ANALYSING CAUSES OF DISTRIBUTION TRANSFORMER VANDALISM IN DEVELOPING COUNTRIES – THE CASE OF MALAWI

MASTERS IN BUSINESS ADMINISTRATION

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A dissertation submitted to the Faculty of Commerce, The Malawi Polytechnic, University of Malawi, in partial fulfillment of the requirement for the award of the degree of Masters in Business Administration (MBA).

July, 2008

Declaration

I declare that this report is my own, unaided work. It is being submitted in partial fulfillment of the requirements for the degree of Master in Business Administration (MBA) in the University of Malawi. It has never been submitted before for any degree or examination in any other University.

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This Day of …….2008

Signature…….

Certificate of Approval

We declare that this dissertation is from the candidate's own work and effort. Where he has used other sources of information, it has been acknowledged. This dissertation is being submitted with our approval.

First Supervisors Name ….……..……..

Signature…….…….……..

Date……..…….

Second Supervisors Name.…… ……..……..

Signature…….…….……..

Date……..…….

Head of Department's Name…….……..

Signature…….…….…….……...

Date…….

Dedication

To the loving memory of my late Dad, Audryson, Edmund Chiphwanya, who inspired me to strive for greater achievements in life despite many obstacles and my Mum, Hannah Chiphwanya, who instilled in me a sense of patience and focus in times of great challenges. May your soul rest in peace Dad and I love you Mum, God bless you.

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Abstract

While the level of accessibility of electricity is low in developing countries and the energy sector receiving less foreign investments, there is another aspect that is contributing negatively to the effort of increasing access and improving reliability of electricity. This is the practice of vandalizing electrical installations. Of relevance to this study is vandalism targeted at one of the most crucial equipment in provision of electricity, the distribution transformer. This study was conducted to identify and critically analyse the root cause(s) of distribution transformer vandalism. This is crucial realizing that if vandalism goes unchecked, the developing countries' goals, including Malawi, of increasing accessibility to electricity will be difficult to achieve.

This research took an interpretivism philosophy with a phenomenological stance but was mainly constructionivism with an inductive approach. The sample was drawn from Southern Electricity Supply on non probability, purposive sampling principles. Four instruments were developed targeting members of the local community, key informants, vandalism participants and another instrument for recording physical attributes of a vandalized transformer site. Data was analysed using SPSS and Microsoft excel computer packages.

The majority of the respondents from the community are of the view that former ESCOM employees are behind the vandalism seconded by thieves while businessmen and ESCOM employees are third and fourth respectively. Most respondents think distribution transformers are vandalized by people involved from far and that they do this due to poverty in search of oil. Most transformers were targeted because they were either isolated and concealed from public scrutiny or there was no security at the time of the act.

This study has established that distribution transformers are vandalized mainly for their oil, which has got many uses and is easily converted into cash on the black market. This is done by people who have fair technical knowledge of how transformers work. These people mostly do not live within the surrounding of the victimized transformers and have

got organized groups. The findings have further shown that most of the transformers that are vandalized are located in activity nodes. These activity nodes are residential areas, commercial areas and trading areas. These locations have high presence of people capable and motivated to carry out vandalism during day time. However, it is established that most acts of vandalism are carried out at night.

The study recommends that vandalism can be significantly reduced if there is more sensitization particularly to some key department in the Malawi Police Service and the judiciary. Furthermore, there is need to review the penalties given to convicted offenders and apply strategies that will not allow vandalized materials enter the market.

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Abbreviations and Definitions

Abbreviations

CES	: Central Electricity Supply of ESCOM
CPTED	: Crime Prevention Through Environmental Design
ESCOM	: Electricity Supply Corporation of Malawi LTD
HV	: High Voltage
IHL	: Imprisonment with Hard Labour
KPLC	: Kenya Power and Lighting Company
MAREP	: Malawi Rural Electrification Programme
MoF	: Ministry of Finance
MoNEA	: Ministry of Natural Resources and Environmental Affairs
NES	: Northern Electricity Supply of ESCOM
PMS	: Poverty Measurement Study
PRSP	: Poverty Reduction Strategy Paper
SES	: Southern Electricity Supply of ESCOM
TANESCO	: Tanzania Electricity Supply Company
ZESA	: Zimbabwe Electricity Supply Authority
ZESCO	: Zambia Electricity Supply Company

Definitions

Distribution Transformer:

An electrical equipment that transforms either 33, 000 or 11,000 volts to 400 volts phase to phase or 230 volts phase to neutral.

Poverty:

The state of being without, often associated with need, hardship and lack of resources across a wide range of circumstances. For some poverty is subjective and comparative term, for others it is moral and evaluative; and for others scientifically established. The principal uses of the term include: Description of material need, including deprivation of essential goods and services, multiple deprivation and pattern of deprivation over time (Wilkipedia)

Poverty line : the level of income below which one cannot afford to purchase all resources required to live.

Chapter One

1.0 Introduction

1.1 Background of Study

1.1.1 Energy and Poverty

Poverty is one of the major challenges that the world is committed to fight against as evidenced by the world leaders' commitment in the UN millennium goal initiative as declared in 2000. It is being recognized that energy is very crucial in meeting these goals. **"**Around two billion people lack modern energy services. We need to work with our partners to increase access to energy if we are to support the achievement of the goals agreed at the Millennium summit in 2000" (G8 summit communiqué 2005 as cited in Mandil, 2005). This demonstrates the key role energy plays in eradicating poverty.

Mandil (2005) asserts that about 2.4 billion people use traditional fuels worldwide while only 1.6 billion (about a quarter of the world's population) have access to electricity. Europe, East Asia, Latin America has over eighty percent access while South Asia has just below forty percent access and the least is Sub Saharan Africa with less than 20 percent access to electricity. Africa generates only about 3.1 percent of world electricity although it has above fourteen percent of the world population (Davidson, 2005).

The above statistics underscore the importance of developing countries, particularly the Sub Saharan Africa to invest in electrification programme. This effort is meeting great challenges, one of which is poor attraction to Foreign Direct Investment (FDI) in the energy sector. According to Davidson (2005), in 1990-98 Foreign Direct investment in the energy sector was only six percent of the total Foreign Direct Investment in the Sub Saharan Africa.

Malawi is one of the countries in Sub Saharan Africa that has low accessibility to electricity. While the level of accessibility of electricity is low in developing countries and the energy sector receiving less foreign investments, there is another aspect that is contributing negatively to the effort of increasing access and improving reliability of Electricity. This is the practice of vandalizing electrical installations. Of relevance to this study is vandalism targeted at one of the most crucial pieces equipment in provision of electricity, the distribution transformer.

1.1.2 Electricity Supply Industry in Malawi

The electricity supply industry in Malawi became more visible just before independence with a thermal power station at Chichiri in Blantyre. The utility vested with the mandate of supplying electricity was named Nyasaland Electricity. After independence the utility changed name to Electricity Supply Commission of Malawi created under an act of parliament. The first hydro power station was commissioned at Nkula Falls A in 1966. The demand for electricity kept growing necessitating expansion of the electricity generating base. The industry therefore saw an increase of power stations from one in 1966 to six in 2002, while the installed capacity increased from 24 Megawatt to just above 280 Megawatt during the same period (ESCOM, 2002)

Malawi's electricity sector is now liberalized. However, electric power at the moment is supplied by the Electricity Supply Corporation of Malawi (ESCOM). This is the same utility that used to be the Electricity Supply Commission of Malawi. ESCOM is a public utility, which was incorporated under the Companies Act in 1998 as a limited liability company with own articles of association. The utility has established business units of Generation, Transmission and Distribution through which commercial transactions are conducted. Support functions and executive management form the holding company.

The need to increase the accessibility of electricity in the country is well recognized, hence the company in its annual budget makes provision for grid expansion to increase its

customer base. In addition, the Government of the Republic of Malawi is intensifying its effort to increase number of people having access to electricity. This is one of the ways to reduce poverty according to Malawi Poverty Reduction Strategy Paper (2002). In view of this, through the Ministry of Energy, government embarked on a Malawi Rural Electrification Programme (MAREP)

1.1.3 Distribution of Electricity in Malawi

Malawi's distribution System comprises 33,000 volts, 11,000 volts, 400volts and the 230 volts line network. This is interlinked with distribution transformers which transform the power from either 33000 or 11000 volts to 400 volts. The installed capacity of the network was about 370,000 kiloVolt Amperes in 2001 (ESCOM, 2001).

The Distribution Business Unit of ESCOM carries out the distribution function of electricity for ESCOM. The Business Unit has three geographical semi autonomous sub utilities namely; Southern Electricity Supply (SES); Central Electricity Supply (CES) and Northern Electricity Supply (NES). The Southern Electricity Supply is the most developed network. It realizes sixty two percent of the total revenue, while Central Electricity Supply constitutes about thirty three percent and Northern Electricity Supply's share is about five percent of ESCOM's total revenue (ESCOM, 2001). The Southern Electricity Supply therefore has more distribution transformers installed amounting to just over fifty six percent of the total capacity installed.

1.2 Statement of Problem

In August 2004, a transformer at Nakabango in Mafubira in Jinja, Uganda was vandalized. Thugs siphoned oil from that transformer and it subsequently blew up. The transformer in question was the twelfth within a month that blew up (Nampala, 2004). There have been frequent power failures in Makeni (Pelican Road) Lusaka, Zambia, which are often blamed on vandalism (ZESCO's, 2004). "The past decade has seen a

steady number of incidences of vandalism against ZESCO installations especially pole mounted transformers. In the past 12 month an average of 22 transformers per month with an average cost of USD132,000 have been vandalized" (Sichiela, 2005). A man, who was among a group of people got burnt when attempting to steal oil from a transformer in the Malawi township of Bangwe (Burnt at a transformer, 2003). This information confirms that transformer vandalism is a general problem in developing countries yet accessibility to electricity is very low in these countries.

Distribution transformers are capital items as far as power utility companies are concerned. They require considerable financial resources to be invested in their acquisition. One transformer currently costs around MK300,000 (US$2,500) hence damage to ten of them translates to MK3,000,000 in replacement costs. Adding the cost of labour, loss of revenue, administration and transportation, the value of losses may double. The minimum expected lifetime for a transformer is 25 years. They are mostly installed outdoor, often in isolated places. This coupled with the fact that transformers are widespread countrywide, poses a major challenge to provide human physical protection.

If vandalism goes unchecked, the developing countries' goals, including those of Malawi, of increasing accessibility to electricity, will be difficult to achieve. Malawi, with a population of about 12 million people has about four percent only having access to electricity (MoF, PRSP, 2002). Further, the nation will continuously lose foreign currency as these transformers are imported. If there are adverse health effects due to the oil, human life is also endangered. Unfortunately, the people whose life may be at stake may not be aware of these effects. It is for these reasons that vandalism must be stopped.

