

Further, respondents were asked to mention the functions of ZERA. The top four functions as indicated by the percentage of respondents mentioning them were as follows;

57% REGULATORY AND LICENSING

16% ENERGY EFFICIENCY AND ENVIRONMENTAL PROTECTION

12% RESEARCH AND DEVELOPMENT

12% TO INCREASE ENERGY ACCESS AND SECURITY OF SUPPLY

The majority of respondents were not aware of their rights and responsibilities as shown by the high percentages of "don't know" responses. The most popularly identified rights were:

30%

Lodge a complaint and get an amicable solution within a reasonable time frame

27%

Being treated fairly with kindness and due respect

13%

Being informed about the energy price structure

EFFECTIVENESS OF REGULATORY TOOLS

ZERA was rated positively on some aspects of its regulatory function, the top four of which were;

74% CUSTOMER CARE

62% COMPLIANCE AND LICENSING

57% RELIABILITY TO GET A LICENCE

61% LICENSING TERMS AND CONDITIONS

However, ZERA was rated negatively on some of its regulatory roles, the leading three of which were:

49%

Consumer education concerning safety issues

48%

Delivering on its promises

49%

Accepting responsibility for its performance

In terms of efficiency, ZERA was perceived as performing below average. Some 47% of the respondents were aware of ZERA's pricing structure, which meant the majority (53%) of the participants were not aware of its pricing models. Forty-two percent (42%) of the respondents agreed that they get their licence on time. A total of 55% of the respondents indicated satisfaction with ZERA's information dissemination strategy.

With respect to pricing, only 39% of the respondents were satisfied with the prices charged by ZERA for licences. In contrast, the rest (61%) felt that prices set for licences and levies are unreasonably high. Fifty-one percent (51%) of respondents were satisfied with the ZERA licensing process while 21% rated it as poor and 28% were indifferent.

***55%** of respondents are satisfied with ZERA'S information dissemination strategy*

COMPLAINT RESOLUTION

At the time of the survey, 67% of the complaints reported had been fully resolved while 33% of the complaints were unresolved. Over 75% of complaints had not been resolved for more than two months while, in extreme cases, some complaints (34%) had been outstanding for eight months.

CURRENT USE OF ALTERNATIVE ENERGY IN ZIMBABWE

Generally, the survey showed that the uptake of alternative energy is still very low throughout the country. In terms of the energy mix,

LIQUEFIED PETROLEUM GAS (LPG) HAS A RELATIVELY BETTER STANDING AT 8.4%...

... AS CONTRASTED WITH BRIQUETTES AT 0.3% OF THE TOTAL MARKET SHARE.

Fifty-six percent (56%) of the LPG on the market is sold through informal channels/ markets and 18% through direct suppliers while twenty-six percent (26%) is sold through other markets.

The main factors affecting the use of alternative energy sources included the price of the product; reliability of supply; value for money; instructions on product use, multi-use of the product; quality of the products and support services. People are most skeptical about the quality and reliability of the product when deciding on whether to use alternative energy options. The survey findings indicated that awareness on the safe use of alternative energy is low at 20%. This suggests that awareness campaigns have not effectively reached every part of the country as indicated by sampling results. This is reinforced by the finding that the highest proportion of respondents acknowledging awarenes was 24% for all the provinces.

CUSTOMER SATISFACTION INDEX (CSI)

The Consumer Satisfaction Index (CSI) rating of ZERA - which represents the proportion of those who:

31%

Satisfied with ZERA service provision

39%

Neither satisfied nor dissatisfied with the service they received

30%

Rated the service as poor

To calculate the CSI, the statistic of respondents, averaging around 20%, who had positively responded to being aware of ZERA was used.

CUSTOMER SATISFACTION INDEX FOR THE LICENSEES

An analysis of the different customer segments was the basis for calculating Customer Satisfaction Indices (CSIs) for specific energy sectors namely; electricity, petroleum and LPG. The CSIs for the different segments were as follows;

IN THE ELECTRICITY SECTOR, 50% WERE SATISFIED AND 17% WERE DISSATISFIED

IN THE PETROLEUM SECTOR, 80% WERE SATISFIED WHILE 5% WERE DISSATISFIED

IN THE LPG CATEGORY, 75% WERE SATISFIED WHILE 3% WERE DISSATISFIED

CONCLUSION

Customer satisfaction was low and this is attributed to the fact that ZERA's role and mandate is not known by the majority of the stakeholders.The CSI was calculated using only those responents who were aware of ZERA's existence and service.ZERA's role, functions and scope must be made clear to the public soas to enable a more empirically based assessment of its work. This would also obviate customer blame on issues that are not within ZERA's mandate. Increasing awareness will help ZERA to better their brand value, reputation and bring diverse perspectives together to enable innovation, all of which help drive long-term sustainability and shareholder value.

There was a higher uptake of LPG in households than for other alternative energy sources coupled with its low use in the productive sector. Awareness of safety measures when using LPG was low for all

respondents. There was low awareness on safe use and handling of cylinders even when they were empty. This gives ZERA an opportunity to increase customer care and awareness campaigns in both urban and rural areas. In this regard, ZERA can enforce the requirement that all retailers of LPG educate the consumers on the safe use and handling of LPG at the point of sale throughout the country.The study established that the greatest volume of gas is being supplied through informal retailers. LPG pricing was generally considered affordable but inconsistent, especially in the winter months when prices increase substantially. Prices fluctuated between USD 1.40 and USD 4.00 per kg, for example, during the 2016 winter period.

Awareness of safety measures when using LPG was low for all respondents

RECOMMENDATIONS

- ZERA should educate the public on its mandate. This helps ZERA to connect with key stakeholders in the energy industry (i.e. both direct and indirect customers).
- In terms of pricing, licensees felt that prices set for licences and levies are too high.
- There is therefore need for ZERA to reduce its license fees or alternatively have a customer-friendly transparent pricing system.
- There is need for ZERA to improve on the turnaround time for complaints resolution.
- ZERA needs to effectively license and monitor the currently high numbers of unlicensed LPG retailers and operators trading illegally and under unsafe environments.
- Proper standards and structures should be established to regulate the sale of LPG as it poses a danger.
- Price of LPG must be stabilised to ensure consistency.
- LPG retailers/wholesalers must educate the public on safe use and handling of gas.

ACRONYMS

AEBS	Alternative Energy Baseline Survey
BMO	Business Membership Organisation
CBD	Central Business District
CSPRO	Census and Survey Processing System
CSI	Customer Satisfaction Index
CSS	Customer Satisfaction Survey
EMA	Environment Management Authority
IPP	Independent Power Producers
KII	Key Informant Interviews
kW	Kilowatt
LPG	Liquefied Petroleum Gas
NOIC	National Oil Infrastructure Company
PCA	Principal Component Analysis
PPS	Probability Proportional to Size
PROBE	Probe Market Research
SAZ	Standards Association of Zimbabwe
ZERA	Zimbabwe Energy Regulatory Authority
ZESA	Zimbabwe Electricity Supply Authority
ZETDC	Zimbabwe Electricity Transmission and Distribution Company
ZIA	Zimbabwe Investment Authority
ZIMSTAT	Zimbabwe National Statistics Agency
ZINARA	Zimbabwe National Roads Administration
ZPC	Zimbabwe Power Company

DEFINITION OF KEY TERMS

Alternative Energy - energy generated in ways that do not deplete natural resources or harm the environment, especially by avoiding the use of fossil fuels and nuclear power.

Renewable energy - is energy that is collected from renewable resources, which are naturally replenished on a human timescale, such as sunlight, wind, rain, tides, waves, and geothermal heat.

Customer - is an individual or business that purchases the goods or services on the market.

Customer Satisfaction - is a measure or assessment of how well products and services supplied by a firm meet, or even surpass, customer expectation.

Customer Satisfaction Index - is an economic indicator that measures customer satisfaction and is seen as a key performance indicator within business or service delivery. It combines the customer survey scores from different business attributes to create a single customer satisfaction score or index.

Direct Customers - these are the petroleum, IPPs and LPG sector retailers/wholesalers.

Household - these are domestic consumers. A household is one or more people who live in the same dwelling and also share at meals or living accommodation, and may consist of a single family or some other grouping of people.

Key Informant Interviews - are interviews conducted with individuals who have first-hand and important knowledge about a topic of interest.

Kish grid - it is a method for selecting members within a household to be interviewed. It uses a pre-assigned table of random numbers to find the correct person to be interviewed. The same grid can be used to select the correct household to be interviewed in cases of multiple households on a single property.

Likert Scale - is a psychological measurement device that is used to gauge attitudes, values, and opinions. It functions by having a person complete a questionnaire that requires them to indicate the extent to which they agree or disagree with a series of statements.

Productive sector - these are corporate companies either in the formal or informal sector.

Corporate - in this survey were made up of five sectors namely manufacturing, agriculture, commerce and distribution, mining, construction and building. For this study, social institutions like schools, hospitals and clinics were included in this sector.

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CHAPTER 1

INTRODUCTION AND BACKGROUND

ZERA is a statutory organisation under the Ministry of Energy and Power Development (MOEPD) with a mandate to regulate the energy sector in Zimbabwe as provided for in the Energy Regulatory Authority Act [Chapter 13:23] of 2011 as read with the Petroleum Act [Chapter 13:22] of 2006 and the Electricity Act [Chapter 13:19] of 2002. The energy sector is comprised of different players that include state owned enterprises, oil companies and independent power producers (IPPs), customers, and the regulator, ZERA. The interaction of these players entails that each has certain expectations that need to be fulfilled. ZERA, as the regulator for the energy sector, is at the core of ensuring that all suppliers of energy satisfy customer expectations.

The National Energy Policy of 2012 has singled out energy as a critical component in the economy

The energy sector in Zimbabwe is subdivided into the Electricity and Petroleum subsectors and other alternative sources of energy. ZERA has an oversight function on all these subsectors and, as enshrined in the Energy Regulatory Authority Act, performs some of the following functions: establishing regulations and licensing; promotion of research and development; supply of access and security of energy. The National Energy Policy of 2012 has singled out energy as a critical component in the economy. The demand and supply sides of the energy sector require constant oversight -especially from the regulatory lens- to ensure productivity that impact positively on socio-economic growth. In this regard, it is imperative that consumers of energy in their various categories are availed the chance to comment and contribute on the way service provision is structured and delivered.

In this regard, this report presents the findings of a maiden Consumer Satisfaction Survey (CSS) and Alternative Energy Baseline Study (AEBS) in Zimbabwe. The survey was carried out by Probe Market Research from September to December 2016.

Customer satisfaction is a measure or assessment of how products and services supplied by an organisation meet or surpass customer expectation.

- KIPPRA (2010)

The alternative energy survey was aimed at establishing a baseline within the market structure, demand and the level of safety and health awareness of alternative energy use. This will help the Authority to gauge the current usage of various energy sources, various market forces and the future outlook for the country's national energy consumption. Alternative energies are energy sources that pose less harm to the environment and usually substitute fossil fuels in energy supply.

It is a truism that alternative energies have low negative environmental impact, a distinction which sets them apart from renewable energies which may or may not have significant environmental impact.

- Hartnett (1976)

A baseline survey for alternative energy is key in establishing a basis and starting point for rapid promotion and inception of clean energy use in the Zimbabwean national energy mix.

1.1 OBJECTIVES

The specific objectives of the CSS and AEBS were as follows:

- To gain insight into the ZERA market visibility and effectiveness of ZERA customer awareness programmes with specific reference to petroleum and related products; electricity awareness, renewable energy, energy efficiency and customer rights and obligations;
- To develop a customer satisfaction index of the energy sector;
- To establish the level of awareness among customers of their rights and responsibilities with respect to operators in the petroleum, LPG and electricity subsector;
- To measure the effectiveness of customer awareness services and educational programmes of the petroleum and electricity subsectors;
- To ascertain the effectiveness of customer dispute resolution and the existing structure or strategy of addressing customers' complaints of operators in the petroleum and electricity subsector;
- To carry out an overview of alternative energy sources use and demand in Zimbabwe;
- To carry out alternative energy sources market structure analysis in Zimbabwe;
- To explore the health, safety and environmental issues of LPG and other alternative sources of energy.

1.2 SIGNIFICANCE OF STUDY

The main goal of the CSS and AEBS was for ZERA to gain an insight and appreciation of the level of satisfaction of energy consumers against their expectation of the supply and performance of electricity, petroleum, and other energy products across the country. The CSS and AEBS survey is intended to assess and determine consumer requirements, gaps and expectations of energy products and service providers' delivery and performance in Zimbabwe.

1.3 SCOPE OR DELIMITATIONS OF THE RESEARCH

The survey was conducted at a national level covering a wide spectrum of stakeholders and clients who included domestic energy consumers; motorists; agriculture, industrial, and mining sectors; and service institutions including government ministries and departments, local authorities, civil society and the media. This baseline survey concentrated on levels of satisfaction on the energy supply and use by sector and province, among other strata.

CHAPTER 2

LITERATURE REVIEW ON ALTERNATIVE ENERGY

2.1 INTRODUCTION

In order to build a strong theoretical underpinning on alternative energy and customer satisfaction index, literature on customer satisfaction and alternative energy is reviewed in this chapter. In light of this, literature from other African countries is reviewed to give an indication of customer satisfaction with the energy sector in selected African countries.

2.2 CUSTOMER SATISFACTION SURVEYS ON ENERGY

Consumer satisfaction is a measure or assessment of how products and services supplied by a firm meet or surpass customer expectation (KIPPRA, 2010). Consumer Satisfaction Index (CSI) is an economic indicator that measures customer satisfaction and is seen as a key performance indicator within business or service delivery. Consumer satisfaction has become a vital modus operandi or concern for companies and organizations in their efforts to improve product and service quality, and maintain customer loyalty within a highly competitive market place.

In Kenya, according to the International Energy Agency (IEA) (2001), analysis of fuel types in urban and rural areas showed that the most popular fuel types in terms of their various uses are:

80% KEROSENE

60% CHARCOAL

55% FUEL WOOD

37% ELECTRICITY

21% LPG

The use of energy type varied with respect to geographical location. Consequently the usage of fuel wood, charcoal and kerosene in rural areas is higher, compared to urban areas, whilst the use of LPG and electricity in the rural areas is lower, compared to that of urban areas.

A CSS was carried out in Kenya in 2010 on petroleum products, electricity and renewable energy providers with key indicators on customer expectation, perceived quality, perceived value, image, loyalty and handling of customer complaints.

- KIPPRA (2010)

The study found that the cost of installation was the most cited reason for not using LPG, electricity and solar energy sources among lower income households and groups (*ibid*). The study also found that

the renewable energy, consisting of mainly the solar and biogas subsectors had the highest customer satisfaction of 74.71%. This was mainly because of their attribute as standalone fuels and consumers preferred them as they are easily accessible, and free of charge, at for solar energy, with installation as the main cost incurred.

The CSS also showed that petroleum products, which include kerosene and LPG, both had a customer satisfaction index of 62.32%.

- KIPPRA (2010)

Consumers of this energy source were mainly urban dwellers. They used it in combination with other fuels, for cooking mainly, (LPG) and for lighting (kerosene) as cheaper alternatives to electricity. Lower LPG usage was attributed to affordability as gas appliances such as cookers were said to be expensive. LPG was not as easily accessible in rural Kenya and, due to lack of correct information; most respondents cited fear of using LPG whilst some from lower income households complained that LPG was relatively expensive (*ibid*).

Connectivity to electricity in Kenya varied greatly across provinces with the capital city, Nairobi, having the highest connectivity reaching a proportion of 53.47% households; followed by Central Province with 42.4 %; while North Eastern and Western Provinces had the least connection rates of 14.5% and 14.7%, respectively.

- Mwakubo et al. (2007)

However, according to the study by KIPPRA, electricity had the lowest customer satisfaction (53.06%), with users complaining of higher tariffs, unavailability, and quality of the product due to power cuts.

- KIPPRA (2010)

Biomass had a CSI of 61.82% , providing 70% of the energy requirements in Kenya where 70% of the consumers use biomass mainly for cooking.

- Kituyi and Kamfor (2002)

The study concludes that focus should be placed on quality of products and services as well as fees and prices, with improved customer service and personal advice offered on alternatives energy.

In South Africa, the 2012 CSS in the residential sector showed that: only 9% of the respondents were very satisfied with electricity provision in their neighbourhood; 55% were satisfied; 15% neither satisfied nor dissatisfied; 15% dissatisfied; and 4% very dissatisfied.

- Department of Energy (2012)

The same research showed that 73% of people with a high living standard indicated satisfaction whilst 45% of people with a low living standard were satisfied with electricity provision, followed by people with a medium living standard (60% were satisfied). From the study, it was evident that South Africans are generally satisfied with the provision of electricity. However, an economic gradient was evident on analysis of the satisfaction levels and, according to the survey findings, 70% of the respondents felt that the price they pay for electricity is too much.

The electrification programme has been extremely successful in expanding the number of households connected to the national grid, significant challenges exist in connecting the remaining 13% of non-electrified households due to factors such as topography, sparse settlement patterns, high costs per connection and either a lack of or no bulk infrastructure.

- Integrated National Electrification Programme (2007)

According to the survey, over 80% of those who are not connected to the national grid constitute the rural poor and the remaining 20% are the urban poor who reside in informal settlements.

- Department of Energy (2012)

Despite greater levels of access, multiple energy use remains an enduring reality among households in South Africa, even after electrification.

This is a result of affordability as well as possible constraints in the type of electric current received – particular to those households that receive a load-limited supply of 20 ampere.

- INEP (2007)

Poorer households use electricity mainly for lighting and cannot afford to use it for cooking or heating. Even in the case of lighting, 29% of the poorest electrified households are using candles as a supplementary energy source whilst almost half of all electrified households in South Africa use electricity in combination with other energy sources such as firewood, paraffin and LPG as for cooking .

- Madubansi and Shackleton (2007)

Erratic power supply due to load-shedding has increased the number of dissatisfied electricity users and this, coupled by the recent increase in electricity tariffs, has given rise to people using alternative power sources in both rural and urban areas.

- Altman et al. (2008)

The use of alternative energy sources has for years now been advocated as the panacea to environmental woes.

- Reynolds (2008)

Historically, the main source of fuel has been firewood which, however, led to massive deforestation with coal becoming the alternative. In traditional societies, the growing use of alternative energy sources was as a result of the depletion of natural resources whereas in present time use of alternative energy has been complex, fuelled also by the rapid increases in energy prices.

This historical background gave birth to the evolution of the concept of alternative energy as being any energy source that is an alternative to fossil fuel. This meant alternative energy that would not pollute as much as fossil fuels, and is less harmful to the environment and humans; is lower in cost and comes from sustainable and renewable sources which include hydro , wind , solar, geothermal, nuclear, hydrogen and biogas amongst others.

2.3 ZIMBABWE AND ALTERNATIVE ENERGY UPTAKE

Zimbabwe boasts a variety of alternative energy resources, which are mainly hydropower, solar and biogases although they are under-exploited.

- Chikukwa (2008)

Geothermal energy and uranium deposits have been considered worthwhile for the country though more work needs to be done for reasonable results and conclusions.

- Darvlo (2002)

Gas industry experts have confirmed a world class coal bed methane resource which would exceed total proven resources for all the countries in the Southern African Development Community (SADC) put together. About 40 Trillion Cubic Feet (TCF) of potentially recoverable gas is estimated to be available in the Lupane/Lubimbi areas.

- Ministry of Energy and Power Development (2017)

Government welcomes investment in CBM exploration and downstream activities. To protect investors, the country is a signatory to a number of treaties and bilateral investment protection agreements.

Nonetheless, under-exploitation of the available sources of energy is attributable to various factors including an unfavourable economic environment; changing climatic conditions; a weak policy on energy research and development; and lack of expertise has led to the mismatch between energy demand and supply in the country.

- Kumar and Jain (2010)

Zimbabwe has a national electrification rate of only 41.5%, with 79% of urban households having electricity whilst rural electrification is still below 19%. In Zimbabwe, the relative contribution and use of various energy forms is as follows: fuel wood (53%), coal (20%), electricity (13%) and petroleum fuels (14%).

- Karekezi and Kithyoma (2008)

These percentages speak to the issues of availability, affordability and accessibility of the various forms of energy. Notably, solar energy and biogas remain under-exploited. Incessant pressure on the national electricity grid witnessed by the routine load shedding compounded by constant erratic rains and low water levels in Kariba dam; capacity under utilisation of the Hwange plant; failure by consumers to service electricity bills and ZESA's limited cost recovery; government's slow rate of significant expansion of existing and new power stations and harvesting of energy from other sources, has resulted in Zimbabwe's reversion to traditional sources of energy (fuel wood and coal) despite the wealth in alternative energy sources.

COMMON TYPES OF ALTERNATIVE ENERGY

Alternative energy forms discussed under this section are solar energy, wind energy, biomass, geothermal and hydro energy.

2.4.1 SOLAR ENERGY

Investors and world leaders are seeking a new, clean energy frontier

Solar energy has gained particular momentum with environmentalists arguing that solar power is the best environmentally-friendly alternative energy source (World Watch Institute, 2016). In the developed world, particularly the USA and Australia, electricity suppliers are becoming more supportive of solar energy as backup schemes to their common power supply. The new technological advancements in skyscraper construction have incorporated solar panels aiding in the self-sufficient power generation for such buildings. In the Sub-Saharan region, the potential for renewable energy development is receiving increasing attention lately as investors and world leaders seek a new clean energy frontier (*ibid*, 2016).With abundant sunshine throughout the year, the continent has infinite solar energy. Kemeny et al. (2014) postulate that several large-scale solar power facilities are under development in Africa including projects in South Africa, Algeria, and Rwanda. He further argues that there are several examples of small grid-linked solar power stations in Gambia, Sierra Leone, and Tunisia which are catering for farm energy needs and at times feeding into the national grid.

There has been an increase in the use of solar enegry among urban dwellers

Zimbabwe has made strides in the uptake and use of solar energy with the enormous potential of solar power both in small and large scale industries (Davison, 1996). On a larger national scale, plans are underway to start up solar power plants with the State Procurement Board seeking tenders for three solar plants that would generate 300 megawatts on completion (Herald October 13, 2015). It is worth noting that, in the past, the harnessing of solar energy was mainly done in rural areas by individuals, small business operators and clinics but currently - due to the escalation in power cuts and electricity rates - there has been an increase in the use of solar energy among urban dwellers (ZIMSTAT, 2012).

Limitation of financial resources has affected most efforst on alternative energy projects

Nonetheless, the use of solar as an alternative energy source is vitiated by the limitation of financial resources both at macro and micro levels. With the current economic challenges facing Zimbabwe, this has affected not only the funding of the proposed three solar power plants but most efforts on alternative energy projects. On a micro level, ZIMSTAT (2012) asserts that the economic challenges are also being felt by the general populace constraining them from fully harnessing solar as an alternative form of energy. For most urban dwellers using solar energy, there is a bias on setting up solar geyser systems rather than the whole electrical supply system. This lack of usage of solar power therefore promotes an overreliance on the already constrained national grid for the supply of electricity (ZIA, 2016).

2.4.2 WIND ENERGY

This entails generation of electricity from wind with speeds above 6 m/s, usually by using propeller-like turbines (Horton, 2008). Off and on-shore wind farms have been used to generate electricity in Europe, Asia and USA. Wind energy is environmentally-friendly as it is pollution free. Armstrong et al. (2016) criticise wind energy for being costly and for having a negative impact on the environment as large tracts of land have to be cleared so that wind can flow without obstruction. In Africa, wind farms have been set up in Kenya, Morocco, Gambia and South

In Zimbabwe wind speeds rarely rise above the required minimum speeds

Africa. However, in Zimbabwe, studies have shown that wind speeds rarely rise above the required minimum speeds and hence wind regimes are not favourable for the generation of electricity. Generally, average annual wind speeds of at least 4.0-4.5 m/s (14.4- 16.2 km/h; 9.0-10.2 mph) are needed for a small wind turbine to produce enough electricity to be cost-effective. Wind speeds over Zimbabwe (averaging 3 metres/second) are too low for most wind-based power-generation technologies, although wind energy has been used for a pilot power-generation project at Temaruru in Rusape and for water pumping at various sites around the country. Wind energy is utilised in the pumping of water in boreholes, especially in farming areas (Emissary and Punungwe, 1998).

2.4.3 BIOMASS ENERGY

This is the energy developed from the wastes of various human and animal activities like the by-products and wastes from timber industry, agricultural yields and municipal solid waste (UNEPCC, 2010). Out of the many alternative sources of energy, biomass takes into account the utilization of waste material to develop energy thereby disposing of waste in a profitable and effective way. The biomass keeps on generating and decomposing as part of the natural biological cycle. It is therefore an environmentally-friendly way of energy production in which biological mass is recycled and re-used hence, a renewable source of energy.

A minimum ethanol or petrol blend target of 20% by 2015 was set while a 5% biodiesel blend is set for 2020(NEP, 2012). In the south-east Lowveld of Zimbabwe, there are two sugarcane-crushing mills that use bargasse for electricity generation. Hippo Valley and Triangle Sugar Estates Generate 72.5MW for their own consumption and can feed up to 10MW to the national grid. Zimbabwe had a target of substituting 10% of its fuel requirements by 2015 through bio-fuels (NEP, 2012).

At most large timber mills, only about 10% of wood waste is generated

There is also potential for power generation from wood waste generated from the timber industry with over 70,000 tons of biomass waste each year. This figure is projected to double by 2020 (AFREPREN, 2012). At most large timber mills, only a small fraction (about 10%) of wood waste generated, is currently consumed in process steam boilers for lumber drying kilns, while the vast majority is burned in the open air or dumped. It is estimated that at least 4 MW of power could potentially be generated from waste that is produced from large mills.

2.4.4 HYDRO ENERGY

Hydro energy emanates from water which drives turbines which, in turn, generate electric power (Kemeny, 2014). Out of all the renewable energy sources, hydro energy has been the most commonly adopted worldwide. Hydroelectricity, like solar energy, has a number of advantages primarily that it emanates from a free and natural source and has the potential for continuous electricity generation. Moreover, the power generated is clean and does not harm the environment. In Zimbabwe, the Kariba hydro power station is the country's biggest plant with an annual generation of 6,400 GWh. The Tokwe Mukosi Dam, which has just been completed, presents opportunity for power generation. According to AFREPREN (2012) Zimbabwe has a hydropower potential of 18,500 GWh a year. There is potential for the country to satisfy its electricity demands through hydroelectricity but, again due to the economic climate policy, constraints as well as climatic changes, hydro electricity generation has failed to operate at its maximum capacity.

2.4.5 GEOTHERMAL ENERGY

Horton (2008) asserts that geothermal energy is produced by tapping into the thermal energy created and stored within the earth which heats underground water and is released to the surface of the earth as steam. This pressurised steam can be used to run steam turbines to generate electricity. This form of energy -considered sustainable -is mostly concentrated in eastern Africa, but there are many fragmented spots of high intensity geothermal potential spread across the continent. Currently, not much else is known about the potential of geothermal energy in Zimbabwe mainly because of lack of research and development in geothermal potential in the country.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

A mixed methodology approach of combining both qualitative and quantitative methods of data collection was employed in this study. The use of key informant interviews and a questionnaire survey targeting domestic customers, the motoring public and industrial customers (productive sector) allowed triangulation of data from different sources and added to the robustness and reliability of the findings.

A multi-level proportionate stratified random sampling method was used in the selection of research respondents from the broad consumer categories of; households, motorists, direct customers and productive sector. The proportional representation of each type of consumer to the whole population was used to calculate the sample size. This probability proportional to size approach was used with weighting done to avoid limitations of probability proportional to size (PPS).The 2012 national population census was used as the sampling frame. All provincial major urban areas in addition to Harare and Bulawayo, with the highest electricity connections, based on Census 2012) were selected for study. Three rural districts in each province were randomly selected for the study. In each district that was selected prominent landmarks such as schools were used as a starting point.

The 2012 national population census was used as the sampling frame

3.2 PROJECT IMPLEMENTATION

The project was implemented in seven phases as tabulated below:

Table 3.1: Project implementation phases

1	Project kick-off and orientation	The project team met with ZERA for a technical kick-off or induction meeting to review the assignment and proposed approach. A timeline was agreed upon which requisite project deliverables mapped. Roles and responsibilities for ZERA and PROBE were discussed and finalised.
2	Questionnaire preparation	The questionnaires were designed by the Probe team before they were presented to the ZERA team for input. This feedback was used to edit the questionnaires as necessary. The final versions were presented to the ZERA team for approval. The approved questionnaires were translated into Ndebele and Shona versions
3	Enumerator preparation	A total of 55 enumerators and 12 supervisors were trained using both a pen and paper based approach (PAPI) and electronic tablets computer aided personal interviews (CAPI).

4	Pilot survey	A pilot phase was done as a means of testing the survey processes. The pilot checked the following; • Specific wording and technical terms in the questionnaire; • Skip patterns and filters (as well as other embedded instructions) in the questionnaire.
5	Fieldwork	The fieldwork was done from the 29th of October to the9th of December 2016.
6	Data capturing and cleaning	The Census and Survey Processing System (Capri) was used as the data capturing software.
7	Analysis and Reporting	A draft report was done and presented to ZERA. Input from ZERA was incorporated into the final report. A summary of this report was prepared as a PowerPoint presentation.

Source: Researchers' Own Derivation

3.2.1 HOUSEHOLD SAMPLE

The household sample was split into urban and rural strata. The sample was designed as follows:

A Urban Stratum

The weight was calculated as:

$$w_i \frac{1}{pi}$$

w_i = weight

p_i = the probability of a unit included in the sample.

In order to avoid bias, random numbers were allocated to each district and arranged in ascending order. First three districts were picked. On average a total of 40 interviews were done in each ward in the sampled district.At least five starting points, using prominent landmarks were identified in each ward sampled. Substitution was done instantaneously if the intended respondents were not available or unwilling to participate and the next house was picked. The rule of thumb of keeping left was used to select households.

A systematic sampling technique based on skipping and selection was used to identify the household for study. In high density, areas every fifth house was picked for study. For the medium and low density areas, two houses were skipped with the third one being sampled for study.

In the case of cluster houses or flats, the first dwelling (only one) was included in the sample and the skip pattern followed thereafter. A weighting technique was employed to correct problems that were as a result of using probabilities.

B Rural Stratum

Rural areas around growth points and business service centers were surveyed. The skip pattern for rural stratum was two houses. Mining and farming communities were also included in this stratum.

The overall sample for the household survey was split as follows;

Table 3.2: Overall sample split for the house to house / domestic component

	TARGET SAMPLE	ACHIEVED SAMPLE
Bulawayo	624	649
Manicaland	262	256
Mashonaland Central	120	151
Mashonaland East	202	214
Mashonaland West	363	455
Matabeleland North	105	118
Matabeleland South	100	135
Midlands	367	417
Masvingo	189	213
Harare	1640	1612
Total	**3972**	**4220**

Source: Researchers' Own Derivation

Figure 3.1: Fieldwork team in Masvingo (Nemanwa)

3.2.2 DIRECT CUSTOMER

Direct customers who were defined as organisations that access a service from ZERA regularly were sampled from the ZERA licensees' databases. The direct customers identified are petroleum and electricity sector licensees. A quota for service stations, was allocated in each province, for big Oil Companies such as :

The target sample for direct customers was 312.

3.2.3 PRODUCTIVE SECTOR

The productive sector sample was extracted from the World Bank Enterprise Survey (ES) database. In this study both the formal and informal sectors were consulted. The corporates in each sector were further divided by size into large, small and medium companies. Probability proportional to size technique was used to ensure that areas with high concentration of companies got more companies included in the sample. For non-responses replacement were made by selecting the next company. Informal business clusters within urban areas were sampled so as to accommodate the informal sector.

The final split for the productive sector was as follows:

Table 3.3: Overall sample split for the productive sector /industry component

	TARGET SAMPLE	ACHIEVED SAMPLE
Agriculture (forestry & plantation)	138	107
Commerce and distribution	301	212
Construction and building	8	13
Manufacturing (food & clothing FMCG)	55	74
Mining (quarry & cement production)	5	12
Social institutes	209	174
Formal business	713	592
Informal business	114	178
Total	**1543**	**1362**

Source: Researchers' Own Derivation

3.2.4 MOTORISTS/ PETROLEUM SECTOR

Zones were created within urban areas using street maps from the Surveyor General's office. Intercept interviews were done in these zones and at growth points in the rural stratum. Poisson distribution was used to determine the sampling interval. Using the ZINARA database, the calculated sampling interval used was 20 minutes for urban or busy areas and three minutes for areas that were in rural areas. In order to get diverse views from respondents, interviews were done in the morning, lunch time and late afternoon. Security zones such as police centres, prisons and military barracks were excluded from this study as these areas are difficult to get access.

Table 3.4: Overall sample split for the motorist component

	TARGET SAMPLE	ACHIEVED SAMPLE
Bulawayo	183	384
Manicaland	31	76
Mashonaland Central	87	91
Mashonaland East	59	88
Mashonaland West	55	125
Matabeleland North	56	72
Matabeleland South	77	79
Midlands	108	181
Masvingo	29	93
Harare	482	817
Total	**1167**	**2006**

3.2.5 KEY INFORMANT INTERVIEWS

Twenty key informant interviews were done with key stakeholders, such as local council, NOIC, ZETDC who have specific knowledge and expertise in the energy sector. These in-depth interviews allowed participants to express their opinions in their own words providing a deeper insight into their attitudes and reactions towards the energy sector in Zimbabwe.

3.2.6 MEDIATION AND ARBITRATION CUSTOMERS

Eight interviews were done with customers that had gone to ZERA for mediation. This customer segment was not split into any specific component as their complaints varied from petroleum to electricity.

3.2.7 RESPONSE RATES

Respondents targeted concerted to participate in the survey voluntarily, having had the nature, risks, possible benefits of participation explained to them. Some of the targeted respondents were substituted with other respondents due to the following reasons:

i Responsible person was away for an extended period during the survey period.

ii Refusals to participate in the survey.

Table 3.5 summarises the response rates of each category. When the targeted sample was exceeded, it was viewed as 100% response rate.

Table 3.5: Response rate per energy-user category

SEGMENT	TARGET SAMPLE	SAMPLE ACHIEVED	RESPONSE RATE
House to House/ Domestic	3972	4220	100%
Motorist	1167	2006	100%
Productive Sector	827	770	93%
Direct Customers	312	291	93%
Mediation Customers	12	8	67%
Key Informant Interviews	30	20	67%

Source: Researchers' Own Derivation

The overall response rate was high in most segments as shown in the Table 3.5.

3.3 TRAINING, FIELDWORK AND DATA PROCESSING

The training was conducted at the New Ambassador Hotel, Harare, for 6 days, from 12th to 18th October 2016. Training was essential at the inception of the project as it equipped the field team(s) with the necessary skills and knowledge relating to the purpose of the study, the research design, methodologies, sampling methods, research instrument use and the methods of data collection to be used in the survey.

Figure 3.2: Enumerator training

Enumerators training session at Ambassador Hotel

The fieldwork for this survey was carried out from the 29th of October 2016 to 6th of December 2016. After data collection; all the questionnaires were coded and edited before data processing. Data entry and verification was performed using the Census and Survey Processing (CSPro) software. During data entry, further editing of computer identified errors was done and corrections made. Batch editing was the method used for data cleaning in CSPro. Further cleaning was done in SPSS using logical syntax. Tabulation was done using SPSS /version 20.

3.4 PROFILE OF RESPONDENTS

THE RESPONDENTS INTERVIEWED FOR THE MOTORIST AND HOUSEHOLD SEGMENTS WERE RANDOMLY SELECTED

MOTORISTS

67% MALES

33% FEMALES

HOUSEHOLD

69% FEMALES

31% MALES

In terms of age the respondent's ages were spread as shown in table 3.6.

Table 3.6: Respondents ages

	HOUSEHOLD	MOTORISTS
Younger than 18 years	0%	0%
18-19 years	5%	3%
20-24 years	11%	6%
25-30 years	18%	18%
31-35 years	15%	18%
36-39 years	10%	12%
40-44 years	12%	15%
45-54 years	13%	16%
55-59 years	6%	6%
60-69 years	7%	6%
70 years or older	3%	0%

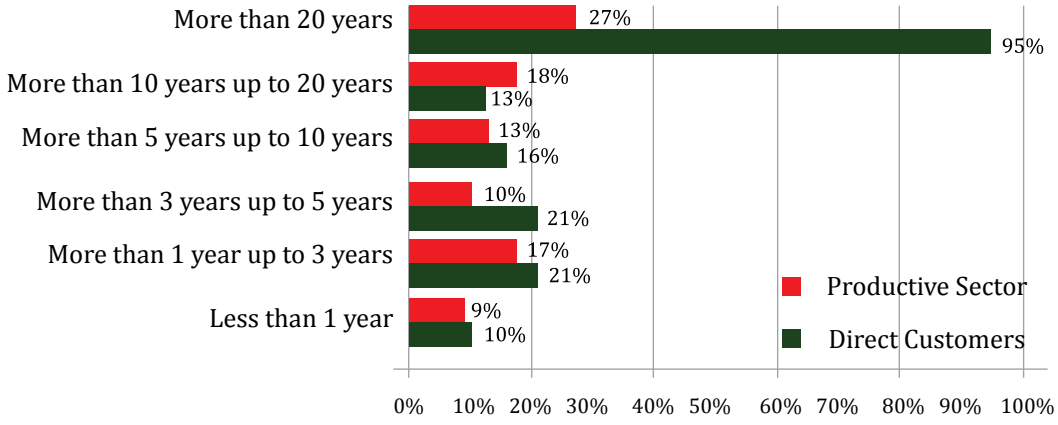
*Most of the respondents interviewed were in the **25-30** year category for both households and motorists.*

3.4.1 PROFILE OF COMPANIES

A Duration of operation for the productive sector or company respondents

The graph below gives a summary of the years the companies (productive and direct customers) targeted for interviews have been in operation. Ninety–five (95%) of the direct customers and 27% of the Productive Sector have been operating for more than 20 years as evident from Fig 3.3.

Figure 3.3: Duration of operation of companies



Source: Researchers' Own Derivation

CHAPTER 4

ZERA CUSTOMER SATISFACTION INDEX

4.1 INTRODUCTION

The ratings are depicted graphically and as tables using colour codes

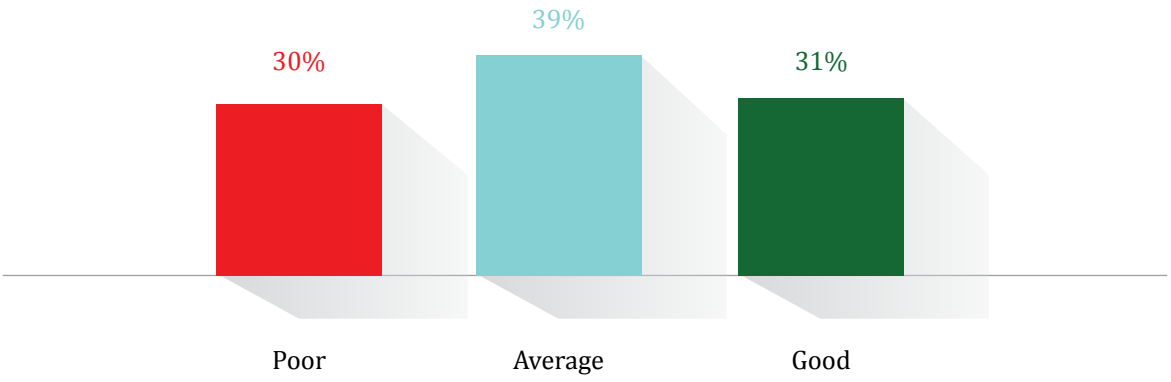
This section of the report presents the customer satisfaction index for ZERA across the direct and indirect customers. Customer satisfaction in this study was defined as the measure or assessment of how well products and services supplied or offered by ZERA directly or indirectly to the customer meet, or even surpass, customer expectation. The customers are divided into six segments; direct customers, productive sector customers (industrial customers), individual house-to-house customers (domestic customers), motorists, key informants, and mediation and arbitration customers. The ratings are depicted graphically and as tables using colour codes i.e.: red for negative rating, light blue for any neutral rating and green for positive rating.

4.1.1 ZERA OVERALL CUSTOMER SATISFACTION INDEX

The overall satisfaction index of ZERA was assessed using a 5-point Likert scale where 1 is very poor and 5 very good. The ratings of 4 and 5 are treated as positive whereas ratings of 1 and 2 are considered negative. The rating of 3 is treated as average and considered to cover customers who are neither satisfied nor dissatisfied. In this study, direct customers are defined as customers that are licensed by ZERA (namely IPPs, Petroleum retailers/wholesalers, ZETDC, ZPS and LPG wholesalers/retailers)while indirect customers (i.e. motorists, productive sector and households)those who receive a service or product from the licensees (direct customers).

The overall satisfaction rating after combining all customer segments is 31%. The Figure 4.4 shows that 39% of the customers rated ZERA as average while 30% rated the service they got as poor.

Figure 4.4: Overall ZERA Customer Satisfaction Index



Source: Researchers' Own Derivation

The overall ratings of ZERA were calculated taking into consideration the following aspects:

A Direct customers

All the customers' responses were used to come up with the ratings. The main reason for this is that these customers interact with ZERA on a regular basis and are able to rate them most accurately.

A consumer can only rate services offered by an institution like ZERA if they are aware of its existence, therefore, awareness of ZERA is a critical measure that had to be established before the overall CSI could be calculated. The indirect customers (i.e. motorist, households and productive sector) had a mixture of consumers that were aware and not aware of ZERA. For calculating the overall customer satisfaction index of ZERA in this section, only the ratings from customers that indicated that they were aware of ZERA were considered.

B Motorists

Of the all the motorist's interviewed, 23% were aware of ZERA. The ratings from these respondents were used to calculate the CSI for ZERA. This CSI was then combined with other customer segments to come up with the overall average or composite CSI index.

C Households

In the household sector, 10% of the respondents interviewed were aware of ZERA. These respondents were asked to measure their perceptions of ZERA. Their ratings were then used to calculate the CSI index in the house-to-house component.

D Productive sector

In the productive sector, 42% of respondents were aware of ZERA. This figure was then used to calculate the CSI of ZERA.

A total of 1317 respondents in all customer segments gave ZERA a customer satisfaction rating of 31%.Thirty percent (30%) rated ZERA as poor and 39% as average. A low customer satisfaction rating of ZERA came from the indirect customers (i.e. the productive sector, households and motorists).The higher ratings came from the direct customers (i.e. the licensees).

Justification for the positive ratings can be attributed to ZERA's efficiency particularly on tariff intervention. A good example given by stakeholders was the intervention by ZERA when ZETDC wanted to increase tariff charges in 2016. Negative ratings maybe a result of low awareness of ZERA as illustrated in Figure 4.19, where for example 90% of household respondents were not aware of ZERA and hence low customer satisfaction.

The following views were highlighted by the stakeholders in the qualitative component:

> *"They are doing a good job looking at when they started as an organisation that is still in its infancy. They started in 2012 with nothing except for an Act of Parliament which they were given. They had to start from recruiting employees, trying to put statute, to set up systems, and then regulating. They are now very active. I see a number of articles of them getting involved in all sectors of the energy sector that is petroleum, electricity and renewable energy. They have tried very well to regulate the energy sector and to bring some conformity" [SIC].*
>
> *- A player in the energy sector*

4.1.2 DIRECT CUSTOMERS SATISFACTION INDEX

The provincial analysis in Table 4.7 shows the highest satisfaction rating (good and excellent category) was in Mashonaland Central (81%), and the lowest in Matabeleland North (33%). The detailed spilt is shown in the table below:

Table 4.7: Direct customers overall satisfaction rating of ZERA by province

PROVINCE	VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT
Bulawayo	2%	15%	46%	20%	17%
Manicaland	9%	5%	18%	36%	32%
Mashonaland Central	0%	0%	18%	45%	36%
Mashonaland East	4%	4%	20%	52%	20%
Mashonaland West	0%	14%	18%	32%	36%
Matabeleland North	22%	0%	44%	11%	22%
Matabeleland South	38%	0%	0%	25%	38%
Midlands	10%	0%	27%	43%	20%
Masvingo	4%	8%	23%	38%	27%
Harare	4%	6%	33%	45%	13%
Average	**6%**	**7%**	**29%**	**37%**	**22%**

The main reasons given for the ratings are shown in Table 4.8.

Table 4.8: Justification for ratings by direct customers

PERCENTAGE (%)	REASON
52%	ZERA is efficient and is doing a good job
4%	ZERA is invisible
4%	Haven't faced any challenges with ZERA
8%	ZERA is not servicing us. ZUVA is the only company selling LPG to licensed traders
6%	ZERA is failing to control unlicensed players
2%	ZERA does not attend to our challenges
2%	It takes too long to get a service from ZERA
2%	ZERA does not educate us

Positive reasons given are linked to the efficient services ZERA provided while negative reasons were due to time taken to resolve complains and the licensing process.

4.1.3 OVERALL SATISFACTION BY LICENSEE TYPE

A comparison on customer satisfaction was made between the various direct customer segments comprised of petroleum retailers or suppliers. Refer to table 4.9.

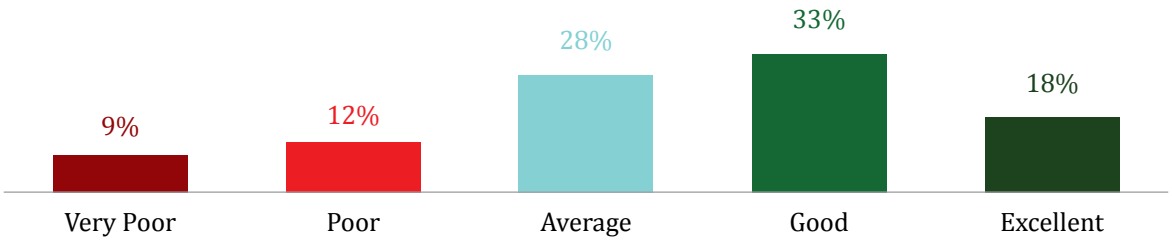
Table 4.9: Direct Customer overall satisfaction rating of ZERA by sector

LIQUID FUELS	VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT
Retailer	8%	13%	29%	42%	8%
Wholesaler	0%	0%	44%	33%	22%
Importer	0%	0%	50%	50%	

4.2 EVALUATION OF LICENSING PROCESS

This section reports on the evaluation results of the licensing process by direct customers. A 5-point scale was used to rate licensing process with the results depicted in figure 4.5.

Figure 4.5: ZERA's licensing mechanism



Source: Researchers' Own Derivation

Figure 4.5 shows that fifty-one percent (51%) of the respondents are satisfied with ZERA licensing process while 21% rated it as poor and 28% rated ZERA service as average. The Table 4.10 shows satisfaction rating by province.

Table 4.10: Rating of ZERA licensing process by province

How would you rate the licensing process?

PROVINCE	VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT
Bulawayo	20%	20%	23%	20%	17%
Manicaland	9%	9%	19%	27%	36%
Mashonaland Central	0%	9%	46%	9%	36%
Mashonaland East	0%	0%	36%	52%	12%
Mashonaland West	0%	9%	27%	32%	32%
Matabeleland North	0%	33%	12%	11%	44%
Matabeleland South	38%	25%	24%	13%	0%
Midlands	13%	17%	23%	37%	10%
Masvingo	8%	12%	22%	46%	12%
Harare	7%	10%	30%	40%	13%
Average	**9%**	**12%**	**28%**	**33%**	**18%**

The highest satisfaction ratings were noted in the Mashonaland East and Mashonaland West provinces with a rating of 64% each while Matabeleland South recorded the lowest rating of 13% (see Table 4.10).

The Table 4.11shows ratings of the licensing process by the various direct customer segments response to the question: *How would you rate the licensing mechanism offered by ZERA on a 5-point scale where 1 is very poor and 5 is excellent?*

Table 4.11: Rating of ZERA licensing process by direct customers segments

SECTOR		VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT
LPG	Retailer	11%	8%	15%	53%	13%
	Wholesaler	11%	0%	45%	22%	22%
	Importer	0%	0%	100%	0%	0%
Liquid Fuels	Retailer	6%	6%	31%	38%	19%
	Wholesaler	0%	0%	50%	0%	50%
	Importer	0%	0%	100%	0%	0%

Sixty-six percent (66%) of LPG retailers are satisfied with ZERA's licensing service. Suppliers who import LPG and petroleum were all average category and were neither satisfied nor dissatisfied (see Table 4.11).

Table 4.12: Justification for ratings by direct customers

PERCENTAGE (%)	REASON
19%	It's not easy to get a licence one is supposed to go through a rigorous process to meet some requirements
8%	When you pay they take time to release the licence or rather issue the certificate
10%	ZERA is rigid
10%	ZERA licence is an affordable licence
8%	ZERA is efficient, it provides a good service
26%	Other reasons

The leading proportion (19%) of dissatisfied respondents who indicated their reasons for dissatisfaction said that they are not satisfied with what they call a rigorous process one is supposed to go through to get a licence or certificate (see Table 4.12).

4.2.1 EVALUATION OF ZERA KEY SERVICE PROVISION AREAS BY DIRECT CUSTOMERS

A total of seven key service areas were evaluated using the 5-point scale. The findings are summarised in Table 4.13.

Table 4.13: ZERA service provision to direct customers

SERVICE AREA	VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT
Information dissemination of safety issues	10%	9%	26%	32%	23%
Customer education on safety issues	13%	16%	22%	30%	19%
Transparency of the pricing structure	5%	14%	34%	29%	18%
Customer service delivery at ZERA	3%	6%	17%	48%	26%
Toll free services	11%	7%	44%	25%	13%
Terms and conditions (written at the back of the licence)	2%	7%	30%	40%	21%
Compliance and licensing	4%	9%	25%	42%	20%
Average	**7%**	**10%**	**28%**	**35%**	**20%**

The Table 4.13 shows that, on average, 55% of the direct customers are satisfied with the services rendered to them by ZERA.

Customers were satisfied with the following services as reflected in the ratings they gave:

- 74% of respondents were satisfied with customer service delivery at ZERA;
- 62% of the respondents were satisfied with the compliance and licensing procedures at ZERA and
- 61% said the terms and conditions (written at the back of the licence) are clear.

Using a scale of 1 to 5 - where 1 represented strongly disagree, 3 neither disagree nor do agree, and 5strongly agree - respondents were asked to rate elements of the service delivery system at ZERA. This section of the questionnaire assessed various aspects of service delivery connected to customer satisfaction namely: reliability, responsibility, empathy and courtesy. Customers were asked to respond to identified five attributes, which, for analysis purposes, can be collapsed into the three above named categories. The five attributes to be rated are indicated in the first column of Table 4.14.

Table 4.14: Key service attributes of ZERA by direct customers

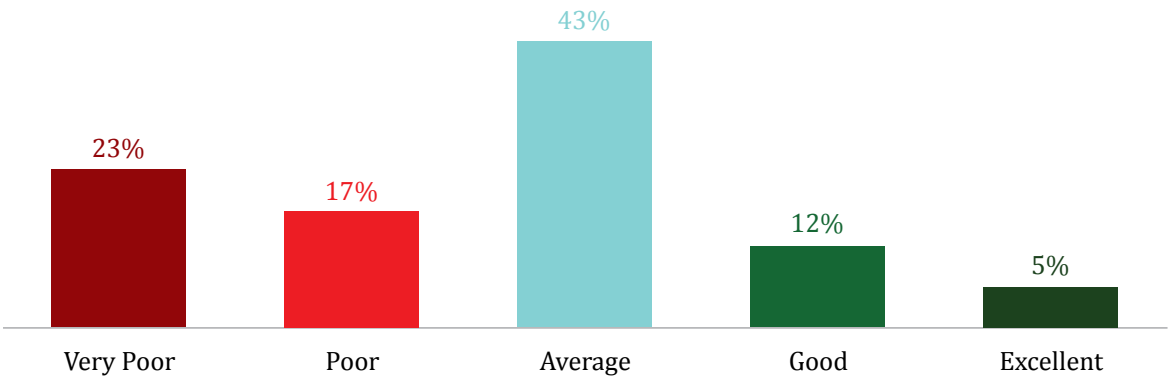
SERVICE	STRONGLY DISAGREE	NEITHER AGREE NOR DISAGREE	STRONGLY AGREE
It delivers on its promises	24%	28%	48%
It accepts responsibility for its performance	22%	29%	49%
It treats customers (licensees) with empathy and respect	22%	17%	61%
It strives to further customers (licensees) knowledge & skills	24%	22%	54%
The levies and licence fees charged are reasonable	34%	29%	37%
Average	**25%**	**25%**	**50%**

Thirty four percent, (34%) of the respondents indicated that they disagreed with the statements that, *"the levies and licence fees charged are reasonable"*. The average positive score is 50% compared to the satisfaction rating of 31% (see Figure 4.14).As evidenced in figure 4.14, only two attributes of treating customers (licensees) with empathy and respect and of striving to further customers (licensees) knowledge and skills scored above 50%.

4.2.2 HOUSEHOLD CUSTOMER SATISFACTION INDEX

Households across the country's ten provinces were asked to rate how satisfied they were with the services offered by ZERA. A 5-point Likert scale was used and the results are shown in Figure 4.6.

Figure 4. 6: Overall household ZERA satisfaction rating indices



Source: Researchers' Own Derivation

The household customer satisfaction rating for ZERA is 17% while 43% of household customers gave an average rating and 40% a poor rating.

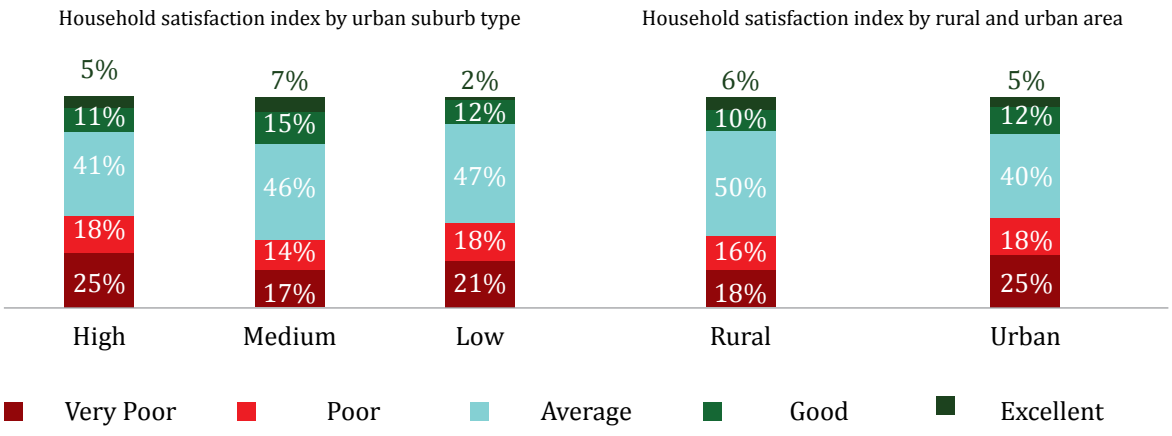
The provincial analysis shows the highest satisfaction ratings came from Masvingo with37% of the respondents indicating that they are happy with ZERA's services. Mashonaland East was the second with 27%. The lowest positive satisfaction ratings were from Matabeleland North, Matabeleland South and Midlands with 2% each (see Table 4.15).

Table 4.15: ZERA household satisfaction index by province

PROVINCE	VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT
Bulawayo	13%	21%	50%	13%	3%
Manicaland	5%	13%	57%	18%	7%
Mashonaland Central	56%	21%	19%	2%	2%
Mashonaland East	5%	4%	64%	15%	12%
Mashonaland West	29%	44%	21%	4%	2%
Matabeleland North	11%	10%	77%	2%	0%
Matabeleland South	8%	16%	74%	2%	0%
Midlands	41%	11%	46%	2%	0%
Masvingo	10%	5%	48%	26%	11%
Harare	27%	14%	36%	15%	8%

Twenty-five percent (25%) of the respondents in the high-density areas expressed dissatisfaction with ZERA. It was interesting to note that most respondents, despite where they live, all rated ZERA as average (over 40%) as shown in Figure 4.7.

Figure 4.7: Overall satisfaction rating by rural, urban and suburb type



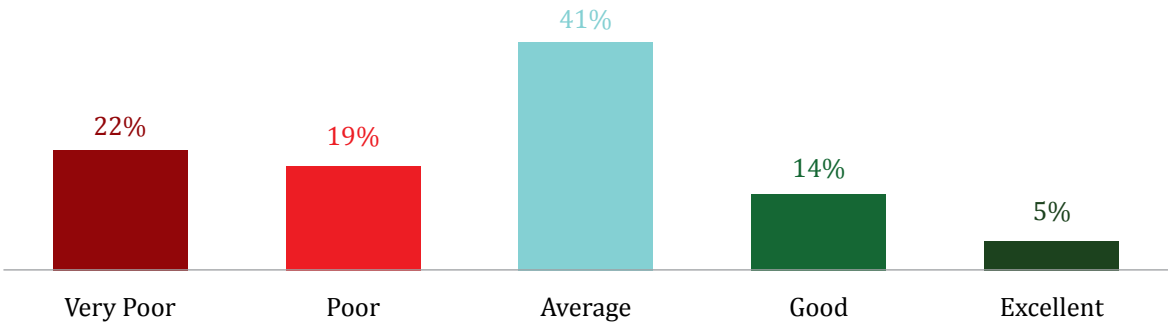
Source: Researchers' Own Derivation

More household customers in urban areas were not satisfied with ZERA's services as compared to customers in the rural areas.

4.2.3 MOTORIST (PETROLEUM) CUSTOMER SATISFACTION INDEX

The customers that use the various petroleum products also rated ZERA. The individual motorist customer satisfaction index was 19% as shown in the Figure 4.8.

Figure 4.8: Overall motorist satisfaction ratings



Source: Researchers' Own Derivation

A high number of motorists (41%) are neither satisfied nor dissatisfied with the services given by ZERA. These ratings were further split by province as shown in the Table 4.16.

Table 4. 16: Motorist satisfaction ratings by province

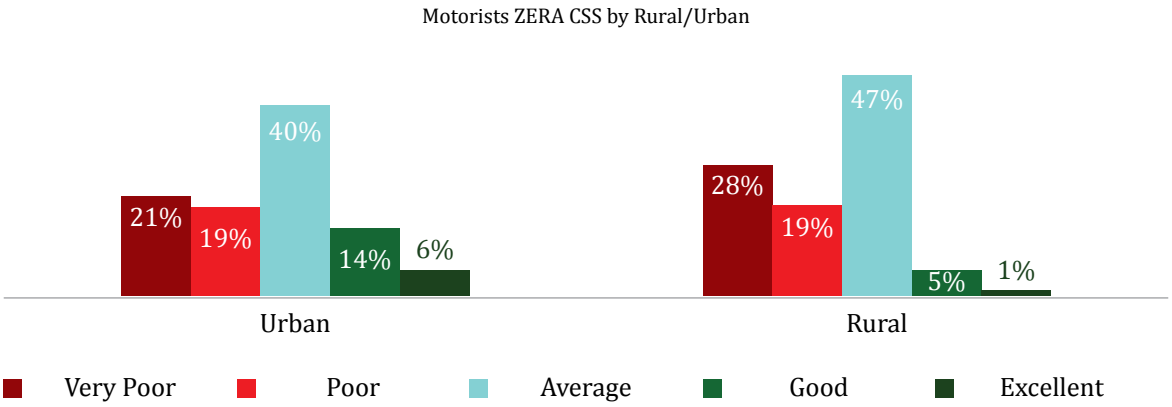
PROVINCE	VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT
Bulawayo	15%	21%	45%	16%	3%
Manicaland	10%	12%	51%	21%	6%
Mashonaland Central	30%	19%	37%	14%	0%
Mashonaland East	8%	5%	57%	20%	10%
Mashonaland West	28%	30%	36%	3%	3%
Matabeleland North	8%	17%	69%	6%	0%
Matabeleland South	14%	14%	66%	6%	0%
Midlands	36%	22%	37%	4%	1%
Masvingo	11%	9%	47%	24%	9%
Harare	26%	19%	34%	14%	7%

The highest positive ratings came from Masvingo and Mashonaland East with 33% and 30% respectively expressing satisfaction with ZERA's services. The lowest positive ratings were recorded in Midlands with 5%.

4.2.4 OVERALL SATISFACTION RATING BY RURAL/URBAN AND FUEL TYPE

Figure 4.9 shows the rating of ZERA by motorists in both urban and rural areas.

Figure 4.9: Overall satisfaction rating by motorists in rural and urban areas



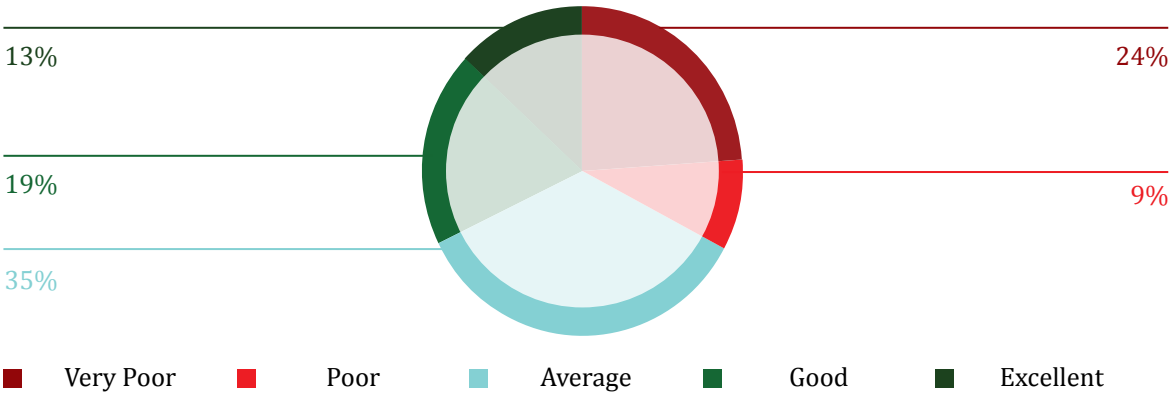
Source: Researchers' Own Derivation

Twenty percent (20%) of the motorists in urban areas are satisfied with ZERA as compared with 6% in the rural areas (see Figure 4.9).Average ratings were high, probably due to low awareness of ZERA.

4.2.4 PRODUCTIVE SECTOR ZERA CUSTOMER SATISFACTION INDEX

The productive sector was included in the sample to gauge industry's perception of ZERA and to determine their current level of satisfaction with the Authority. To reduce bias, companies were randomly selected from all sectors of the economy.

Figure 4.10: Overall ZERA service rating by productive sector



Source: Researchers' Own Derivation

Thirty-two percent (32%) of the respondents were satisfied with the services they received from ZERA, 33% rated it as poor; and 35% were indifferent (see Figure 4.10).

4.2.5 OVERALL ZERA SATISFACTION RATING BY PROVINCE

The overall rating of ZERA's services by the productive sector in ten provinces is presented in Table 4.17.

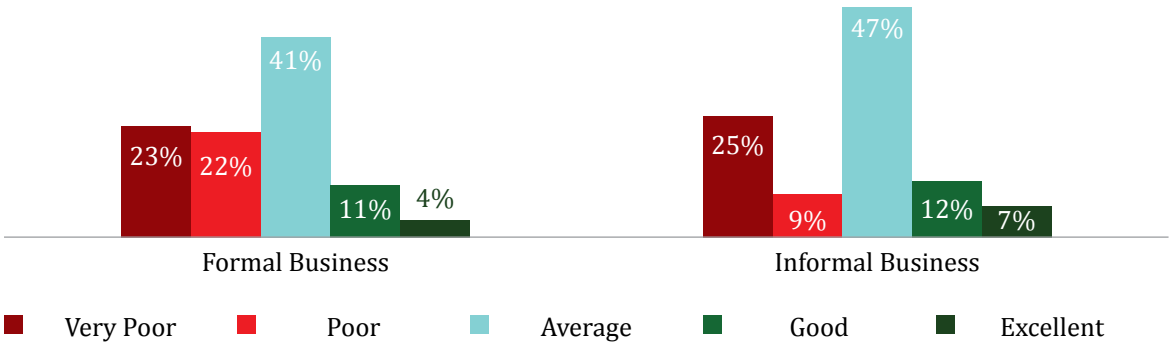
Table 4.17: ZERA-productive sector satisfaction rating by province

PROVINCE	VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT
Bulawayo	13%	30%	45%	8%	4%
Manicaland	11%	16%	44%	26%	3%
Mashonaland Central	33%	27%	20%	13%	7%
Mashonaland East	9%	0%	82%	0%	9%
Mashonaland West	18%	29%	35%	12%	6%
Matabeleland North	6%	6%	88%	0%	0%
Matabeleland South	44%	22%	12%	22%	0
Midlands	48%	18%	32%	2%	0%
Masvingo	19%	11%	37%	22%	11%
Harare	26%	17%	40%	12%	5%

The highest positive ratings came from Masvingo (33%) and Manicaland (29%).The negative ratings came from Matabeleland South and Midlands with 66%each (see Table 4.17).

Overall satisfaction rating by business type was also done. The informal businesses are more satisfied with ZERA (19%) than the formal businesses (15%) see Figure 4.11.

Figure 4.11: ZERA productive sector satisfaction rating by formal and informal business

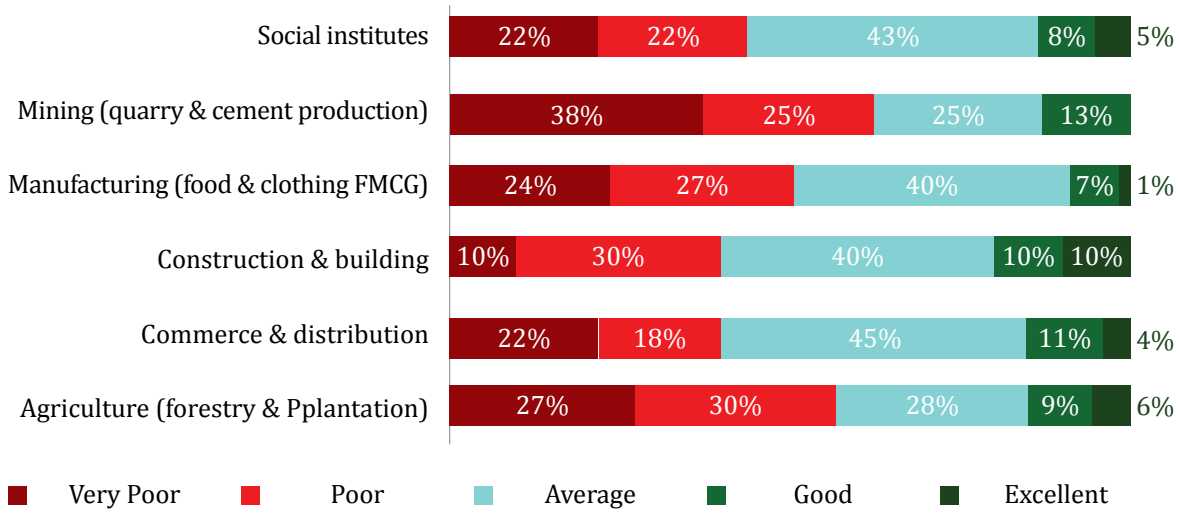


Source: Researchers' Own Derivation

4.2.6 ANALYSIS BY SECTOR

Figure 4.12 shows that ZERA customers across all sectors are generally not satisfied with the current services they are receiving.

Figure 4.12: ZERA productive sector satisfaction rating by economic sectors



Source: Researchers' Own Derivation

The mining, agriculture and manufacturing sectors and social institutions exhibited the least satisfaction with 63%, 57%, 51% and 44% respectively (see Figure 4.12).

Reasons given for the ratings are presented in Table 4.18.

Table 4.18: Responses on ZERA service scenarios by the productive sector

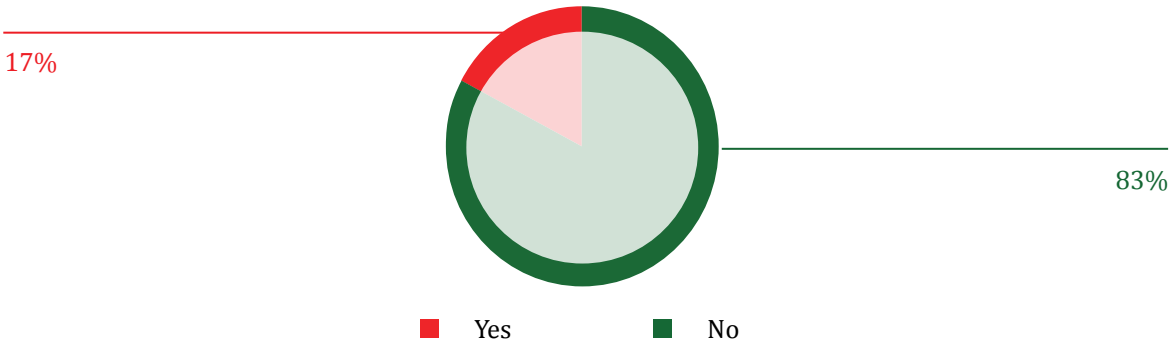
PERCENT	CLAIM OR SCENARIO OF ZERA SERVICES
69%	ZERA is doing great considering that they denied ZESA's price hike
6%	ZETDC has improved on services ever since ZERA was introduced
3%	ZERA has made some strategic strides
3%	ZERA is not strict on ZETDC and pricing of fuel
5%	ZERA can do more to raise awareness

The main reason for corporate satisfaction is that ZERA stopped electricity tariff hikes and respondents also felt that ZETDC had improved its services since ZERA's establishment.

4.3 ZERA COMPLAINTS MANAGEMENT FROM DIRECT CUSTOMERS

To evaluate the level of proficiency ZERA has when handling with customer complaints; direct customers were asked if they had recently reported any complaints. As shown in Figure4.13, 83% of the direct customers have not reported a complaint to ZERA while 17% had reported a complaint to the Regulator.

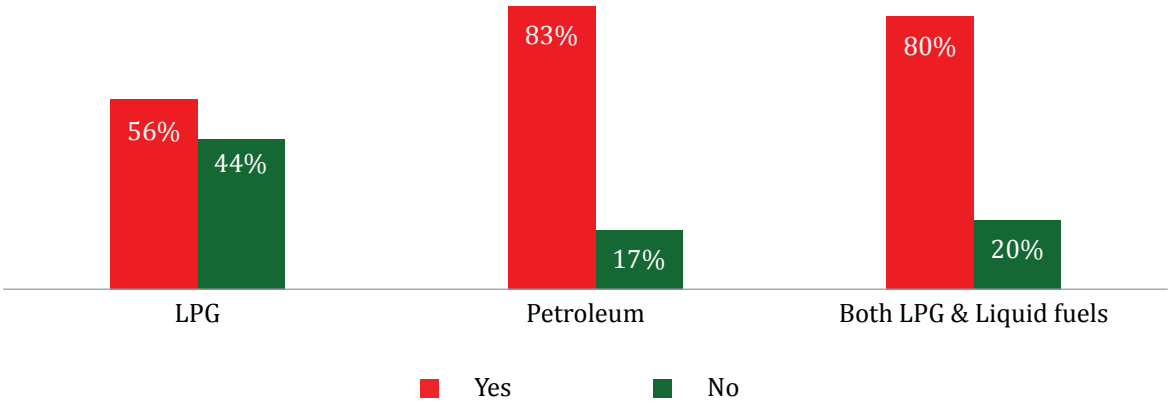
Figure 4.13: Overall reported complaints



Source: Researchers' Own Derivation

This is encouraging as it indicates at face value that there are very few complaints. The complaints were further disaggregated by customer segment in order to highlight the areas from where the most complaints emanated.

Figure 4.14: Reported complaints by direct customer segments



Source: Researchers' Own Derivation

Forty-four percent (44%) of the complaints emanated from the LPG direct customers.
The respondents who indicated "YES" (see figure 4.14) which constituted 17% of total respondents were then asked to provide details of their most recent complaint.

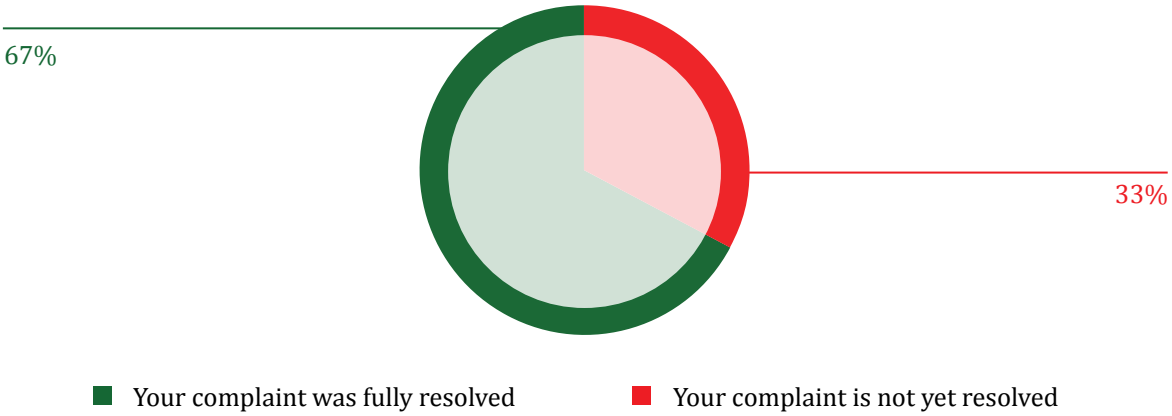
4.3.1 DIRECT CUSTOMER COMPLAINTS TO ZERA

The following are some of the complaints directly reported to the Authority;

- *"We told them about contaminated fuel which was being sold by informal dealers and they only said we test all the fuel suppliers but they keep on selling it in such unsafe environment."*
- *"We reported about Major petroleum on how they got license to trade at their current location at Dairibord when their license did not allow them to trade there."*
- *"We formed an association named GRAZ (Gas Retailers Association of Zimbabwe). We wanted to lodge our complaints with ZERA but the association did not materialise."*
- *"We complained about the vendors retailing gas within our surrounding area."*
- *"We complained about the unlicensed dealers who were selling contaminated fuel."*
- *"The 6 cents margin, licensing and lack of transparency and plastic containers."*
- *"Licence had expired and ZERA closed our service station down."*
- *"It was about the mushrooming of smaller service stations which we suspect are not licensed by ZERA."*
- *"It was about pricing where a retailer would sell both in bulk and at retail price at the same station."*
- *"Cross filling of Kensys gas cylinder by other suppliers."*
- *"It was about a customer who had consumed contaminated fuel."*
- *"I complained about dealers who transport their fuel with plastic tanks and sell unleaded fuel but we, Total, were told it is mandatory to sell blended fuel."[SIC]*

The respondents were then asked if their complaints have been addressed. Figure 4.15 highlights that 67% of the complaints reported have been fully resolved.

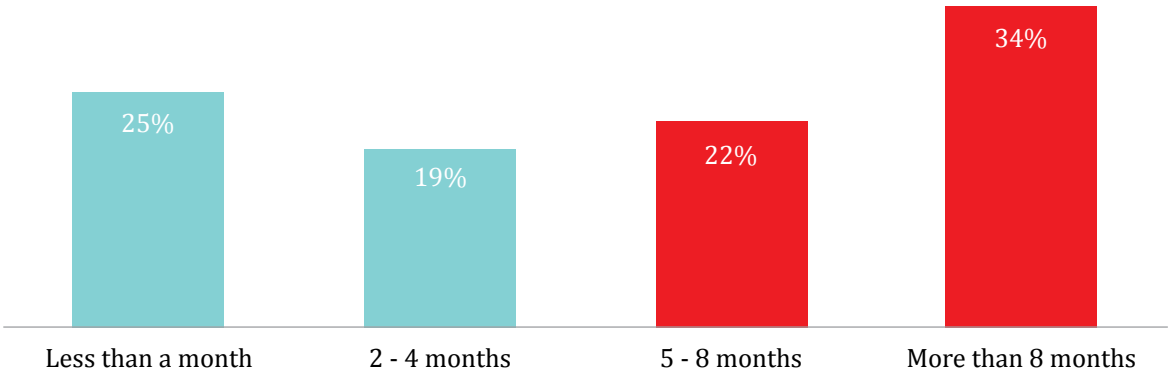
Figure 4.15: Percentage of resolved complaints direct customers



Source: Researchers' Own Derivation

Thirty-three percent (33%) of the complaints had not been resolved at the time of the survey. The respondents were asked to indicate the number of days/months their complaints had taken to be resolved. Their responses are shown in figure 4.16.

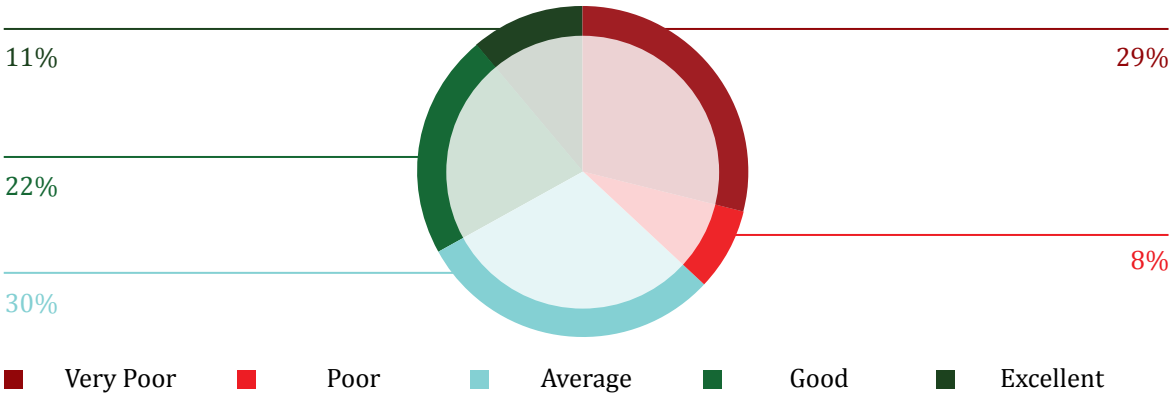
Figure 4.16: Time taken to resolve complaints



Seventy-five percent (75%) of the complaints have been unresolved for more than two months. Thirty four percent (34%) have been outstanding for more than eight months. This is a high percentage and a policy needs to be put in place limiting the time for resolving customer complaints.

Using a 5-point scale, direct customers (67%) whose complaints were resolved were asked to rate the ZERA complaint resolution process. Figure 4.17 shows the responses of respondents the complaints resolution process.

Figure 4.17: Direct customer satisfaction with complaint resolution

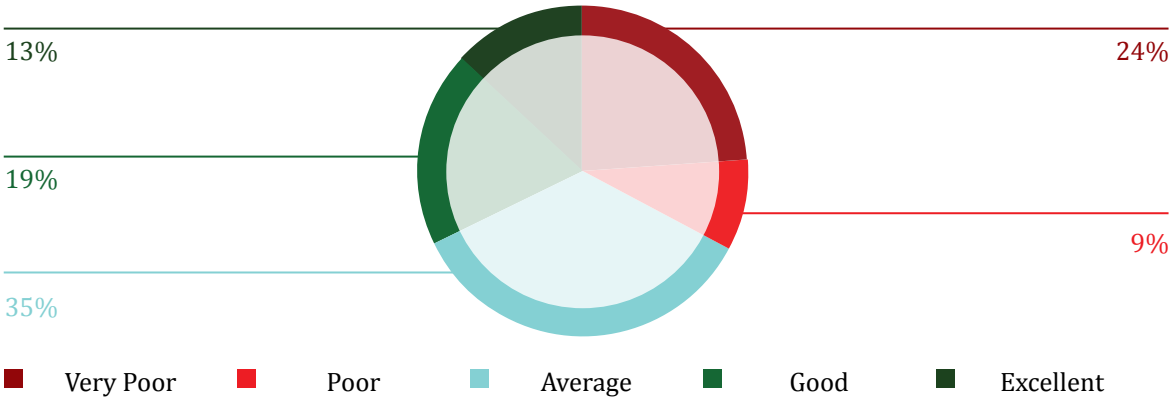


Source: Researchers' Own Derivation

The resolution of complaints scored at 33%.There is, however, 30% of customers on the border line and this could be a reflection of the long-time taken to resolve complaints. Only 33% of the respondents were satisfied with ZERA's complaint handling.

Overall satisfaction with ZERA's complaint resolution was 32%, while 33% rated it as poor as shown in Figure 4.18.