Checking of this problem can only be best attained if the underliying causes of this practice are properly identified and critically analysed. While some reports state that the major attraction is transformer oil, others have claimed it is political sabotage, while others link it to poverty and unemployment, (Kainja, 2005). This research intends to identify and critically analyse the root cause(s) of this problem.

1.3 Research Questions

This study intends to answer the following research questions:

I. What are the main reasons for vandalizing distribution transformers*?*

II. What is the relationship between transformer location and vandalism?

1.4 Research Objectives

The objectives of the research are :

I. To establish the main reasons for vandalizing distribution transformers

II. To establish the relationship between transformer location and vandalism

1.5 Significance of Study

Studies have been carried out and works published in developing countries in the fields of Crime, Graffitti and Vandalism. Theories on vandalism were developed (Newman, 1972). Different types of vandalism have been identified on the basis of their motive (Cohen 1973). Some adaptations to these have been made on Cohen's Typology of Vandalism (Barker and Bridgeman, 1994). While several vandalism studies have been done on public transport systems, buildings and telephone booths (Stafford & Pettersson, 2003,) (Gerson & Wilson, 1990) , no specific study appears to have been conducted in vandalism of distribution transformers so far. Considering that the studies in the field of vandalism have been conducted in communities with different socioeconomic and cultural backgrounds, the results of this study will provide useful information for developing countries.

1.6 Limitation

The study has been conducted in one region of Malawi, which limits its generalization to all developing countries. Access to prisoners jailed for vandalism of transformers was not granted. This has contributed negatively to the amount of information which the research originally intended to access for analysis.

1.7 Organisation of Study

The rest of the study is organized as follows: Chapter two discusses literature review, Chapter three describes the methods and measurement for the study, Chapter four presents findings while Chapter five analyses the findings and finally Chapter six presents conclusion and recommendation.

Chapter Two

2.0 Literature Review

2.1 Introduction

This chapter examines the body of knowledge on vandalism and its causes. It defines vandalism and includes sections on theories, types, likely causes, criminal perspective and determiners of vandalism. It further examines the motivation of distribution transformer offenders and environmental determiners.

2.2 Vandalism Defined

The term vandalism comes from Vandals, an ancient tribe of people from northern Europe who invaded Rome in 455 AD. The invasion was characterized by massive destruction of property that was senseless, which made the word vandal be associated with reckless destruction, abuse or misuse of property (Holland,n.d). Although there are several definitions for vandalism, they generally reflect this view. For instance, vandalism is defined as willful or malicious destruction, injury, disfigurement or defacement of any public or private property without the consent of the owner or persons having custody or control. (Vandalism, 2004). The UK Criminal Act of 1971 as cited in Stafford & Pettersson (2003) defines it as intentionally or recklessly destroying or damaging any property belonging to another without lawful excuse. Others view vandalism as a pure criminal act (Fredericton Police Force, n.d) while some categorise vandalism as a social and physical process (Canter 1984 cited in Gearson and Wilson 1990). This research adopts the UK criminal Act, 1971 definition as cited in Stafford & Pettersson, (2003).

Vandalism may range from scribbling on a wall, destruction of graves, smashing of glass windows to burning of schools through arson attack (Stafford & Pettersson, 2003).

England and Wales police statistics of 2003 has on record 1,109,370 criminal damage offences and that accounts for 24 percent of all recorded crime. Of the criminal damage offences, 5 percent were arson, 39 percent to vehicles, 27 percent to dwellings and other buildings while other targets including transport infrastructure and phone boxes accounted for 29 percent. (Stafford & Pettersson, 2003).

Vandalism costs much not only in monetary terms but also through danger to human lives, increasing fear of crime among old and the underprivileged, loss of services and general lowering of quality of life in communities. Until 1998 Australian Telecom was spending $18 million annually to pay for vandalism to its public telephones, and in Liverpool in United Kingdom, before an anti-vandalism campaign began to take effect, half the city's public phones were out of commission at any given time (Merseyside Police, 1998 cited in Gearson and Wilson, 1990). This just emphasizes the negative impact that vandalism has in our communities.

2.3 Types of Vandalism

Vandalism can be classified in several types. Based on the motives behind them Cohen (1973) identifies the types as: acquisitive, tactical, ideological, vindictive, play and malicious. For acquisitive, the motive is to acquire money or property while for tactical it constitutes damage as a conscious tactic. It is used to accomplish a goal such as carried out by students to force the authorities to close the school in case where they are not prepared for exams, just as an example. The ideological type is somehow similar to tactical vandalism but is done for an explicit cause or to express protest message. It is normally oriented towards a social or political cause. Good examples of this type in recent times include the toppling and destruction of Soviet monuments after the fall of Soviet Union and the toppling of Saddam Hussein statue by the multinational force in Iraq (Wilkipedia –Vandalism 2004). Vindictive is the type that involves damage to obtain revenge while play type of vandalism is carried out in the context of a game. This occurs when mainly youth intentionally damage property in the course of play. Malicious type involves an expression of rage or frustration against a symbolic item of property.

2.4 Theories in Vandalism

Several theories have been developed in the field of vandalism and crime. Below are some of the theories found pertinent to this study. It should be noted that many studies in this area have been done in connection with vandalism in buildings. However, the principles apply generally.

2.4.1 Defensible Space Theory

Newman (1972), established that crime rates in high-rise buildings, where a hallway, lifts, lobbies, fire escapes were isolated from the scrutiny of the public, vandalism was higher than in low-rise buildings where there was scrutiny. Newman established that vandalism was high where three major components of territoriality, natural surveillance and image were not available.

Territoriality means creating sense of ownership and control by people to mark out and defend their own ground. Thus any suspicious individual found in unfamiliar territory may be confronted. Natural surveillance refers to the creation of defensible space by architectural design that makes clear which spaces are private and which are shared by residents and which are public. This discourages intruders and encourages residents to monitor public and semi public spaces and challenge those who are strangers. Image stresses on the fact that a well-designed and good-looking housing can counteract the negative effects of poor image suffered by people in public housing. The more proud the residents are for their dwellings the better they will treat them.

2.4.2 Manageable Space Theory

Donald (1981) and Perlgut (1982) cited in Gearson and Wilson (1990) developed Manageable space theory. The theory stresses on the role of management to make sure residents learn to seek out responsibility and even exercise significant creativity in participating in their communities. While this theory acknowledges the importance of

architectural role in combating the crime, it argues that architecture should respond to people and the design must be responsive to human presence.

2.4.3 Physical Design and Kinetic Management Theory

This is based on the principle of "least effort" as advanced by Zipf (1950) cited in CPTED (2003). It argues that criminals and victims find the shortest route, spend least time and seek the easiest means to accomplish something. The theory as advanced by Felson (1987) cited in Gearson and Wilson (1990), stresses the need to manipulate the environment to divert flow of likely offenders away from the likely targets or restrict them to where they can be monitored. Gearson et al (1990) notes that from the above theory, successful case studies have come up with a number of situational crime preventing strategies. Some that are related to graffiti and vandalism are: a) reduce converges of targets and offenders; b) constrain offenders; c) protect targets e.g target hardening d) enhance guardianship.

The above theories seem to agree on a number of factors: The defensible space emphasises on territory which stresses people defending their own ground or targets is more similar to that aspect in manageable space theory where people or owners need to seek out responsibility and exercise responsibility. These points rather give owners of property or people benefiting from such property e.g. residents to get responsibility to protect the said property. The defensible space theory further highlights natural surveillance which hinges on architectural design allowing potential target areas to be open space for people to see. This purports that ordinary surrounding communities will act as watchdogs. This aspect also agrees with the Manageable Space theory that also recognizes the role of design in preventing or scaling down vandalism. In addition the point is further in agreement with physical design and kinetic management theory where it emphasizes on diverting flow of likely offenders or restricting them to where they can be monitored. This last theory further stresses the role of physical design of the target.

2.5 Likely Causes of Vandalism

Vandalism can be viewed from two main categories of likely causes. From a peer pressure perspective which mainly encompasses the play and malicious type and the Criminal perspective which includes the Ideological, Tactical, Vindictive and Acquisitive

2.5.1 Peer Pressure Perspective of Vandalism

Vandalism mostly carried out by teenagers is associated with youthful high spirit or "an unconscious attempt on part of children to exercise control over environment by leaving some sign of their presence" (Barker and Bridgeman, 1994). The Play and Malicious type of vandalism mostly carried out by this group is mostly due to peer influence. Johnson (2005) asserts that participating in vandalism helps young people maintain or enhance their status among peers.

2.5.2 Criminal Perspective of Vandalism

Pure theft is another cause, which is directly linked to acquisitive vandalism. Johnson (2005) in looking at school vandalism and break-ins acknowledges that theft of high technology goods have become more common. These goods are targeted because they are relatively easy to sell. This implies that monetary gains are obtained through criminal activities. This is in agreement with Fredericton Police Force (n.d) and Australia's New South Wales Police and Telecom's Special Vandalism Investigation squad (Monaghan, 1986 as cited in Gearson and Wilson 1990) who view vandalism as a mere criminal act.

Criminologists have suggested a number of possible motivations for vandalism (Canter 1984 cited in Gearson and Wilson 1990). He asserts that Police psychologists classify vandals in three groups; Firstly, those that break and burn Schools are lashing out at authority, secondly spray paint kids and seat slashers are show offs with the latter being less-eloquent, thirdly, phone busters are thieves. Motives of phone busters are similar to

those that vandalize distribution transformers as they both fall in acquisitive type. Since theft is a criminal act, some criminological principles were found to be useful in examining this area. The question is what determines crime to occur?

2.5.2.1 Determiners of Crime

CPTED (2003) discuses three levels of crime determiners which are first, second and third order determiners. First order determiners are the ones that are considered as the first order of importance in predicting occurrence of crime. Crime happens on pathway or activity nodes where there is a presence of "high risk" population. These high risk populations tend to undertake routine activities, going from one activity node to another along established pathways whether pedestrians, vehicular or other (Cohen and Felson, 1979 and Brantingham and Brantingham, 1981). It is implied that the presence of high risk population on a route or place is of first order importance as to whether a crime or a nuisance behavior will occur. This philosophy further purports that the choice of what area or city to undertake a crime is influenced by where the person committing the crime lives and routine between daily activities such as entertainment and family commitments (Wright and Decker cited in CPTED, 2003)

The second order determiners are the environmental circumstances, which the "high risk" population find themselves as they move along the routes. A burglar chooses a specific house on a street depending on environmental cues such as concealment and lack of surveillance from neighbour (Cromwell 1991 cited in CPTED, 2003). This implies that crime prone targets are those that provide a conducive environment for crime to happen such as lack of concealment.

The third order determiner involves a more passive environmental circumstance such as lighting and weather. These according to CPTED (2003) have an impact if they are implemented together with the more important determiners. From the above, it is noted that the major determiners of crime are the people available termed as "high risk population" and the areas they carry out their activities termed pathway and activity

nodes. The second major determiners are the environmental cues that these high risk populations find themselves in. These are identified as concealment or lack of surveillance as supported also by the Defensible space theory earlier. Another factor is the level of simplicity provided by the target. Thus the more easier and faster it is to vandalise a target the more likely a motivated offender will carry out the act. This is supported by the Physical design and Kinetic Management theory observed earlier. The simplicity accorded by a target is largely dependant on its physical design.