Figure 4.18: Direct customers overall satisfaction with complaint procedures by ZERA



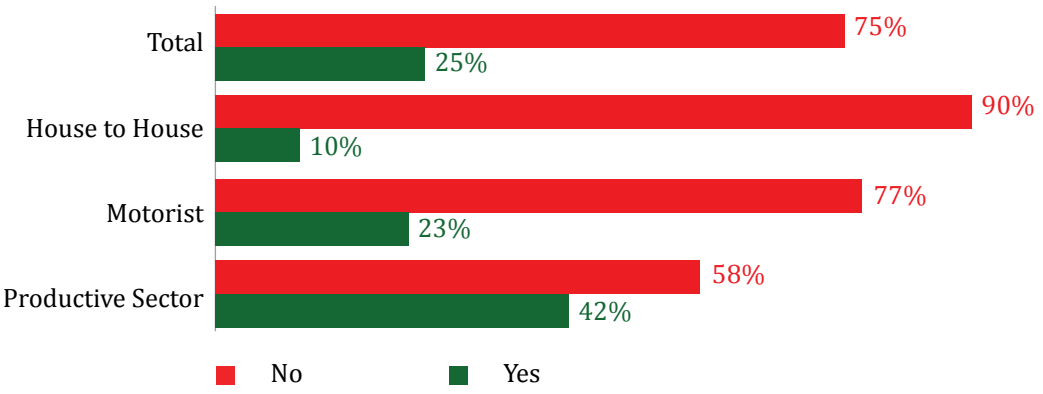
Source: Researchers' Own Derivation

Direct customers who trade in both LPG and liquid fuels with 63% had the highest satisfaction rating for the complaints handling procedures. These respondents were either satisfied or dissatisfied with ZERA. There were no fence seaters.

4.4 PUBLIC AWARENESS OF ZERA

Awareness of ZERA was a crucial component of the study as it reflected the extent to which respondents were familiar with the ZERA brand and the services they offered. Questions on awareness aimed to provide an insight into ZERA's visibility to customers are summarised below:

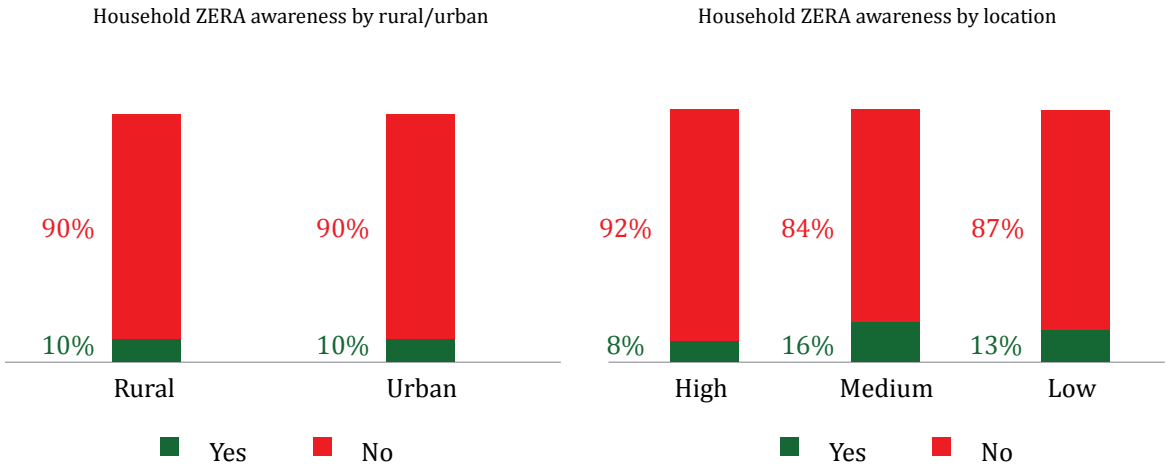
Figure 4.19: Overall awareness of ZERA by indirect segments



Source: Researchers' Own Derivation

The productive sector (42%) followed by motorists (23%) were the customers most aware of ZERA. Overall, ZERA was known by only 25% of the total sample. The productive sector (42%) is more aware of ZERA as compared to motorists (23%) and households (10%).Overall, 90% of the households are unaware of ZERA. This may be attributed to the indirect interaction between ZERA and the households.

Figure 4.20: Household analysis of ZERA awareness in urban areas



Low awareness of ZERA was highest with 92% for high density respondents while 16% of the medium densities respondents were aware of ZERA.

Ninety percent of both urban and rural respondents were not aware of ZERA.

Source: Researchers' Own Derivation

Table 4.19 highlights the awareness level of ZERA by province:

Table 4.19: Awareness of ZERA by customer segment and province

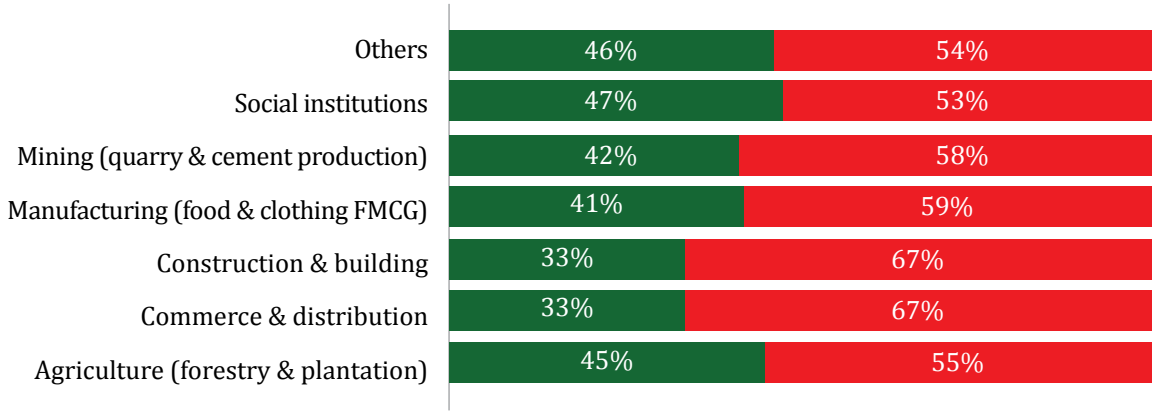
Are you aware of ZERA?

PROVINCE	HOUSE-TO-HOUSE		MOTORIST		PRODUCTIVE	
	YES	NO	YES	NO	YES	NO
Bulawayo	9%	91%	23%	77%	34%	66%
Manicaland	6%	94%	22%	78%	41%	59%
Mashonaland Central	9%	91%	18%	82%	65%	35%
Mashonaland East	9%	91%	22%	78%	24%	76%
Mashonaland West	13%	87%	14%	86%	33%	67%
Matabeleland North	6%	94%	15%	85%	22%	78%
Matabeleland South	3%	97%	14%	86%	60%	40%
Midlands	10%	90%	21%	79%	25%	75%
Masvingo	6%	94%	15%	85%	56%	44%
Harare	14%	86%	29%	71%	49%	51%

Awareness of ZERA by household customers was better in Harare (14%) and lowest in Matabeleland South (3%). Motorists in Harare (29%) were more aware of ZERA when compared to Mashonaland West and Matabeleland South (14%) who had the lowest awareness. The province with the highest awareness ratings by the Productive Sector was Mashonaland Central with65%whileMatabeleland North with22%had the lowest awareness rating.

Overall 58% of the productive sector (industry) was not aware of ZERA. This rating is much lower when compared to the other customer segments. The productive sector was further split into economic sectors to analyse awareness of ZERA as shown in the Figure 4.21.

Figure 4.21: Productive sector awareness of the energy sector



Source: Researchers' Own Derivation

Social institutions (47%) and the other sector (which included financial institutions, arts and crafts) (46%) had the highest awareness of ZERA while the construction and commerce sectors were lowest, with 33%. The following opinion was stated in response to the open-ended question;

> *"We have heard of them through programs on radio where they were discussing their role, what the consumer can do when they are not happy with their products and issues regarding safe use of electricity through monitoring the equipment available."*
>
> *- A player in the energy sector [SIC]*

4.4.1 AWARENESS OF ZERA FUNCTIONS

All respondents were asked if they knew what the functions of ZERA were. Table 4.20 shows their responses. This question allowed for more than one response therefore the percentages will not add up to 100%.

Table 4.20: Awareness of ZERA functions

	HOUSE TO HOUSE	PRODUCTIVE	DIRECT CUSTOMERS	OVERALL
Regulatory and licensing	41%	35%	95%	57%
Research and development	9%	7%	19%	12%
To increase energy access and security supply	13%	4%	18%	12%
Energy efficiency and environmental protection	10%	10%	27%	16%
Key energy stakeholder advisory services	7%	4%	21%	11%
Increase adoption of alternative energy/ technology / sources	3%	4%	10%	6%
Don't know	50%	58%	4%	21%

"They have a regulatory function basically they are supposed to give policy direction on what is supposed to happen in the energy sector. They are supposed to monitor the operations of the various sub sectors in the sector ensuring they are abiding to the policies, to the rules, to the regulations and also to some extent to be sensitive and to listen to the customers of the energy sectors."

- BMO respondent (Stakeholder in a consumer lobbying)

Probed as to whether they felt that ZERA was adhering to its mandate, the respondents felt that ZERA was adhering to its mandate to some extent since the industry now has some guidance on how they are supposed to act and behave.

"I think partially we know that they have a mandate which is set down and they provide guidance in many things and they try to provide the guidance needed but again we are entwined with politics and other issues as well. I believe that they are not able to completely follow their own set mandate. But they have the capacity to properly do quite a good job."

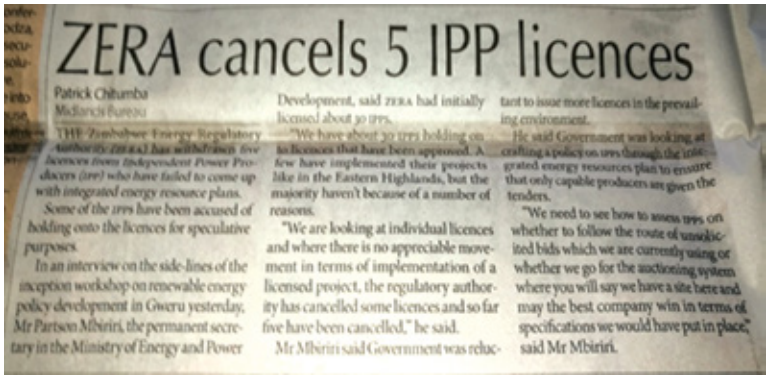
- Stakeholder in the mining sector [SIC]

One respondent had a different opinion and said:

"To us the stakeholders, ZERA's mandate is quite clear and straight forward however, to the general population it is not especially in the rural areas that might not see the need for regulations."

- Stakeholder in the energy sector[SIC]

Figure 4.22: The Herald, 18 November 2016, highlighting one of ZERA's functions in the energy sector



ZERA cancels 5 IPP licences

Patrick Chitumba
Midlands Bureau

THE Zimbabwe Energy Regulatory Authority (ZERA) has withdrawn five licences from Independent Power Producers (IPPs) who have failed to come up with integrated energy resource plans.

Some of the IPPs have been accused of holding onto the licences for speculative purposes.

In an interview on the side-lines of the inception workshop on renewable energy policy development in Gweru yesterday, Mr Partson Mbiriri, the permanent secretary in the Ministry of Energy and Power Development, said ZERA had initially licensed about 30 IPPs.

"We have about 30 IPPs holding on to licences that have been approved. A few have implemented their projects like in the Eastern Highlands, but the majority haven't because of a number of reasons.

"We are looking at individual licences and where there is no appreciable movement in terms of implementation of a licensed project, the regulatory authority has cancelled some licences and so far five have been cancelled," he said.

Mr Mbiriri said Government was reluctant to issue more licences in the prevailing environment.

He said Government was looking at crafting a policy on IPPs through the integrated energy resources plan to ensure that only capable producers are given the tenders.

"We need to see how to assess IPPs on whether to follow the route of unsolicited bids which we are currently using or whether we go for the auctioning system where you will say we have a site here and may the best company win in terms of specifications we would have put in place," said Mr Mbiriri.

4.5 CUSTOMERS RIGHTS AND RESPONSIBILITIES

This section of the questionnaire sought to establish customer's awareness of their rights and responsibilities. A list of attributes was used to evaluate this. This question allowed for more than one response thus the percentages do not add up to 100%.

Table 4.21: Awareness of consumer rights and responsibilities

POSSIBLE RIGHTS AND RESPONSIBILITIES	HOUSE TO HOUSE	PRODUCTIVE	MOTORIST	OVERALL
Be treated fairly with kindness and due respect	25%	24%	33%	27%
Privacy and to have confidential information	5%	0%	6%	4%
Be informed about energy price structure	14%	6%	19%	13%
Lodge a complaint and get an amicable solution within a reasonable time frame	14%	57%	19%	30%
Access to and be informed about safe handling, storage ,dispensing and usage of energy products	9%	7%	16%	11%
Access to and be informed about complaint handling procedure	7%	1%	9%	6%
Customer education and awareness	11%	2%	14%	9%
A responsive energy regulatory authority	2%	5%	6%	4%

The most known attribute was "being treated fairly with kindness and due respect" by33% motorists and 25% house- to - house respondents.

4.6 CORRELATIONS AND REGRESSIONS ANALYSIS

A Correlations

If ZERA improves on the licensing mechanisms it is likely to satisfy its customers

Correlations between factors that are assumed to affect rating of ZERA and the rating of ZERA services were computed. The table below lists all factors with significant correlations at 99% (denoted by **) and 95% (denoted by *) confidence interval. Results show that there is a strong positive correlation at 99% confidence interval between rating of ZERA and licensing mechanisms. This shows that if ZERA improves on the licensing mechanism it is likely to satisfy its customers. Licensing fees and reliability of licensing services affects customer rating of ZERA positively. If ZERA do more on transparency, revising licensing fees and licensing service improvement the customers are likely to be happy with the organisation. There is negative correlation (-0.106) at 99% confidence interval between awareness of ZERA and customer satisfaction rating. Those who were aware of ZERA gave a positive rating. Those who were unaware of ZERA rated it negatively.

There is also a positive correlation between rating of ZERA and customer care. If ZERA improves its customer care there is a high chance that customers will rate ZERA positively, thereby improving CSI. Documentation requirements by ZERA and price compliance will positively affect rating of ZERA at 99% confidence interval. Regulatory requirements by ZERA have a strong negative correlation with rating of ZERA services. Complaints resolution had a strong positive correlation of 0.909 with rating of ZERA. The correlation is almost perfect. This shows that ZERA needs to consider improving this service if a good positive rating is to be achieved. More information on correlations is provided in the table below.

Table 4.22: Correlations

SERVICE RATING	CORRELATIONS
.482**	Licensing mechanism offered by ZERA
.316**	ZERA delivers on its promises
.324**	ZERA accepts responsibility for its performance
.249**	ZERA treats customers (licensees) with empathy and respect
.205**	ZERA strives to further customers (licensees) knowledge and skills
.212**	The levies and licence fees charged are reasonable
.123	Transparency in licensing
.357**	Transparency on application of rules and regulations
.202**	Transparency on tariffs

SERVICE RATING	CORRELATIONS
.409**	Reliability of licensing services
.391**	Time taken to get a licence
.316**	Tariff pricing structure
.439**	Customer care
.281**	Quality Checks done by ZERA
.402**	Documentation required by ZERA
.356**	Licensing fees
.441**	Reliability of licensing services
-.295**	Regulatory requirements
.413**	Price compliance
.200**	Quality checks done by ZERA
.310**	Documentation required by ZERA
.123*	Availability of Ethanol
.909**	Complaints resolution

B Multiple Regression Model

All the factors that feed into the building blocks were considered to fit a multiple regression model. Principal component analysis was performed to ascertain the appropriate model. Principal component analysis is a variable-reduction technique that shares many similarities to exploratory factor analysis. Its aim is to reduce a larger set of variables into a smaller set of 'artificial' variables, called 'principal components', which account for most of the variance in the original variables. Data on factors were gathered from house-to-house, productive, direct customers and motorists. Tests were done to remove factors that show autocorrelation; that is correlation between the elements of a series (all factors that affect ZERA rating, building blocks i.e. pricing, regulatory tools, efficiency, complaint resolution and awareness) and others from the same series separated from them by a given interval, multicollinearity; a situation where a number of independent variables (actual factors for each building block, namely; pricing, regulatory tools, efficiency, complaint resolution and awareness)in a multiple regression model are closely correlated to one another and hetroskedasticity; the circumstance in which the variability of a variable is unequal across the range of values of a second variable that predicts it.

Tests were done to remove factors that show autocorrelation

A multiple regression model is presented to show the influence of different factors on overall rating of ZERA. The mathematical presentation of the model is presented below as:

$Y_i=\alpha+\beta_i X_i+\mu_i$

Where
Y_i "is the dependent variable," α"the constant," $\beta_{(i)}$ " is the regression coefficient" , $X_{(i)}$ "the independent variableand " μ_i "is the white noise."

The table presents the multiple regression model beta values. The top four factors that contributed most to ZERA ratings are discussed below. Customer care contributed much to the rating of ZERA. Pricing is the second most important factor and has a negative effect on ZERA rating followed by availability of ethanol for blending for the petroleum sector. The least important factor in determining rating of ZERA is toll free service. ZERA can afford to utilize resources on improving this service to the top four important factors.

More details on contribution of other factors are summarised in Table 4.23.

Table 4.23: Multiple regression model

	STANDARDIZED COEFFICIENTS	T VALUE	SIG.
MODEL	BETA		
Constant	0.12	-.915	.384
Transparency of the pricing structure	-.469	-3.008	.015
Customer service at ZERA	-.805	-3.282	.009
Toll free services	.400	2.594	.029
Compliance and Licensing	.988	4.755	.001
Treating customers with empathy and respect	-.657	-2.337	.044
Application of rules and regulations	.689	2.638	.027
Customer care	1.169	3.969	.003
Time taken to get a licence	.588	2.268	.050
Quality Checks done by ZERA	-.518	-2.753	.022
Documentation required by ZERA	-.725	-3.374	.008
Availability of Ethanol	.926	3.105	.013
Pricing	-1.096	-3.914	.004

4.7 CONCLUSIONS AND RECOMMENDATIONS

4.7.1 AWARENESS

Awareness level on ZERA was very low at 25%. There is need therefore for ZERA to embark on more public awareness campaigns. This can help ZERA to stay connected to all the stakeholders (i.e. both direct and indirect customers).Stakeholders often have the capacity to influence the success (or failure) of a Regulator at various levels. It is therefore important for ZERA to interact more with stakeholders in order to address any and all suggestions and concerns.

*Awareness level on ZERA was at **25%***

The role and mandate of ZERA is not known by the majority of the stakeholders. ZERA needs to make clear what their mandate is in order to manage stakeholder expectations. Increasing awareness of ZERA will assist in building brand value, reputation and will also bring diverse perspectives together to enable innovation, all of which help drive long-term sustainability and shareholder value.

4.7.2 EFFECTIVENESS OF REGULATORY TOOLS

Good regulatory tool outcomes depend on more than well designed rules and regulations. To measure effectiveness of ZERA several attributes were rated ranging from information dissemination to the terms and conditions of issuing a licence. ZERA was rated positively on issues such as customer care (74%), compliance and licensing (62%), reliability to get a licence (57%), and the terms and conditions for licences (61%). Other attributes which contribute to their regulatory role ZERA were rated negatively with examples such as consumer education for safety issues (49%), delivering on its promises as ZERA (48%), and accepting responsibility for its performance (49%). These attributes are of importance especially when dealing with customers as they expect ZERA to uphold its promises. Ensuring that promises are kept enhances the respondent's confidence in the Regulator or brand and affects the perceptions of their future stakeholders.

When promises are kept it enhances respondents' confidence in the Regulator or brand

4.7.3 EFFICIENCY

Efficiency of ZERA is measured when it is able to serve its customers or stakeholders in a healthy manner. Healthy in that ZERA should have a quick turnaround time in terms of complaint resolution; transparent pricing structure and efficient information dissemination. However, when looking at the results ZERA is seen to be performing slightly below expectations regarding transparency of pricing structure 47%; satisfaction with time taken to get a licence (42%); and information dissemination is just above average at 55%. The efficiency of ZERA can therefore be improved. Currently, 34% of the complaints reported have been outstanding for more than eight months and customers felt that ZERA was slow in resolving their complaints particularly those that are electricity related. The efficiency of ZERA would improve if they resolve complaints faster including those that do not fall within their direct mandate.

ZERA is performing slightly below expectations regarding transparency

4.7.4 PRICING

Licensees felt that prices set for licences and levies charged are too high and unreasonable. Only 39% and 37% of the respondents rated ZERA positively on their tariff pricing structure and levies and licence fees, respectively. There is therefore a need for ZERA to consider psychological pricing, as there is a maximum to what consumers are able and willing to pay for a product or service regardless of the value it provides.

The stakeholders also pointed out that the rates/fees charged are fair and reasonable:

- *"Considering the economic environment we are operating in the prices are fair for both parties but they should be structured downwards in the longer term by allowing more players into the power generation sector."*
- *"They can only be fair if we are sure of the efficiency of the service provider. Like I was saying that we have bottled management structure an organisation which supposedly is inefficient right now."*
- *"I think it's a bit higher considering the fact that we import more electricity than we produce here locally."*
- *"Petroleum prices are not reflective of the international prices when the international price falls it does not drop at the same margin in Zimbabwe."*
- *"The charges are generally high in this country especially for industry like mine we think that it is far too high and we don't think it's comparable with other countries."*
- *"They are not reasonable, electricity is very expensive. The majority of the residents are not economically fit to sustain the huge cost of electricity."[SIC]*

4.7.5 COMPLAINT RESOLUTION

A complaints resolution and feedback section is a vital component of customer satisfaction as it reflects the customer's happiness or frustrations. In this survey, the feedback that was requested was focussed only on complaints. The importance of complaints is that when reported, the feedback could assist ZERA in understanding how they could fix certain issues and prevent them from recurring. The overall number of respondents that indicated they had reported a complaint directly to ZERA were 53 (17%) and is a manageable number. However, the major issue was the rather inordinately long time taken to resolve these complaints. Seventy-five percent of these complaints took more than five months to be resolved. This is an area that ZERA needs to improve on.



4.7.6 EFFECTIVENESS OF REGULATORY TOOLS

Key stakeholders were asked if they felt that ZERA is effective in regulating the energy sector. The following are their responses:

- *"Yes but to some extent ZERA is not visible to the ordinary man on the street."*
- *"Well I would say yes from a personal opinion well since in Zimbabwe unlike many other countries we have not witnessed a report of accidents related to energy. However the gas industry is very dangerous one and is not regulated well that will result in hazardous accidents happening here and there."*
- *"Definitely, I am just coming from a workshop where ZERA was actually promoting diesel 50, and they were talking about being part of the global fuel economy initiation where they are looking at efficiency of vehicles and have a basic study to find out what our vehicles are consuming…."*
- *"Yeah it's difficult because you can't really measure to say these are efforts which have been done when you are dealing with one player."[SIC]*
- *"They are trying because they have limitations beyond their control. The problem is the rigidity in the government structures. For example, the increase in the prices of ethanol which I don't think was in their interests."*
- *"With some government interference it will never be effective enough. Though they are trying their level best there are a lot of things which need alignment in the sector."*
- *"I think they have given residents some" minimum standards for the safety."[SIC]*

CHAPTER 5

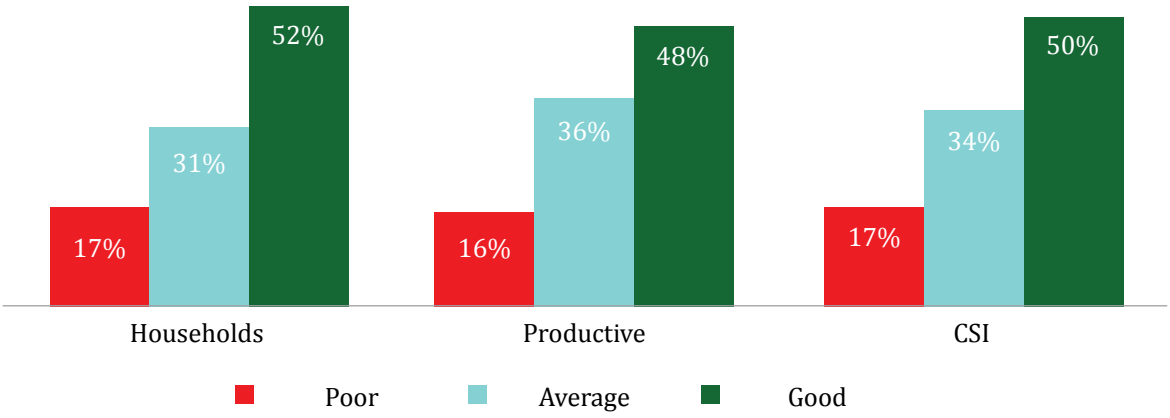
ZETDC CUSTOMER SATISFACTION INDEX

In Zimbabwe, ZETDC (a subsidiary of ZESA Holdings) is responsible for the transmission of electricity from the power stations and its distribution as well as its retailing to end users. This section sought to establish how satisfied consumers were with the ZETDC service delivery.

Overall ZETDC Customer Satisfaction Index

ZETDC is one of the major players in the energy sector in Zimbabwe. The way customers rate its service delivery level has a direct influence on how they would rate ZERA. Figure 5.24 highlights the overall satisfaction level ratings of ZETDC by its customers:

Figure 5.23: Household overall ZETDC service rating



Source: Researcher's Own Derivation

Fifty percent (50%) of the ZETDC customers are satisfied with the services they receive from ZETDC while 17% rated it as poor, and 34% were indifferent. The productive sector is not happy with ZETDC services. Households/domestic users are more satisfied with ZETDC with a rating above 50%, while the productive sector/industry rating is below 50%. This could be attributed to the different consumption rates in between these sectors. Several alternative methods of energy can be used in the domestic sector for their general end use while power cuts for industry would probably affect production. There is ease of adaptability to other energy forms in homes in contrast with manufacturing or other businesses.

ZETDC is rated at par with other utilities across the region.

According to KIPPRA (2010), 53% of electricity customers in Kenya were satisfied. In South Africa, the 2012 CSI for the residential sector showed that only 9% of the respondents indicated that they were very satisfied with electricity provision in their neighbourhood; 55% were satisfied; 15% neither satisfied nor dissatisfied; 15% dissatisfied; and 4% very dissatisfied.

- Department of Energy (2012)

Having been given the overall satisfaction ratings, the key stakeholders were asked whether they felt if the Zimbabwean consumers were receiving quality electricity supply and this elicited mixed responses. Some respondents were of the opinion that poor quality of electricity is attributed to lack of funding by ZESA as they cannot provide proper maintenance of their equipment.

> *"We have a problem on the quality, we get a lot of complaints from our members about it, which sometimes damages equipment and gives short life span of certain equipment and it is adding complications in business. Also I think that the quality has to do with the infrastructure and some to do with the electricity cables that need to be refurbished or what needs to be done. Quality electricity means constant supply ."*
>
> *- BMO stakeholder in the mining sector [SIC]*

Another respondent commented that;

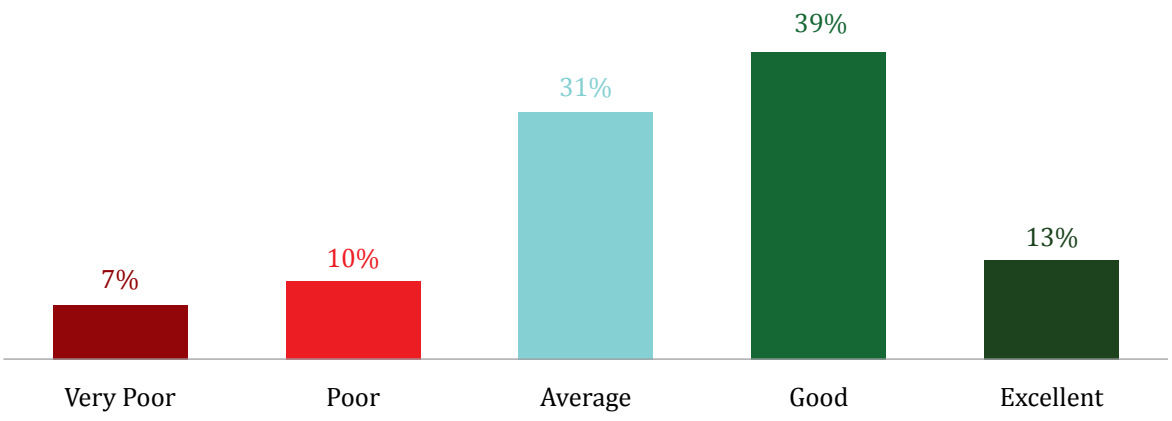
> *"People sometimes go for days, weeks or months without electricity especially in the rural areas; in the urban areas the quality has improved a bit. I once visited Siyakobvu in September and they were complaining that their power was out in February. They tend to be unreliable especially on the time lag when power goes out and when it comes back."*
>
> *- BMO stakeholder in the farming industry [SIC]*

This fact maybe one reason why there was a low satisfaction rating of 47% in the rural areas.

5.1.1 HOUSEHOLD CUSTOMER SATISFACTION OF ZETDC

A further analysis was done on the house-to-house (domestic) overall ratings of ZETDC by area and suburb. The figure below highlights these ratings.

Figure 5.24: Household overall CSI rating of ZETDC



Source: Researcher's Own Derivation

There are a high number of customers who rated ZETDC as average (31%). These customers, once satisfied, can improve the overall satisfaction rating.

Household customer satisfaction index by province

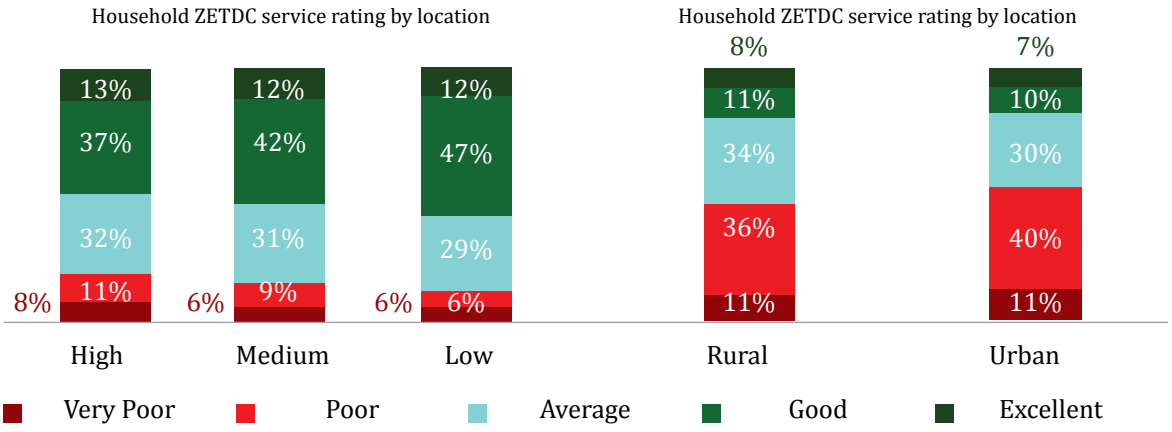
The Table 5.24 highlights the overall satisfaction by province.

Table 5. 24: Household overall ZETDC service rating by province

PROVINCE	VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT
Bulawayo	4%	10%	25%	48%	13%
Manicaland	5%	11%	36%	35%	13%
Mashonaland Central	4%	11%	32%	43%	10%
Mashonaland East	7%	13%	48%	26%	6%
Mashonaland West	6%	6%	24%	53%	11%
Matabeleland North	8%	13%	26%	49%	4%
Matabeleland South	0%	5%	45%	43%	7%
Midlands	11%	8%	32%	42%	7%
Masvingo	8%	10%	35%	35%	12%
Harare	8%	11%	31%	34%	16%

The highest positive rating of 64% came from Mashonaland West followed by Bulawayo with 61%. The lowest positive satisfaction ratings came from Mashonaland East (32%).

Figure 5.25:Household ZETDC service satisfaction rating by suburb and rural/urban



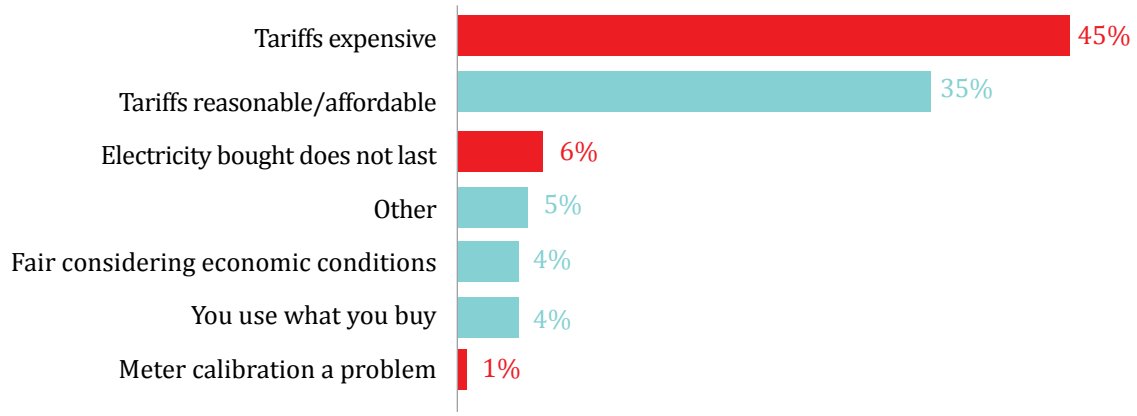
Compared to the medium and low densities, the high density consumers are not happy with the service they are getting from ZETDC compared to other areas.

Rural customers are dissatisfied with the services they are getting from ZETDC.

Source: Researcher's Own Derivation

The respondents were further asked to provide reasons for their rating of ZETDC and a summary of their reasons is given in Figure 5.27.

Figure 5.26: Justification for ZETDC ratings by households



Source: Researcher's Own Derivation

Positive reasons given were tied to reasonable tariffs charged. This was highlighted by 35% of the respondents. This could be because of the prepaid system which allows the households to monitor and control the electricity used. Forty five percent (45%) of the households said that ZETDC charges were expensive. Tariff charges levied can be seen to be a major contributor to the low satisfaction rating of electricity suppliers not only with ZETDC but throughout the region. In Kenya electricity had the lowest customer satisfaction (53.06%), with users complaining of high tariffs (KIPPRA, 2010) while in South Africa, 70% of the respondents felt that the price they pay for electricity is too much (Department of Energy, 2012).

Figure 5.27: An article in the Herald newspaper2016 ZERA intentions to audit ZESA.


Herald Business

ENVIRONMENT
Time Zim reconsidered Cites membership?: Page B2

Monday 17 October 2016

ZERA to audit Zesa

Business Reporter

ZIMBABWE Energy Regulatory Authority will institute an independent audit of the cost structure and operations of ZESA to determine whether the utility is passing the cost of its inefficiencies to consumers.

ZESA acting chief executive Engineer Misheck Siyakatshana said the regulator had already started reviewing submissions by international consultants for the tender to carry out the cost and operations audit of ZESA.

"The results of the review will be presented to the Ministry of Energy and Power Development who will decide on the course of action as the shareholder," he said.

Over the past five years, Government and ZERA have only allowed marginal increase in power tariff to avoid crippling businesses.

The audit comes after ZERA rejected a proposal by ZESA, in July this year, to hike power tariffs by 40 percent to increase revenue inflow to fund operations, finance maintenance works and bankroll capital intensive projects.

ZESA, owed over $1 billion in arrears by consumers, would have hiked tariffs from an average 9,83c/kWh to 14,69c/kWh if the request had been granted. It was feared hiking tariffs would lead to a wave of price increases.

Available research findings show that electricity is a major cost to production in virtually all sectors of the economy accounting for 20 percent of production cost in farming and agriculture, 18 percent in industries, 15 percent in industry and 11 percent in commercial activities.

Mr Siyakatshana said that there was concern from various quarters, including Government, that possible inefficiencies within ZESA could be the reason for high cost of power and sustained demands to raise tariffs.

"The review was commissioned (by Zimbabwe Energy Regulatory authority) following concerns from various stakeholders, Confederation of Zimbabwe Industries, Chamber of Mines, consumer groups and most importantly Government itself that there could be inefficiencies in both the structure and operations of ZESA Holdings and its subsidiaries," he said.

"The Zimbabwe Energy Regulatory Authority is currently procuring independent international consultants to examine and review the cost structure and operations of ZESA with a view to identify areas of cost saving and efficiency improvement," Mr Siyakatshana said on Friday last week.

ZESA's power tariffs are considered a major cost driver to businesses in Zimbabwe. Cost of power is one of many factors cited in studies meant to improve the country's ease of doing business con-

driven with a view to raising the competitiveness of local industry and companies to global standards.

"Government is concerned there could be inefficiencies in ZESA and wanted an independent consultant to go through the cost structure operations of ZESA. Government, as shareholder, will decide what to do," he said.

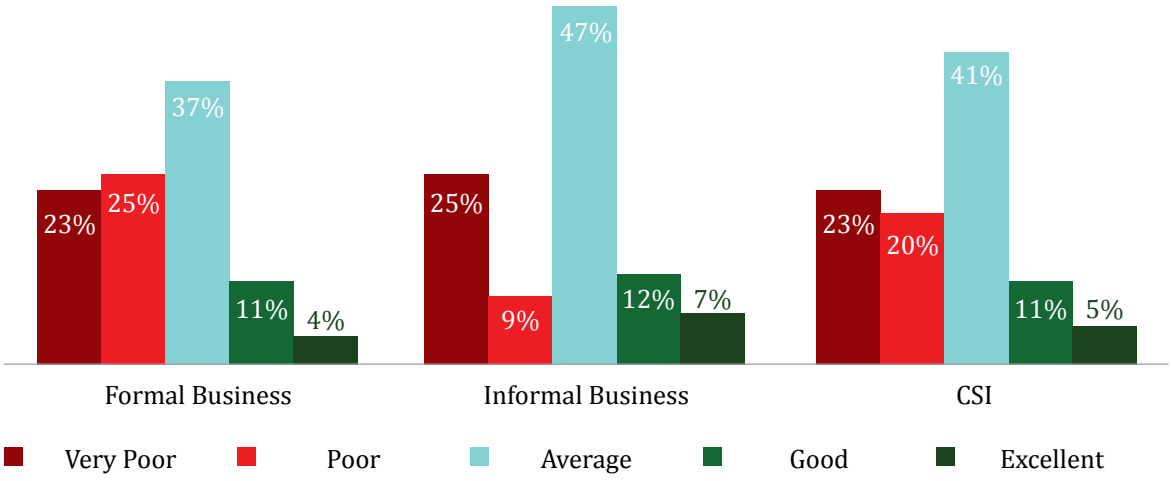
While a study by National Economic Consultative Forum found out that the average cost of producing electricity from the power utility's hydro and thermal power stations is higher compared to other regional countries, due to the ageing equipment, inefficiencies were also cited as a factor.

Official statistics show that ZESA's average cost of producing electricity between 2009 and 2015 has ranged between 9,63c per kilowatt hour to 14,69c/kWh, while the tariff ranged from 3,93c/kWh and 9,86c/kWh.

5.1.2 OVERALL SATISFACTION BY THE PRODUCTIVE SECTOR

Sixteen percent (16%) of the productive sector rated ZETDC positively while 43% rated it poorly and 41% were indifferent.

Figure 5.28: Productive sector overall CSI rating of ZETDC



Source: Researcher's Own Derivation

Satisfaction rating was higher in the informal sector with 19% as compared to companies in the formal sector. Sixteen percent (16%) of the satisfaction rating was split by province. Bulawayo had the highest positive rating (68%) followed by Matabeleland South (66%). Matabeleland North (12%) and Manicaland (15%) had the lowest positive ratings (see Table 5.25).

Table 5.25: Productive sector overall CSI rating of ZETDC by provinces

	VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT
Bulawayo	4%	5%	23%	50%	18%
Manicaland	4%	9%	72%	11%	4%
Mashonaland Central	11%	11%	26%	26%	26%
Mashonaland East	3%	21%	45%	21%	10%
Mashonaland West	6%	6%	38%	39%	11%
Matabeleland North	0%	24%	64%	12%	0%
Matabeleland South	0%	0%	34%	44%	22%
Midlands	13%	11%	29%	36%	11%
Masvingo	7%	7%	47%	32%	7%
Harare	5%	11%	37%	38%	9%

Table 5.26 shows the satisfaction rating by economic sectors. There were more average ratings:

Table 5.26: Productive sector overall CSI rating of ZETDC by economic sector

	VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT
Agriculture (forestry & plantation)	9%	11%	44%	27%	9%
Commerce & distribution	6%	10%	34%	39%	12%
Construction and building	0%	8%	34%	33%	25%
Manufacturing (food & clothing FMCG)	7%	4%	46%	24%	19%
Mining (quarry & cement production)	18%	0%	28%	36%	18%
Social institutes	2%	12%	34%	42%	10%
Others	5%	9%	35%	42%	9%

The construction (58%) and mining (54%) sectors had the highest satisfaction ratings. The agriculture sector satisfaction rating was the lowest at 36%.

The respondents were further probed to give reasons for their ratings of ZETDC. These are presented in Table 5.27.

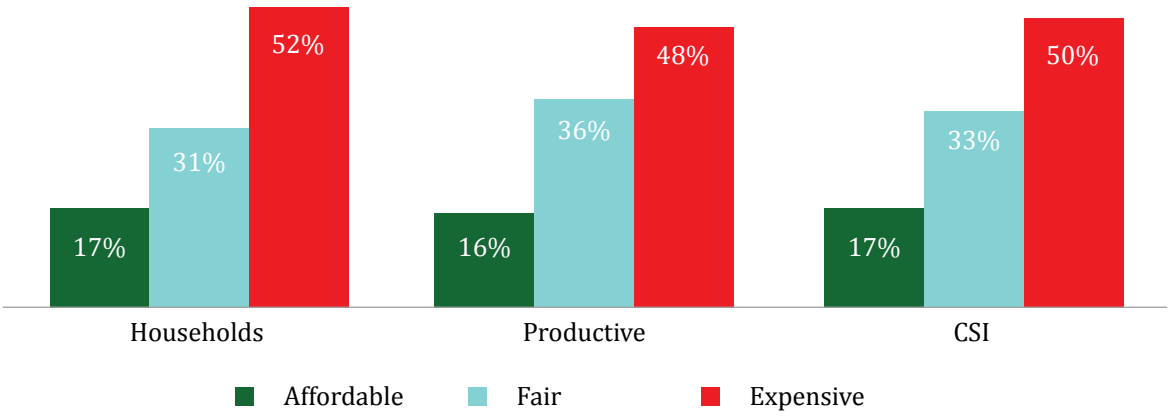
Table 5.27: Productive sector overall CSI rating on aspects of ZETDC performance

PERCENT	PLEASE GIVE REASONS FOR YOUR ANSWER?
30%	ZETDC's response is slow after queries have been lodged
19%	Electricity is always available
18%	Service delivery by ZETDC in this industrial area has improved
18%	ZETDC is now efficient. There is a massive improvement in the service for instance we no longer have power cuts
6%	They respond to faults quickly
5%	With less power cuts their services can be perfect
2%	ZETDC billing is high
1%	ZETDC has no problems or challenges unless only in the rainy season
1%	Others

5.1.3 EVALUATION OF ZETDC PRICING STRUCTURE

This section presents findings on how customers perceived the cost of electricity.Figure5.30 highlights the overall satisfaction level rating.

Figure 5.29: Overall CSI of ZETDC pricing

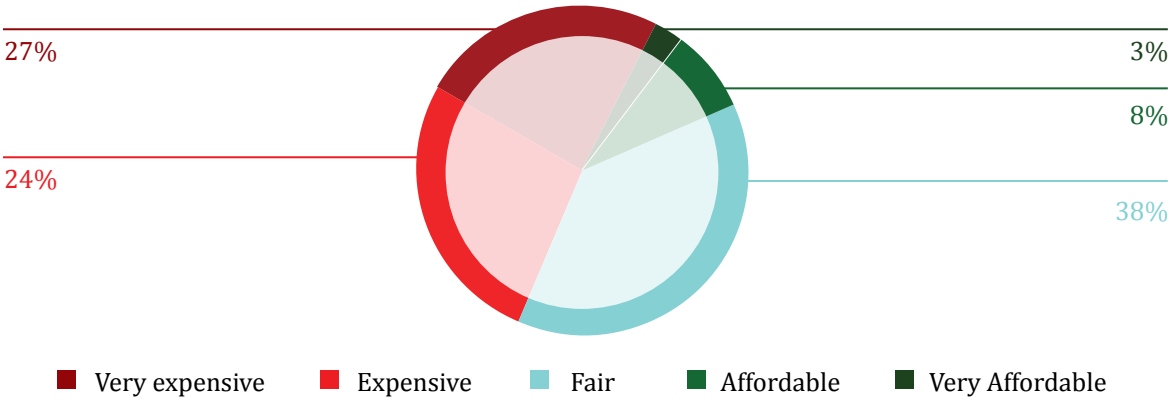


Source: Researcher's Own Derivation

Seventeen percent (17%) of the respondents are satisfied with prices being charged by ZETDC while 50% rated it as expensive and 33% were indifferent.

An analysis of how the household rated ZETDC is shown in Figure 5.31.

Figure 5.30: Overall CSI of ZETDC pricing by household customers



Source: Researchers' Own Derivation

Overall satisfaction ratings by household showed that 11% of the respondents are satisfied with the prices being charged by ZETDC while 51% rated it as expensive and 38% were neither satisfied nor dissatisfied.

Table 5.28: Overall household customers CSI of ZETDC pricing by province

How would you rate ZETDC electricity charges on a 5 point scale where 1 is poor and 5 is Excellent?

	VERY AFFORDABLE	AFFORDABLE	FAIR	EXPENSIVE	VERY EXPENSIVE
Bulawayo	2%	7%	37%	31%	23%
Manicaland	3%	15%	38%	22%	22%
Mashonaland Central	0%	8%	50%	33%	9%
Mashonaland East	0%	7%	43%	32%	18%
Mashonaland West	2%	14%	36%	27%	21%
Matabeleland North	1%	14%	38%	29%	18%
Matabeleland South	0%	5%	60%	21%	14%
Midlands	2%	8%	37%	18%	35%
Masvingo	3%	6%	39%	33%	19%
Harare	5%	7%	37%	25%	26%

Compared to the other provinces households from Bulawayo (54%), Midlands (53%), Masvingo (52%) and Harare (51%) rated the electricity charges of ZETDC as expensive.

Figure 5.31: Overall household customers CSI of ZETDC electricity charges by area and rural/urban

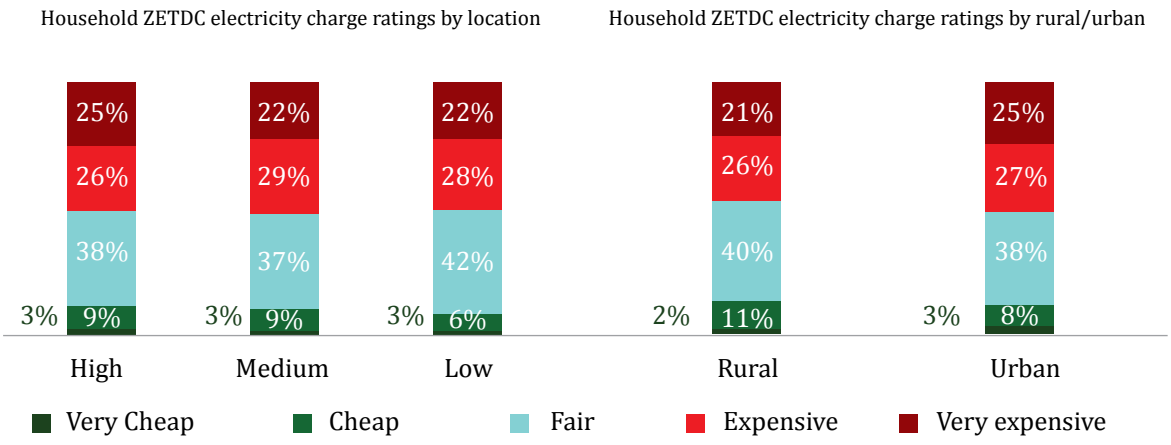


Figure 5.32 shows that ZETDC household customers are not satisfied with the electricity rates that are charged as shown by the50% rating by all areas suburbs. They consider it expensive. Less than 12% of respondents are happy with ZETDC electricity charges.

Using the same ratings, the analysis is further split into rural and urban areas. Urban respondents (52%) view ZETDC electricity charges as being more expensive compared to the rural respondents (47%).

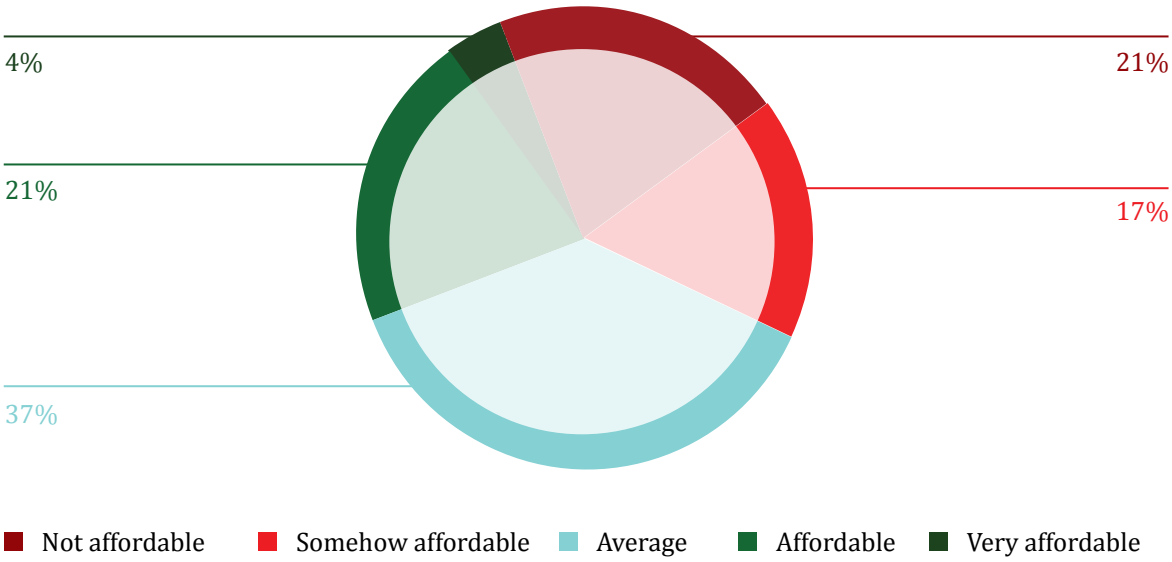
Source: Researchers' Own Derivation

An example of the reasons for the ratings given was:

> *"I think there are different tariffs for domestic and industrial users. To some extent I feel that the prices are fair on households because they want to discourage people from using electricity unnecessarily. However on the industrial side I feel the electricity charges are too high considering other production costs."*
>
> *- Stakeholder in the petroleum sector [SIC]*

A similar assessment was made for the productive sector. At least25% of the respondents felt prices being charged by ZETDC are favourable while 37% rated them as average (see figure 5.33).

Figure 5.32: Overall Productive sector customer rating of ZETDC electricity charges



Source: Researchers' Own Derivation

The overall satisfaction of price ratings by province is indicated in Table 5.29.

Table 5.29: Overall Productive sector customer satisfaction with ZETDC electricity charges by province

PROVINCE	VERY EXPENSIVE	EXPENSIVE	FAIR	AFFORDABLE	VERY AFFORDABLE
Bulawayo	18%	19%	35%	21%	7%
Manicaland	24%	33%	22%	18%	2%
Mashonaland Central	21%	16%	32%	26%	5%
Mashonaland East	7%	10%	52%	28%	3%
Mashonaland West	28%	28%	22%	22%	0%
Matabeleland North	24%	12%	29%	35%	0%
Matabeleland South	11%	11%	67%	11%	0%
Midlands	46%	8%	31%	11%	3%
Masvingo	11%	21%	29%	25%	14%
Harare	19%	16%	41%	22%	2%

Masvingo, Matabeleland North, Mashonaland Central and Bulawayo have a significant number of respondents who said that electricity prices are affordable with 39%, 35%, 31% and 28%, respectively (see table 5.29).A high number of respondents from Matabeleland South (67%) indicated that electricity charges were fair. (See table 5.29).

Table 5.30 highlights the satisfaction ratings by sector.

Table 5. 30: Overall Productive sector customer satisfaction index of ZETDC electricity charges by economic sectors

	VERY EXPENSIVE	EXPENSIVE	FAIR	AFFORDABLE	VERY AFFORDABLE
Agriculture (forestry & plantation)	23%	23%	31%	20%	3%
Commerce & distribution	22%	16%	37%	22%	4%
Construction & building	17%	8%	75%	0%	0%
Manufacturing (food & clothing FMCG)	21%	19%	38%	16%	6%
Mining (Quarry & cement production)	9%	18%	9%	55%	9%
Social institutes	22%	16%	39%	20%	3%
Others	20%	16%	36%	24%	4%

Sixty-four percent (64%) of respondents in the mining industry rated the pricing structure as favourable. The other productive sector customers said electricity charges are unfavourable (see Table 5.30).

5.1.4 ZETDC KEY SATISFACTION AREAS

Respondents were asked a series of questions that were meant to capture their perceptions of the ZETDC brand as a service provider. The respondents were asked to rate ZETDC on the following attributes as shown in Table 5.31.

Table 5.31: ZETDC key satisfaction areas by household respondents

How would you rate ZETDC on the following by house-to-house?

	VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT
Accuracy in Billing	7%	14%	42%	31%	6%
Availability of Electricity	4%	6%	17%	46%	27%
Calibration of meter supplied	4%	12%	40%	32%	12%
Safety Issues	13%	12%	23%	38%	14%
Transparency of the billing system	6%	16%	40%	30%	8%
Customer service (face to face)	6%	12%	34%	37%	11%
Customer service (call centres)	8%	13%	38%	31%	10%
Resolution of reported faults	16%	16%	29%	29%	11%
Quality of power	2%	5%	16%	45%	33%
Grid connection service	4%	7%	43%	36%	11%

Seventy-eight percent (78%) of the household respondents rated *quality of power* positively followed by 73% on *availability of electricity*. Thirty two (32%) rated ZETDC negatively on *resolution of faults* and regarding *safety issues* on electricity 25%.

Figure 5.33: Unprotected domestic transformer in Bindura (Mashonaland Central)

A similar exercise was done for the productive sector.

Table 5.32: Productive sector ratings of ZETDC services

	VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT	DON'T KNOW
Accuracy in billing	5%	13%	26%	34%	12%	10%
Availability of electricity	4%	7%	17%	43%	29%	0%
Quality of power supplied	2%	4%	11%	38%	45%	0%
Safety issues	10%	8%	17%	40%	24%	1%
Transparency of billing system	3%	14%	30%	34%	10%	9%
Customer service (face-to-face, call centres)	6%	10%	21%	43%	14%	6%
Turnaround time for grid connection	6%	7%	26%	29%	7%	25%
Payment plan	3%	8%	21%	24%	8%	36%
Reaction time for reported faults	14%	19%	21%	27%	12%	7%

Eighty-three percent (83%) of the respondents rated *quality of power* supplied positively followed by 72% on *availability of electricity* while a lower positive was given to ZETDC on *payment plans* (32%) and on *turnaround time for grid connection* (36%).

Figure 5.34: Termite-destroyed electricity pole in Plumtree, Matabeleland North

ZETDC is mandated to maintain its electricity infrastructure, but service delivery is compromised as illustrated above.A list of attributes was also used to evaluate ZETDC administrative skills. Household customers felt that in terms of *treating customers with empathy and respect* (51%) ZETDC performed well, while 57% rated *"educating the public on the safe use of electricity"* as poor.

Table 5.33: Household satisfaction ratings on selected ZETDC deliverables

	STRONGLY DISAGREE	NEITHER AGREE NOR DISAGREE	STRONGLY AGREE
It delivers on its promises	24%	35%	43%
It takes responsibility when it is at fault	25%	34%	41%
It treats customers with empathy and respect	20%	29%	51%
It educates the public on the safe use of electricity	57%	21%	22%
The cost of electricity is reasonable	40%	34%	27%

Fifty eight percent (58%) of the respondents of the Productive sector felt that electricity tariffs are not reasonable. See Table 5.34.

Table 5.34: Productive sector satisfaction ratings on selected ZETDC deliverables

To what extent do you agree or disagree with the following statements on ZETDC?

	STRONGLY DISAGREE	NEUTRAL	STRONGLY AGREE
It delivers on its promises	40%	18%	42%
It treats customers with empathy & respect	39%	16%	45%
Electricity tariffs are reasonable	58%	10%	32%

How reliable and accessible is electricity to urban and the rural communities? Some submissions.

"I think there was rural electrification program which has since phased out so for the rural areas I think that access remains a problem. For the urban areas I think the urban set up is satisfactory.

- Stakeholder in the government

"It has been reliable to those who have had electricity over the last year, as we have had stable supplies but going forward if you look at you say the last 10 years we have had frequent power outrages so I would say in the last year it was reliable better than the last 10 years back it was of course unreliable"

- Stakeholder (government department) [SIC]

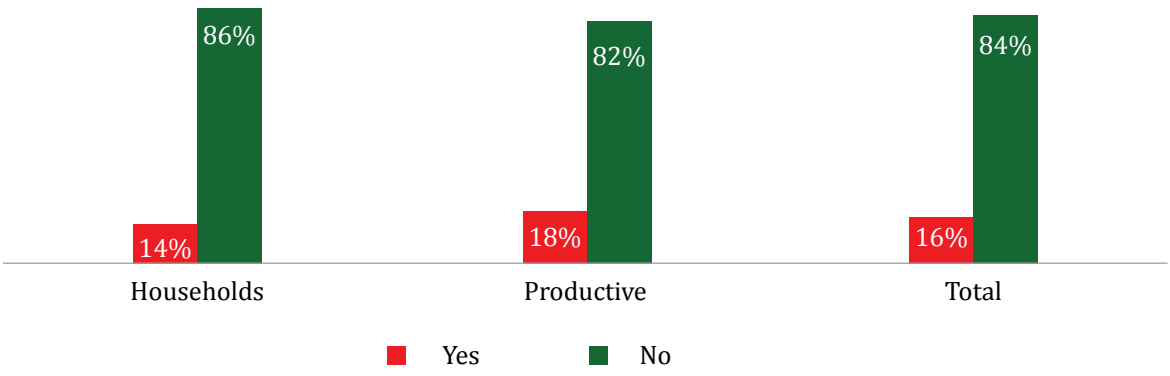
Figure 5.35: Transformer in residential area; Kadoma (Mashonaland West)

ZETDC is mandated to maintain its electricity infrastructure.

5.1.5 ZETDC COMPLAINT MANAGEMENT

In order to determine the level of efficiency and effectiveness of ZETDC complaint resolution, the respondents were asked if they had made a complaint in the past three months.

Figure 5.36: Overall reported complaints



Source: Researchers' Own Derivation

As shown in Figure 5.37, only 16% percent of the respondents (both households and productive) had made a complaint in the past three months. This is encouraging as it indicates at face value that very few complaints are lodged regarding ZETDC service delivery.
Further analysis by area and sector is shown in Table 5.35.

Table 5.35: Overall reported house to house complaints by province

Have you reported a complaint to ZETDC in the past 3 months?

HOUSE TO HOUSE	YES	NO
Bulawayo	14%	86%
Manicaland	7%	93%
Mashonaland Central	15%	85%
Mashonaland East	13%	87%
Mashonaland West	9%	91%
Matabeleland North	7%	93%
Matabeleland South	19%	81%
Midlands	14%	86%
Masvingo	34%	86%
Harare	17%	83%

*Most complaints reported emanated from Masvingo (**34%**), Matabeleland South (**19%**) and Harare (**17%**) with the lowest number coming from Manicaland and Matabeleland North with **7%**.*

Table 5.36: Overall reported productive sector complaints by province

Have you reported a complaint to ZETDC in the past 3 months?

PRODUCTIVE SECTOR	YES	NO
Bulawayo	15%	85%
Manicaland	16%	84%
Mashonaland Central	26%	74%
Mashonaland East	17%	83%
Mashonaland West	33%	67%
Matabeleland North	12%	88%
Matabeleland South	0%	100%
Midlands	15%	85%
Masvingo	36%	64%
Harare	19%	81%

*Masvingo (**36%**), Mashonaland West (**33%**) had the highest number of reported complaints. Matabeleland South made no complaints.*

Respondents in both sectors who had indicated that they had made complains were then asked to provide details of their most recent complaint(s) as highlighted in the *household customers* extracts:

- *"ZETDC billed a huge sum to us they said it's because they had been undercharging the school over a period of time (based on estimate readings)."*
- *"We were connected together with the primary school but because of exorbitant prices we opted to be disconnected from the school it has been a month now since the ZESA guys are saying they need time to put us into the system and now they are claiming $390."*
- *"We have reported about the poles and wires that are loosely connected at the headquarters. The poles are at the school garden where the kids play. The poles as well as the wires are loose. They are a hazard to the kids and the people living in the house. We have been making reports every year but until now nothing has been done."*
- *"We have been reporting the issue of a meter that we had stopped using since early this year, the meter is not connected to anything and we have been asking ZESA to come and remove the meter but they still bill the meter. The last bill was about $4000."*
- *"We have a house we had conduct piping done in May but up to now they haven't come for inspection."*
- *"We had our water pipes fixed some time ago and the people who dug mistakenly broke the electricity wires that were underground."*
- *"Wanted a prepaid meter but after several calls they did not respond, even after going there personally they did not react."*
- *"They disconnected us from electricity because of a debt that we had .after paying or recovering the debt they did not come to do the reconnection in time."[SIC]*

Productive sector customers

- *"We had an issue with the meter which was replaced and the new meter came with a huge bill."*
- *"We had a power failure due to some power line fault; we didn't have electricity at our cutting and designing classrooms for some days."*
- *"There was a time when we were double billed."*
- *"The grid that the school is connected to was not working and it took ZESA a week to attend to it. We ended up buying a generator."*
- *"The breaker at the pole where we get our electricity had tripped. We phoned ZESA and they did not respond. Only after seeing some ZESA guys passing by our canteen that's when the issue*

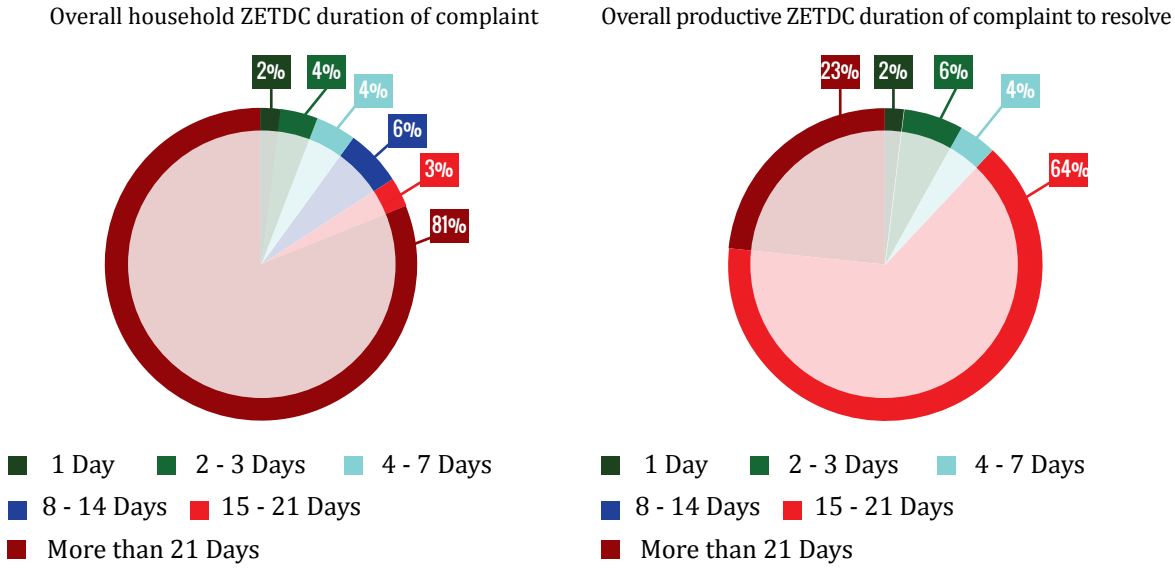
was attended to."

- *"The administration failed to explain the debt that they had given us on our account...they just imposed a lump sum of $7,000."*
- *"Late billing we receive bill on the 12th when they have clearly made the last day of payment 9th/10th of the month and because of this we have been disconnected several times."*
- *"It was about excessive power, the quality of power was compromised and it was causing dangers to electrical gadgets."*
- *"Issue of transformer, it was not functioning we spent four days without electricity."[SIC]*

5.1.5.1 TURNAROUND TIME FOR COMPLAINT RESOLUTION

The household customers were asked to indicate the number of days their complaints had been outstanding. Their responses are shown in Figure 5.38.

Figure 5.37: ZETDC time taken to resolve complaints for households



Source: Researchers' Own Derivation

Overall, the majority of the complaints for household customer's (81%) and productive sector (64%) had been unresolved for more than 21 days. Only 2% were resolved within a day.

Ninety-one percent of the rural areas' complaints had taken more than 21 days to resolve (Table5.37).

Table 5.37: Turnaround time for rural and urban household complaints resolution

How long has the complaint been outstanding?

	1 DAY	2 - 3 DAYS	4 - 7 DAYS	8 - 14 DAYS	15 - 21 DAYS	MORE THAN 21 DAYS
Rural	0%	0%	3%	6%	0%	91%
Urban	3%	5%	3%	6%	4%	79%

Analysis by province for household customers is presented in table 5.38.

Table 5.38: Turnaround time for household complaints resolution by province

How long has the complaint been outstanding?

	1 DAY	2 - 3 DAYS	4 - 7 DAYS	8 - 14 DAYS	15 - 21 DAYS	> 21 DAYS
Bulawayo	0%	0%	4%	12%	16%	68%
Manicaland	0%	0%	0%	0%	0%	100%
Mashonaland Central	11%	0%	0%	11%	0%	77%
Mashonaland East	0%	17%	17%	0%	0%	66%
Mashonaland West	8%	0%	0%	8%	0%	83%
Matabeleland North	0%	0%	0%	0%	0%	100%
Matabeleland South	0%	0%	0%	0%	0%	100%
Midlands	5%	10%	5%	14%	0%	66%
Masvingo	0%	0%	0%	6%	6%	89 %
Harare	1%	5%	3%	1%	1%	88%

Almost all of the household complaints in Manicaland, Matabeleland North and South had not been resolved in under 21days.The same analysis of the productive sector was done and Table 5.39shows the results.

Table 5.39: Turnaround time for complaints resolution by economic sector

	1 DAY	2 - 3 DAYS	4 - 7 DAYS	8 - 14 DAYS	15 - 21 DAYS	> 21 DAYS	OTHER SPECIFY
Agriculture (forestry & plantation)	0%	14%	0%	0%	0%	57%	29%
Commerce & distribution	0%	0%	10%	0%	0%	60%	30%
Construction & building	0%	0%	0%	0%	0%	100%	0%
Manufacturing (food & clothing FMCG)	0%	0%	0%	0%	0%	100%	0%
Mining (quarry & cement production)	0%	50%	0%	0%	0%	50%	0%
Social institutes	11%	0%	0%	0%	0%	67%	22%
Others (specify)	0%	7%	7%	0%	0%	57%	29%

The construction and manufacturing industry had complaints that had gone unresolved for more than 21 days.

5.1.6. COMPLAINT RESOLUTION

In terms of complaint resolution, ZETDC was rated 16% by the respondents. This suggests that there were few complaints, or most of the complaints were not reported.

(Indicate if these respondents were satisfied with the complaint resolution or not).

5.1.7 SAFETY ISSUES

All households that use electricity from the national grid are potential victims of electrical fault(s) and unsafe usage issues as the newspaper articles below testify.

Figure 5. 38: Article on ZETDC awareness campaign on safe use of electricity Daily news, 14 December 2016

The household customers were asked if they had been educated on the safe use of electricity. The table below highlights that only 17% of household customers had received some sort of education on the safe use of electricity.

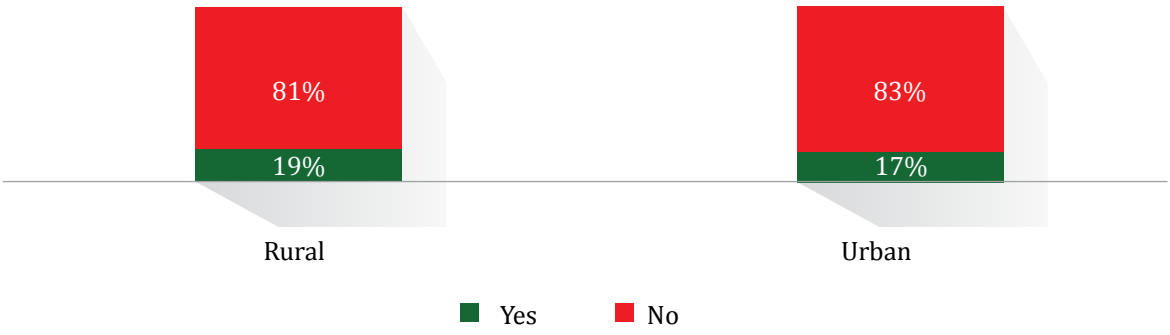
Table 5.40: Safety, education and training issues by province

Have you been educated on the safe use of electricity?

	YES	NO
Bulawayo	19%	81%
Manicaland	10%	90%
Mashonaland Central	10%	90%
Mashonaland East	36%	64%
Mashonaland West	11%	89%
Matabeleland North	19%	81%
Matabeleland South	14%	86%
Midlands	14%	86%
Masvingo	14%	86%
Harare	19%	81%
Average	**17%**	**83%**

*Seventeen percent (**17%**) of urban household respondents said they had received some education on the safe use of electricity. The majority who had received some education were from Mashonaland East (**36%**) while Manicaland (**10%**) and Mashonaland Central (**10%**) respondents had the least education.*

Figure 5.39: Household education on safe use of electricity by rural/urban



Source: Researchers' Own Derivation

There is a need for ZETDC to educate the public on the correct use of electricity and electrical equipment such as stoves, electric heaters and other electrical equipment. Accidental injuries and death can be avoided if people recognize the dangers and know the correct and safe way to use electricity.

This study sought to understand if respondents, despite their lack of training and knowledge, were taking any precautions when using electricity as shown on the table on the next page:

Table 5.41: Precautions taken when using electricity by province

What precautions do you take when using electricity?

	TREAT ALL PLUGS AS LIVE	DO NOT TOUCH NAKED WIRES	WEAR RUBBER SHOES	ALWAYS USE PROFESSIONAL ELECTRICIANS FOR REPAIRS AND MAINTENANCE	DON'T KNOW	OTHERS
Bulawayo	29%	36%	35%	17%	12%	17%
Manicaland	22%	42%	61%	11%	3%	17%
Mashonaland Central	43%	53%	56%	41%	2%	0%
Mashonaland East	42%	69%	59%	14%	1%	9%
Mashonaland West	14%	59%	64%	5%	2%	3%
Matabeleland North	14%	36%	28%	6%	32%	18%
Matabeleland South	29%	62%	40%	12%	2%	5%
Midlands	35%	72%	58%	23%	2%	1%
Masvingo	26%	31%	70%	5%	2%	28%
Harare	23%	42%	48%	19%	5%	12%
Average	**26%**	**46%**	**50%**	**17%**	**6%**	**12%**

Overall, 50% of the respondents wore rubber shoes when using electricity while 6% are not aware of any precautions they should practice. Respondents were asked if they personally, or any member of their household, had ever been injured in an electricity related accident or incident. The table below highlights the findings;

Table 5.42: Household injury by electricity related accident by province

Has any member of your household ever been injured in an electricity related accident or incident?

	YES	NO
Bulawayo	2%	98%
Manicaland	2%	98%
Mashonaland Central	0%	100%
Mashonaland East	0%	100%
Mashonaland West	1%	99%
Matabeleland North	0%	100%
Matabeleland South	0%	100%
Midlands	1%	99%
Masvingo	3%	97%
Harare	2%	98%
Average	**2%**	**98%**

*Ninety-eight percent (**98%**) of all respondents have never had an electricity related accident or incident. Three percent (**3%**) of reported accidents emanated from Masvingo. Half of the **2%** respondents, who had reported accidents, are from the rural areas.*

The respondents were asked the nature of the accidents or incidents. Forty-nine percent of accidents were as a result of burns from hot appliances while 24% were electrocuted by live wires.

Table 5.43: Nature of the accident

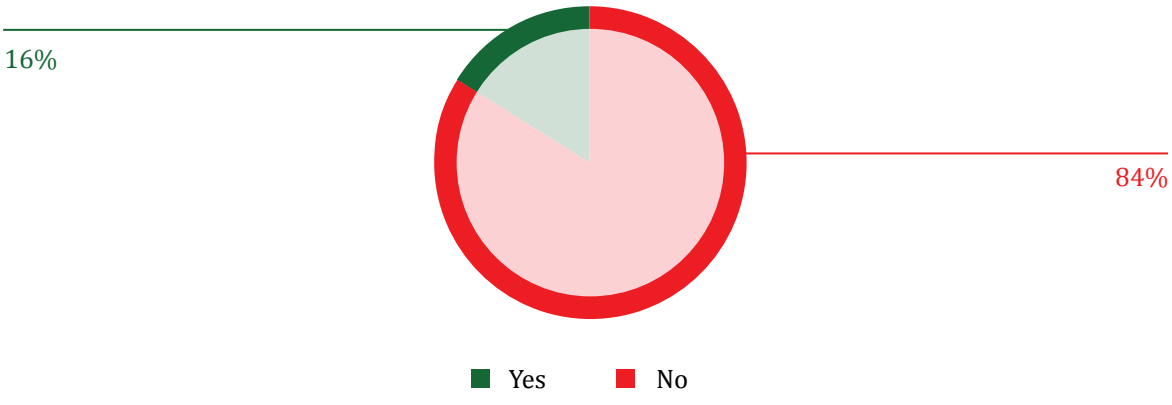
What was the nature of the accident?

	ELECTRICAL SHOCK BY ZETDC LIVE WIRES	BURNT BY HOT APPLIANCES	OTHERS (SPECIFY)
Bulawayo	33%	44%	22%
Manicaland	0%	100%	0%
Mashonaland West	0%	0%	100%
Midlands	60%	0%	40%
Masvingo	40%	60%	0%
Harare	20%	51%	29%
Average	**24%**	**49%**	**27%**

The majority of respondents that had experienced electric shock from live wires came from Midlands (60%) and Masvingo (40%).

All the respondents that were injured because of electrical faults that were caused by ZETDC were asked if they had received any compensation from ZETDC. Figure 5.41 shows their responses.

Figure 5.40: Compensation from ZETDC for injury caused by electric faults



Source: Researchers' Own Derivation

Eighty-four percent (84%) of the respondents said they have not yet been compensated. Of those who were compensated, the majority were from Harare (83%) and Midlands (67%).

At the end of the session the respondents were asked whether, in their view, the community was adequately aware of safety issues when using electricity. Forty-two percent (42%) of the respondents said there were awareness campaigns that were being done to raise safety levels in the community.

Table 5.44: Awareness of safety issues by the community

Do you feel the community (industry and individuals) are adequately aware of safety issues when using electricity?

	YES	YES
Bulawayo	46%	54%
Manicaland	41%	59%
Mashonaland Central	41%	59%
Mashonaland East	46%	54%
Mashonaland West	18%	82%
Matabeleland North	52%	48%
Matabeleland South	50%	50%
Midlands	55%	45%
Masvingo	64%	36%
Harare	38%	62%
Average	**42%**	**58%**

Stakeholders said the following:

- *I think it's an area which requires a lot of attention because I have read and heard about a lot of people who died due to electrical faults."*
- *"Yes we do it right though here and there we have accidents, we are negatively impacted by the economy because we are sometimes forced to compromise standards for example provision of safe clothing is not as it is supposed to do."*
- *"I think so, ZETDC has been running adverts on ZTV focusing on SHE, safety healthy issues."*
- *"ZETDC really adhere to such principles for example they will leave everything intact without putting the public in danger of naked wires."*

Figure 5.41: An educational campaign advert

5.1.7.1 PRICING

The stakeholders also pointed out that the rates/fees charged are fair and reasonable:

- *"Considering the economic environment we are operating in the prices are fair for both parties but they should be structured downwards in the longer term by allowing more players into the power generation sector."*
- *"They can only be fair if we are sure of the efficiency of the service provider. Like I was saying that we have bottled management structure an organisation which supposedly is inefficient right now."*
- *"I think it's a bit higher considering the fact that we import more electricity than we produce here locally."*
- *"Petroleum prices are not reflective of the international prices when the international price falls it does not drop at the same margin in Zimbabwe."*
- *"The charges are generally high in this country especially for industry like mine we think that it is far too high and we don't think it's comparable with other countries."*
- *"They are not reasonable, electricity is very expensive. The majority of the residents are not economically fit to sustain the huge cost of electricity."[SIC]*

5.1.7.2 COMPLAINT RESOLUTION

In terms of complaint resolution, ZETDC was rated 16% by the respondents. This suggests that there were few complaints, or most of the complaints were not reported.

5.1.8 RECOMMENDATIONS FOR ZETDC

The following are some recommendations ZETDC can adopt:

- ✓ Have an adequate and efficient transport system in order to respond promptly to customer's complaints.
- ✓ Continuously repair infrastructure i.e. cutting trees and replacing broken/rotten electric poles.
- ✓ Advise on prices, fees and tariff increases timeously.
- ✓ Be more accurate in billing and revise the debt recovery percentage which is seen as too high.
- ✓ More transparency required in billing of accounts as many respondents did not know how the amounts owing were arrived at and accrued.

CHAPTER 6

OVERALL PETROLEUM CUSTOMER SATISFACTION INDEX

6.1 INTRODUCTION

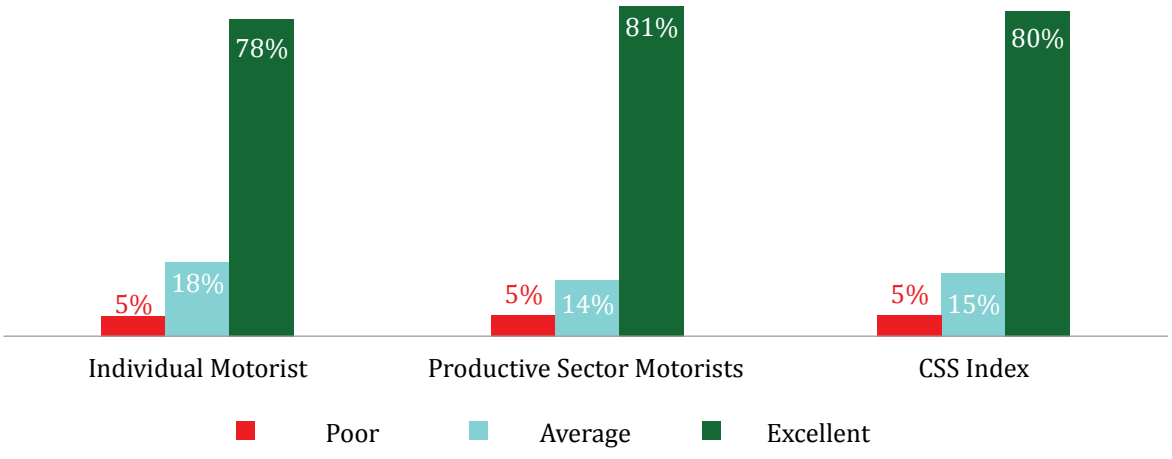
This section was done with individual motorists and the productive sector. Respondents were asked to base their experiences with their frequently used suppliers when rating petroleum usage. Responses covered customer satisfaction index, fuel pricing structure, quality of fuel on the market, demand for fuel and complaints.

Figure 6.42: An image of old service station vis-à-vis a modern service station

6.2.1 OVERALL PETROLEUM SECTOR SATISFACTION INDEX

Respondents were asked to rate the service they received from their frequently used service station using a 5-point scale (see Figure 6.44).

Figure 6.43: Overall petroleum satisfaction index



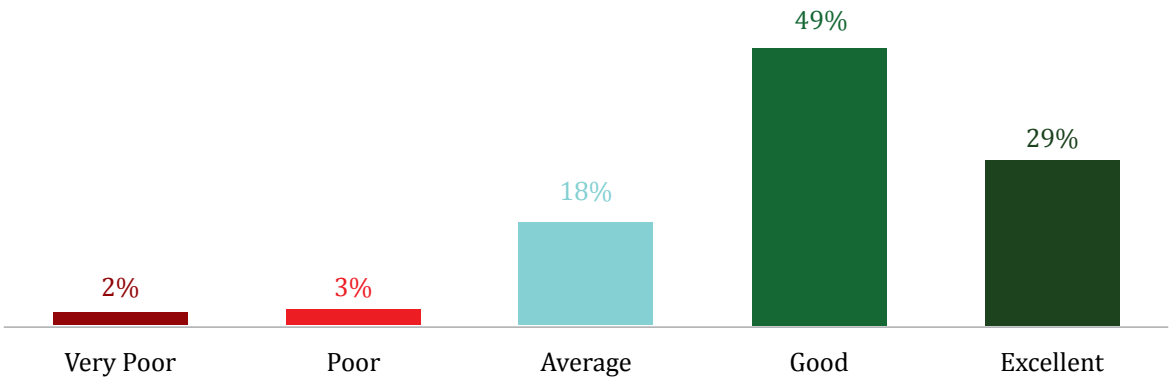
Source: Researchers' Own Derivation

The overall customer satisfaction index for the petroleum sector is 80%.The productive sector had the highest satisfaction rating with 81% and individual motorists 78%.