2.5.2.2 First Order Determiners of Vandalism

These are the likely areas where vandalism can occur depending on the availability of the motivated offenders. The two most important factors are therefore prone areas and availability of motivated offenders.

2.5.2.2.1 Prone Areas

Literature shows that some locations are likely to have criminal events than others. This is substantiated by several theories. Brantigham and Brantigham (1981, 1984) in their pattern theory focused on how crime occurs in a specific location and time. They suggests that criminal events can be explained by peoples normal movements through target areas in coarse of the day, week, month and year and that normal activities strongly shape crime patterns. They advocate studies on crime statistics and geographical layout of crime occurrences. In their approach they makes the following assumption:

Firstly, that there are individuals motivated to commit crime. Secondly, that there is a multi staged target selection process, thirdly that the selection process is influenced by cues emitted by the environment. Fourthly, that environmental cues and cue clusters are re-used by offenders forming templates. Lastly, those templates are relatively fixed and have similar qualities within groups of offenders.

They assert that crime can be drawn from the repetitive templates. The selection process can be understood from the perspective of occurrences in space and time, while spatial qualities can be explained based on the behavior in the environment. They therefore summarise that most crimes are committed close to homes or at major activity nodes, offenders tend to cluster together and crime happens in the action spaces of offenders.

The emphasis on location is further demonstrated in the pathway theory. This approach attempts to explain crime environment through the path people use as they do their normal daily activities. Pathways can be any type where people go whether in vehicles, as pedestrians, cyclists, motor cycles etc. Some pathways have little crime because they do carry less high risk populations. CPTED (2003) summarizes this argument in the statement "Crime happens on pathway and at activity nodes where there is presence of high risk population."

2.5.2.2.2 Motivated Offenders

It is estimated by British transport Police that young people are responsible for 90 percent of vandalism offences on the railways. The peak age is 17 at peak times of 4 pm to 7 pm (Stanfford & Pettersson, 2003). The same author quotes Youth Board Research as establishing that nearly 70 percent of young people excluded from school, admitted committing incidents of vandalism. In 1997, US law enforcement agencies made approximately 136,500 arrests of persons under the age 18 for vandalism. These arrests represented 44 percent of all vandalism arrests (Stahl, 2000). The same report further discloses that 88 percent of these arrests were male and the peak age was 16. Brown (2003) agrees that it is generally accepted that most vandalism is committed by men. While the above reports appear to differ on the specific age group that is a major culprit for vandalism, they generally agree that the teenagers and young adults are perpetrators of most vandalism acts. Boredom, alienation, family and community breakdown, lack of leisure opportunities and youth unemployment are identified as triggers. However, Cohen and Felson (1979) have a different view in their routine activities theory. They argue that there will always be a vast supply of crime motivation and that the motivation

and supply of offenders are constant. They predict a high rate of potential crime becoming actual crime whenever three elements occur in space and time together. The three element for a successful crime are absence of capable guardian, abundance of motivated offender and availability of suitable target.

2.5.2.3 Distribution Transformers –Motivation of Offenders

In view of distribution transformer vandalism, it is important to examine the question, what is the motivation of the people who carry out these acts?

2.5.2.3.1 Disgruntlement and Sabotage

Arguments have been made that people who vandalize distribution transformers are knowledgeable in this area. Since the electricity industry is small in terms of players the perpetrators must have got this information from the utilities that operate the electricity network. They must be workers or former workers of those utilities. Kainja (2005) identifies retrenchment and disgruntled employees as some of the causes. This is supported by the following quotes. “Nine Lusaka ZESCO Workers have been picked up in connection with draining oil from transformers which was later sold as cooking oil”(Times of Zambia, 2005). Kenya Power and Lighting Company agree with this as they discovered some of their technicians colluding with thieves to pull down transformers (KPLC 2004). Green Anarchy (2005) confirms that sabotage or disgruntled acts are committed on transformer equipment. “This action was obviously conducted by someone with working knowledge of substation operation with an intent to sabotage the equipment. Therefore we can not rule out that it may be associated with the strike against JCP & L”.(Green Anarchy, 2005). This was in response to a vandalism act on a substation in Lapatcong, New Jersey, United States where there was a strike.

2.5.2.3.2 Attractive Incentives

Others view the reason for vandalism as need for monetary gains through these acts (The Gurdian, 2004 and Nampala 2004). The culprits include people who provide market for the stolen items. These are some shop owners, street side vendors and homemade skin lightening concoctions manufacturers (Root cause, 2004). Kainja (2005) agrees by suggesting that one of the causes for vandalism is illegal scrap metal dealers and buyers. These conduct their business with these items.

The major target of vandalizing transformers however, appears to be the oil which is used to cool the transformer. "It is suspected and rumoured that due to the shortage of diesel fuel the transformer oil is being used to run diesel engines in buses and trucks. Some companies use transformer oil as fuel in factories, foundries and boilers" Madzikanda (2005). It appears this is not for that country (Zimbabwe) alone as confirmed in the Zambian situation by Sichiela, (2005).

> Transformers are vandalized mainly for the oil that is contained in them. In Zambia, an investigation carried out about four years ago revealed that transformer oil had found various uses in the population and these included fuel (mixed with diesel) and sold as cheap fuel along the highways, vegetable oil (mixed with genuine oil) and sold to unsuspecting members of the public, engine oil, firing for furnaces in foundries etc

The Zambian Electricity Supply utility agrees that cooking is one of the uses. "Another use is for cooking as it is mixed with soya oil to unsuspecting customers" (Times of Zambia, 2005). While the authors may not completely agree on the uses of the transformer oil, one clear thing coming out is that the oil is the major motivator to transformer vandalism as it can be easily converted into money on the readily available market.

2.5.2.3.3 Poverty

Kainja (2005) cites poverty as one motivation for vandalism. A 1998 U.S Department of Education study concluded that incidents of vandalism are widespread in both urban and rural areas but rates tend to be higher in crime ridden neighborhoods marked by poverty (The Roots, 2002). In view of Malawi being ranked as one of the poorest countries in the world, it becomes pertinent to examine poverty as a motivator.

Poverty is a very broad term and somehow ambiguous to define. It encompasses a lot of factors and it is for that reason that there are varying definitions of poverty. However the most applied indicator of poverty is the poverty line. While there are internationally accepted poverty lines, different countries often use different lines. The poverty analysis of the Integrated Household Survey brief for Malawi (2000) estimates the poverty head count of 65.3 percent. These people are unable to meet their basic needs. The report further established that poverty is worse in rural areas. The Southern Region is the poorest of the three regions. The figures above used poverty lines for four areas of the country and per capita consumption levels. This was done to reflect different prices, different household demographic composition and different consumption preferences between poverty line areas. These poverty lines based on 1998 study but adjusted to September 2000 prices are as below: Southern rural MK15.33, Central MK18.30, Northern rural MK50.15.

Poverty prevalence coincides with the pattern of population with the large majority of both the general population and poor located in rural areas. However urban poverty does not follow the rural pattern in that cities in Central and Northern regions contains more extensive poverty than Blantyre and Zomba (World Bank, 1996). The report further notes that Lilongwe has the highest prevalence of poverty.

Of much significance to this study is the observation that 87 percent of the vandalized transformers from April to July 2004 were from Southern Electricity Supply which is in the South of the Country (ESCOM Distribution July 2004).

2.5.2.4 Environmental Cues

As noted above on the second order determinants, the environmental circumstances that the motivated offenders find themselves in plays a role in the levels of vandalism to be committed. These include lack of concealment or exposure, location where the transformers are and vulnerability (thus how easy it is to carry out the vandalism activity with minimum chance of being caught). The vulnerability of the transformer is, to a larger extent, a result of its design.

2.5.2.4.1 Location

The location where the targeted item is situated seem to be another contributing factor to vandalism and crime. Sichiela (2003) states that relocating of pole mounted transformers to safe areas where possible was one of the ways which Zambia used to reduce vandalism. The same author further points out that increasing the height of the transformer from ground level is another option. Madzikanda (2005) claims that draining of oil most happens in Harare which is the capital city of Zimbabwe. In Tanzania, Dar es Salaam is the leading region in transformer vandalism (Tanesco, 2004). Incidentally, Dar es Salaam is the commercial city of Tanzania and used to be the capital. In Uganda the practice of vandalism is high in Jinga which is the second largest city in the country (Nampala 2004).

The above seem to suggest that vandalism of distribution transformers is rampant in large cities.

2.5.2.4.2 Transformer Design and Mounting

The design of the transformer has attracted scrutiny in the wake of the vandalism levels in the region. It is noted that some designs of transformers encourage vandalism activities as they provide easy access to the oil. “Vandals simply open the drain valve or

unbolt the cover and push the pipe which they use to drain the oil" Sichiela (2005). "Oil valves were opened on two transformers at marble substation in Lapatcong Township" (Green Anarchy 2005). However perpetrators have gone to the extent of cutting the transformer tanks and vandalizing locks to gain access for ground mounted transformers (Madzikanda, 2005). Kaponda (2005) notes that when transformer construction design is improved to address the vulnerable parts the vandals modify their techniques as well such that the battle seems endless. This underlines the determination to carry out these acts by some people. Nevertheless, design of distribution transformers plays a crucial role in the level of vandalism. This agrees with CPTED (2003) on the rational choice theory that looks at the offenders' perspective of how they use the environment rather than only concentrating on what motivated the offender to commit the crime (CPTED, 2003). It emphasizes on focusing on a fruitful framework within which a would be offender can consider deterrence. Clarke (1997: 15-25 cited in Wilkepedia. 2006 – Rational Choice theory) asserts that the offender decides to risk breaking the law after considering his or her own needs. Before committing a crime the reasoning criminal weighs the chances of getting caught and the value gained in committing that act. The relevance of the theory therefore aims at increasing the perceived effort necessary to commit a crime, increasing the perceived risk of apprehension or reduction of anticipated compliance. Clarke (1997) further observes that this involves concerted effort by manufacturers of standard equipment prone to theft among other players.

Sichiela (2005) asserts that pole mounted transformer on double structure are most vulnerable to vandalism. He further notes that single pole mounted transformers seem not to be targeted as much. The author however does not say why this situation is like that. It has also been argued that since the transformers are mounted in open places, they are so conspicuous that they attract vandalism. This argument is supported by Donald, (1981) and Pelgut, (1982) cited in Gearson and Wilson (1990), in their manageable space and defensible space theories. They further noted that architectural designs that do not allow the concerned communities monitor public and semi public places and allow them challenge intruders are more vulnerable to vandalism. In the context of distribution

transformer this means the surrounding community carrying out policing activities for the concerned transformers.