6.2.2 OVERALL PETROLEUM SECTOR SATISFACTION INDEX BY INDIVIDUAL MOTORISTS

The general satisfaction rating shows that the majority of the individual motorists said the services offered to them were satisfactory. Seventy-eight percent (78%) of motorists ranked the service as good, 5% rated the services poor and 18% were indifferent (see Figure 6.45).

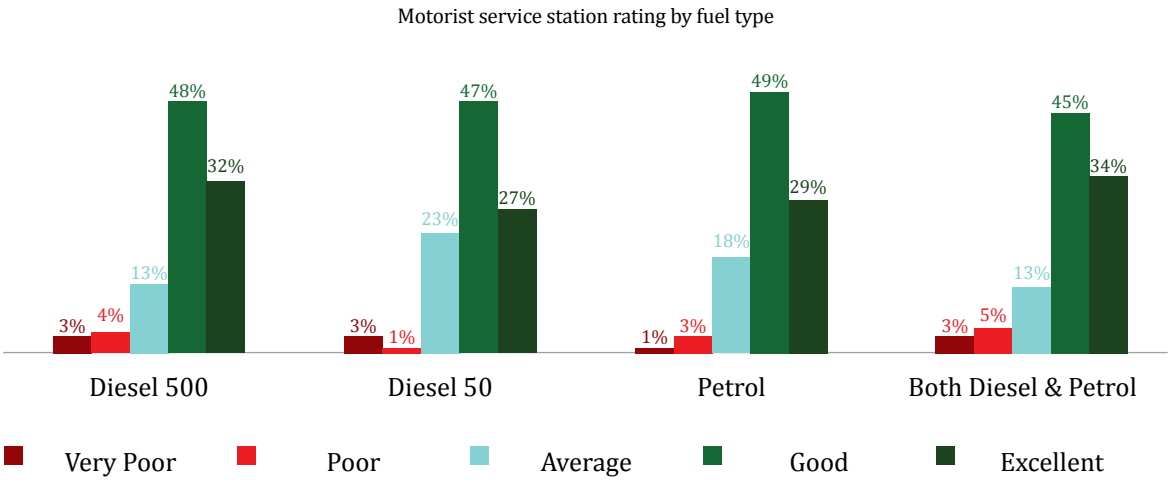
Figure 6.44: Motorists overall satisfaction service station service rating



Source: Researchers' Own Derivation

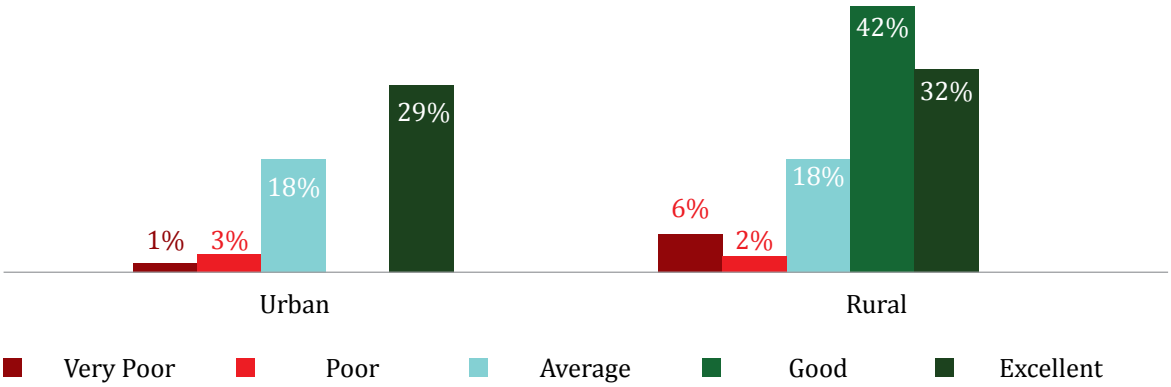
These results were further analysed by fuel type and suburb as shown in Figure 6.46.

Figure 6.45: Motorist service station rating by fuel



For all the types of fuel surveyed, motorists rated their service providers above 70% showing that are happy with the services they received. Highest satisfaction rating came from motorists using diesel 500 who rated their service provider at 80%.

Figure 6.46: Motorist service station rating by rural/urban



Source: Researchers' Own Derivation

The highest satisfaction ratings came from the urban motorists with 78% Rural motorist rating was 74%. There was little difference in terms of service ratings of motorists despite their residential area at the time of the interviews. Only 4% separates urban and rural motorist from the overall satisfaction rating.

6.2.3 ANALYSIS OF SATISFACTION RATINGS OF SERVICE STATIONS BY PROVINCE

Table 6.45 shows analysis of motorist satisfaction of service station by province.

Table 6.45: Motorist satisfaction ratings of service stations by province

PROVINCE	VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT
Bulawayo	1%	2%	15%	60%	22%
Manicaland	4%	0%	19%	49%	28%
Mashonaland Central	0%	3%	16%	57%	24%
Mashonaland East	4%	4%	34%	35%	23%
Mashonaland West	1%	5%	8%	55%	31%
Matabeleland North	2%	6%	13%	63%	16%
Matabeleland South	3%	5%	8%	61%	23%
Midlands	6%	2%	20%	33%	39%
Masvingo	3%	3%	11%	50%	33%
Harare	1%	2%	20%	44%	33%
Average	**2%**	**3%**	**17%**	**49%**	**29%**

The highest positive ratings came from Mashonaland West (86%) and Matabeleland South (84%).

Table 6.46 shows the main reasons given by motorists for their ratings.

Table 6.46: Justification for motorist satisfaction rating

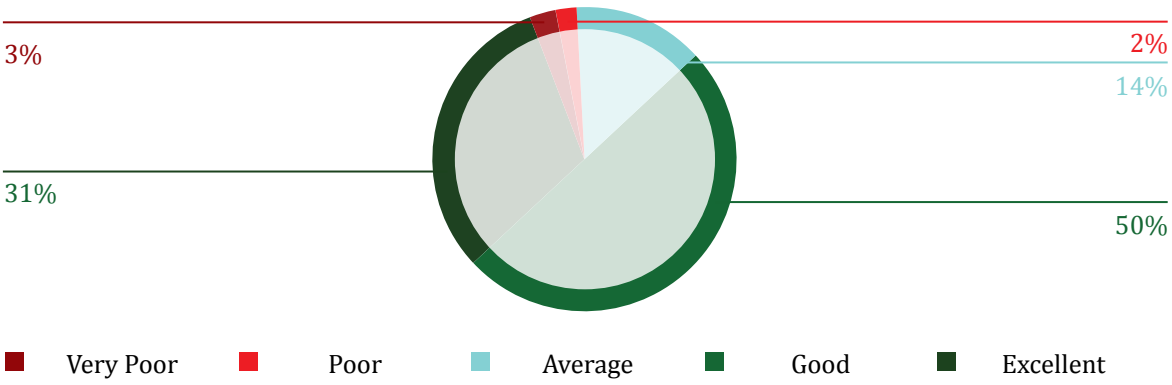
48%	Customer service is good
9%	Quality of fuel is good and good customer service
8%	So far no problems
3%	Fuel is always available
2%	We have cards and it's easy for us
2%	Prices are cheaper than elsewhere
2%	Its close by
1%	There is value for money
6%	Poor services
3%	Sometimes they have no fuel
14%	Others

Positive ratings were associated mainly with good customer service and the quality of fuel. Negative rating was as a result of poor services and unreliable fuel supplies.

6.2.4 OVERALL PETROLEUM SATISFACTION INDEX BY THE PRODUCTIVE SECTOR

The overall customer satisfaction rate is 81% which indicates that most of the productive sector motorists are satisfied with the services they are getting. Only 5% were dissatisfied.
Figure 6.48 summarizes the results for the productive sector.

Figure 6.47: Productive sector motorist service rating



Source: Researchers' Own Derivation

A Productive sector customer satisfaction analysis by sectors

As seen in the table below, respondents in the productive sectors are generally satisfied with the current services they are receiving. The mining (100%), construction and building (88%), commerce and distribution (87%) sectors had the highest satisfaction ratings.

Table6.47: Productive sector motorist service rating by sectors

	VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT
Agriculture (forestry & plantation)	2%	4%	11%	51%	32%
Commerce and distribution	1%	0%	12%	53%	34%
Construction and building	0%	0%	12%	63%	25%
Manufacturing (food & clothing FMCG)	5%	0%	14%	54%	27%
Mining (quarry & cement production)	0%	0%	0%	37%	63%
Social institutes	2%	4%	17%	47%	30%
Others (specify)	5%	4%	18%	46%	27%
Average	**3%**	**2%**	**14%**	**50%**	**31%**

B Productive sector customer satisfaction analysis by province

The rating of the satisfaction index by province is presented in Table 6.48.

Table 6.48: Productive sector satisfaction rating by province

	VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT
Bulawayo	4%	1%	13%	57%	25%
Manicaland	4%	0%	7%	44%	44%
Mashonaland Central	0%	0%	9%	45%	45%
Mashonaland East	50%	0%	0%	50%	0%
Mashonaland West	0%	18%	0%	45%	36%
Matabeleland North	0%	0%	33%	50%	17%
Matabeleland South	0%	0%	0%	67%	33%
Midlands	0%	4%	8%	46%	42%
Masvingo	0%	0%	6%	44%	50%
Harare	3%	3%	18%	49%	28%

Satisfaction ratings are high in all the provinces. Matabeleland South had the highest satisfaction rating of 100% followed by Masvingo with 94%. Highest dissatisfaction was noted in Mashonaland East (50%) and Mashonaland West (18%).

The Table 6.49 highlights the reasons given for the ratings.

Table 6.49: Justification for productive sector satisfaction rating

28%	Good quality fuel products
16%	They are efficient/service is good/Point of sale
10%	Other
2%	They are expensive prices not stable
27%	Not happy with the service e.g. refuse point of sale, slow, poor customer service
15%	Good customer care, friendly staff swift in assisting clients

Motorists rated their frequently used fuel suppliers highly mainly because of the quality of fuel (28%) and the efficient service. Negative ratings are associated with high prices.

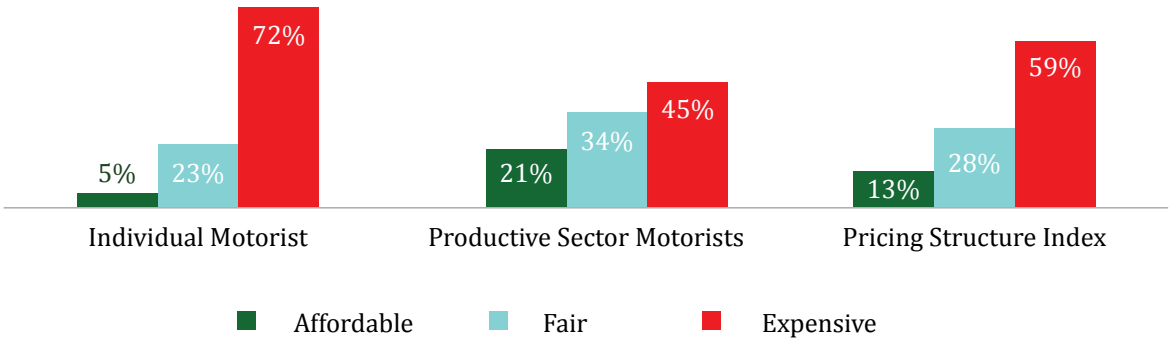
6.3 PERCEPTION OF THE PRICING STRUCTURE OF FUEL IN ZIMBABWE

This section presents findings of motorist's perceptions of the fuel pricing structure in Zimbabwe.

6.3.1 EVALUATION OF THE FUEL PRICING STRUCTURE

The overall satisfaction rating for the price structure is shown in Figure 6.49.

Figure 6.48: Overall satisfaction with fuel pricing structure



Source: Researchers' Own Derivation

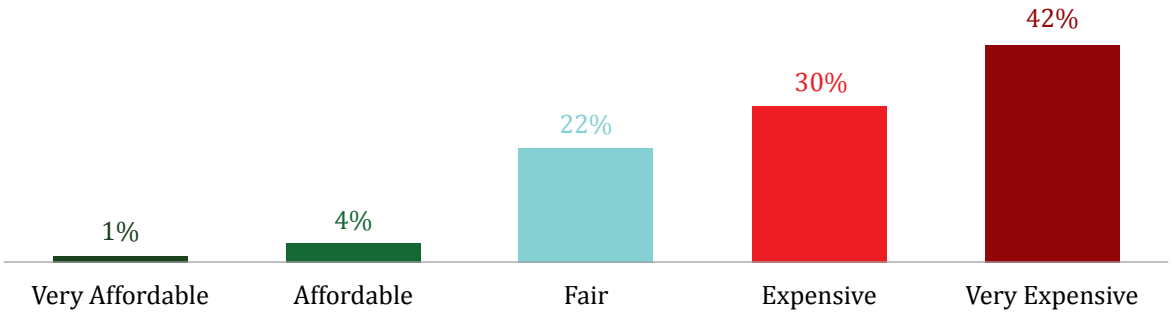
The overall fuel pricing structure was considered high as shown by the 59% rating by the respondents. Thirteen percent (13%) of the motorists said the price of fuel was very cheap, while 28 % % were indifferent. A comparison between individuals (domestic) and productive sector (industry) motorists shows that industry considered the fuel pricing structure to be fair as shown by the 34% rating.

Individual motorist fuel considered it to be very expensive (72%). This could be because the productive sector benefits from discounts through bulk buying.

6.3.2 OVERALL PETROLEUM SECTOR PRICING STRUCTURE SATISFACTION BY INDIVIDUAL MOTORIST

Overall, 72% of the individual motorists felt that fuel is expensive. Only 5% of the respondents felt that fuel is affordable, while 23% indicated that prices were fair.

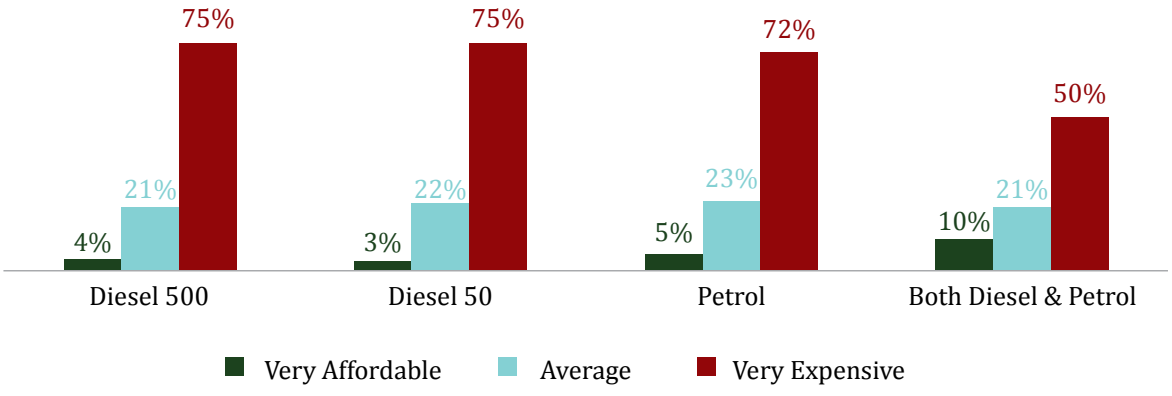
Figure 6.49: Overall satisfaction with fuel pricing structure by individual motorist



Source: Researchers' Own Derivation

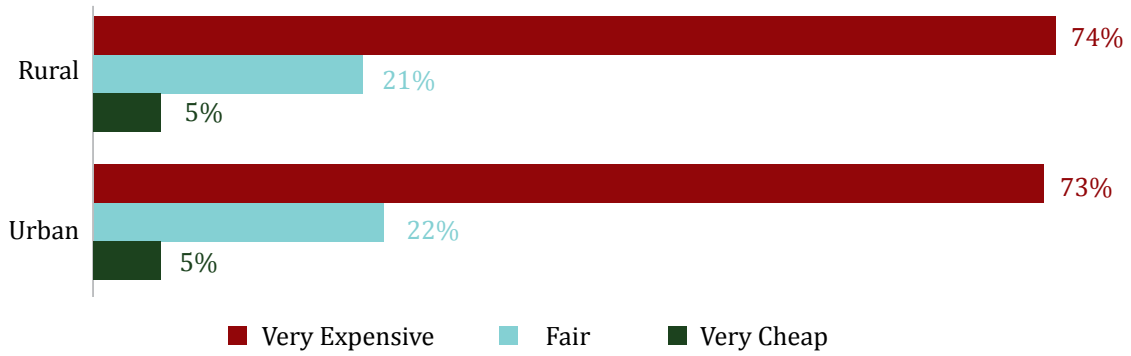
The pricing structure is further analysed by province, fuel type and rural versus urban area.

Figure 6.50: Motorist fuel price rating by fuel type



Motorists that use diesel fuels considered diesel to be expensive Figure6.51.

Figure 6.51: Motorist fuel price rating by rural vs. urban



Both rural and urban individual motorist say fuel is expensive with ratings of 74% and 73% respectively. Only 5% of respondents in both areas consider it to be affordable.

A provincial analysis in the table below reinforces the perception by individual motorists that fuel is expensive in the country as indicated by average figures of above 60% across the provinces.

Table 6.50: Fuel pricing structure by province

How would you rate the price of fuel in Zimbabwe compared to other countries in the SADC region on a 5-point scale where 1 is very cheap and 5 very expensive?

PROVINCE	VERY AFFORDABLE	AFFORDABLE	FAIR	EXPENSIVE	VERY EXPENSIVE
Bulawayo	1%	3%	16%	32%	48%
Manicaland	2%	2%	23%	32%	40%
Mashonaland Central	1%	0%	27%	45%	27%
Mashonaland East	1%	6%	32%	30%	30%
Mashonaland West	2%	6%	22%	29%	42%
Matabeleland North	0%	3%	18%	29%	50%
Matabeleland South	0%	2%	17%	9%	73%
Midlands	1%	4%	19%	31%	45%
Masvingo	1%	10%	25%	31%	33%
Harare	1%	4%	24%	30%	40%
Average	**1%**	**4%**	**22%**	**30%**	**42%**

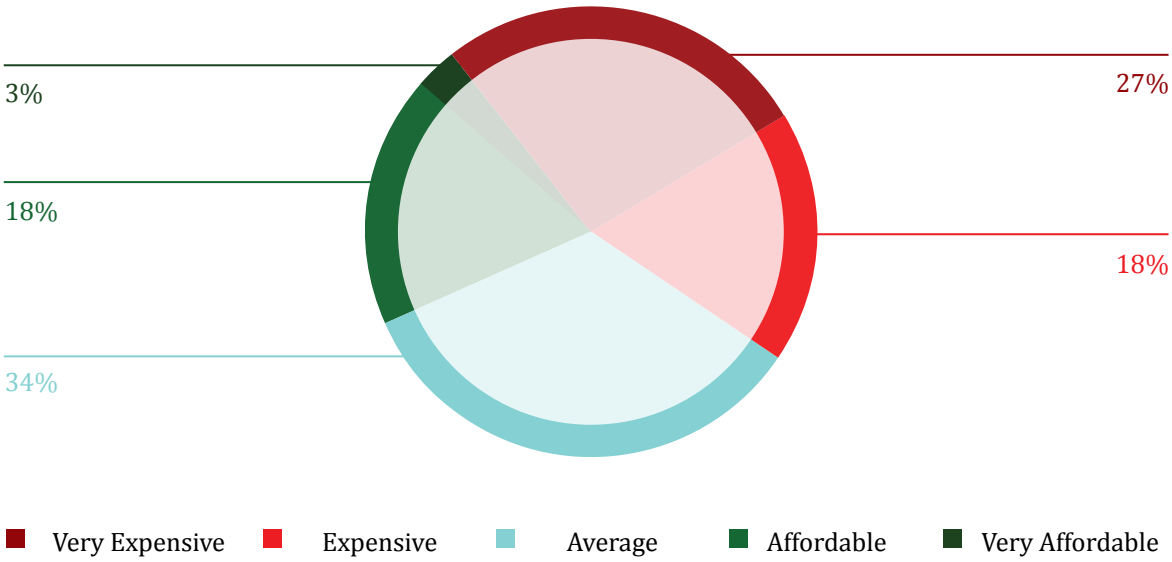
The province that rated fuel as very expensive was Matabeleland South (82%) followed by Bulawayo (80%). This could be because respondents compared prices in their province to those in neighbouring countries. Reasons given for the ratings are presented in the table below.

Table 6.51: Justification for individual satisfaction rating

75%	Expensive compared to other countries
15%	Price is fair compared to other countries
3%	Cheap compared to other regions
3%	Other

The majority of the respondents 75% said that Zimbabwean fuel prices are higher than countries in the region. Figure 6.53 shows overall productive sector satisfaction with fuel pricing.

Figure 6.52: Overall productive sector satisfaction with fuel pricing structure



Source: Researchers' Own Derivation

Forty five percent 45% of the productive sector perceives the fuel pricing structure to be expensive, 34% were indifferent and 21% considered it to be reasonably priced.

The construction and manufacturing sector rated the fuel pricing structure as very expensive as shown in the Table 6.52.

Table 6.52: Overall satisfaction with fuel pricing structure by productive sector

	VERY EXPENSIVE	EXPENSIVE	NEUTRAL	CHEAP	VERY CHEAP
Agriculture (forestry & plantation)	30%	18%	34%	14%	4%
Commerce and distribution	20%	20%	39%	17%	4%
Construction and building	13%	38%	0%	36%	13%
Manufacturing (food & clothing FMCG)	32%	19%	27%	19%	3%
Mining (quarry & cement production)	13%	25%	24%	13%	25%
Social institutes	27%	18%	36%	16%	3%
Others	33%	12%	34%	21%	0%

The construction and building sectors had no neutral rating (see Table 6.52).

Table 6.53: Overall productive sector satisfaction rating of fuel pricing structure by province

PROVINCE	VERY EXPENSIVE	EXPENSIVE	AVERAGE	CHEAP	VERY CHEAP
Bulawayo	19%	14%	40%	22%	5%
Manicaland	33%	11%	41%	11%	4%
Mashonaland Central	27%	18%	36%	0%	18%
Mashonaland East	50%	0%	50%	0%	0%
Mashonaland West	9%	18%	45%	27%	0%
Matabeleland North	33%	17%	17%	33%	0%
Matabeleland South	0%	67%	33%	0%	0%
Midlands	42%	4%	35%	12%	8%
Masvingo	13%	13%	44%	25%	6%
Harare	30%	21%	29%	18%	2%
Average	**27%**	**18%**	**34%**	**18%**	**3%**

Overall, 27% of the respondents indicated that the fuel was very expensive especially in Mashonaland East Province and 18% felt it was expensive. Thirty four percent (34%) were of the view that the fuel

was average in terms of pricing. About 18% believed that the fuel is cheap and 3% very cheap. Overall, 27% of the respondents indicated that the fuel was very expensive especially in Mashonaland East Province and 18% felt it was expensive. Thirty four percent (34%) were of the view that the fuel was average in terms of pricing. About 18% believed that the fuel is cheap and 3% very cheap.

The stakeholders were also asked to give their opinion on the pricing structure of Zimbabwean fuel as compared to other regions;

"We are not quite confident because of the information we have to rely on is from websites, if we compare our fuel price with regional counterparts we feel that ours is expensive. I know Malawi and Tanzania seemed to be higher than ours as of 2014 and2015. I am not sure of 2016 figures but looking at Malawi, Tanzania and even Zambia they look like they are more expensive than ours. Of interest is if you look at Zambia it is further from the sea than us, so naturally we would want it to be much more expensive than ours. We are supposed to bring bulk fuel by pipeline as compared by road but they are using road. This is a concern we have for such a long time we are still paying for the sin that was committed by others in the past through National Oil Company of Zimbabwe (now called NOIC).If you look at the fuel pricing structure there is a debt redemption levy and we still do not know where we are now because we have been paying for it for a long time now. It is not clear whether we still have not finished paying this debt redemption levy. Up to now we do not know what happened to the money that was supposed to pay for it at that time and this is one of the things that cause fuel to be expensive."

- Stakeholder in the petroleum sector [SIC]

Do you feel that industry and individuals are aware of how fuel is priced?

"The industry would know but individuals would find the formula very complex, many individuals are not aware of how the price on the pump is derived."

- Stakeholder in the petroleum sector [SIC]

Customers were asked what influenced the pricing structure in Zimbabwe.

Table 6.54: Perception on factors affecting fuel pricing structure by sector

In your opinion what factors influence fuel price in Zimbabwe?

	INDIVIDUAL MOTORIST	PRODUCTIVE SECTOR MOTORIST
International Crude Oil prices	8%	12%
Government Taxes	30%	34%
Availability	11%	17%
Quality of the product	3%	4%
Transport costs	23%	0%
Don't know	15%	16%
Other	33%	44%

Sixty-four percent (64%) of all motorists identified government taxes as the most critical factor affecting fuel prices. Asked the same question, stakeholders felt that the fuel prices are high because of transport cost.

This was explained as:

> *"The transportation cost, of course since we are a landlocked country we do much of our fuel transportation by road from the ports of arrival. The level of activity in the economy also determines the cost of fuel: with less activities in the country the government will have less activity to tax, they will go for easy money to tax petroleum products."*
>
> *- Stakeholder in the petroleum sector [SIC]*

> *"The debt redemption levy which is still being paid for, the government tax if you look at the taxes, the ZINARA levy, there is the road something and there are a couple of them. They come up to 67 cents to the price of fuel so you see fuel should have been cheaper if it was not for the tax. I think the pipeline is also influencing the cost of the fuel although when considering the pipeline, the fuel should have been cheaper."*
>
> *- Stakeholder in the petroleum sector [SIC]*

This caption in the Daily News quotes the Regulator's Chief Executive Officer acknowledging that fuel taxes are too high.

Figure 6.53: ZERA statement on fuel tax, Daily news 16 November 2016

Fuel taxes too high: Zera

Ndakaziva Majaka
SENIOR BUSINESS WRITER

THE Zimbabwe Energy Regulatory Authority (Zera) yesterday said the country's fuel taxes and levies were too high making local petroleum prices unresponsive to international oil price fluctuations.

Zera chief executive Gloria Magombo told Parliament that local fuel dealers have to honour five tax and levy obligations amounting to about $0,62 per litre of petrol imported.

"...while the FOB price for today is sitting at $0,46 for petrol, the local price for transportation is about $0,65 per litre and duties and levies are $0,62 per litre and that does not change even if the gulf prices change," she said.

"The amount of drop is in line with this, the prices are responsive of that.

"The reason you do not see huge drops is because of the fixed costs that we have on that fuel price so it does not matter even if the price drops to $0,30.

The amount of drop is in line with this, the prices are responsive of that. The reason you do not see huge drops is because of the fixed costs that we have on that fuel price so it does not matter even if the price drops to $0,30.

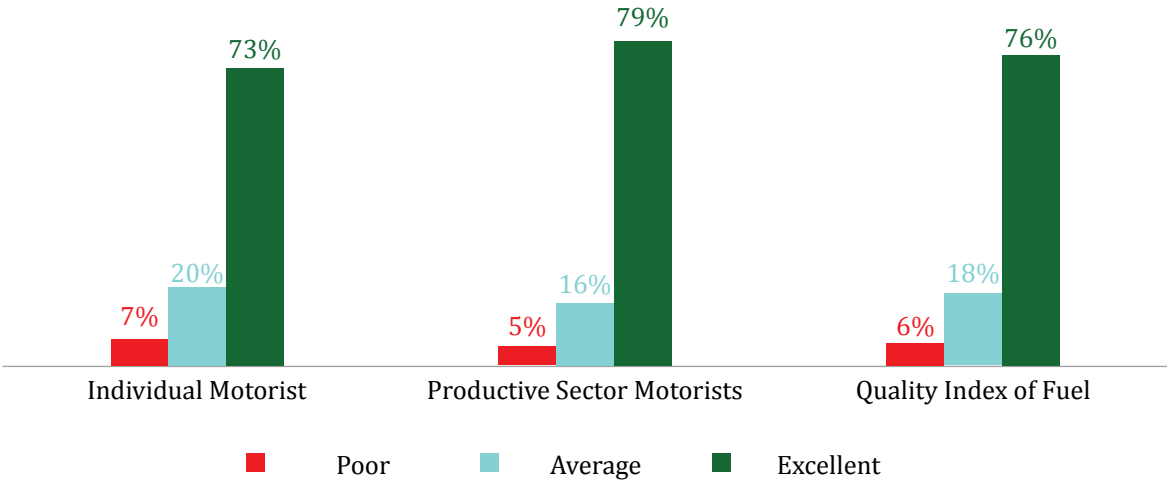
Zera chief executive Gloria Magombo

6.3.3 QUALITY OF FUEL SUPPLY

This section establishes motorists' perceptions of the quality of fuel on the Zimbabwean market. An analysis was made of the perceptions about the quality of fuel consumed by individuals and the productive sector motorist.

Seventy-six percent (76%) of the motorists rated the quality of fuel sold on the Zimbabwean market to be as excellent. Only 6% rated it as poor.

Figure 6. 54: Overall customer satisfaction rating of fuel quality

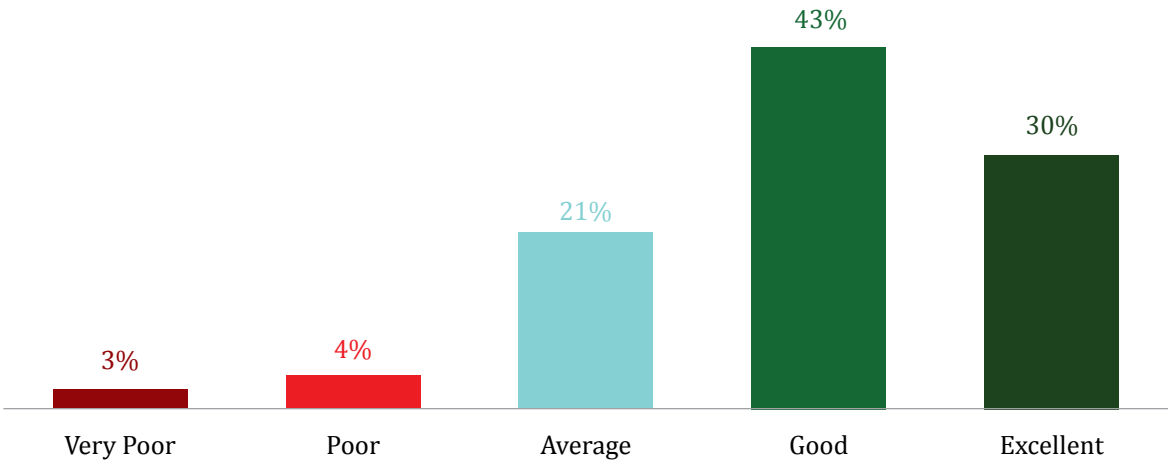


Source: Researchers' Own Derivation

A comparison of the satisfaction levels of individual motorist and the productive sector motorist was made. The productive sector motorists (79%) are more satisfied with the quality of fuel as compared to individual motorist at 73%.

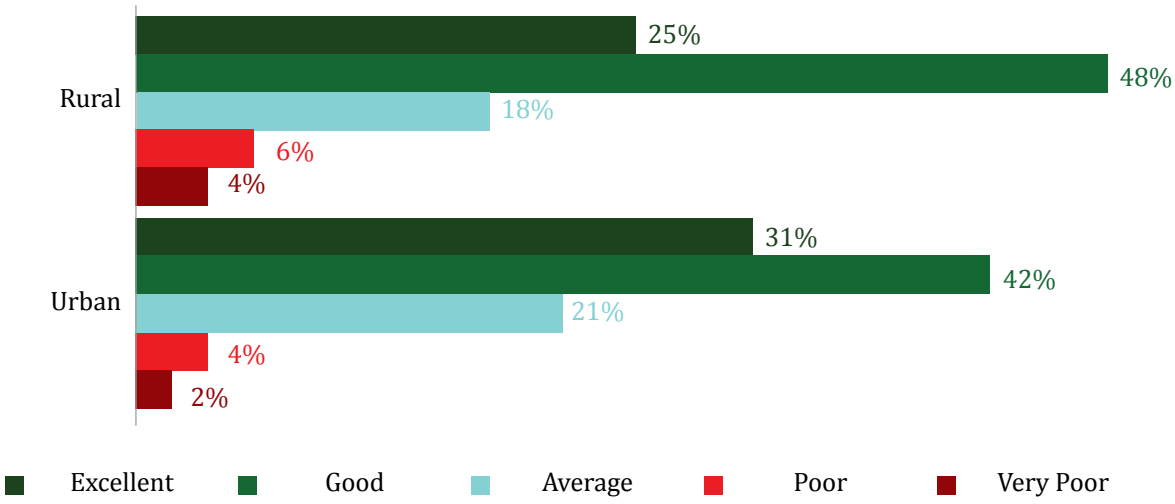
Seventy three percent (73%) of the individual motorists are happy with the quality of fuel sold, 21% were indifferent and 7% rated it as poor.

Figure 6.55: Overall petroleum sector satisfaction with fuel quality by individual motorists



Source: Researchers' Own Derivation

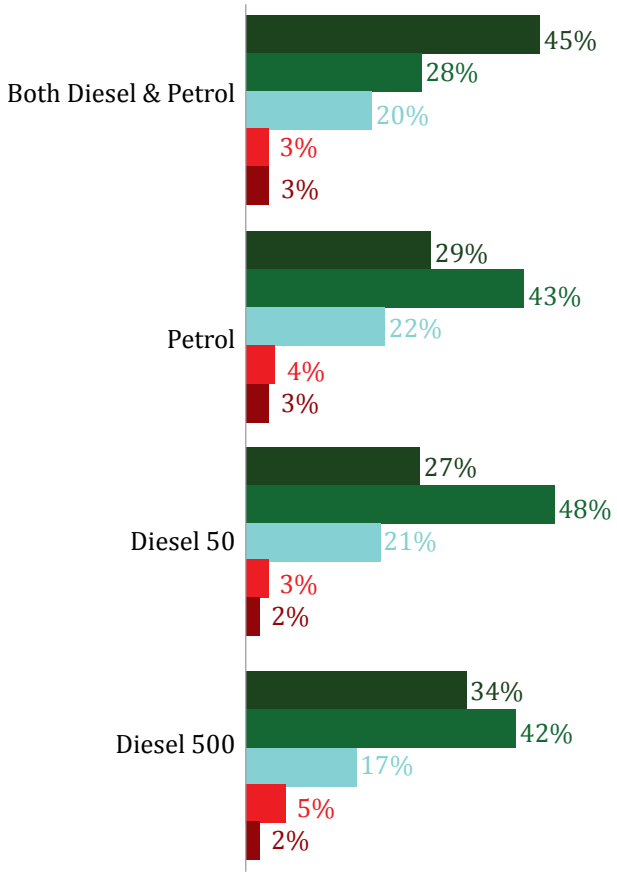
Figure 6.56: Fuel quality rating by overall individual motorists in rural and urban



Source: Researchers' Own Derivation

The figure shows that both rural and urban motorists are satisfied with the quality of fuel as shown by the 73% positive rating.

Figure 6.57: Individual motorist overall quality of fuel rating by fuel type



Both diesel and petrol users are satisfied with the quality of fuel. Motorists using diesel 500 (76%) are marginally more satisfied as compared to the diesel 50 respondents (75%). Petrol users have a slightly lower rating of 72% compared to diesel users.

Source: Researchers' Own Derivation

The satisfaction rating of fuel was split by province as shown in Table 6.55.

Table 6.55: Individual motorist overall quality of fuel rating by province

PROVINCE	VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT
Bulawayo	2%	6%	22%	47%	23%
Manicaland	6%	2%	17%	30%	45%
Mashonaland Central	1%	1%	26%	46%	26%
Mashonaland East	4%	9%	32%	22%	32%
Mashonaland West	2%	6%	21%	43%	29%
Matabeleland North	3%	5%	18%	53%	21%
Matabeleland South	2%	8%	24%	53%	14%
Midlands	6%	2%	16%	47%	28%
Masvingo	6%	3%	11%	36%	44%
Harare	2%	3%	20%	41%	34%
Average	**3%**	**4%**	**21%**	**43%**	**30%**

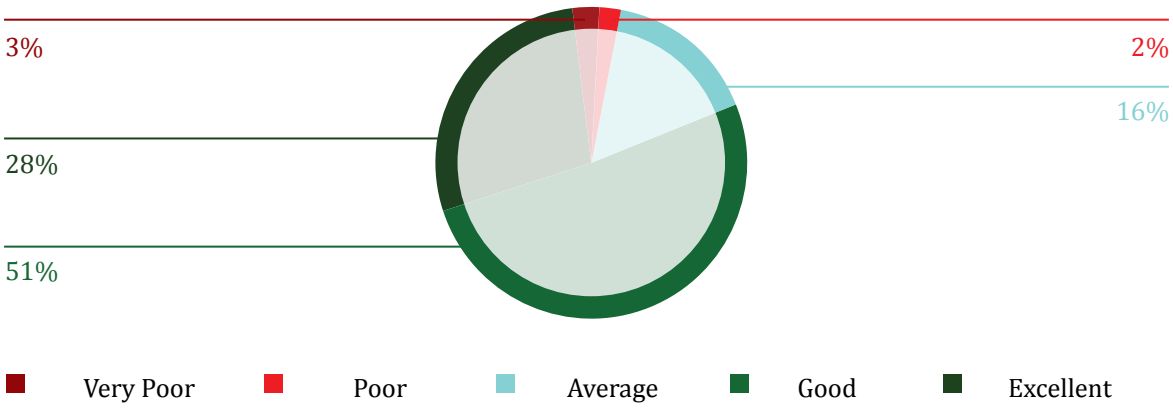
Overall, all provinces are satisfied with the quality of fuel sold on the market. The highest satisfaction rating came from Masvingo (80%), Harare and Midlands (75%) while Mashonaland East (54%) had the least satisfied rating.

Table 6.56: Overall satisfaction ratings on aspects of fuel quality by customers

PERCENT	COMMENTS
35%	You travel for a longer mileage
26%	It's of high quality
13%	I have never had a problem with it
13%	You don't travel for a long mileage
1%	Their fuel price is good/value for money
1%	Their reputation is good
1%	Total fuel is the best
2%	Others

The respondents' justifications for higher rating of the quality of the fuel were based on the argument that the fuel is of a high quality (see Table 6.56).

Figure 6.58: Productive sectors overall rating of petroleum fuel quality



Source: Researchers' Own Derivation

Seventy nine percent (79%) of the productive sector motorists are satisfied with the quality of fuel sold on the market.

Table 6.57: Analysis of satisfaction of fuel quality by province

PROVINCE	VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT
Bulawayo	2%	1%	17%	57%	23%
Manicaland	4%	0%	7%	41%	48%
Mashonaland Central	0%	0%	9%	36%	55%
Mashonaland East	0%	0%	0%	100%	0%
Mashonaland West	9%	0%	18%	55%	18%
Matabeleland North	0%	0%	17%	67%	17%
Matabeleland South	0%	0%	0%	67%	33%
Midlands	0%	4%	12%	65%	19%
Masvingo	0%	6%	0%	38%	56%
Harare	4%	2%	19%	49%	27%
Average	**3%**	**2%**	**16%**	**51%**	**28%**

The study showed that all respondents from Mashonaland East and Matabeleland South were satisfied with the quality of fuel they were getting from their service stations.

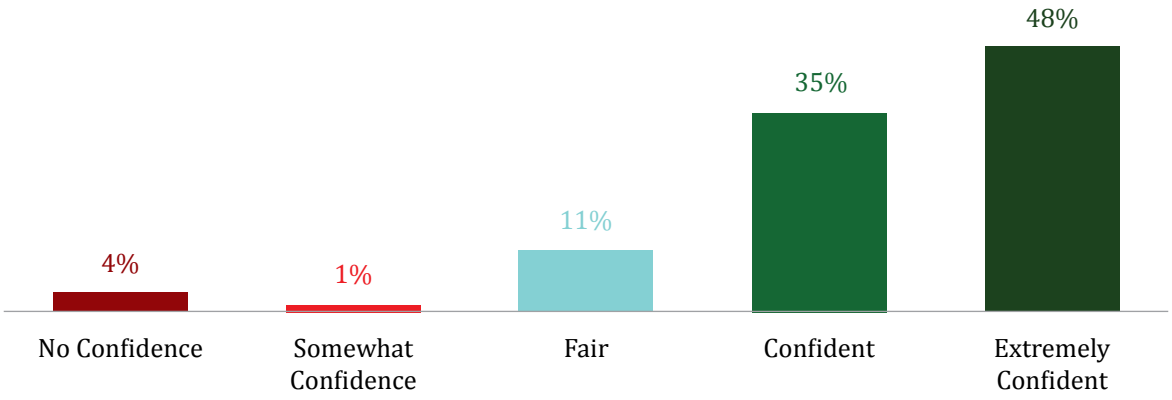
Justification for ratings by the productive sector respondents were given as:

- *"In some instance its very dubious we can't easily ascertain what some people are saying diesel 500 is diesel 50, there is no mechanism to test whether its diesel 50 or diesel 500."*
- *"It's a grey area, reports are that some of the fuel is poor quality procured under dubious circumstances, so the onus is on ZERA to expose companies that will be selling substandard."*
- *"Information in this regard is not clear and it also needs someone who would have been exposed to fuel from other countries to make a clear assessment."*
- *"I think on our experience I do not have any problems because we have used fuel from Zambia, Tanzania and South Africa, I think it is basically within the same range."*
- *"It is an area where there is room for improvement because in South Africa there is a wide variety of fuels and the consumers can make choices, some of the fuels being mandated on the market are of lower quality for the engines we have now."[SIC]*

6.3.4 DIRECT CUSTOMERS SATISFACTION INDEX WITH ZERA'S FUEL QUALITY SPOT CHECKS

The direct customers were asked to rate ZERA's effectiveness in terms of quality tests that they perform on fuel sold by retailers. Their perceptions are summarized in Figure 6.60.

Figure 6.59: Overall Direct Customer Rating of Fuel Quality Checks



Source: Researchers' Own Derivation

Eight three percent (83%) of the direct customers have confidence in the quality checks performed by ZERA, while 5% have no confidence.

Do you think ZERA constantly checks on the quality of fuel?

The stakeholders were asked their perception of the fuel quality checks done by ZERA. The following were some of their responses:

- *"I am sure they do spot checks on the quality of fuel though I am not sure about the frequency"*
- *"Yes it does they have a test that they do to check whether the PPM or whatever it is, is correct. If it differs then they know whether the fuel has been adulterated or not"*
- *"They say they do I don't know whether they do it for real or not"*

- Stakeholders in the petroleum sector [SIC]

Do you think that the motoring public is aware of the quality standards set by ZERA for fuel?

- *"I don't think so because the majority of Zimbabwean consumers are just worried about the price that's why you find that motorists are not reluctant to deal with illegal fuel dealers because what matters is price."*
- *"Yes this public is aware of the standing issue and have knowledge on the quality of fuel on the market."*
- *"I don't think so, they rely on ZERA and assume that all fuel brought at service stations is credible."*
- *"No, it's very technical because for you to access a SAZ standard its $30 so who really in this economy can afford to pay $30 to access a SAZ standard with the information on fuel parameters."*
- *"I do not know but there is some appreciation of what they are getting especially in terms of fuel to say this fuel is efficient 1 litre can take you 15km or a litre can take you 10km, I think there is that kind of appreciation of fuel."*
- *"I am not sure on this one but ZERA has not been providing enough information on the subject and what it means to motorists."*

- Stakeholders in the petroleum sector [SIC]

6.3.5 FUEL SUPPLY DEMAND

This section of the study aimed to establish the demand of fuel per given day and whether the service stations had strategic reserves of fuel.

Petroleum licensees were asked if they held strategic reserves of fuel on their business Premises.

Table 6.58: Strategic reserves of fuel held by direct customers by Province

Do you have any strategic reserves of fuel?

	YES	NO
Bulawayo	8%	92%
Manicaland	24%	76%
Mashonaland Central	30%	70%
Mashonaland East	30%	70%
Mashonaland West	5%	95%
Matabeleland North	13%	88%
Matabeleland South	0%	100%
Midlands	25%	75%
Masvingo	17%	83%
Harare	22%	78%
Average	**18%**	**82%**

*Eight two percent (**82%**) of the direct customers do not have strategic reserves. In Matabeleland South (**100%**) of the direct customers indicated that they did not have any strategic reserve. The **18%** direct customers who had strategic reserves were asked indicate the fuel capacity of their reserves.*

Responses are shown in the table below:

Table 6.59: Quantity of strategic fuel reserve held by direct customers

What is your fuel capacity reserve in litres?

Mean	45351,85L
N	27

The average reserve capacity of fuel in the country is 45, 351. 85 litres.[1]

Direct customers were asked estimate, on average, the number of litres they sold per day. Answers are shown in table 6.60.

Table 6.60: Fuel capacity reserves in litres held by direct customers

What is the average fuel demand per day in your business for the following products in litres?

	DIESEL	PARAFFIN	PETROL
Mean	3064,13L	691,60L	3155,39L
N	179	176	179

Three thousand and sixty-four litres of diesel were sold daily by the petroleum sector while 691, 60litres of paraffin and 3 155, 39 litres of petrol were sold on average daily.[2]

Do you think that the national strategic reserves of fuel in Zimbabwe are sufficient or adequate?

Stakeholders' responses to the open-ended question said;

> *"Yes, I would want to think so, companies like Petrotrade, NOIC, I think they are doing well, I have heard of the second pipeline to reduce the cost of transporting the fuel*
>
> *- A business membership organisation representing customers [SIC]*

[1] N represents the number of interviewed petroleum licensees who had strategic reserves
[2] N represents the number of interviewed petroleum licensees who sold either petrol , diesel and paraffin

Figure 6.60: An article in which Government allays fuel shortage fears

National news

Govt allays fuel shortage fears

What is your opinion of the procurement and distribution of fuel?

- *"Those who have been given the mandate to import are doing a good job, also the effort by ZERA to register many service stations and keep a database of such improves on the distribution and quality of the product."*
- *"It is not transparent. The use of the pipeline is reserved for a few and even ZERA, I don't think ZERA is aware of the technicalities in the use of the pipeline."*
- *"Procurement is central and the retailers take from the source to their stations, but for both procurement and distribution I don't see any challenges." [SIC]*

Figure 6.61: ZERA speaks out in black market fuel

'CMED fuelling black market'

Ndakaitira Majaka

Zera chief executive Gloria Magombo

and will soon roll out fuel marking as we since got a buy-in from all stakeholders.

"Numerous reports have been received indicating that fuel imported free of duty at CMED is being sold on the black market.

"However, under fuel marking, we will be able to deal with such issues," she said.

Energy parliamentary portfolio committee chairperson, Daniel Sibamba, however, told Magombo that her organisation was sleeping on the job.

"You have these reports but we have not heard of any prosecutions. This is a typical case of what I refer to as the case of closing the stables when the horses have already bolted.

"This issue is nothing new and it is contributing to numerous leakages of State resources and funds. So

6.3.6 KEY SATISFACTION AREAS

Lists of attributes were used to evaluate the services that territory managers are offering to customers, as rated by the Likert scale of 1 to 5, where, 1 represented very poor and 5 meant excellent. For analysis purposes, the responses are summarized in Table 6.61.

Table 6.61: Key aspect satisfaction rating for the petroleum sector by individual motorist

How would you rate the petroleum service provider/supplier on the following?

	NEGATIVE	NEUTRAL	POSITIVE	DON'T KNOW
Accuracy in Billing	6%	23%	68%	3%
Fuel price	17%	36%	46%	0%
Reliability in the provision of a quality product	5%	19%	75%	1%
Wide range of motor vehicle lubricants	13%	18%	65%	4%
Promotions	57%	13%	14%	16%
Wide network distribution	21%	20%	58%	1%
Support services (free tyre pressure, window cleaning etc.)	33%	17%	50%	1%
Availability of fuel	4%	13%	83%	0%
Good customer care	5%	13%	81%	0%
Corporate social responsibility	35%	15%	23%	27%
Conveniently located	8%	20%	72%	1%

Promotions and corporate social responsibility did not rate positively as can be seen by the low positive percentages. These attributes needs more attention.

Table 6.62: Key aspect satisfaction rating for petroleum sector by productive sector motorist

How would you rate the petroleum service provider/supplier on the following?

	NEGATIVE	NEUTRAL	POSITIVE	DON'T KNOW
Accuracy in billing	6%	19%	65%	10%
Display of prices	4%	11%	82%	3%
Reliability in the provision of a quality product	5%	11%	83%	1%
Promotions	58%	14%	13%	15%
Accessibility	7%	21%	69%	3%
Support services (e.g. free pressure, oil and water check, etc.)	26%	17%	53%	4%

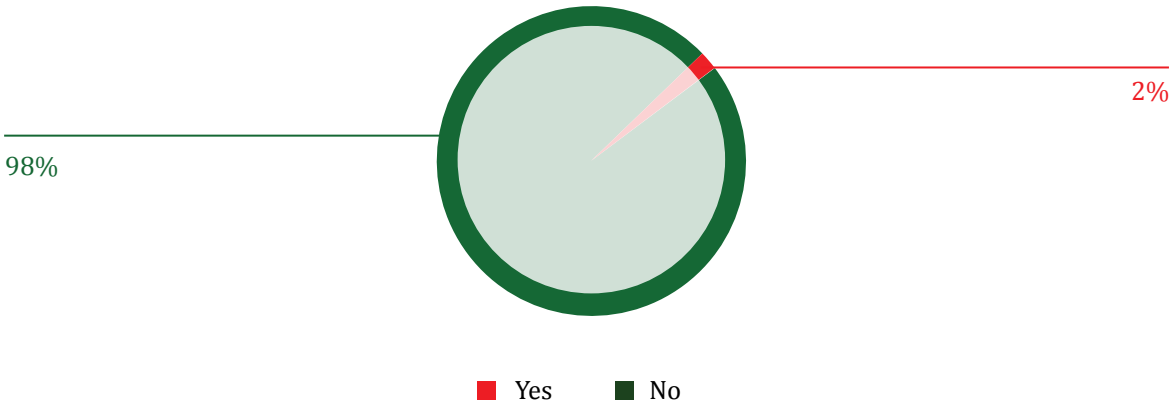
	NEGATIVE	NEUTRAL	POSITIVE	DON'T KNOW
Availability of fuel	3%	8%	87%	2%
Accessibility of services	4%	25%	68%	3%
Good customer care	5%	15%	78%	2%
Corporate social responsibility	33%	14%	16%	37%
Conveniently located	8%	15%	74%	3%

Although the majority of the positive ratings were above 50%, there is stillroom for improvement. Areas that direct suppliers should improve on are promotions (13%), and Corporate Social Responsibility (16%). Support service should be improved on. A better understanding of the customers' business can lead to better services to the client.

6.3.7 COMPLAINTS MANAGEMENT

To assess the level of competence service stations/fuel suppliers have when dealing with customer complaints, motorists were asked about the complaints that they had made in the past and whether they were satisfied with the way they were handled. Respondents were first asked if they had reported a complaint in the past three months. Only 2% percent (i.e. both productive sector and individual motorist) said that they had made a complaint in the past three months. This implies that respondents were mostly getting satisfactory services from suppliers.

Figure 6.62: Petroleum reported complaints



Source: Researchers' Own Derivation

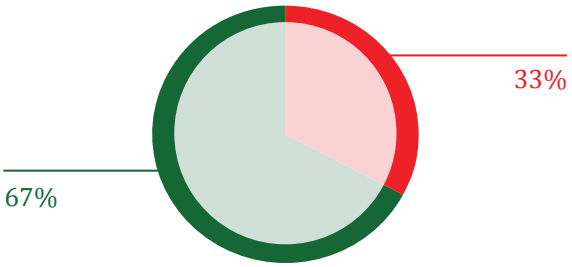
Respondents were asked to provide details of their complaint/s and the most common complaints were:

Table 6.63: Complaints reported

They sometimes say they have no POS only because they want cash
They made an error on a capturing voucher made it petrol instead of diesel
There are wires near the service station and my worst fear is about my tyres
Their fuel quality was compromised or contaminated
I complained that the filling station should have promotions. I have been a loyal customer for years but they have not shown any appreciation to us
He gave me the wrong fuel diesel instead of petrol
Poor services they take time to attend to customers
Diesel is being mixed with paraffin
Complain about unfair prices, increase of price weekly, and fluctuations

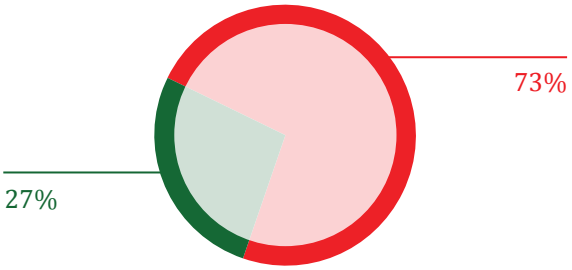
A Duration for complaint resolution

Figure 6.63: Complaint status by productive sector



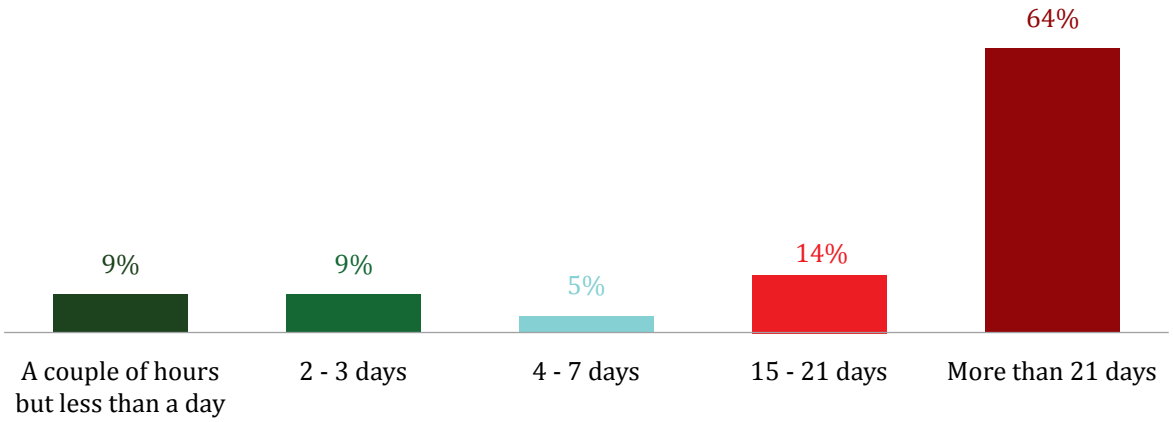
*Respondents were then asked if their complaints had been successfully resolved. Sixty seven percent (**67%**) of productive sector said that their complaint was fully resolved.*

Figure 6.64: Complaint resolution status by individual motorist



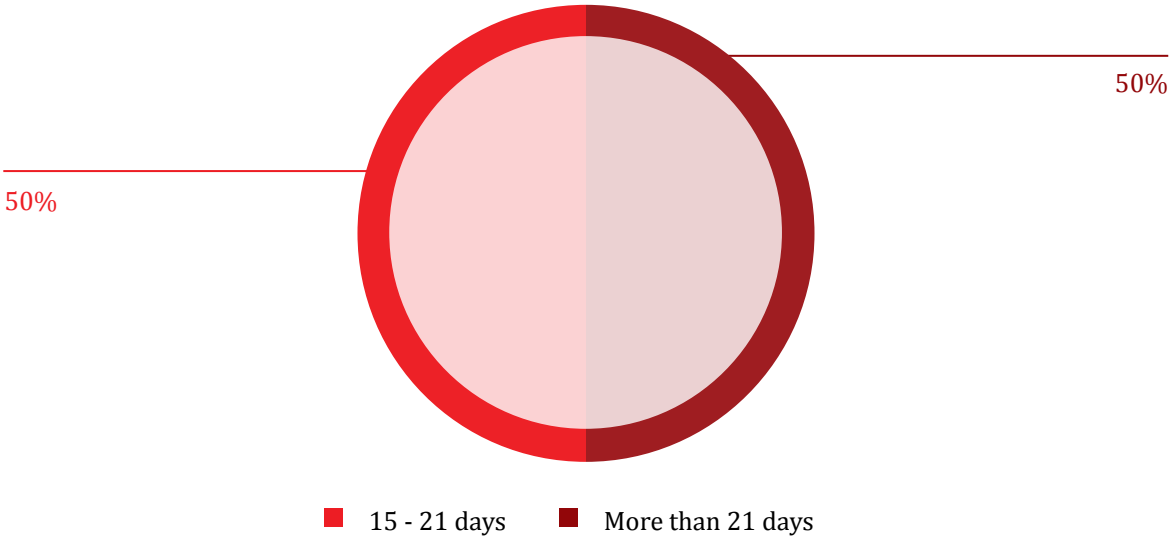
*Seventy-three percent (**73%**) of the individual motorists who had made complaints said that their complaints had not been resolved.*

Figure 6.65:Turnaround time for complaints resolution for individual motorists



Sixty four percent (64%) of motorists that had reported complaints had them unresolved for more than 21 days and fourteen percent (14%) were outstanding for 15 to 21 days.

Figure 6.66: Turnaround time for complaints resolution for productive sector motorist



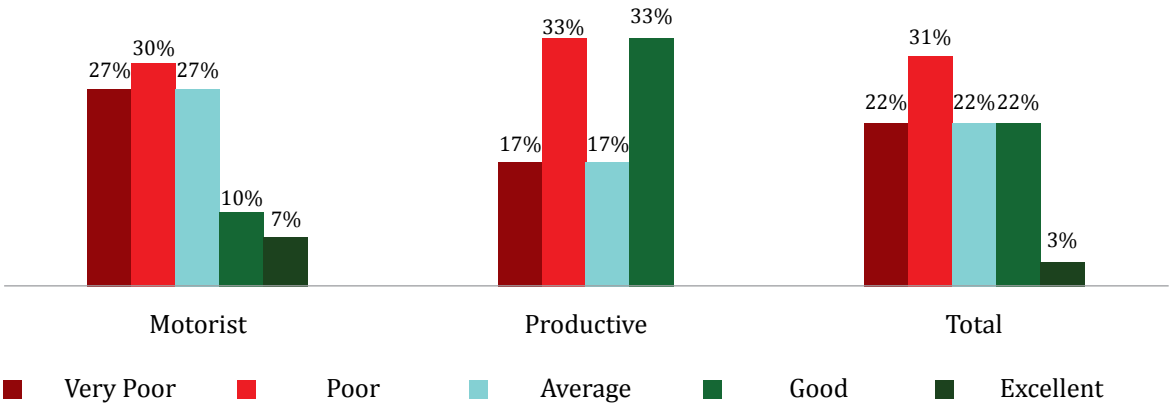
Source: Researchers' Own Derivation

All i.e. 100% of the productive sector respondents had complaints outstanding for more than 15 days. This indicates a weakness or lack of urgency on the part of service station managers to resolve complaints.

B Satisfaction ratings on complaint resolutions

Respondents who had made a complaint were then asked to rate their service station/supplier on complaint resolution. A 5-point scale where 1 is poor and 5 is excellent was used (see Figure 6.68).

Figure 6.67: Supplier rating in complaint resolution



Source: Researchers' Own Derivation

Of the respondents that had their complaints resolved, only 25% were satisfied with the way in which they were resolved and 53% were not.

6.4 LICENSING OF PETROLEUM SUPPLY

The respondents were asked about their perceptions of the time it took ZERA to licence petroleum suppliers. Comments;

"I don't know as this is not my area of expertise".

- BMO stakeholder

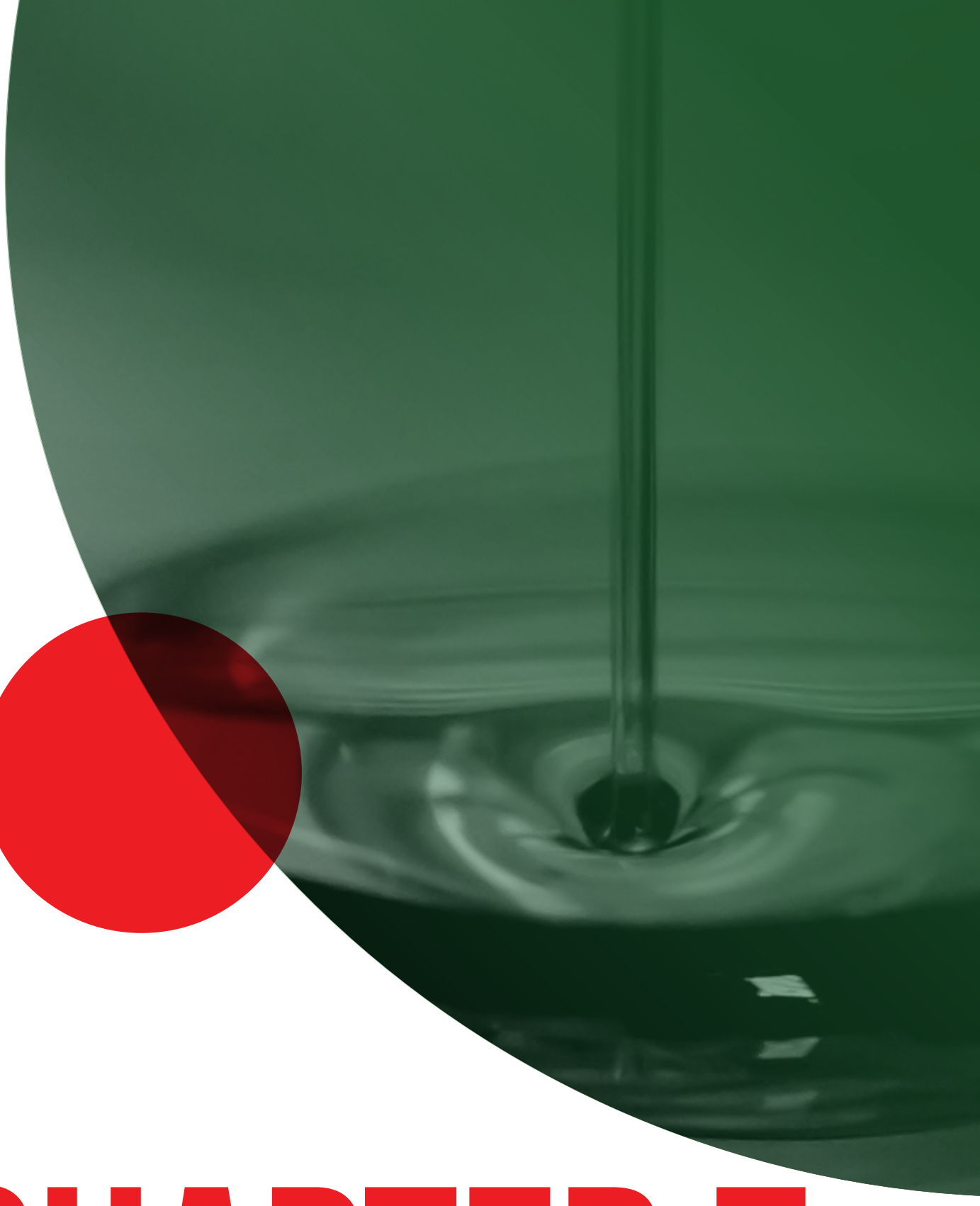
"I have no idea but if we had a client service charter from ZERA then I would know that it's my right for my licence to be processed in 7 days, but, because we are not in that position I don't know what my rights are and I don't know what my expectations should be."

- Stakeholder in the petroleum sector

"I have no idea but I know people have been complaining saying, "we need to do business in Zimbabwe but it takes ages to get a license compared to other countries."

- BMO stakeholder representing customers [SIC]

The findings show that the respondents are not aware of the actual duration it takes to be licensed. ZERA should educate the direct customers on this process.



CHAPTER 7

LPG CUSTOMER SATISFACTION INDEX

7.1 INTRODUCTION

This chapter presents results of the satisfaction level, reliability of supply, ratings on quality, complaint management and key satisfaction areas of LPG gas.

Figure 7.69 shows a summary of LPG satisfaction rating for the household and the productive sector customers.

Figure 7.68: Overall LPG satisfaction ratings for household and productive sector customers

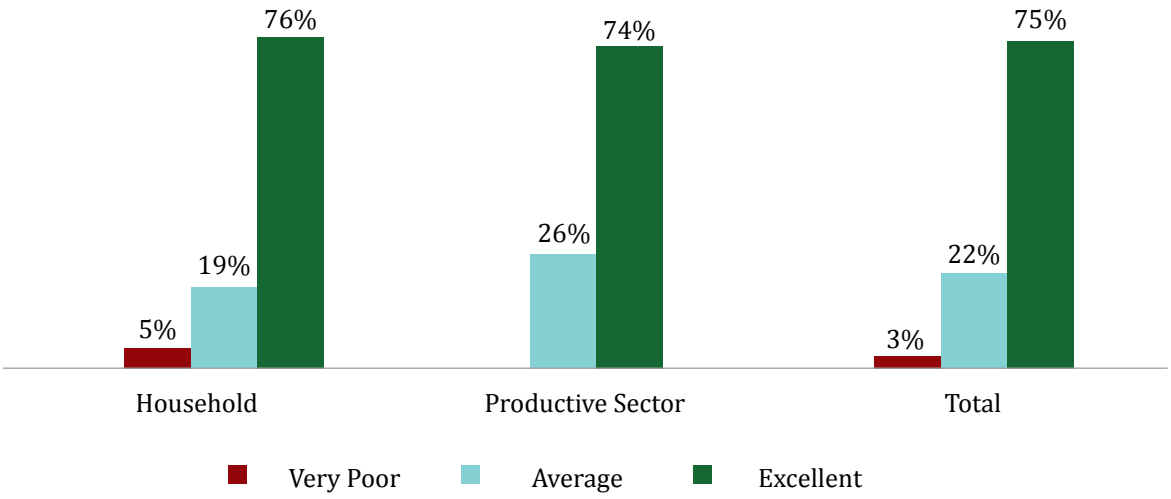


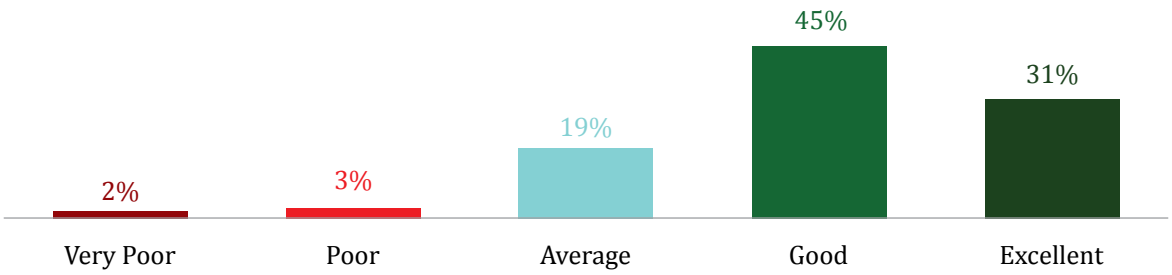
Figure 7.69 shows the overall customer satisfaction index for LPG is 75%.Twenty-two percent (22%) of the respondents were neither satisfied nor dissatisfied and only 3% rated it negatively.

Both household and productive sector ratings are nearly the same.

Figure 7.69: Examples of LPG retailers

7.1.1 OVERALL LPG CUSTOMER SATISFACTION INDEX BY HOUSEHOLDS

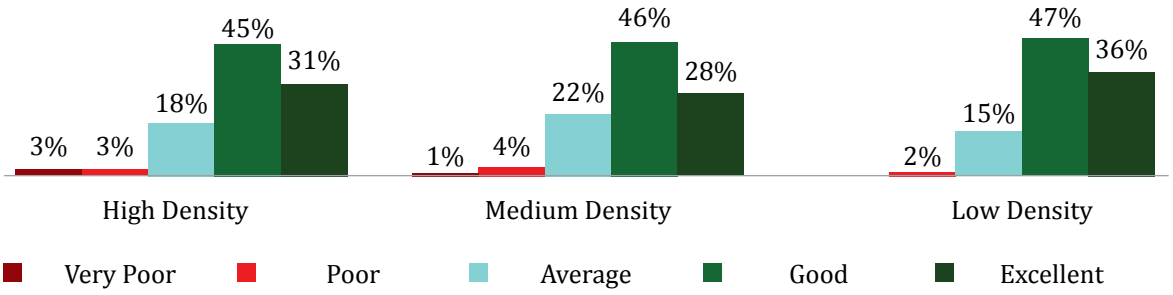
Figure 7.70: Overall LPG satisfaction ratings by households



Source: Researchers' Own Derivation

Seventy-six percent (76%) of household respondents were satisfied with the services they got from their LPG supplier while 5% rated it as poor.

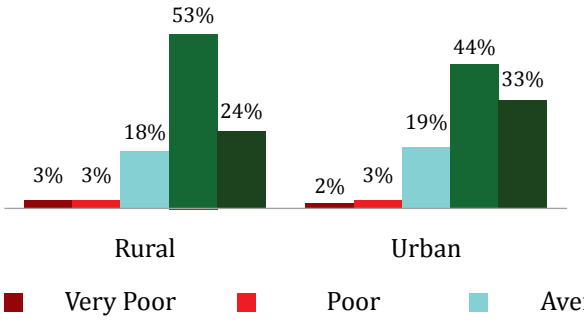
Figure 7.71: Overall household customers LPG satisfaction index by suburb



Source: Researchers' Own Derivation

The household respondents were classified by residential areas i.e., high, medium and low density. The highest satisfaction came from the low density areas (83%). Highest dissatisfaction (6%) was in the high density, followed by medium density (5%) and low density (2%).

Figure 7.72: Overall household customers LPG satisfaction index by rural vs. urban



*There is a high satisfaction rating of **77%** from both urban and rural respondents.*

Source: Researchers' Own Derivation

7.1.2 SATISFACTION RATING FOR LPG SUPPLIERS BY PROVINCE FOR HOUSEHOLDS

The table below shows household customer satisfaction ratings for the LPG supplier by province.

Table 7.64: Overall household customer's satisfaction ratings on LPG supply by province

PROVINCE	POOR	AVERAGE	GOOD	EXCELLENT
Bulawayo	4%	23%	59%	14%
Manicaland	6%	9%	44%	41%
Mashonaland Central	2%	5%	67%	26%
Mashonaland East	7%	26%	45%	22%
Mashonaland West	3%	23%	56%	18%
Matabeleland North	5%	9%	82%	5%
Matabeleland South	11%	28%	50%	11%
Midlands	0%	13%	55%	32%
Masvingo	8%	11%	56%	26%
Harare	5%	19%	36%	39%

Respondents from all provinces were satisfied with services they are getting from their LPG suppliers as shown by the above 50% satisfaction rating. Mashonaland Central respondents had the highest satisfaction rating with 93%.Midlands had no negative ratings.

The reasons for the rating are presented in Table 7.65.

Table 7.65: Justification of overall household customers LPG satisfaction index

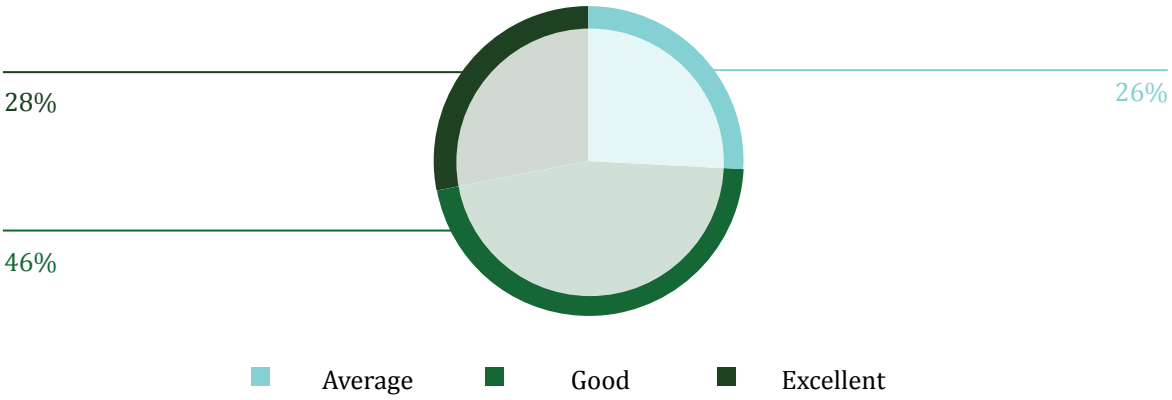
42%	They are efficient and have a good services
20%	Prices are reasonable
9%	We have no problem
8%	Good customer care and products
6%	They have good products
6%	Not happy with the service/products
2%	Other

In-depth interviews showed that some respondents did not feel safe using LPG as they were afraid it might explode during cooking. This could be due to low awareness on the safe use of LPG.

7.1.3 OVERALL LPG CUSTOMER SATISFACTION INDEX BY PRODUCTIVE SECTOR

The overall customer satisfaction index as given by the productive sector was74%.This is a good index as it means most of the productive sector customers are happy with the LPG on the market.

Figure 7.73: Overall productive sector customers LPG satisfaction ratings

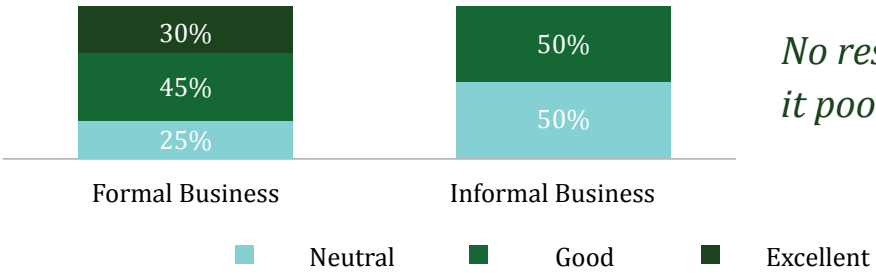


Source: Researchers' Own Derivation

A Analysis of productive sector LPG CSI

The formal businesses had higher satisfaction ratings than the informal sector. Seventy five percent (75 %) of respondents rated LPG positively. Twenty five percent (25%) of respondents from the formal business and 50% from informal business sector gave a neutral rating.

Figure 7.74: Overall productive sector customer LPG satisfaction ratings by business type



No respondents rated it poorly.

Source: Researchers' Own Derivation

Further split by economic sector, the analysis is as follows:

Table 7.66: Overall productive sector LPG satisfaction ratings

	AVERAGE	GOOD	EXCELLENT
Agriculture (forestry and plantation)	60%	20%	20%
Commerce and distribution	9%	82%	9%
Construction and building	0%	100%	0%
Manufacturing (food and clothing FMCG)	0%	67%	33%
Social institutes	35%	31%	35%
Others (specify)	18%	45%	36%
Average	**26%**	**46%**	**28%**

The productive sector rated their satisfaction of LPG. Forty six percent (46%) rated their satisfaction as good, 28% excellent and 26% felt LPG was average. Generally customers were satisfied by the LPG service providers on the market.

B LPG productive sector customers' satisfaction by province

The table below shows the satisfaction ratings by provinces.

Table 7.67: Overall productive sector customer LPG satisfaction index by province

	AVERAGE	GOOD	EXCELLENT
Bulawayo	20%	60%	20%
Manicaland	0%	0%	100%
Mashonaland West	0%	100%	0%
Matabeleland North	67%	0%	33%
Masvingo	0%	100%	0%
Harare	28%	43%	30%
Average	**26%**	**46%**	**28%**

The satisfaction index for each province is given in the table above and shows that LP Gas meets the expectations of all users. Manicaland, Mashonaland West and Masvingo had the highest satisfaction of a 100%. There were no negative ratings.

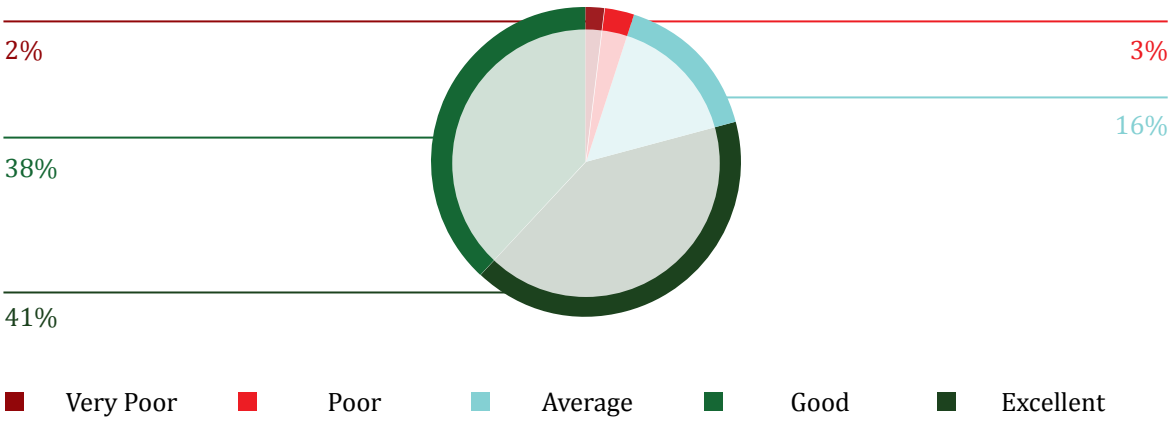
Table 7.68: Justification for the Productive sector customers LPG satisfaction index

2%	Gas is readily available
2%	We buy on discounted prices since we buy in bulk
7%	They sell quality product
7%	They supply good gas though at times they run out
9%	We use very expensive gases
32%	Others
42%	We are not so sure whether they are giving you the right quantities

7.1.4 SATISFACTION INDEX OF THE QUALITY OF LPG BY HOUSEHOLDS

Seventy-nine percent (79%) of respondents found LPG to be of good quality. Five percent (5%) rated it poorly and 16% indicated that it was of average quality.

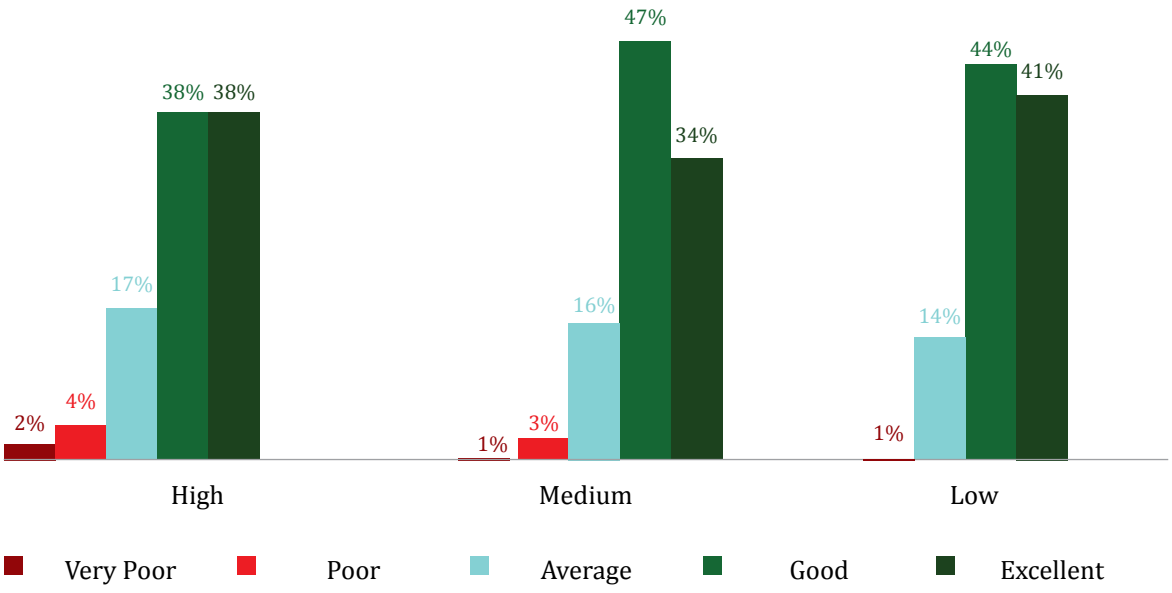
Figure 7.75: Overall satisfaction of LPG quality by households



Source: Researchers' Own Derivation

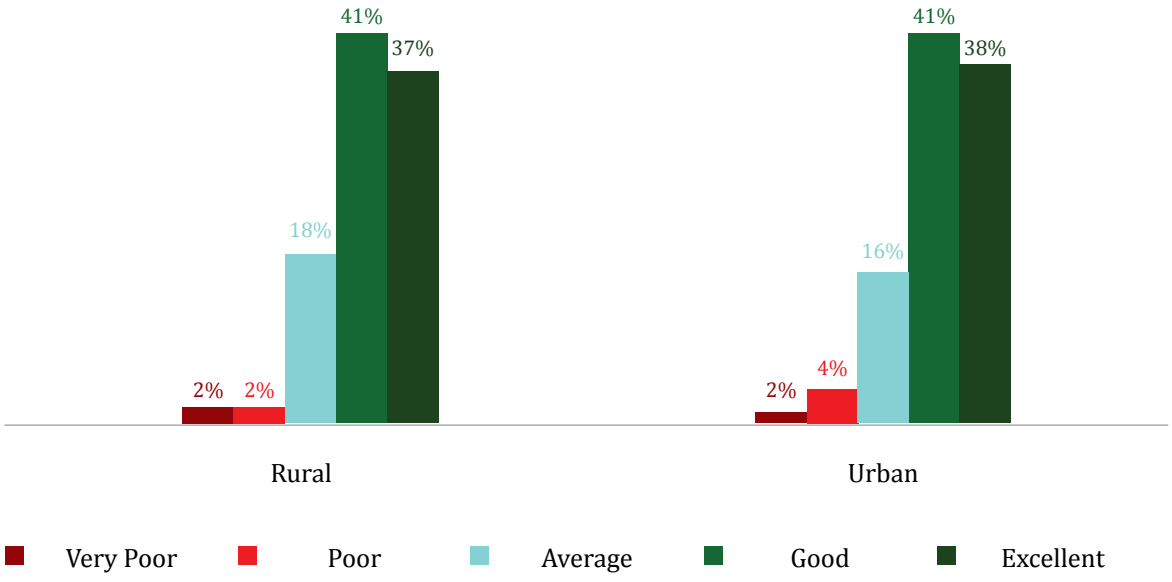
The figure below highlights the satisfaction rating of LPG split by area, suburb and province.