2.5.2.4.4 General Transformer Surrounding and Upkeep

General appearance and surrounding of the distribution transformer has been cited as another environmental cue contributing to vandalism. Long spells of non maintaining and cleaning the surrounding attracts vandalism. The broken window theory supports this observation. The theory, developed by Wilson and Kelling (1982), refers to physical signs that show that an area was uncared for. It purports that if an area has broken windows, accumulation of trash and litter, graffiti etc then the area invites criminal behavior (Thabit, 2005). Supporters of this theory argue that some distribution transformers are vandalized because they look uncared for. Should efforts to always keep the places tidy and clean were always maintained chances for vandalism would be much reduced.

2.6 Chapter Summary

From the literature reviewed, it is clear that vandalism is willful or malicious destruction of private or public property. It can be categorized depending upon the motivation behind the act. This implies that the reasons vary too. Most vandalism is committed by male youth. This however involves the categories of Play and Malicious. There seems to be no evidence of vandalism studies conducted in the field of electrical installation in general and distribution transformers in particular.

Vandalism of telephone booths, which is very similar to that of distribution transformers, is mainly acquisitive. This type of vandalism is a criminal act and can better be understood by further examining some area of criminology. Criminologists have developed three types that determine crime to happen. These are the first order determiners that encompass areas prone to crime and the type of people available termed as high risk population. The second type is the second order determiners also known as the environmental cues. This includes location, design of the target and general

surrounding or proper house keeping. Studies indicate that motivation of the people vandalizing transformer are identified in three categories of disgruntlement due to other reasons, absolute theft as it provides better incentive on the market and poverty.

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Chapter Three

3.0 Methodology

3.1 Introduction

The purpose of this chapter is to describe the methods and procedures used in conducting this research. It includes sections on approach and philosophy, sampling, sources of data, development of instruments, administration of instruments, data analysis, ethical considerations and chapter summary.

3.2 Philosophy and Approach

Saunders et al (2003) highlights three types of research philosophies namely Positivism, Interpretivism and Realism. Positivism adopts the philosophical stance of the natural scientists. Realism is based on the belief that reality exists that is independent of human thoughts and beliefs. Lastly, interpretivism emphasizes that it is necessary to explore the subjective meanings motivating people's action in order to be able to understand these. This study takes this Interpretvism philosophy with a phenomenological stance but was mainly constructionivism.

In view of the above choice of philosophy, the inductive approach was chosen for this study. This is in recognition of the fact that the purpose of this approach is to get a feel of what is going on so as to understand better the nature of the problem.

3.3 Sampling

Sampling is the process of selecting units from a population of interest so that by studying the sample we may fairly generalize our results back to the population from which they were chosen (Trochim, 2002). This study used non probability sampling method.

3.3.1 Sampling Method

Saunders et al (2003) mentions two main types of sampling as probability also termed as representative and nonprobability sometimes called judgmental sampling. The non probability sampling provides a range of alternative techniques based on one's subjective judgment. These techniques are quota, purposive, snowball, self selection and convenience. This research used a purposive sampling technique in coming out with the administrative districts. Selection of interviews for members from the general community was done using convenience sampling. Exclusion was on basis of predefined criteria. This was mainly due to the individual not living in the area during the time of the vandalism

The key informants were in four categories. Firstly, were those involved in investigations. These represented the people from Security and Audit department of ESCOM and the Malawi Police Service who conduct investigations with the aim of apprehending the culprits. Secondly, there were those people that are involved with maintenance and repair of vandalized transformers. Thirdly, there were members from the Malawi Police Service involved in prosecuting people suspected to have committed vandalism offences

3.3.2 Target Population

The target population for this study was the total number of customers whose transformers were vandalized in the Southern Electricity Supply between July 2004 and

June 2005. ESCOM Distribution report of March 2006 shows that SES had 79,089 customers being supplied by 2,089 transformers. This gives an average of thirty seven customers per transformer. Eighty-four transformers were vandalized during the period of study. However, only sixty four transformers were from the targeted districts. The estimated target population therefore is two thousand three hundred and sixty eight customers (2,368). This formed the target population.

3.3.3 Sample Size

The Southern Electricity has ten administrative districts. These are Thyolo, Mulanje, Blantyre, Limbe, Nchalo, Bangula, Mwanza, Liwonde, Zomba and Mangochi. An examination of the vandalized transformers from these areas revealed that Blantyre contributed about 48.2 percent while Limbe had 25 percent, Mulanje and Thyolo had 7.2 percent each while Zomba had 3.6 percent which constitute just over 90 percent of the vandalized transformers. These administrative districts were chosen for the study on the basis of having more vandalized transformers than the other districts. The districts were therefore classified in three categories of Blantyre, Limbe and Others to which constituted Zomba, Mulanje and Thyolo. This is in line with the extreme case or deviant sampling technique. This approach is backed by Saunders et. al (2003) who states that the approach focuses on unusual or special cases on the basis that the data collected about these extreme outcomes will enable the researcher to answer the research questions.

The normal approach for calculating sample size is that there is a minimum sample size required for any given population to provide estimates with an acceptable level of precision. Any sample which may be larger than this minimum size will produce results no less precise, but not necessarily more precise than the minimum size (Chikhwenda, *et al.*, 2003). As stated above a population of 2,368 was identified. Saunders **(2003)**, asserts that researchers normally work to 95 percent level of certainty and for most business and management research, margins of error of plus or minus 3-5 percent of the true value are adequate. In view of this a sample size of 1,964 which is 95 percent of the entire

population was necessary for a population of 2,368 to achieve results with 5 percent margin of error (Saunders, 2003).

However, due to time and financial constraints, it was not possible to interview 1,964 respondents. This research was conducted for academic purpose and it had to be completed within a specified period. Hence a sample of two respondents per transformer was decided. Four sites were vandalized twice hence 120 respondents were required from the 64 vandalised sites. However seven respondents never returned the questionnaires giving a total of 113 respondents drawn from the community. This represents a 94 percent response rate which is very commendable.

3.4 Sources of Data

There are two main types of sources of data. These are primary and secondary sources of data. Primary data are data collected by immediate users. Secondary data, on the other hand, is data that have been collected by individuals, organisation or institutions other than the users of the data (Chikhwenda, 2003)

3.4.1 Primary Data

This originated from the site visits conducted, questionnaires and the in-depth interviews. They included both qualitative and quantitative. Sunders et al, (2003) notes that primary data can be collected through semi structured and in-depth interviews, observations and through use of questionnaires. This study employed all those methods.

3.4.2 Secondary Data

Secondary data, which are in categories of documentary, multiple source, and surveys (Sunders et, al 2003) were collected and mainly used in the Literature Review. These data were obtained from published and unpublished sources. The unpublished sources

included reports mainly from ESCOM. The published data were obtained from various libraries such as the Polytechnic, ESCOM library and the Internet. All these have been referenced in the bibliography.

3.5 Development of Instruments

Four instruments were developed as below:

3.5.1 Semi Structured Interview

Three questionnaires were developed for the members of the local community surrounding the vandalized transformers, vandalism participants and key informants.

A questionnaire for community was developed with the aim of exploring the reason for vandalizing the transformers and who the perpetrators are. The instrument has one main section apart from the demographic data. The first questions deal with the length of time that the respondent has been in the area under study. This aims at checking whether the recipient was in the area during the time of vandalism and hence qualifies to be a respondent.

A questionnaire for vandalism participant was developed with the aim of exploring the level of expertise available in the people who carry out the act of vandalism. The instrument further aims at exploring whether that level of expertise was acquired from ESCOM or elsewhere. Finally the instrument aims at exploring the motivations for these acts and the level of risk awareness associated with these acts.

A questionnaire for key informants was developed with the view of getting more information from the people who are more conversant on the issue due to their professional experience. It was designed to collect such information from people of different backgrounds and as such was divided into four parts apart from the demographic data section.

Part II was targeted for people who are involved in investigations of distribution transformer vandalism. It attempts to explore the type of people that are normally involved with vandalism. Part III was developed to get in-depth information on what the level of expertise possessed by those that indulge in these acts. It further aims at exploring the major motive behind the acts and whether there is any type of substation that is more vulnerable than the other. Part IV was developed to get information from members of the police who are involved in prosecuting those involved. It attempts to get the first hand information on what are the common reasons given by perpetrators. It further intends to establish the economic assessment and level of expertise possessed by the perpetrators. Part V was developed for any other group that may be encountered to have more information on distribution transformer vandalism but is not covered on the above categories. The questions are open ended intended to get in depth information relevant to the study

3.5.2 Structured Observation

Structured observations enables the researcher by not merely observing what is happening but also feeling it (Gill and Johnson cited in Saunders (2003)). The observation sheet was developed with the aim of exploring the physical attributes of the distribution transformer vandalized sites. It attempts to explore location characteristics and surrounding community and further intends to link those to the level of vandalism.

3.5.4 Pilot Study

The instruments that were developed were tested by visiting five sites. The observation sheet and community questionnaire (instruments number1 and 2) were tested in these sites. The results showed that one factor from the observation sheet was not practical to collect, hence it was removed. On instrument number two, three questions were found not to be as clear, hence modification were made. Instrument number three was tested by

giving to two experts from ESCOM who found them to be in order. However, Part IV of instrument number 3 and instrument number 4 were not tested as permission from the authorities was not granted by that time.

3.6 Administration of Research Instruments

3.6.1 Observation Sheet

The researcher or research assistant collected information for the observation sheet upon arriving at the vandalized distribution transformer site. Each visited transformer vandalism site had to have one such instrument completed.

3.6.2 Recruitment of Participants for the Study

Respondents from the community were recruited in the visited sites. They were the ones who were both directly affected by the vandalism and those not, but were around and able to recall details pertaining to the vandalism incident. At least two people per vandalized transformer site were asked to take part in the study. Upon their expression of willingness to proceed with the study they were requested whether they would have liked to complete the instrument alone or required the researcher or his assistant to complete it on their behalf. Key informants were identified based on their experience and expertise. The vandalism participants were identified with help of police documents and selected on the basis of easy accessibility.

3.7 The Analysis of Data

Data was first cleaned and then quantitative data inputted into an SPSS computer package. A descriptive analysis was carried out in order to analyze the data. The qualitative data was coded and entered into the computer. The data was then analyzed descriptively and tables drawn. The results were tabulated and implications drawn.

3.8 Ethical Considerations

In identifying people to take part in the study for the community questionnaire, participants were briefed on the intention of the study. They were further informed that they were free to proceed and participate in the study or not. They were further informed that should they decide not to proceed in the course of the interviews they were free to do so. Upon their agreement they were requested to sign a consent form whose sample is shown as appendix 3. Prior permission was sought from the Malawi Police Service, ESCOM and Malawi Prison Service. Permission to collect information was granted from ESCOM and Malawi Police Service. A response was never forthcoming from the Malawi Prison Service hence the study failed to cover the vandalism participants as earlier planned.