Figure 7.76: Overall quality rating of LPG index of household customers by suburb



No major difference was seen in the three suburbs in terms of customer satisfaction with the quality of LPG.

Figure 7.77: Overall household customer's quality rating of LPG index by rural vs. urban



Source: Researchers' Own Derivation

There is not much difference in the rating of the quality of LPG being sold in rural and urban areas (78% and 79% respectively).

Matabeleland South province had the highest satisfaction rating of 100%, followed by Midlands with 90%, as shown in the table below:

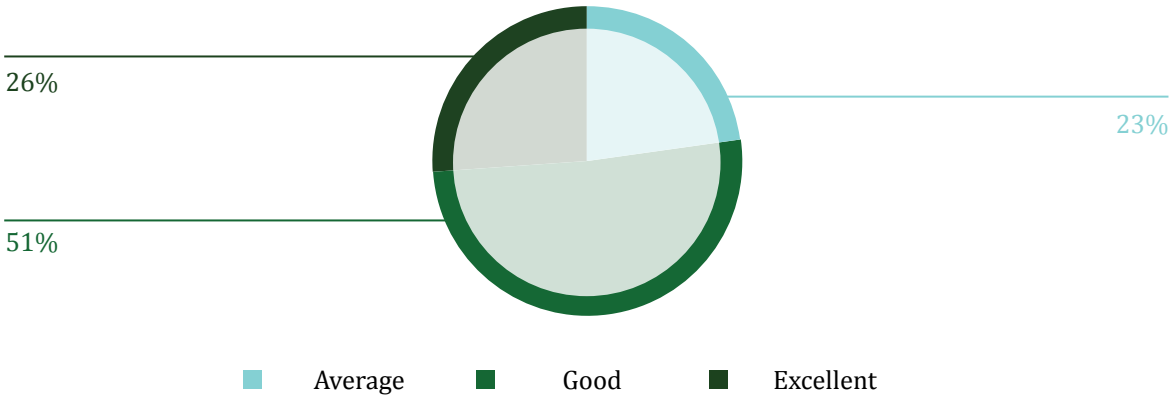
Table 7.69: Overall household customer's quality rating of LPG index by province

PROVINCE	VERY POOR	POOR	AVERAGE	GOOD	EXCELLENT
Bulawayo	1%	3%	27%	48%	21%
Manicaland	3%	0%	9%	31%	56%
Mashonaland Central	2%	0%	12%	40%	46%
Mashonaland East	6%	2%	15%	38%	39%
Mashonaland West	0%	6%	29%	47%	19%
Matabeleland North	5%	0%	27%	59%	9%
Matabeleland South	0%	0%	0%	44%	56%
Midlands	0%	0%	10%	44%	46%
Masvingo	2%	3%	11%	46%	39%
Harare	2%	4%	14%	38%	41%

7.1.5 PRODUCTIVE SECTOR LPG SATISFACTION INDEX

The quality of LPG was analysed by the productive sector as shown in the figure below;

Figure 7.78: Overall productive sector customer's quality rating of LPG index

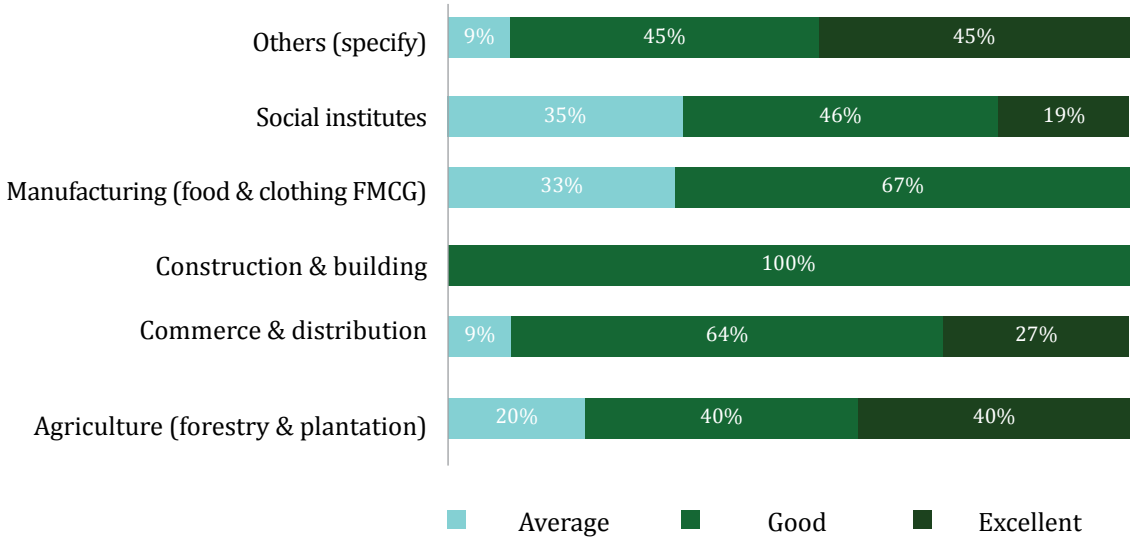


Source: Researchers' Own Derivation

The results show that the productive sector views LPG to be of a high quality. Seventy seven percent (77%) of the respondents rated it good and excellent; twenty three percent (23%) average.

Analysis by productive sector is shown in the figure below:

Figure 7.79: Overall productive sector customer's quality rating of LPG index by economic sector



Source: Researchers' Own Derivation

All sectors were satisfied with the quality of LPG.

Manicaland, Mashonaland West and Masvingo, were the most satisfied with LPG quality:

Table 7.70: Overall productive sector customer quality rating of LPG index by province

	VERY POOR	POOR	AVERAGE
Bulawayo	20%	50%	30%
Manicaland	0%	0%	100%
Mashonaland West	0%	100%	0%
Matabeleland North	33%	0%	67%
Masvingo	0%	100%	0%
Harare	25%	53%	23%
Average	**23%**	**51%**	**26%**

Below are stakeholders (KIIs) perceptions on the quality of LPG:

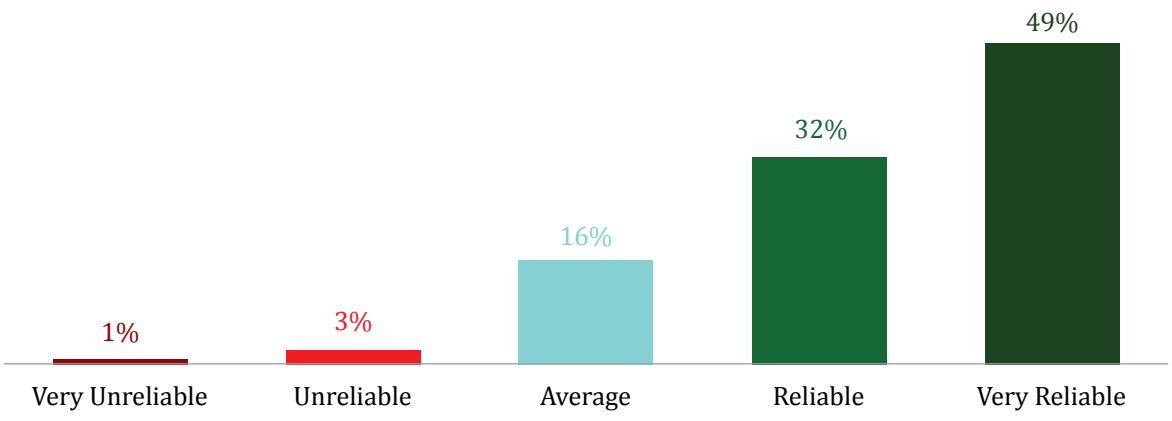
- *"I think the quality we have is good quality gas because as you are aware most of the distributors are supplied by BOC gases."*
- *"The quality is very good since we have a regulator the assumption is the regulator is aware of the quality and the regulator will not want cheap quality gas to get in the country".*
- *"I am not sure on that one, what I know is gas differs from on supplier to another, but to determine whether it's the best or not I can't say."*
- *"I think it will be difficult certainly to say it's of this quality, my view is like it's sort of a mixed bag since it's not properly regulated we could be getting all sorts of all kinds of gas."[SIC]*

Some KIIs felt that the LPG on the Zimbabwean market was of good quality as it was under scrutiny and regulation from ZERA. However, some respondents found it difficult to access as they said the LPG came from different sources, hence different types.

7.1.6 HOUSEHOLD LPG SATISFACTION INDEX

The reason this was done was to see if customers had experienced shortages of gas. Using a 5-point scale respondents were asked how reliable their LPG supplier was. Results are shown in the Figure below:

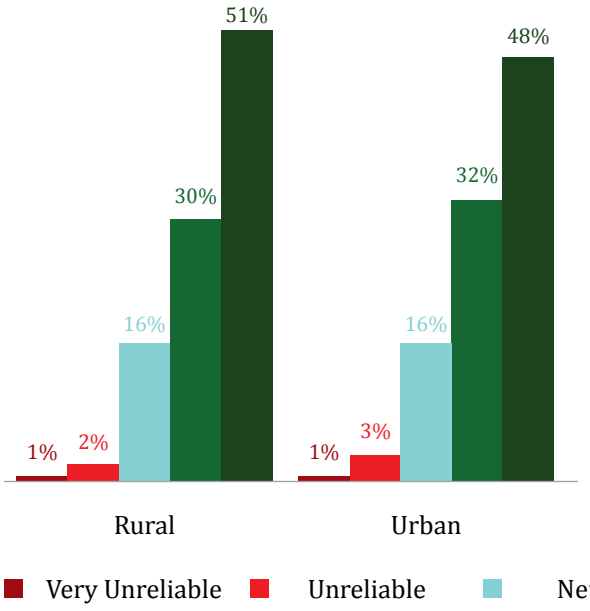
Figure 7.80: Overall household customer's LPG supplier reliability rating



Source: Researchers' Own Derivation

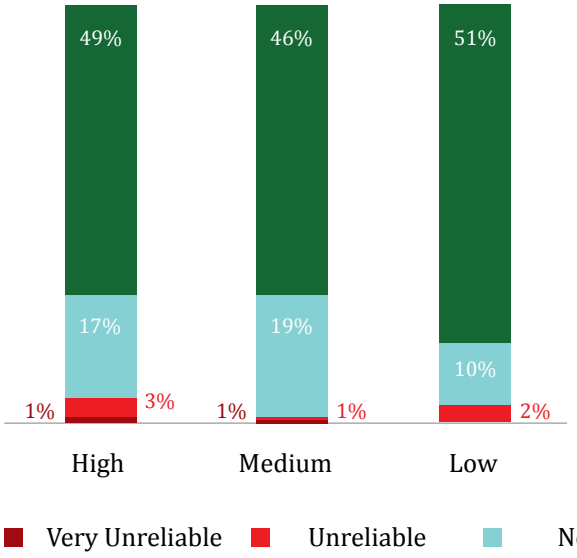
Eight-one percent (81%) of respondents rated their suppliers of LPG as reliable while 16% were indifferent. This shows that, there was no shortage of LPG on the market.

Figure 7.81: Overall household customer's LPG supplier reliability rating by rural /urban



*The majority of respondents in both urban (**80%**) and rural (**81%**) areas are happy with the supply of LPG.*

Figure 7.82: Overall household customer's LPG supplier reliability rating by suburb



*The highest satisfaction rating of the reliability of supply of LPG came from the low density with **51%**.*

Source: Researchers' Own Derivation

Reliability of LPG satisfaction index by province

Reliability of supply of gas was fairly equal in all the provinces as shown in the table on the next page:

Table 7:71: Overall household customer's LPG supplier reliability rating by province

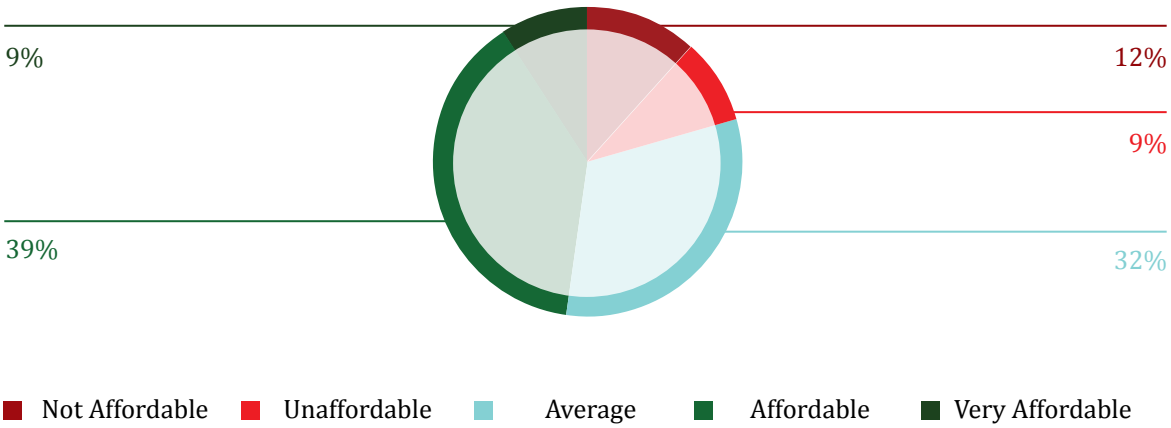
PROVINCE	NOT RELIABLE AT ALL	UNRELIABLE	AVERAGE	RELIABLE	VERY RELIABLE
Bulawayo	1%	4%	12%	36%	47%
Manicaland	0%	6%	16%	38%	41%
Mashonaland Central	0%	2%	26%	25%	47%
Mashonaland East	0%	1%	25%	33%	40%
Mashonaland West	1%	6%	27%	36%	30%
Matabeleland North	0%	5%	9%	27%	59%
Matabeleland South	0%	0%	11%	44%	44%
Midlands	0%	0%	12%	21%	68%
Masvingo	3%	2%	9%	33%	53%
Harare	1%	2%	16%	31%	50%
Average	**1%**	**3%**	**16%**	**32%**	**49%**

Midlands province had the highest satisfaction rating of89% followed by Matabeleland South with 88% and Matabeleland North with 86%.

7.1.7 EVALUATION OF LPG PRICE STRUCTURE BY PRODUCTIVE SECTOR

The productive sector respondents were asked to rate the price of LPG, 48% of the respondents had no strong opinion on the pricing of LPG.

Figure 7.83: Productive sector and household LPG complaints reported



Source: Researchers' Own Derivation

The stakeholders were asked their perception of the LPG price on the Zimbabwean market compared to the prices in the region. The following were some of the opinions given:

- *"When you compare with Botswana I think it is within range though like I said the fact that we are not producing it locally, it's probably coming from far away to make the transport cost very expensive, looking at the pricing without really looking at these other costs would not be fair."*
- *"When comparing to the prices in the region I am not really sure, I haven't checked what the prices in the region are but however I still believe that we can do better when it comes to pricing LPG."*
- *"I don't think so, it's a bit expensive. There has been a quite number of entrants in the market as evidenced by the large number of informal traders which puts pressure on the formal businesses to reduce prices."[SIC]*

7.1.8 LPG CUSTOMERS KEY SATISFACTION AREAS

To understand how respondents perceived LPG suppliers in terms of service, a 5-point Likert scale was used to gauge their opinions. Various service touch points were evaluated and these included safety issues, quality of gas, pricing and after sales service.

Household and productive sector respondents were asked to rate their LPG supplier on ten given attributes. See Table 7.72 for ratings:

Table 7.72: Key satisfaction ratings of the LPG sector by household

How would you rate your LPG supplier on the following by households?

	POOR		NEUTRAL		GOOD	
	HOUSEHOLDS	PRODUCTIVE SECTOR	HOUSEHOLDS	PRODUCTIVE SECTOR	HOUSEHOLDS	PRODUCTIVE SECTOR
Safety issues	14%	5%	21%	7%	62%	88%
Quality of LPG	5%	0%	12%	10%	81%	88%
Availability of products	3%	0%	11%	18%	85%	83%
Pricing of products	6%	25%	30%	40%	63%	36%
Sales Services by supplier	12%	10%	22%	20%	57%	70%
After Sales Services by suppliers	28%	25%	18%	18%	39%	58%
Instructions on use of products	33%	33%	19%	33%	43%	36%

	POOR		NEUTRAL		GOOD	
	HOUSEHOLDS	PRODUCTIVE SECTOR	HOUSEHOLDS	PRODUCTIVE SECTOR	HOUSEHOLDS	PRODUCTIVE SECTOR
Support given to retailers/distributors	25%	0%	20%	20%	34%	81%
Customer care	4%	6%	14%	6%	81%	70%
Reliability of delivery	11%	10%	19%	10%	60%	78%

LPG suppliers were rated positively by both household and productive sector respondents in ensuring they supply *quality products* and that *the* LPG is always available.

Respondents were given a list of four administrative skills and were asked to rate how strongly they agreed or disagreed with each one. Results are summarized in the Table 7.73 below:

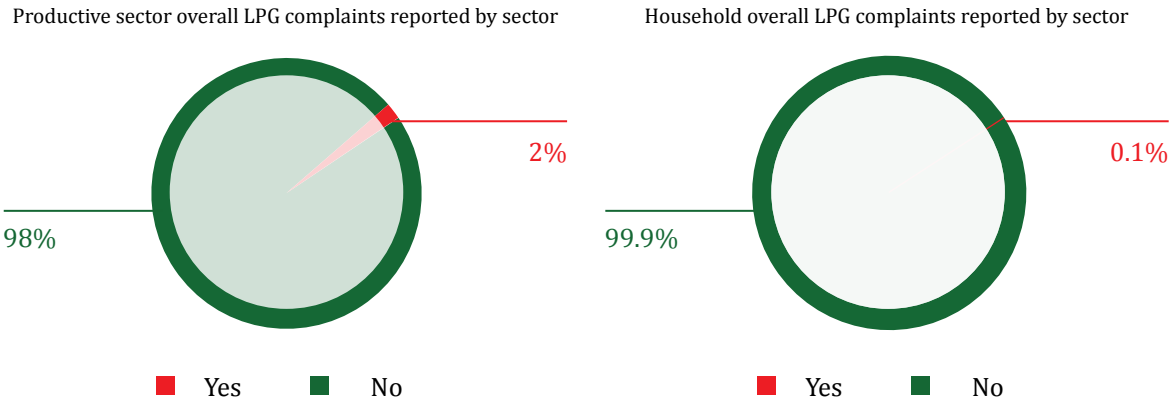
Table 7.73: Administrative skills rating for service provision of LPG

	DISAGREE	NEUTRAL	AGREE
It delivers on its commitments	5%	14%	81%
It treats customers with empathy and respect	2%	19%	79%
It strives to further its knowledge and skills	25%	33%	42%
The pricing is reasonable	23%	23%	55%

7.1.9 EVALUATION OF LPG SUPPLIER'S COMPLAINT RESOLUTION

The Figure below shows the number of LPG complaints reported by the household and productive sector customers.

Figure 7.84: Productive sector and household LPG complaints reported



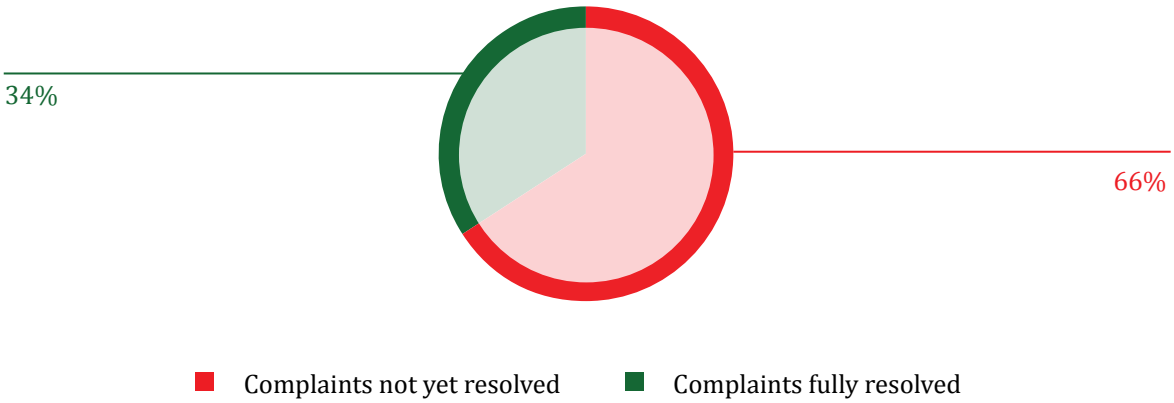
Source: Researchers' Own Derivation

The household and productive sector respondents were asked if they had reported any complaints to their LPG service providers. Only two percent (2%) made complaints to their LPG suppliers. This is in keeping with the high satisfaction rating of 75% noted of LPG service providers given by both household and productive sector respondents.

A Reported complaint status

An effective complaint handling system implies responding promptly to queries. Of the respondents that had reported complaints to their LPG suppliers, some complaints were still outstanding for a long time which suggests that LPG suppliers may not be giving complaint resolution priority. The figure below summarises the overall complaint status for both household customers and the productive sector.

Figure 7.85: LPG complaint resolution status

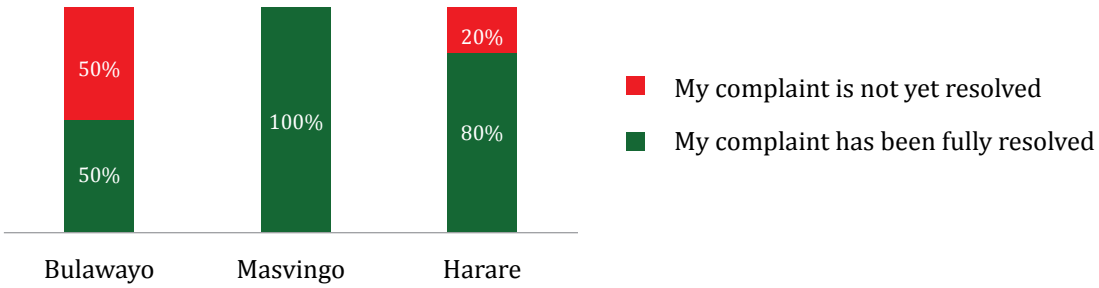


Source: Researchers' Own Derivation

The figure above shows 66% of respondents have complaints still outstanding. Sixty percent (60%) of household and 72% productive sectors complaints have not yet been resolved.

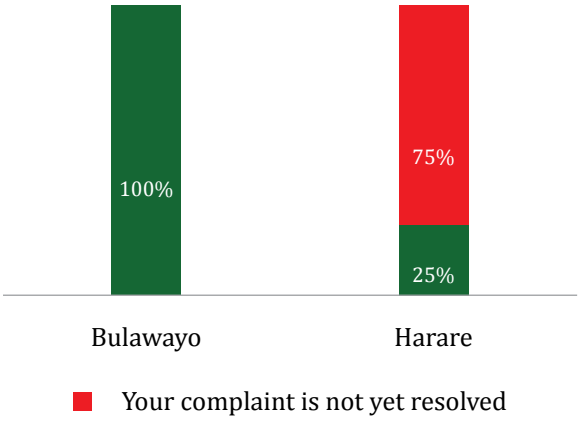
B Productive sector and household LPG complaint status by province

Figure 7.86: LPG complaint resolution status by productive sector and households by province



Respondents in three provinces reported LPG complaints to their suppliers. All complaints in Masvingo have been resolved. Fifty percent (50%) of Bulawayo complaints were not yet resolved. Twenty percent (20%) of Harare complaints were still outstanding.

Figure 7.87: LPG complaint resolution status by household customers



*Hundred percent (**100%**) of Bulawayo complaints have been resolved but only **25%** of Harare complaints have been resolved.*

Source: Researchers' Own Derivation

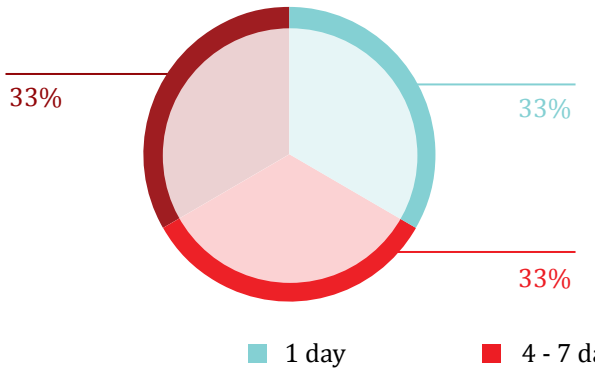
Examples of recent complaints lodged:

- We explained to the supplier that the quality of gas he had was very poor it was not long lasting
- The gas was emitting a lot of carbon monoxide
- Redan was delivering very dirty gas, black smoke would come out and it would dirty all the pots
- Cylinder was leaking, reported twice

A Duration for complaint resolution.

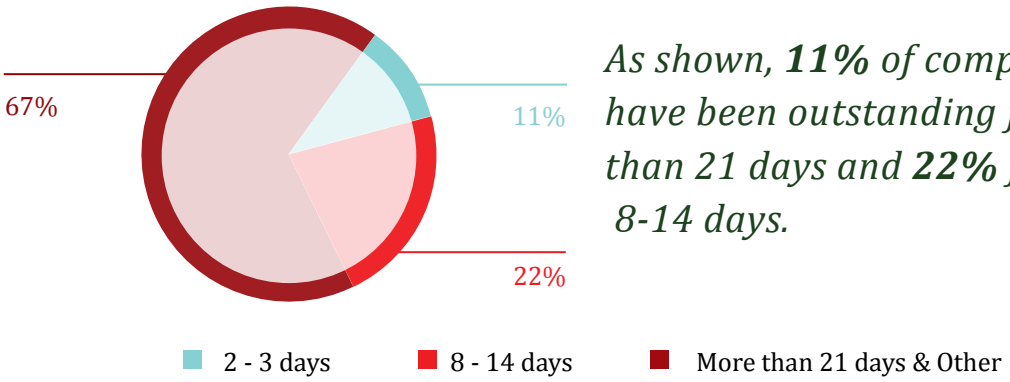
Dealing with resolving customer complaints timeously is essential to customer satisfaction. Respondents were asked the number of days their complaints have been outstanding, and the findings are presented in the figures 7.88. and 7.89.

Figure 7.88: Turnaround time for complaint resolution by household customers



*Thirty three (**33%**) of complaints have been outstanding for more than 21 days; **33%** for 1 day; and **33%** from 4 to 7 days.*

Figure 7.89: Turnaround time for complaint resolution by productive sector customers



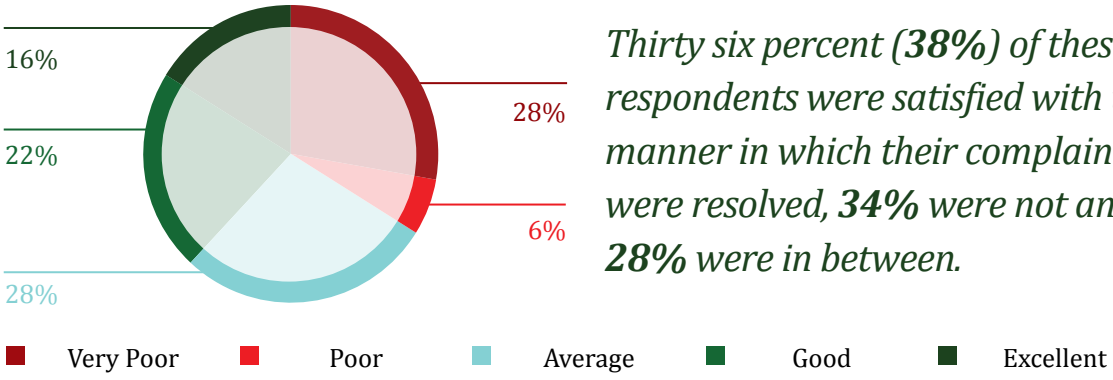
*As shown, **11%** of complaints have been outstanding for more than 21 days and **22%** for 8-14 days.*

Source: Researchers' Own Derivation

B Satisfaction with LPG complaints resolution

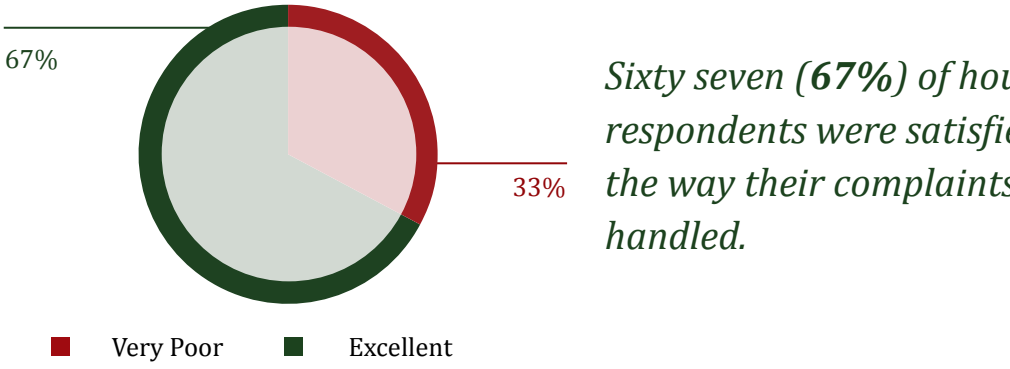
Household and productive sector respondents were asked the extent to which they were satisfied with the way their complaints had been resolved. The findings are presented in Figures 7.90 and 7.91.

Figure 7.90: Overall satisfaction with complaint resolution rating by productive sector rating by productive sector



*Thirty six percent (**38%**) of these respondents were satisfied with the manner in which their complaints were resolved, **34%** were not and **28%** were in between.*

Figure 7.91: Overall satisfaction with complaint resolution rating by household sector rating household customers

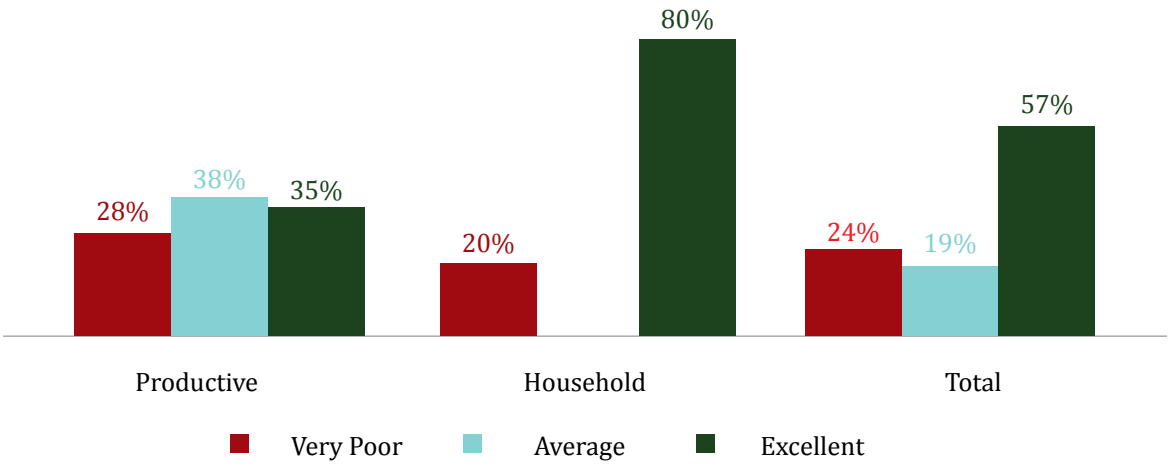


*Sixty seven (**67%**) of household respondents were satisfied with the way their complaints were handled.*

Source: Researchers' Own Derivation

The figure below shows the overall rating for LPG suppliers on resolving complaints:

Figure 7.92: Overall satisfaction of complaint resolution by LPG suppliers



Source: Researchers' Own Derivation

Of the whole respondents were satisfied with the way LPG complaints were handled. Fifty seven percent (57%) of respondents rated their LPG suppliers positively on complaint resolution. Nineteen percent (19%) were indifferent.

7.1.10 EVALUATION OF SAFETY MEASURES FOR USE OF LPG

In handling LPG, it is vital that good safety practices are enforced. The people involved in the supply and distribution channel also need to be aware of their rights and responsibilities. LPG equipment must be kept in good working order.

An evaluation of the level of safety awareness was done. Respondents were asked if they were aware of any safety measures campaigns. The table below shows their responses:

Table 7.74: Evaluation of media channels used for LPG campaigns

	MAI CHISAMBA SHOW	CAMPAIGNS	ENERGY TALK ON RADIO	ENERGY TALK PRINT MEDIA	AGRICULTURAL SHOWS	OTHERS
Bulawayo	0%	24%	24%	0%	5%	48%
Manicaland	43%	14%	29%	14%	0%	14%
Mashonaland Central	50%	0%	50%	0%	0%	0%
Mashonaland East	22%	67%	11%	0%	0%	11%
Mashonaland West	44%	33%	22%	0%	0%	0%
Matabeleland North	0%	100%	0%	0%	0%	0%
Matabeleland South	0%	0%	0%	0%	0%	0%

	MAI CHISAMBA SHOW	CAMPAIGNS	ENERGY TALK ON RADIO	ENERGY TALK PRINT MEDIA	AGRICULTURAL SHOWS	OTHERS
Midlands	0%	40%	20%	0%	0%	40%
Masvingo	17%	50%	17%	0%	0%	17%
Harare	27%	23%	28%	1%	4%	23%
Average	**24%**	**26%**	**26%**	**1%**	**3%**	**23%**

Respondents in Matabeleland South were not aware of any campaigns on the safe handling of LPG. Of the respondents who were aware of LPG campaigns, they were most aware of were safe use of LPG (26%) and energy talk on radio (26%). Energy talk print media was the least known (1% of respondents).

A Safety measures for LPG customers

Household customers were asked what safety measures they used when handling LPG.The following precautions as presented in the table below were mentioned. Table 7.75shows the precautions taken.

Table 7.75: Safety measures adopted for use of LPG

41%	Always use LPG in a well-ventilated place
33%	If there is a leak, open windows before lighting any naked flames.
29%	If there is a leak, close the cylinder valve and open windows
37%	Switch on the lighter before switching on the outlet from the gas tank. Switch on the lighter before igniting the plate.

44%	Always make sure the cylinder is tightly closed after use.
3%	Don't know
6%	Others

B LPG related injuries

Household respondents were asked if they had experienced any LPG related accidents. Only one percent (1%) had.

Table 7.76: LPG related injuries by Province

	YES	NO
Bulawayo	0%	100%
Manicaland	0%	100%
Mashonaland Central	0%	100%
Mashonaland East	0%	100%
Mashonaland West	0%	100%
Matabeleland North	0%	100%
Matabeleland South	1%	99%
Midlands	1%	100%
Masvingo	0%	100%
Harare	1%	99%
Average	**1%**	**99%**

Respondents were asked to suggest recommendations on health and safe environmental issues, the following are their responses;

- *"I think it is one area which should be well regulated, especially things like gas. They really cause a huge amount of damage similar to petrol. Then I think proper standards and mechanisms should be set."*
- *"I think there is need on the part of ZERA to go into the rural areas to carry out campaigns, some seminars to educate the people."*

- *"On the safety of LPG there has to be more awareness on its safe use and its price.'"*
- *"I think not only are we supposed to go the level of educating people but to inspect especially houses with gas to see, where the gas tank is and also give some recommendations. You can create maybe a platform like this." [SIC]*

Do you feel the community i.e. industry and individuals are adequately aware of safety issues when using gas?

- *"Yes, because when you visit some rural centres you would find vendors of LPG. People are accepting it but safety issues might have a long way to go."*
- *"I am sure they need to be educated because if you check sometimes you find someone selling LPG in an open space, which is totally unacceptable which means there is really need to teach people more on how to handle LPG and use it safely."[SIC]*

7.2 CONCLUSIONS ON LPG

7.2.1 AWARENESS

There is higher usage of LPG in households than in the productive sector. Most respondents were not aware of how to use LPG safely. The current handling of cylinders was not well known. ZERA has an opening here to educate the public in urban and rural areas on correct safety measures. ZERA could also ensure that all LPG suppliers educate customers on the safe use and handling of LPG.

7.2.2. EFFECTIVENESS AND EFFICIENCY

ZERA needs to monitor and regulate LP Gas retailers. This study established that the greatest volume of LPG was being sold mainly by informal retailers.

7.2.3 PRICING

The cost of LPG was generally considered affordable but not consistent. For example, in winter the price goes up. The fluctuation in price was said to be between US $ 1.40 to $4.00 per kg. There is need for ZERA to regulate the pricing to ensure that the prices are consistent throughout the year.

7.2.4 RECOMMENDATIONS ON LPG

- ✓ There is need for ZERA to effectively monitor LPG retailers as there are a high number of unlicensed operators who trade in unsafe environments.
- ✓ Proper standards and mechanisms should be established to regulate the sale of LPG.
- ✓ Prices of LPG must be stabilised to ensure consistency.
- ✓ LPG retailers/wholesalers must educate the public on safe use and handling of LPG.

CHAPTER 8

ALTERNATIVE ENERGY

8.1 INTRODUCTION

A study on Alternative Energy was carried out to establish the basis of energy use by; composition, sources, and acceptability of LP gas. This extended to key factors considered by suppliers and end users before they adopt each energy option. This enables direct forecast of the current and future share of Alternative Energies within the country's energy mix. The survey reveals that most Alternative Energy options are used throughout the country in all provinces, with LPG constituting 64.8% of the total alternative energy options.

The study focused on LPG and collected data about the demand, usage, cylinder types and ownership of the cylinders in the market. The study found that LPG is currently current used in canteens, production activities and other uses (including direct water and space heating). Liquefied Petroleum Gas is widely used as a substitute for electricity in cooking. Some customers used solar energy but for limited production processes and canteens because of intermittent supply and initial set up cost. Biogas and briquettes were the least used because people preferred back-up generators due to ready supply compared to the unreliability of grid electricity. Detailed findings of the alternative energy baseline study are outlined in this section.

Biogas and briquettes were the least used because people preferred to use back-up generators

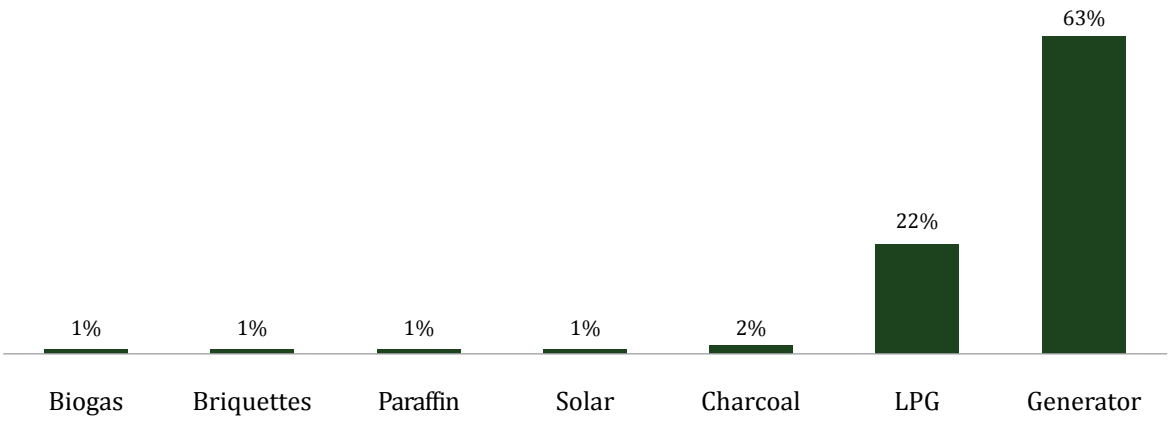
The study showed that most of the alternative energy options are used by canteens, for production activities processes and other uses including water and space heating.