3.9 Chapter Summary

The chapter has discussed the methodology and design approach of the research. This research took an interpretivism philosophy with a phenomenological stance but was mainly constructionivism with an inductive approach. The sample was drawn from SES on non probability, purposive sampling principles. Four instruments were developed targeting members of the local community, key informants, vandalism participants and another instrument for recording physical attributes of a vandalized transformer site. Data was analysed using SPSS and Microsoft excel computer packages. Findings and Analysis are presented in the following chapters.

Chapter Four

4.0 Findings

4.1 Introduction

This chapter analyses the findings of the study. The chapter is divided into three main sections. The first part presents an analysis of the findings from the community. This is further subdivided into characteristic of sample, length of stay, time and reason for vandalizing the transformer, perpetrators, incidents surrounding the vandalism and influencing factors in targeting the transformers. The second part presents an analysis of findings from the physical observations from the sites also divided in the same districts and thirdly is the data analysis of findings from Key informants. Finally the chapter presents a summarised analysis of findings.

4.2 Findings from the Community

4.2.1 Characteristics of Sample

The cluster sample for Blantyre comprised 33 percent female and 67 percent male. Out of these 65 percent were married while 20 percent were single the remaining part comprising the widowed and separated. The respondent's education level range from no education at 3.2 percent, primary school 21 percent, secondary school 57 percent while those who attained technical college and university education constitute the remaining 19 percent. In Limbe, 63 percent of the respondents were male and 77 percent were married. The secondary school education level bracket was the most common represented at about 46 percent followed by technical 20 percent and university education respondents at 17 percent. In other districts however, 73 percent of the respondents were male. About 70 percent were widowed the rest being married. The majority of them only attained primary education at 40 percent, while twenty percent reached secondary level. 26 percent never disclosed their educational level.

In terms of source of income, only 18 percent were unemployed in Blantyre with 24 percent doing businesses and 22 percent occupying professional and clerical positions, the remaining 36 percent being shared by semi skilled, unskilled, skilled workers and guards. In Limbe, about 23 percent of the respondents were in the informal business sector and about the same number were unemployed. Of the respondents, 20 percent occupy professional or managerial positions. In other districts, 60 percent of the respondents were casual labourers and small scale businessmen with about 27 percent engaged in skilled and guarding jobs. As for age, 69 percent of the respondents in Limbe were in the 19 to 40 age group while in the other districts they were in the 20 to 52 age group with the majority at 60 percent being between 20 and 40. In Blantyre however the range was from 17- 67 age group with the majority being from 21 to 40 at 68 percent.

4.2.2 Length of Stay in the Surrounding Vandalised Transformer Area

The results show that 35 percent of the respondents from Blantyre have lived in the area between two to three years, about 40 percent have stayed between four and seven years while about 5 percent have stayed in the vandalized areas between 25 and 50 years. In Limbe, it was found that 23 percent of the respondents have stayed within the area of vandalized transformers between two and three years, while 26 percent have stayed in these areas for a period of four to seven years. Over 14 percent of the respondents have been residing in the vandalized transformer locality for over fifteen years. Findings from other districts, reveal that 53 percent of the respondents have stayed in these areas between three to six years while 27 percent have been there between seven and ten years. Just over 20 percent have stayed above 13 years.

4.2.3 Reason for Vandalising Transformer

The participants were asked to give a reason(s) for the vandalism of distribution transformers in an open-ended question. Twelve different issues were cited as reasons.

In Blantyre, 33 percent of the respondents named transformer oil as the main reason seconded by poverty at about 22 percent. Eight percent of the respondent felt the reason was unemployment while sabotage was cited by 5 percent and about eight percent were not sure of the reasons. While in Limbe 49 percent of the respondents believe that the main reason behind transformer vandalism is oil with 11 percent thinking its poverty. Unemployment was cited by about 9 percent while 3 percent cited sabotage. Savagery revenge and dismissal were each cited by about 3 percent of the respondents as reason for vandalism of distribution transformers. These findings agree mostly with the Blantyre one in the first two categories. Limbe findings, however, indicate sabotage is one contributing factor. Over 53 percent in other districts thinks the main attraction is oil while 13 percent claim not to know the reasons. About seven percent each thinks its poverty, jealousy and lack of civilisation. The full results are shown on figure 4-1.

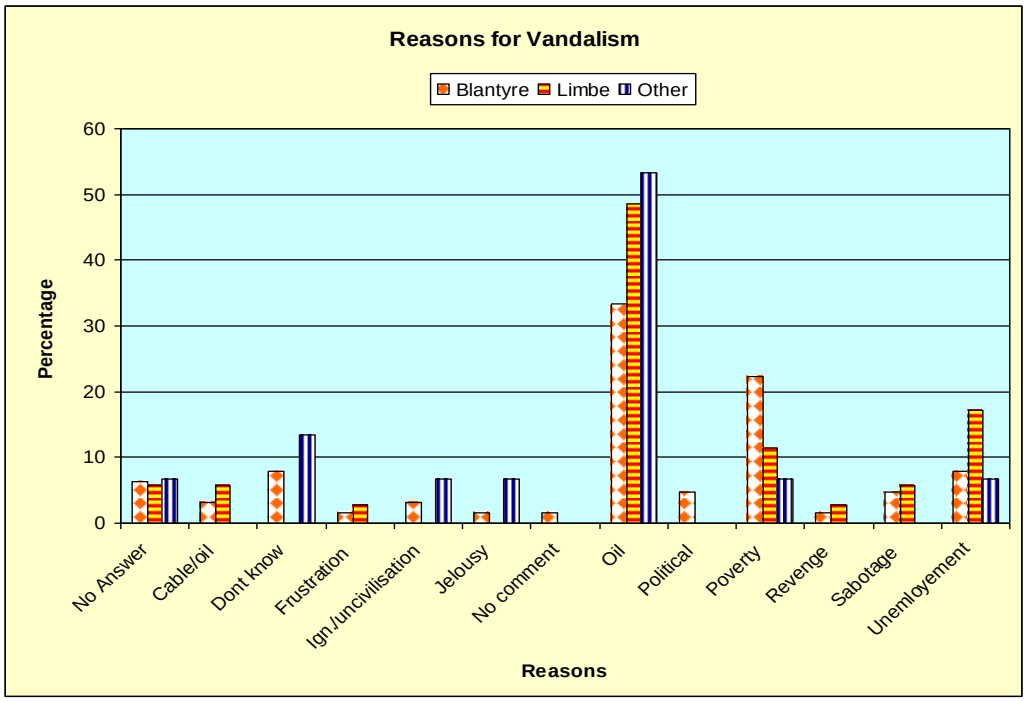

Figure 4-1 Reasons for Vandalism of Transformers

4.2.4 Time of Vandalism

The respondents were asked to recall what time of the day their particular transformer was vandalized. This was a semi-structured question, which aimed at knowing whether it was in the morning, afternoon, evening or night. The results, as shown in figure 4-2, show that, for Blantyre, about 92 percent of the vandalism happened at night followed by afternoon at 6.5 percent, evening at 2.6 percent while morning vandalism was at just above 1 percent. In Limbe, 83 percent of the transformers were vandalised during the night while 11 percent were done during the afternoon. No transformer was vandalised during evening as the remaining 6 percent were attacked during morning time. For the other districts 80 percent of the transformers were vandalized during the night with the remaining 20 percent destroyed during the evening. No transformer in the sample was vandalized in the morning or in the afternoon in these districts.

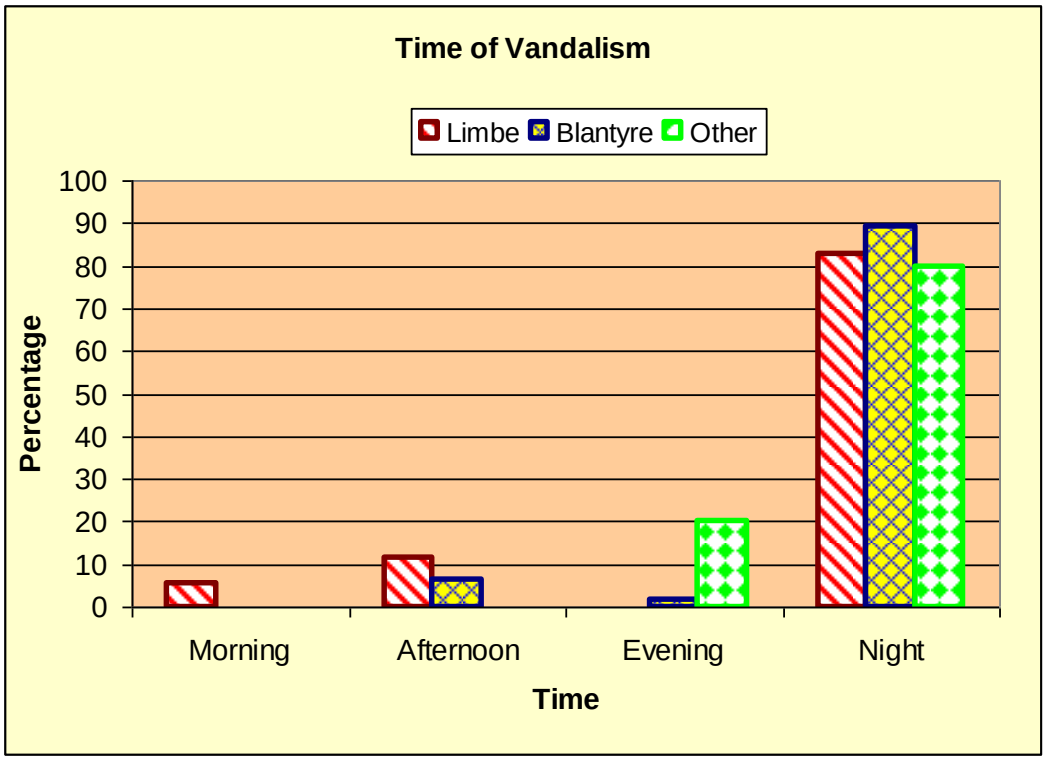

Figure 4-2 Time of Vandalism

4.2.5 Perpetrators of Vandalism

In the literature review it was argued that people who carry out these acts must have worked or are working in utilities that deal with electricity while others felt otherwise. The research therefore included this in its investigations through a semi-structured question needing at most two answers. Most respondents provided two answers. A combination of the two categories shows that almost 44 percent of the participants in Blantyre think former ESCOM employees are behind these acts. Businessmen are considered by 21 percent of the respondents as the ones involved in vandalism followed by just mere thieves at 17 percent. Only 13 percent of the respondents thought ESCOM employees are the ones responsible. The majority of the respondents in Limbe also feel former ESCOM employees are behind the vandalism of these transformers at 40 percent while 20 percent thinks it is actually employees of ESCOM themselves who do these things. However, others think mere thieves carry out these acts at 24 percent while 14 percent are of the view that Businessmen are responsible. According to the findings of this research, most of the people in the districts of Mulanje, Thyolo and Zomba also believe that former ESCOM employees are the ones who carry out these acts. This group is at 43 percent while those who think that ESCOM Employees themselves do that stand at 23 percent. Only 13 percent of the respondents believe that mere thieves are responsible. See figure 4-3 for full details.

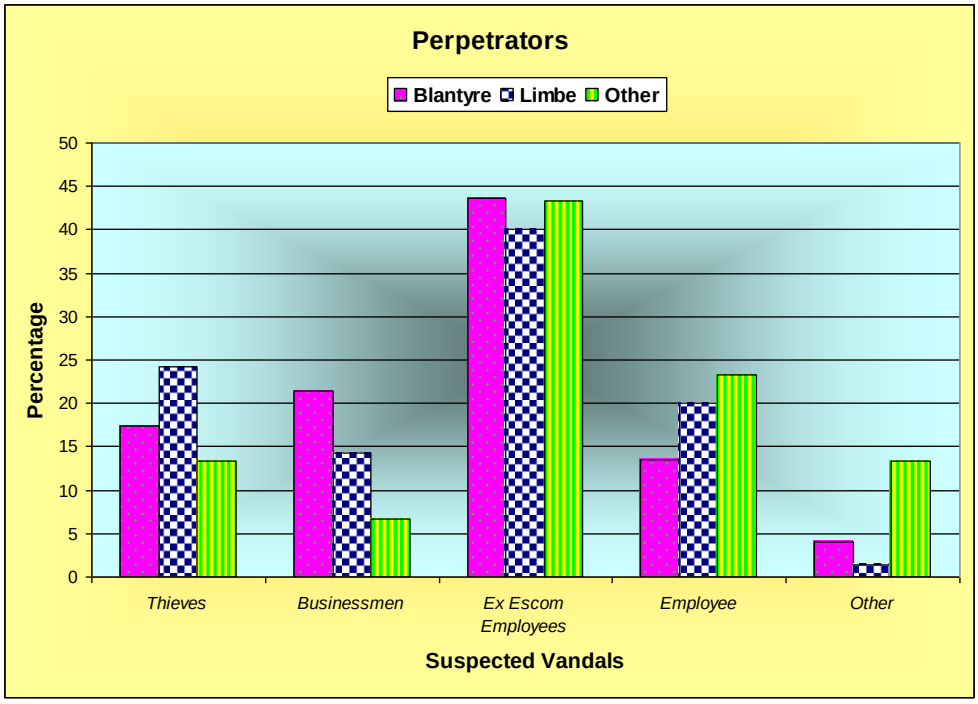

Figure 4-3 Perpetrators for Distribution Transformer Vandalism

The research wanted to find out whether the people who carried out the act of vandalism to their transformer were from within the area or were people residing from afar and just came for the act. This was a structured question. The results as presented in fig 4-4 show that about 79 percent of the respondents from Blantyre thinks that the people responsible for vandalism were not from within their areas. The people who believed that the people responsible were from within their areas were at 18% while three percent said were not sure. As for Limbe, 36 percent of the respondents believe they come from a far while 34 percent believe these acts were carried out by people living within their locality. However, 6 percent were not sure as to the originality of distribution transformer vandalism perpetrators. In the other districts, 47 percent of the respondents think these people are from far away. About 27 percent believe the perpetrators are not from their locality and further 27 percent are not sure. (See figure 4-4).

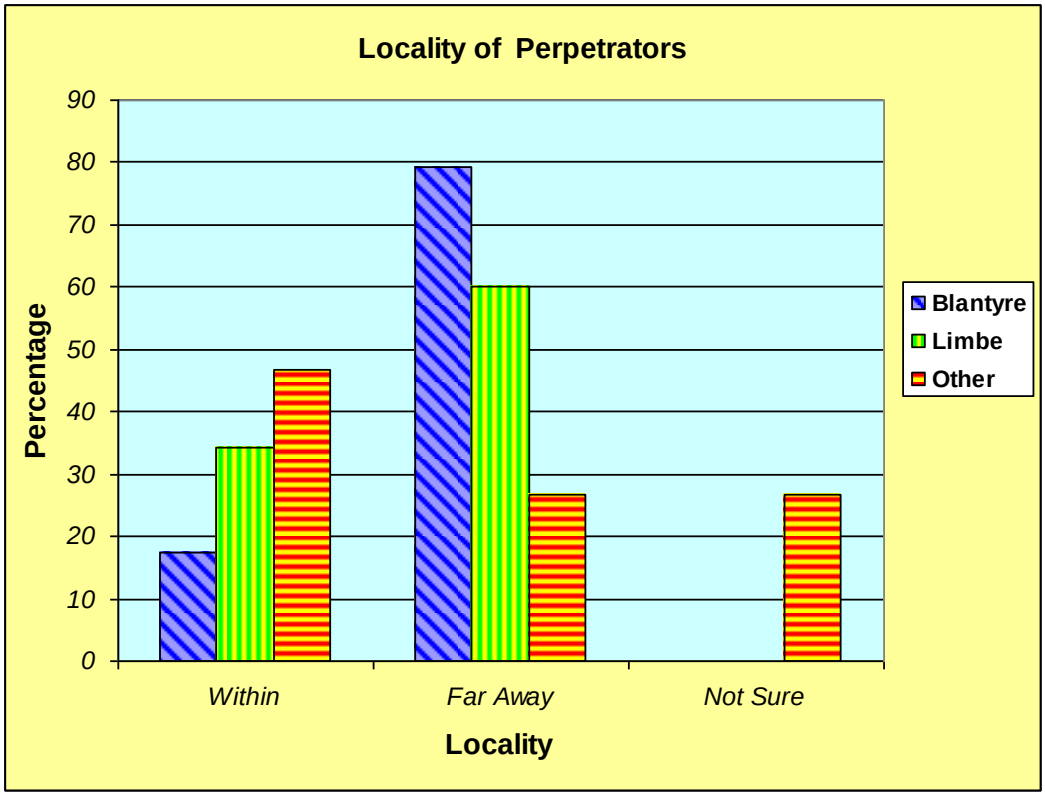

Figure 4-4 Locality of Perpetrators

4.2.6 Recollection of Incidents Surrounding the Vandalism

As presented in the previous chapter, there was an open-ended question which sought to probe more on the incidences surrounding the vandalism. The question was specifically requesting respondents to recall what happened during or before the damage of the distribution transformers. An analysis of the responses produced ten categories. Some respondents noted that the transformers were vandalised during blackouts in the area. Perpetrators took advantage of the dead transformer to carry out the act. These were coded as *damaged during blackout*. Some transformers were vandalized by perpetrators actually opening the high voltage fuses feeding the transformer hence making it dead and eliminating the danger of them being electrocuted. These were coded *opened HV fuses*. Some respondents just heard an explosion and then noted lights going off. These cases were coded as *lights off/Explosion.* In some cases respondents just noted that there was a power failure and were later told either by neighbors or ESCOM officials that their

distribution transformer was vandalized. These cases were coded as *blackout told later*. Other recollections were not making sense in relation to the questions hence these were coded as *Not valid.* In other area people noted abnormal oil spillage below or surrounding a distribution transformer and reported this to ESCOM. These were coded as *Noted oil below a transformer*. The respondents who opted not to provide any answer to the question were coded as *No Answer*. The cases in which the surrounding community saw people carrying bags or gallons coming from the transformer and later the transformer blew were recoded as *People with Bags/Gallons.* In other cases the respondents noted a blackout and later noted that a complete transformer was stolen. These were coded as *Transformer Stolen*. The last code was *Cut Fence* which represented incidents particularly of ground mounted transformers whose protection fence was discovered cut.

The findings from that question for Blantyre indicated that the greatest number of those who responded to the question reported that they had just noted the blackout and were later informed about the vandalism at 21 percent. The second group of respondents, 19 percent, actually heard an explosion and noted power going out while 13 percent saw people suspiciously coming from the victimized transformer earlier before the incident. However, the majority of respondents, 32 percent choose not to answer this question.

Findings from Limbe on the above indicate that most of the respondents (36 percent) experienced a power blackout and were later informed about the vandalism. The respondents that heard an explosion at the time of the blackout were at 19 percent while 11 percent noted people with bags and gallons around the transformer prior the incident. Nevertheless, 27 percent of the respondents never answered the question. The largest number of respondents in other districts actually heard the explosion as lights went off with a representation of more than 53 percent while 26 percent experienced the blackout and were later told about the vandalism. Six percent of responses were not valid. (Full findings are presented in figure 4-5).

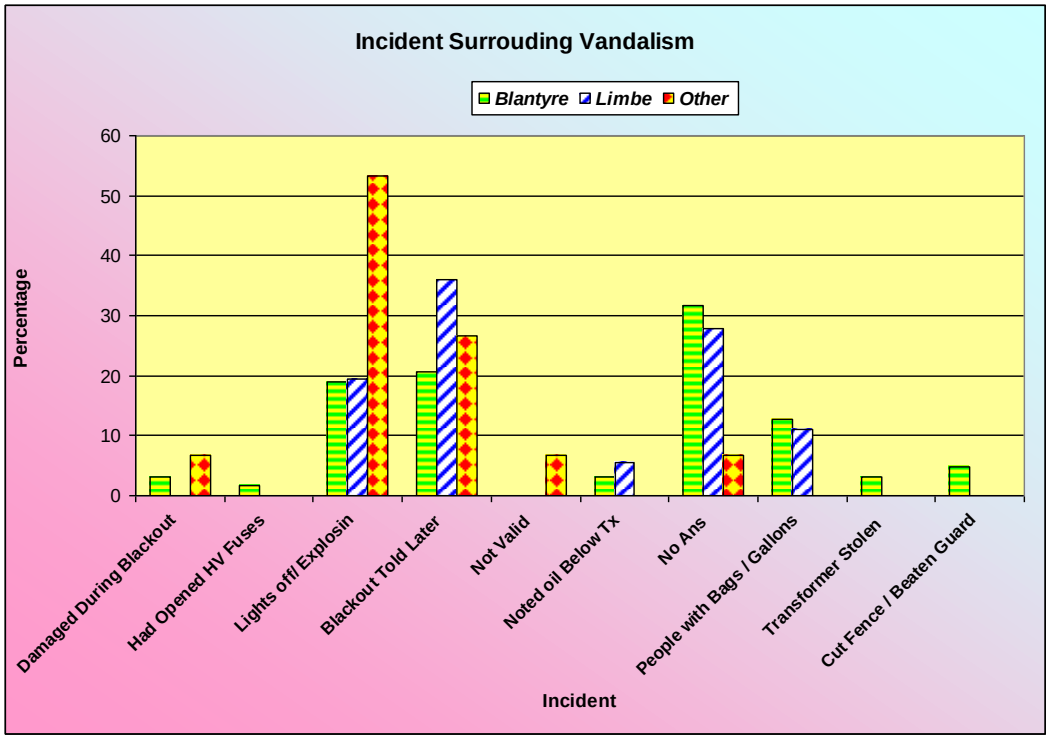

Figure 4-5 Incidents Surrounding Vandalism

4.2.7 Reason for Targeting the Transformers

Another open-ended question sought to examine what respondents thought were the main reasons their transformers were targeted. The analysis of the responses identified eleven categories of answers . The first group of respondents felt there was no other particular reason other than transformer oil. This group felt the many uses of transformer oil was the main reason their transformer were targeted. These cases were coded *Multi Use of Oil*. Another group did not answer to the question and hence they were coded as *No Ans. Don't know* was a code for some respondents who clearly stated that they did not know the reason their transformer was picked. For the respondents that felt the reason for targeting their piece of equipment was concealed from public scrutiny or was isolated were coded as *Isolated / Concealment*. The close proximity to the main road that afforded the perpetrators an easy opportunity to access the transformer and run away if confronted was another reason cited by some respondents. This was coded *Near Main Road.* The easy accessibility to the transformer coded as *Easy target* was another reason.