Figure 8.93: An article showing an increase in the uptake of LPG, The Herald 15 November 2016.


15 November 2016

Gas usage up 182 percent

Figure 8.94: Current use of alternative energies in Zimbabwe



Source: Researchers' Own Derivation

Most of these alternative energies have their generic uses, for example solar is used for lighting and water pumping in industries. Generators and LPG as can be seen in Figure 8.96 are the main sources of alternative energy.

The table below highlights household`s usages of fuel. A combination of various fuels was used especially for cooking. Solar with (88%) was primarily used for lighting.

Table 8.77: Household current use per supply option

	BIOGAS	BRIQUETTES	CHARCOAL	FIREWOOD	GENERATOR	PARAFFIN	SOLAR	LPG
Lighting	0%	0%	0%	1%	57%	10%	88%	2%
Big family function	0%	0%	1%	2%	2%	0%	0%	10%
When there is no electricity	0%	0%	8%	8%	53%	15%	9%	20%
Cooking	0%	100%	100%	93%	21%	86%	4%	68%
Home industry	0%	0%	7%	1%	7%	1%	5%	0%
Others	0%	0%	2%	5%	12%	3%	5%	0%

This situation in Zimbabwe is similar to that in Kenya which also uses a combination of fuels. LPG was used mainly for cooking and kerosene for lighting - kerosene is a cheaper alternative to electricity .

- KIPPRA (2010)

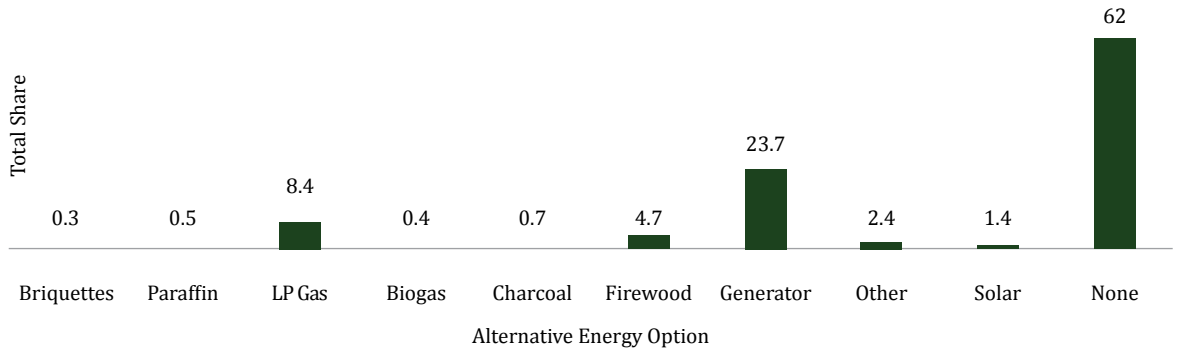
As reported earlier in the literature review, in South Africa almost half of all electrified households use electricity in combination with other energy sources such as firewood, paraffin and gas for cooking.

- Madubansi and Shackleton (2007)

8.1.1 CURRENT USAGE OF RENEWABLE VS. NON-RENEWABLE ENERGY

The bigger part of the population uses Liquefied Petroleum Gas (8.4%) and generators (23.7%) more than any other alternative energy. The Figure 8.97 shows that back-up generators are comparable to conventional energy supply suggesting that most consumers believe that back-up generators are a convenient and flexible option for alternative energy and back up supply.

Figure 8.95: Current sources of alternative energies in use by productive sector



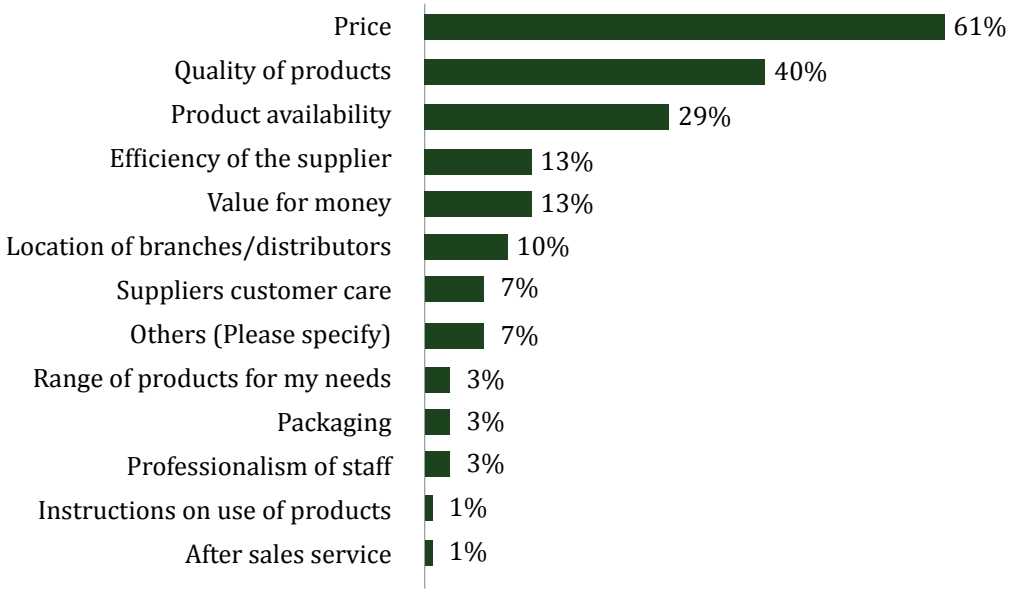
8.1.2 FACTORS ENCOURAGING OR DISCOURAGING USE OF ALTERNATIVE ENERGY

The main factors affecting the use of alternative energy include product price; supply reliability; value for money; instructions on product use; multi-use of the product; quality of the products, and support services. People are doubtful about quality and reliability of the product when deciding on which alternative energy source to use. Generally, the key drivers are value for money, quality of product and support services. Literature, however suggests that the drivers usually go with level of education.

The main factors affecting the uptake of alternative energy are price (61%), quality (40%), product availability (29%) and value for money (13%) respectively. Each alternative energy option has a bearing on the uptake, for example, the price and quality of each option determines the uptake. If the energy option is too expensive customers tend to go for a substitute product of the same quality and sometimes that of a lower ranked quality. In most cases, awareness of the product or energy option determines its uptake.

The survey results also show that most households consider price, quality of products and supply availability. Lesser considered factors are after sales service, instructions on use of products and professionalism of staff.

Figure 8.96: Factors considered for selection of supplier



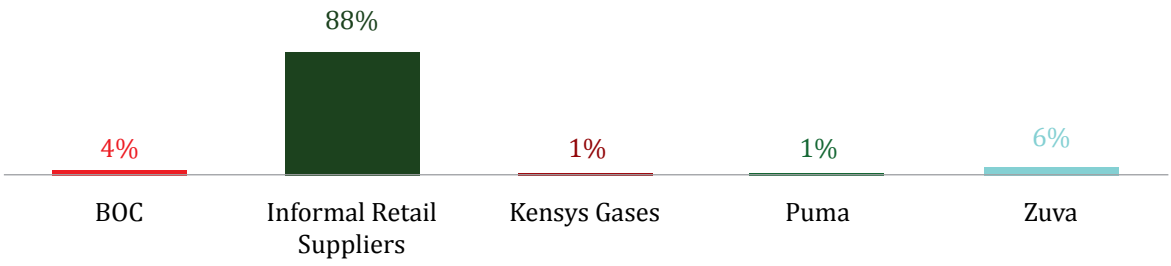
Source: Researchers' Own Derivation

Considering the price and value for money, options which command high initial investment tend to discourage use of the energy option by the general populace. Value for money comes into play to correct that discrepancy. However, it is only effective when product awareness has been successful as some customers consider value for money more than the price of the products. The other factors affecting use may directly affect the social aspects affecting each energy option. An example is firewood use as a direct substitute of LPG or paraffin. The reason respondents opt for firewood is space heating and lighting as well as ease of access.

8.3.4 LPG RETAIL CHANNELS

Having established the usage of LPG, respondents were asked where they purchased the LPG from. This was important in identifying the retail channels being used in the country.

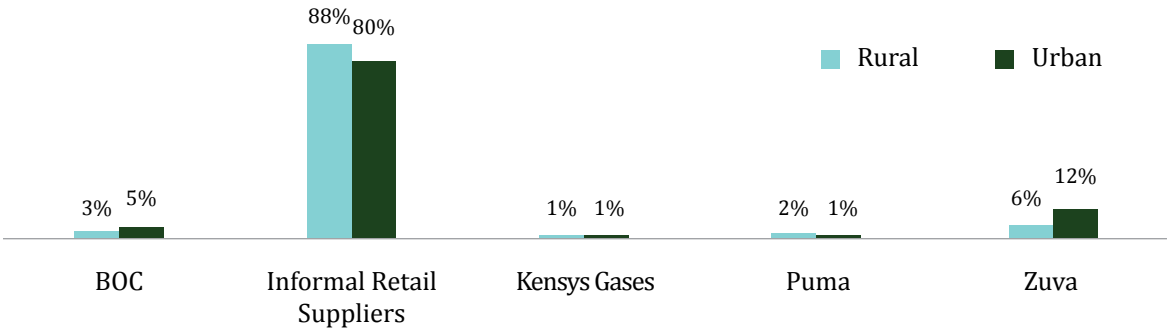
Figure 8. 97: Household LPG sources



Source: Researchers' Own Derivation

Eighty-eight percent (88%) of LPG is sold through the informal channels and 12% through the licensed dealers.

Figure 8.98: Household sources of LPG by rural and urban



Source: Researchers' Own Derivation

Eighty-eight percent (88 %) of both urban and rural respondents mainly buy LPG from the informal retailers.

8.1.3 USAGE OF OTHER ALTERNATIVE ENERGY SOURCES

Respondents were asked to mention the attributes they consider when purchasing solar and biogas systems. The table below summarizes both household/productive sector respondents' decision drivers of solar energy only. Biogas is dealt with in section 8.6.

Table 8.78: Determinants or factors for solar energy use/uptake

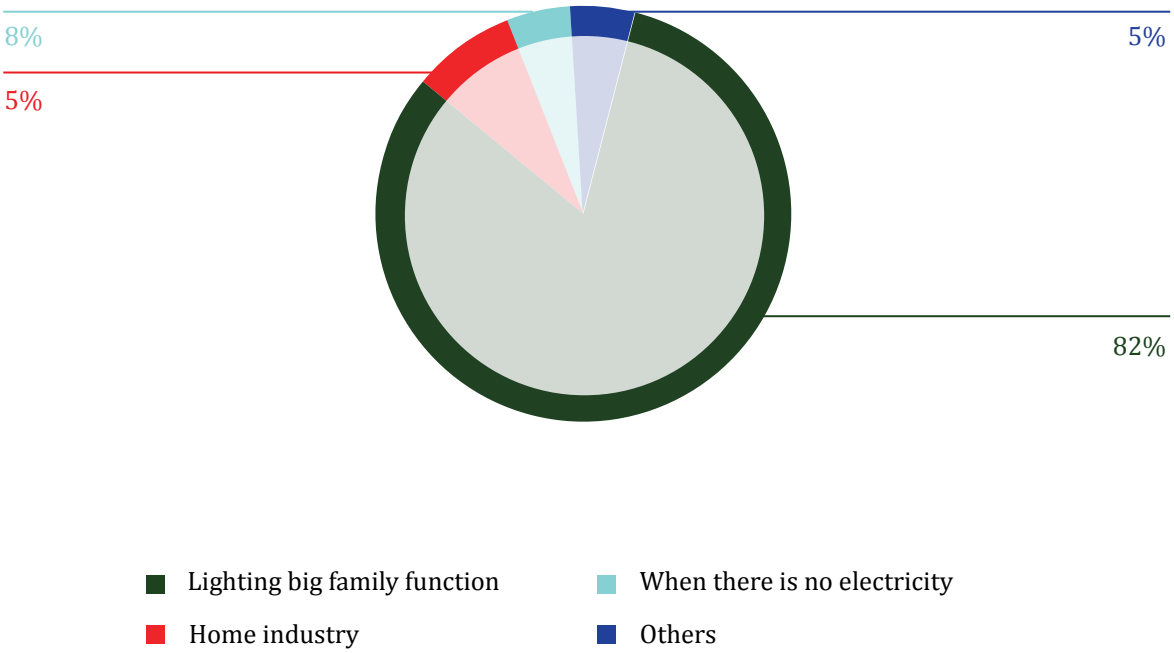
ATTRIBUTES	HOUSEHOLDS	PRODUCTIVE SECTOR	AVERAGE
Price	67%	64%	66%
Quality of products	27%	27%	27%
Efficiency of the supplier	16%	0%	8%
Professionalism of staff	11%	0%	6%
Range of products for my needs	2%	0%	1%
Packaging	7%	9%	8%
Suppliers Customer Care	4%	0%	2%
Product availability	3%	9%	6%
Value for money	4%	45%	25%
location of branches/distributors	0%	0%	0%
Instructions on use of products	1%	0%	0%
Multipurpose use	0%	9%	5%

Price and quality of solar products are the key determinants for solar use. The productive sector respondents also considered value for money.

8.1.4 SOLAR ENERGY USES

Eighty-two percent (82%) of households use solar mainly for lighting and big family functions e.g weddings, graduations, funerals again for lighting and sound systems etc. Eight percent (8%) use it where there is no available electricity (Figure 8.100).

Figure 8.99: Solar use by households



Source: Researchers' Own Derivation

Table 8.79: Solar use in the productive sector

ATTRIBUTES	AGRICULTURE (FORESTRY & PLANTATION)	COMMERCE & CONTRIBUTION	SOCIAL INSTITUTES	OTHERS	TOTAL
Production process	100%	50%	40%	100%	55%
Others	0%	50%	60%	0%	45%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

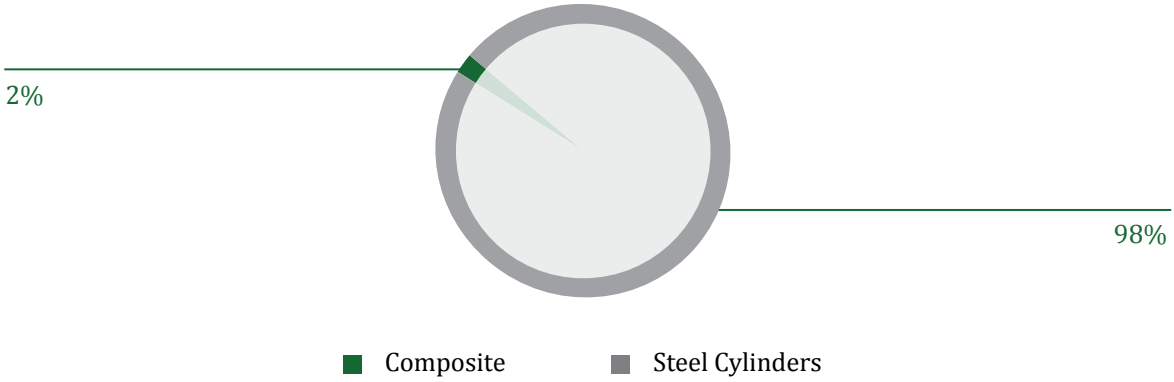
Solar usage is high (55%) in the production process especially the agriculture sector (forestry and plantation). Commerce and distribution sector as well as social institutes use solar energy for back-up, their basic lighting and office equipment.

8.2 TYPES OF LPG CYLINDERS USED

The survey assessed respondents' LPG supply sources and factors they considered important in understanding how they shopped for LPG as well as quantities use on a daily basis. Respondents were asked about the types of cylinder they used and the things they consider when purchasing.

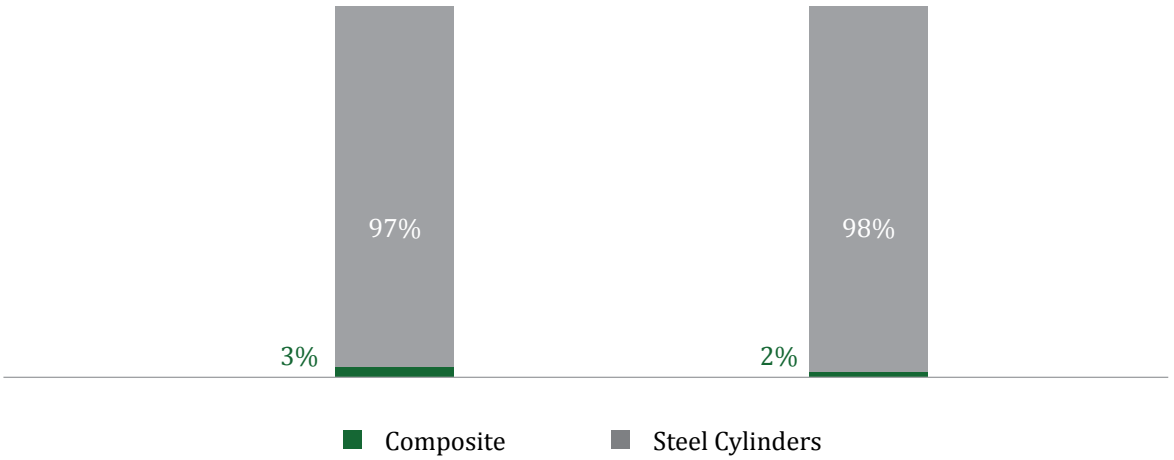
Ninety-eight percent of the households use steel cylinders while only 2% use composite cylinders.

Figure 8.100: Overall household cylinder type used



Source: Researchers' Own Derivation

Figure 8.101: Cylinder type used by rural and urban



Source: Researchers' Own Derivation

The usage of steel cylinders is common in both rural and urban (97% and 98% respectively) A small percentage(3% urban and 2% rural) use composite cylinders.

Table 8.80: Cylinder type used by rural and urban

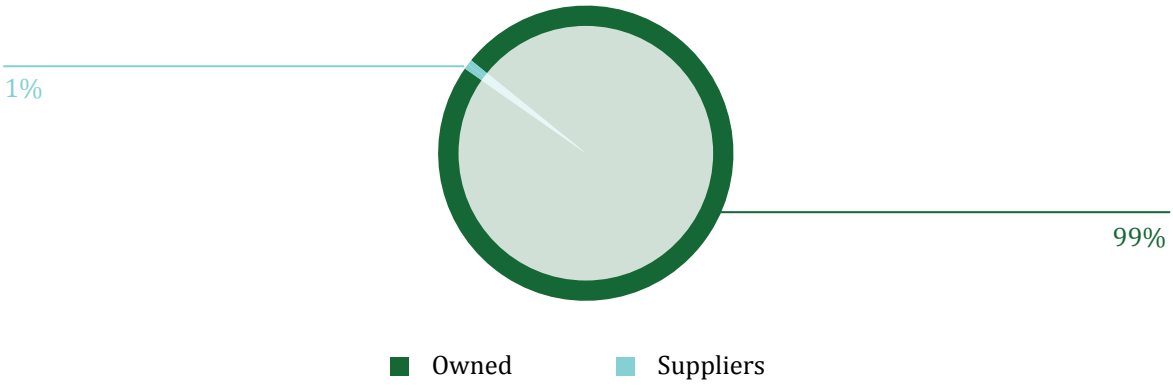
	COMPOSITE	STEEL CYLINDER
Bulawayo	1%	99%
Manicaland	0%	100%
Mashonaland Central	0%	100%
Mashonaland East	1%	99%
Mashonaland West	0%	100%
Matabeleland North	0%	100%
Matabeleland South	6%	94%
Midlands	9%	90%
Masvingo	0%	100%
Harare	2%	98%
Average	**2%**	**98%**

*Composite cylinders were used in Bulawayo (**1%**), Mashonland East (**1%**), Matabeland South (**6%**), Midlands (**9%**), and Harare (**2%**) while the rest of the provinces used mainly steel cylinders. Overall, steel cylinders are most commonly used. All provinces with over **90%** usage used steel cylinders. Only a minority utilised composite cylinders.*

8.2.1 OWNERSHIP OF CYLINDERS

Respondents were asked whether they owned or rented the cylinders they use.

Figure 8.102: Overall household ownership of LPG cylinders



Source: Researchers' Own Derivation

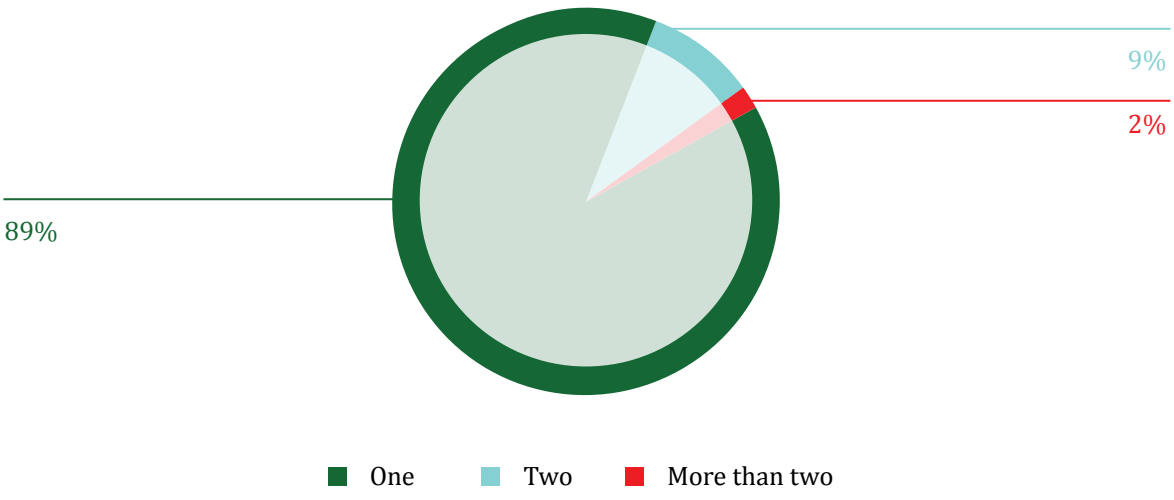
Ninety-ninepercent (99%) of the respondents indicated that theyowned their cylinders and1%said they belonged to the suppliers.

Table 7.81: Average number of Cylinders owned by household per province

		OWNED	RENTED	SUPPLIERS
Province	Bulawayo	100%	0%	0%
	Manicaland	97%	3%	0%
	Mashonaland Central	100%	0%	0%
	Mashonaland East	100%	0%	0%
	Mashonaland West	100%	0%	0%
	Matabeleland North	100%	0%	0%
	Matabeleland South	100%	0%	0%
	Midlands	99%	1%	0%
	Masvingo	99%	0%	2%
	Harare	98%	1%	1%
Suburbs	High	98%	1%	1%
	Medium	99%	0%	1%
	Low	100%	0%	0%

All the household customers owned their cylinders. Those who owned cylinders either purchased or paid a deposit for them. These include BOC gases cylinders. Most household customers (89%) owned one cylinder and11% more than one as shown in the figure below:

Figure 8.103: Household overall number of LPG cylinders owned



Source: Researchers' Own Derivation

The number of household cylinders owned by province is shown in the table:

Table 8.82: Average number of cylinder owned

How many cylinders do you have by Household?

		ONE	TWO	MORE THAN TWO
Province	Bulawayo	83%	14%	3%
	Manicaland	97%	3%	0%
	Mashonaland Central	93%	4%	4%
	Mashonaland East	95%	5%	0%
	Mashonaland West	90%	8%	1%
	Matabeleland North	100%	0%	0%
	Matabeleland South	89%	6%	6%
	Midlands	82%	13%	6%
	Masvingo	85%	14%	2%
	Harare	90%	8%	2%
Suburbs	High	92%	7%	1%
	Medium	86%	11%	3%
	Low	82%	13%	5%
Location	Rural	92%	7%	0%
	Urban	88%	9%	3%

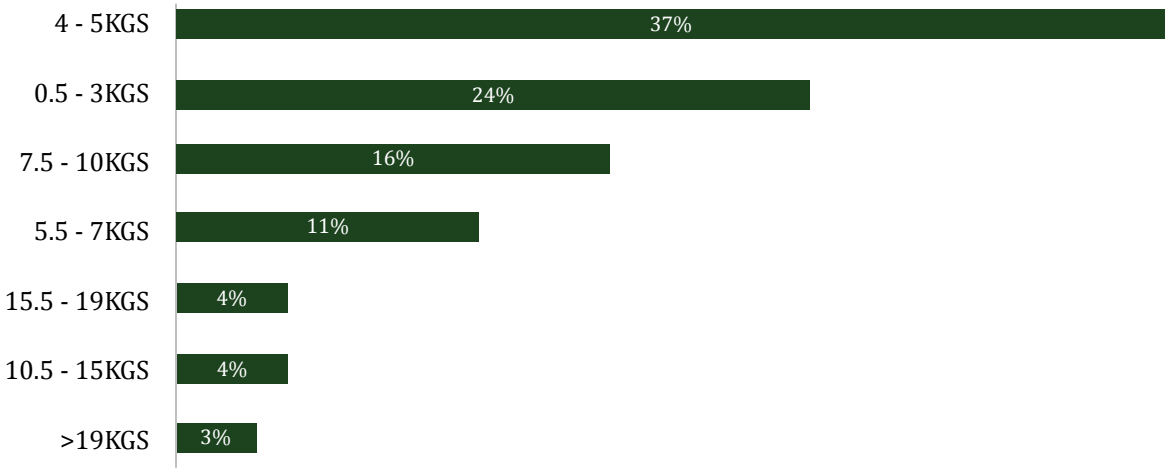
Household who had more than 2 cylinders were rare. The respondents who had more than one cylinder explain such a situation thus;

- *"I own 2 cylinders simply because when one cylinder is empty I simply switch to the other one. I don't want a situation where one runs out and I have no money to fill it at that time."*
- *"I have 2 cylinders one is 19kgs and the other is 5kgs so in the event my 19kgs runs dry and I have no car to carry it for refill I simply use the other cylinder which is portable."*
- *"I use my cylinders at the same time one is for cooking and the other one is for the my refrigerator."*
- *"When I started using gas, I owned a small gas cylinder and by then I was still renting in Hatfield. I would only use it when there was no electricity so it used to last a long time but now that I am staying at my own stand I now rely on LPG for cooking 100% as I have no electricity connection here as yet. I was then forced to buy a bigger cylinder so that it can last a bit longer."[SIC]*

8.2.2 CYLINDER SIZES USED IN HOUSEHOLDS

Household customers were asked the size of cylinders they used.

Figure 8.104: Sizes of LPG cylinders used



Source: Researchers' Own Derivation

Thirty-seven percent(37%) of household customers use 4-5kg cylinders,only 3% use cylinders above 19kgs.

The most common cylinder size used in both rural and urban areas was the 4-5kg split by surburb density as shown in the table below:

Table 8. 83: Sizes of LPG cylinders used per suburb

	0.5 - 3 KGS	4 - 5 KGS	5.5 - 7 KGS	7.5 - 10 KGS	10.5 - 15 KGS	15.5 - 19 KGS	> 19 KGS
High	26%	40%	12%	15%	3%	2%	2%
Medium	25%	33%	13%	18%	4%	6%	2%
Low	15%	33%	9%	20%	6%	9%	9%

Further analysisby province shows that Masvingo had the highest number of respondents usingcylinders above 19kgs.The 4-5kg iswidely used in all the provinces.

Table 8.84: Sizes of cylinder by households

	0.5 - 3 KGS	4 - 5 KGS	5.5 - 7 KGS	7.5 - 10 KGS	10.5 - 15 KGS	15.5 - 19 KGS	> 19 KGS
Bulawayo	27%	31%	9%	23%	4%	3%	2%
Manicaland	19%	44%	6%	19%	3%	3%	6%
Mashonaland Central	23%	44%	11%	18%	0%	5%	0%
Mashonaland East	22%	49%	10%	10%	2%	5%	1%
Mashonaland West	29%	34%	12%	15%	4%	1%	4%
Matabeleland North	32%	36%	0%	14%	5%	14%	0%
Matabeleland South	50%	17%	11%	6%	6%	6%	6%
Midlands	20%	43%	9%	22%	2%	2%	2%
Masvingo	18%	38%	14%	15%	0%	6%	9%
Harare	24%	37%	13%	15%	4%	4%	3%
Average	**24%**	**37%**	**11%**	**16%**	**4%**	**4%**	**3%**

8.2.3 LPG QUANTITIES USED

Respondents were asked how long a full gas cylinder lasted. However, the time period of utilisation depended on size of the gas cylinder as well and nature of use.

Table 8.85: Quantities of LPG used by households

	HIGH	MEDIUM	LOW	TOTAL
1 week	5%	5%	2%	**4%**
2 weeks	18%	20%	10%	**18%**
1 month	42%	39%	35%	**42%**
2 months	18%	20%	19%	**18%**
3 months	9%	6%	12%	**9%**
4 months & above	10%	11%	21%	**10%**

The majority of the household customers said that full cylinders took up to a month to use up.

8.2.4 LPG QUANTITIES SOLD

The direct customers were asked the volumes/quantities of gas they sold on a daily basis.

Table 8.86: LPG quantities sold by direct customers

What is the average volume of LPG that you sell daily?

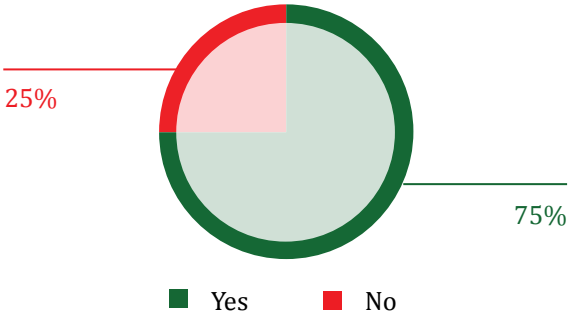
Average volume of LPG sales	287.91
Number of LPG suppliers asked	11

On average 287.91kgs of LPG was sold on a daily basis among the 11 direct customers that were asked (see Table 8.86).

8.2.5 CURRENT LPG STORAGE FACILITY

Given the volumes sold,direct customers were asked if they had storage facilities for LPG. Seventy-five percent (75%) of direct customers had storage facilities on their premises.

Figure 8.105: Current LPG storage facility by direct customers

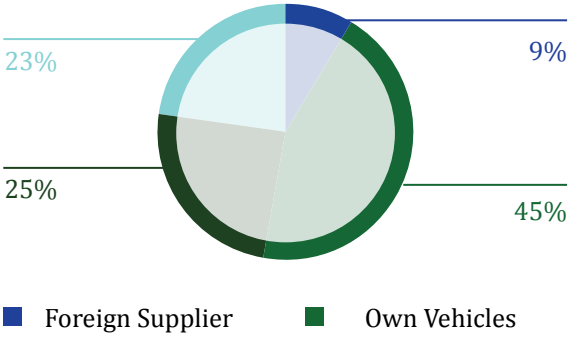


The direct customers said that their storage capacity was adequate to meet the current demand for LPG.

8.2.6 LPG VEHICLE FLEET OWNERSHIP BY DIRECT CUSTOMERS

Forty-five percent (45%) of the direct customers owned their vehicles,and 9% used hired vehicles as shown in the figure below:

Figure 8.106: Fleet size and vehicle type used by direct customers



Foreign LPG suppliers who supplied LPG to some of the direct customers sometimes offered transportation of the LPG,as shown in Figure 8.107.

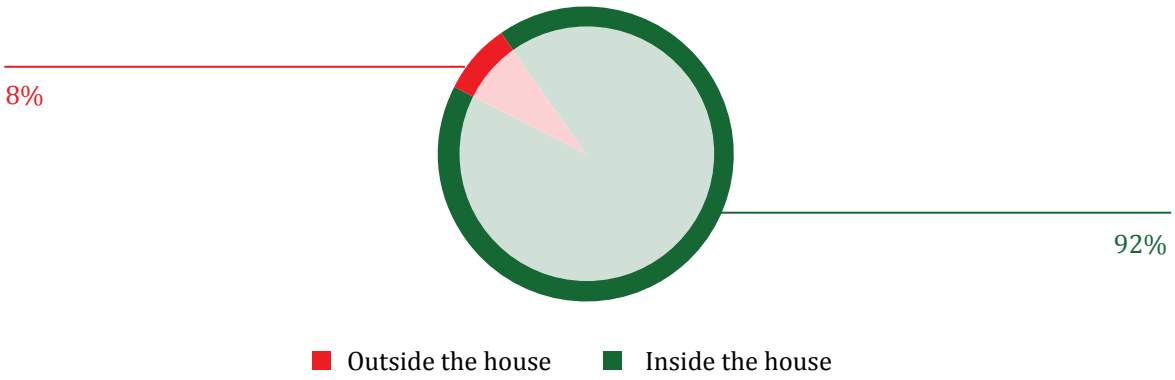
[3] N is the number of respondents

8.3 HEALTH AND SAFETY ISSUES OF LPG AND OTHER ALTERNATIVE ENERGY SOURCES

8.3.1 STORAGE OF LPG CYLINDERS

As part of evaluating storage of LPG cylinders, the household consumers were asked how they maintained them. Ninety-two percent of the household respondents said they stored the cylinders inside their houses.

Figure 8.107: Overall household LPG cylinder storage



Source: Researchers' Own Derivation

8.3.2 STRATEGIES FOR IMPROVEMENT OF SAFE HANDLING OF LPG

The direct customers were asked what recommendations they would give consumers to enable safe handling of LPG. They said that ZERA could help them by doing the following;.

Table 8.87: Strategies for safe handling of LPG

PERCENT	STRATEGIES
51%	More consumer education
38%	Nothing /none/no recommendation
13%	More promotional materials from ZERA would be helpful
10%	Others
2%	ZERA ensure that all people have functioning licenses

8.4 BIOGAS

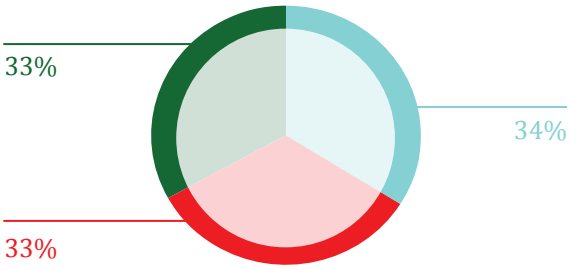
A small number of households used biogas. The productive sector used biogas mainly for their production processes. Biogas is usually not preferred by most customers as the gas burns with a bad odour. Respondents said there are competing uses of biogas, especially in peri-urban areas and rural areas where customers have to decide on manure in place of fertiliser over energy production. In most instances, it is costly to construct and manage digesters well. Most digesters were decommissioned after the enzymes for decomposition could not sustain the conditions emanating from poor maintenance for instance in Mutare. Lastly, there is an issue with storage of the gas; this is still to be embraced as the current customers are not able to store the gas.

Figure 8.108: Examples of biogas systems

8.4.1 SOURCE OF PURCHASE OF BIOGAS EQUIPMENT

The respondents were asked where they purchased their solar and biogas equipment from.

Figure 8.109: Source of purchase of biogas equipment



*Thirty-three percent (**33%**) got them from their own sources, **33%** bought them from vendors, and **34%** imported them from various countries.*

Retail outlets Vendors Source my own

Source: Researchers' Own Derivation

8.4.2. TYPES OF DIGESTERS

The digester can be constructed from local material and costs about US$3,800

Most customers use the dome shaped digester usually the Chinese type from China. These digesters are easy to construct after proper sizing and give customers the ability to use the gas, once enough pressure has been contained within the gas holder. The digester can be constructed from local material and the cost is relatively low. It costs about US$3, 800.The important feature of this as described by most customers and key informants is that the digester is usually placed underground and so have no need for temperature regulation as a result of seasonal variations in temperatures. This digester requires high waste input with skilled manpower to construct giving it a relatively low acceptance level for its usage in the country.

The other type of digester that is normally used is the Indian type, from India. It is a floating tank type digester which is exactly the same as in Crowborough Sewage Works managed by the Harare City Council. Most key informants indicated that the digester can be constructed from cheap material or recycled material which can be done at household level. This means that there is no need for expert assistance in the construction, and the gas is easily used once enough pressure has been reached. The main disadvantage of this digester is that it has a short lifespan when compared to the Chinese type and is susceptible to contamination because of poor ceiling with high maintenance cost.

8.4.3. FACTORS DISCOURAGING UPTAKE OF BIOGAS

The survey found that use of human waste discouraged most customers using biogas as alternative energy option as they see it as a taboo. Other respondents said because the gas has a bad smell emanating from hydrogen sulphide it will contaminate the food. Most importantly, the storage of biogas is difficult because of the current technology in Zimbabwe.

8.5 OUTLOOK FOR ZIMBABWE ENERGY CONSUMPTION

There is an increased mismatch between demand and supply for energy

The rate of alternative energy penetration is expected to rise from the current consumption as customers do not have sufficient funds to connect their homes to the national grid. LPG has shown a rapid penetration within the energy mix though other sources are slowly coming in but mainly for water pumping and back up services.

Corporate consumption is different to that of households. Most studies show that consumption figures for corporates are directly related to modernisation, and the industrial and economic growth of the nation. Zimbabwe is currently facing a shortage of electrical energy owing to internal generation shortfalls and the country imports petroleum fuels at great costs. (National Energy Policy, 2012).

The overall effect of this situation is an increased mismatch between demand and supply for energy. It is up to the Regulator to put in place measures to counter the increase in energy consumption in Zimbabwe especially when the country's industrial sector becomes vibrant.

The family of alternative energies faces a brighter future as a result of flexibility and direct subsidies to encourage green energy.

The overall effect of this situation is an increased mismatch between demand and supply for energy as has always been the case. It is up to the Regulator to put in place measures to counter the increase in energy consumption in Zimbabwe especially when the country's industrial sector becomes vibrant.

8.5.1 RECOMMENDATIONS FOR RENEWABLE ENERGY IN ZIMBABWE

The energy situation in Zimbabwe is comprised of mainly conventional energy sources with non-conventional supplies taking a small portion. The proportion of alternative energy in the national energy mix is composed mostly of renewable energies with LP Gas as the only stand out. In order to promote the uptake of alternative energy, it is necessary to promote more renewables. . The recommendations for renewable energies are such that they must enable increased uptake and increase their rate of penetration. The following recommendations were suggested during the survey and are necessary to turn around the fortunes of alternative energies.

A INTRODUCTION OF SUBSIDIES

The introduction of subsidies and tax incentives will promote growth and increased penetration of renewable energy. Most renewable energies such as solar PV and biogas have very high initial cash outlay and relatively longer payback period but they have stronger economic benefits when it comes to important concerns such as global warming and climate change. The subsidies will also include feed-in tariff for those companies in extensive generation of electricity from renewable energy so that they become sustainable.

B FORMULATION OF RENEWABLE ENERGY POLICY

The government needs to put in place a renewable energy policy which clearly outlines all the necessities and standards in the renewable energy arm. It is quite evident that most problems with Renewable Energy Technologies (RET) are caused by the quality of products on the market as customers prefer cheap options which, in turn, may affect the operation of the system. The policy will at large enable easy regulation of the energy technologies from product use, installation and workmanship.

C FORMULATION OF STANDARDS AND REGISTRATION OF ALL SOLAR COMPANIES

The formulation of renewable energy standards backed by the renewable energy policy will ensure that all the technologies put up by all the dealers will be solid and of good standard. This will promote rapid use of the technologies as the value for money on the system will be ensured as all dealers and manufacturers will have to adhere to set standards. Those who do not follow the standards can be deregistered.

D TRAINING AND AWARENESS CAMPAIGNS

The training and awareness campaigns will enable capacity building of all dealers and end users in the energy value chain. There are several institutions of higher learning which mostly deal with the energy technologies from training to maintenance of the energy systems. The awareness should be centred on the basic understanding of the technologies with emphasis on the effects and limits on each technology highlighted. Training should equip installers and dealers of the various energy technologies from basic design, installation and maintenance.

E INJECTION OF FUNDS AND ENABLING ENVIRONMENT

The government should, besides introducing subsidies, inject funds to increase the rate of penetration of the energy technologies. The much publicised Jatropha Project, for example, failed due to several problems linked to funding which weakened and crippled operations leading to the closure of the test project.

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