Other participants were of the view that the reason was unavailability of security hence the cases were coded as *No Security.* A section of the respondents thought that their transformer was targeted because it was in the rural area hence the members of the community surrounding it were not conversant with the importance of the piece of equipment. These were coded as *Rural location.* Finally there were responses that did not provide meaningful explanation to the question hence it was termed *Not Valid*

The findings from this question for Blantyre as coded per above format reveals that 31 percent of the respondents felt their piece of equipment was targeted because it was isolated and concealed from public scrutiny. Lack of security was cited by 27 percent while 13 percent thought it was the ease which the transformers could be vandalized that prompted the acts. However, another 13 percent of the respondents did not answer the question. In Limbe, the majority of the respondents (28 percent) feel their transformers were vandalized because there was no security. This is seconded by isolated/ concealed place and proximity to the main road as other major reasons, both at 22 percent. As in Blantyre a sizable number of respondents of 17 percent did not answer the question. While in the other districts most of the respondents, at 53 percent, felt their transformers were targeted because they were in isolated place and concealed from public scrutiny. The multi purpose use of transformer oil was the second most cited reason at 13 percent. Another 13 percent stated they did not know why their transformers were targeted

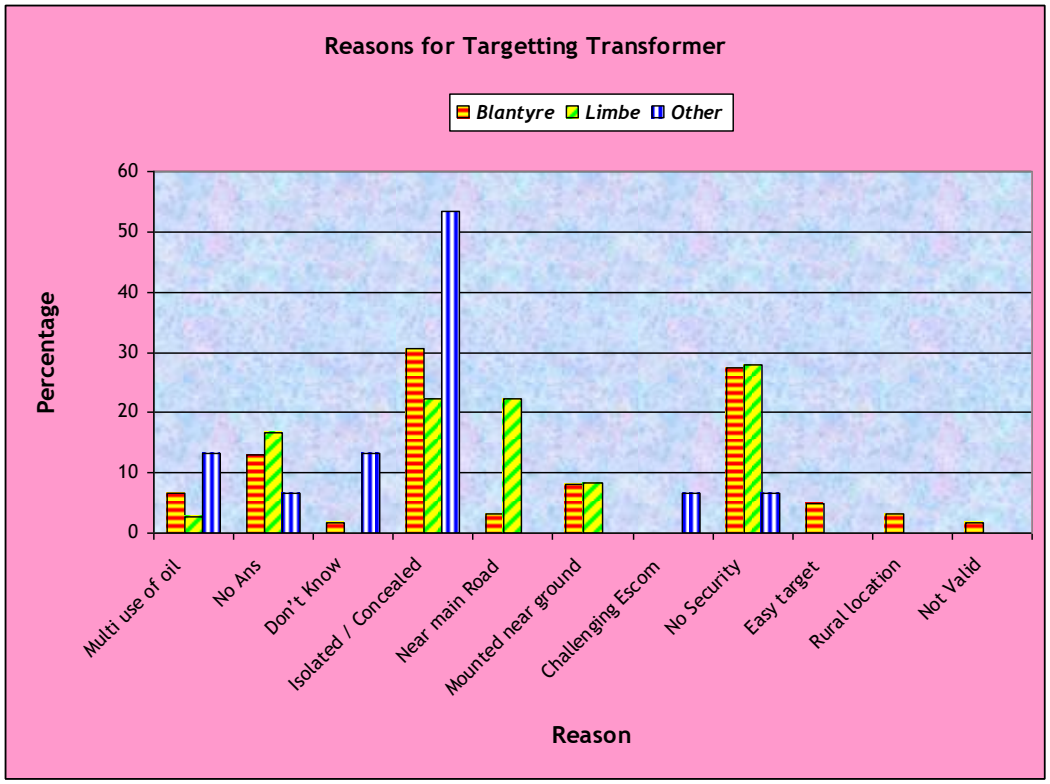

Figure 4-6 Reasons for Targeting Transformer

4.3 Physical Observations from Vandalised sites

4.3.1 Location and Structure Type of Vandalised Transformers

The research wanted to find out through observations the attributes of the sites where transformers were vandalized. The findings show that 91 percent of the vandalized distribution transformers in the other districts were pole mounted. In Blantyre 87 percent of the transformers that were vandalized were pole mounted while 77 percent of the transformers falling victim to vandalism in Limbe were mounted on poles as well.

Data collected physically by the researchers on the vandalized transformer cites shows that 68 percent of the vandalized transformers in Limbe were located in residential areas, the remaining being located in commercial areas. It was also established that transformers located in residential areas in Blantyre were the most vandalized at 65

percent followed by those in a trading area at 16 percent. In the other districts, 45 percent of the victimized transformers were located in areas other than the specified. Examination of these other areas shows that they are estates, farms and gardens. This is followed by trading centers at 27 percent. Figure 4-7 presents full findings.

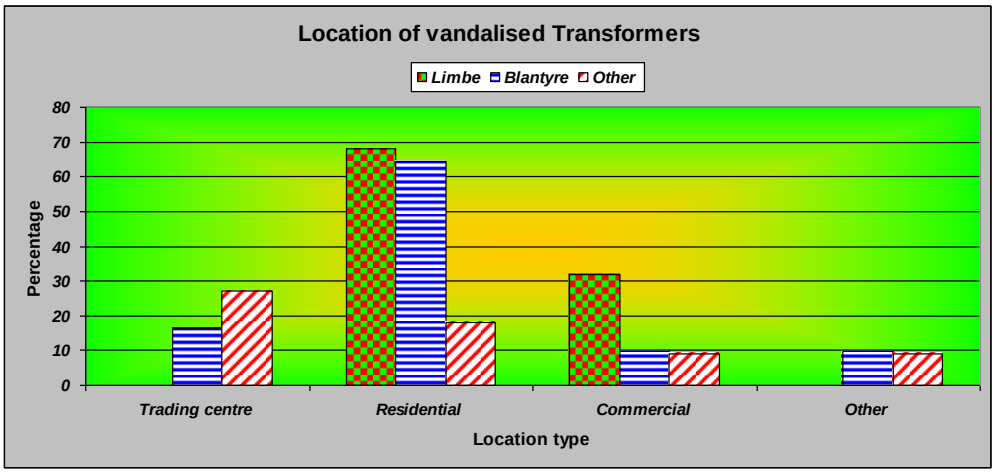

Figure 4-7 Location of Vandalised Transformers

4.3.2 Proximity to Roads and Premises

As to the proximity to the road it was established that 63 percent of the vandalized transformers, in the other districts, were within 100 metres from the road while 27 percent were between 101 to 300 meters from the nearest road. The distance from the nearest premises was also an area of investigation. It was found that about 45 percent of the vandalized transformers were within 100 metres from a building in the other districts and another 45 percent between 101 to 300m. Of the transformer included in Limbe 95 percent were within 100 metres from the nearest road while 100 percent were within 100 metres from the nearest premise. In Blantyre, 97 percent of the vandalized transformers are within 100 metres from the nearest road and 94 percent being within 100metres from a building. (See figure 4-8).

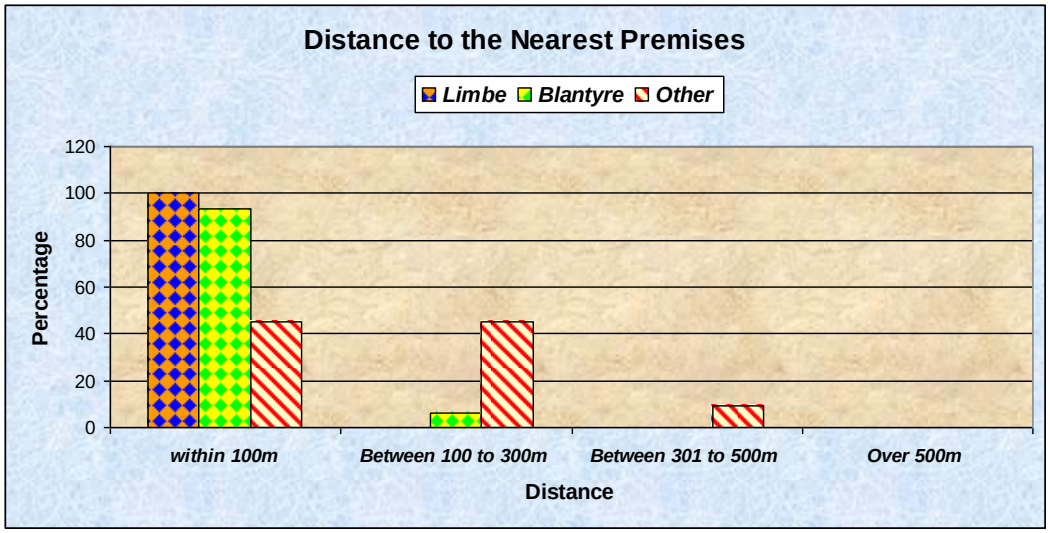

Figure 4-8 Distance to the Nearest Premises

4.3.3 Type of the Nearest Premises

On investigating what type of building is nearest to the vandalized transformer, it was found out that 73 percent were near a dwelling premises in Limbe while 9 percent were near a factory. While in Blantyre it was about 55 percent which were near a dwelling houses followed by trading premises at 26 percent. However in the other districts transformers near dwelling house were at 36 percent seconded by premises other than those listed at 27 percent.

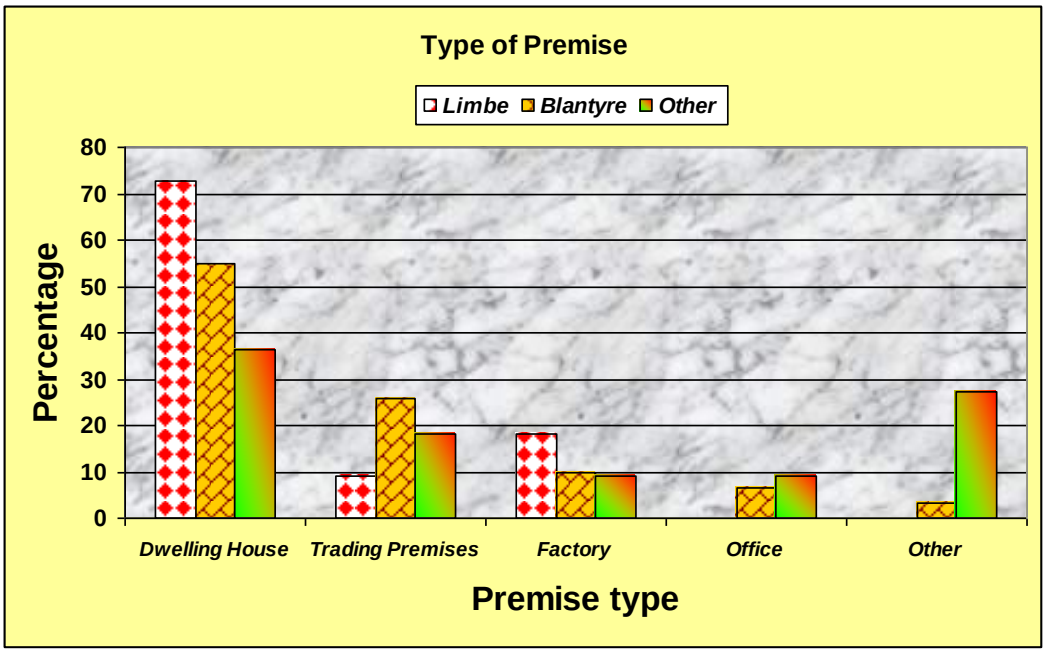

Figure 4-9 Type of Premise

4.4 Findings from Key Respondents

4.4.1 Characteristics of Sample

The sample consists of 46 percent ESCOM officials and the rest being members of Malawi Police Service. The Investigation specialty comprised 64 percent while 18 percent each were from maintenance and prosecution. From the 64 percent of the investigation specialty, 27 percent were from ESCOM and the remaining 36 percent from Malawi Police Service. The key informants years of experience's ranges from three to thirty.

4.4.2 Reason for Vandalism

From these key respondents, 27 percent of felt the underline reason is to get income while 18 percent thought it was for the oil and another 18 percent were of the view that it is

because of oil and the cables. Availability of oil market, poverty, unemployment, poverty and ignorance were each mentioned by 9 percent of the respondents.

4.4.3 Perpetrator –Their Age, Social status and Motivation

About 56 percent of the respondents said the perpetrators are in the 19-30 age bracket while 27 percent said perpetrators were in the 15-30 year age bracket. The respondents who felt that the people involved in vandalism are very poor were at 36 percent while 46 percent said they were poor. Nine percent stated that the perpetrators were less poor. In responding to a question seeking to find the motive behind the act several answers were provided. Those who said it was to earn a living were at 18 percent, income another 18 percent, while oil for money was a response for 36 percent of the respondents. Another reason given is poverty.

Of these respondents, 73 percent graded the perpetrators of vandalism as lowly educated while 18 percent said the perpetrators were fairly educated. Their technical knowledge was another area of interest. The respondents able to answer this question were the ones involved with maintenance. All respondents stated that the perpetrators had fair technical knowledge.

4.4.4 Conviction of Offenders

Those key respondents involved with prosecution were asked to state their view on the success of conviction on cases of vandalism. They were further requested to comment on the reason if they viewed the level of conviction as being less than satisfactory. Hundred percent of the respondents said the conviction status was less than satisfactory. Thus 50 percent said it was fairly satisfactory while the remaining 50 percent viewed it as being less satisfactory.

The reasons cited for this status were that magistrates and prosecutors do not fully comprehend the seriousness of the cases or damage caused by these acts. They believe this is caused the sidelining of these arms during sensitization campaigns. Other prosecutors thought there were no proper sections in the penal code that cater for vandalism offences.

4.5 Summary of Findings

4.5.1 Community

4.5.1.1 Reasons for Vandalizing Transformers

Most of the respondents, 57 percent, think the people do this because of wanting oil and poverty, while 7 percent think its because of unemployment. The majority of the respondents think that their transformers were targeted because they were either isolated and concealed from public scrutiny or there was no security at 31 percent and 24 percent respectively.

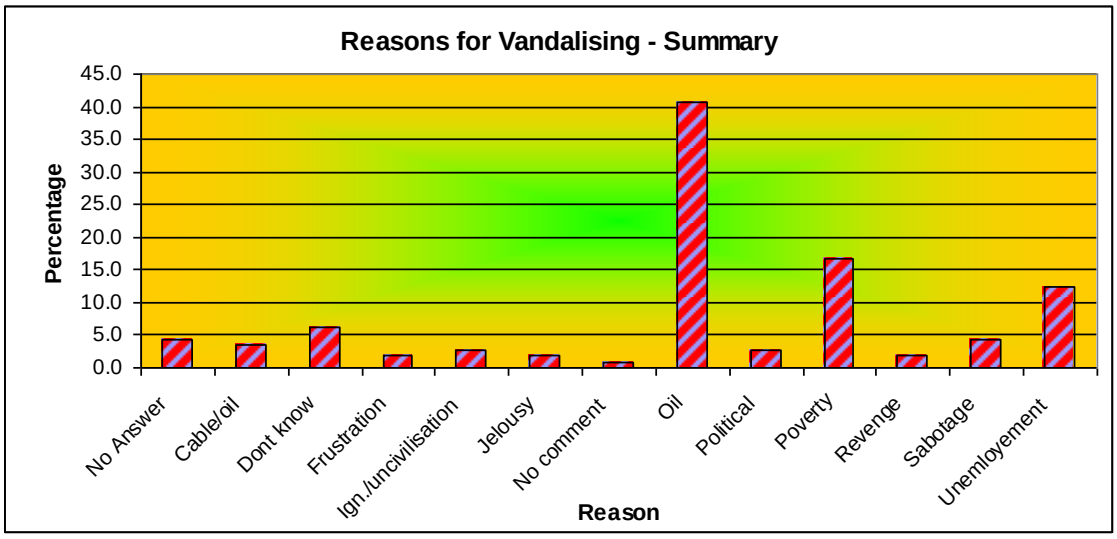

Figure 4-10 Reasons for Vandalising Transformers

4.5.1.2 Time and Perpetrators

The majority of the respondents from the community are of the view that former ESCOM employees are behind the vandalism at 42.5 percent. Thieves are thought to be responsible by 19 percent of the respondents while businessmen and ESCOM employees are third and fourth respectively. Full findings are presented on tables 5 and 6 below.

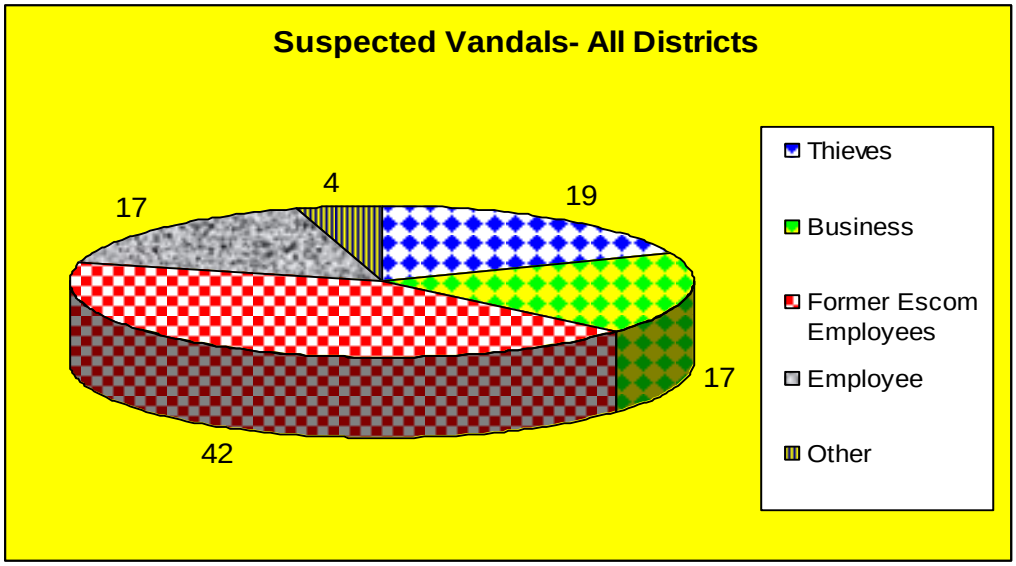

Figure 4-11 Suspected Perpetrators

The majority think that 66 percent of the time a transformer is vandalized the people involved have traveled from far and only 27 percent of the time do the people come from within. Night occurrences of vandalism were at 86.7 percent while 7.1 percent occurred in the afternoon. Mornings are least likely to have vandalism take place at 1.3 percent.

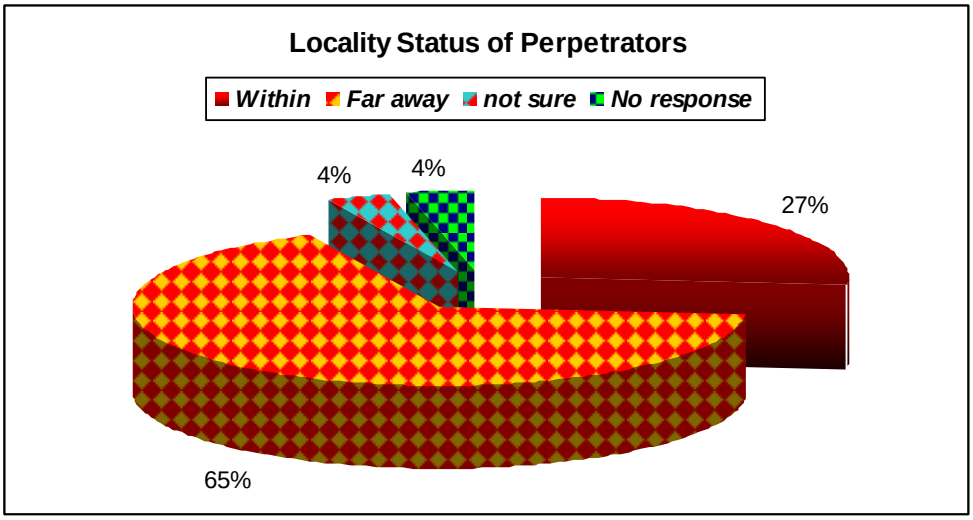

Figure 4-12 Locality Status of Perpetrators

4.5.1.3 Reason and Incidents Surrounding Vandalism

Most of the people at about 27 percent just noted a blackout and were later told about the vandalism. The respondents who actually heard an explosion when the power was going out were at 24 percent. About 11 percent of the respondents actually noticed people with bags moving from the transformer direction. Most transformers were vandalized because they were isolated and concealed from public scrutiny at 31 percent. Of the respondents, 24 percent feel there was no security accorded to the transformer hence their being targeted. The multi purpose use of oil was cited as the reason by six percent of the respondents while 13 percent never responded to the question.

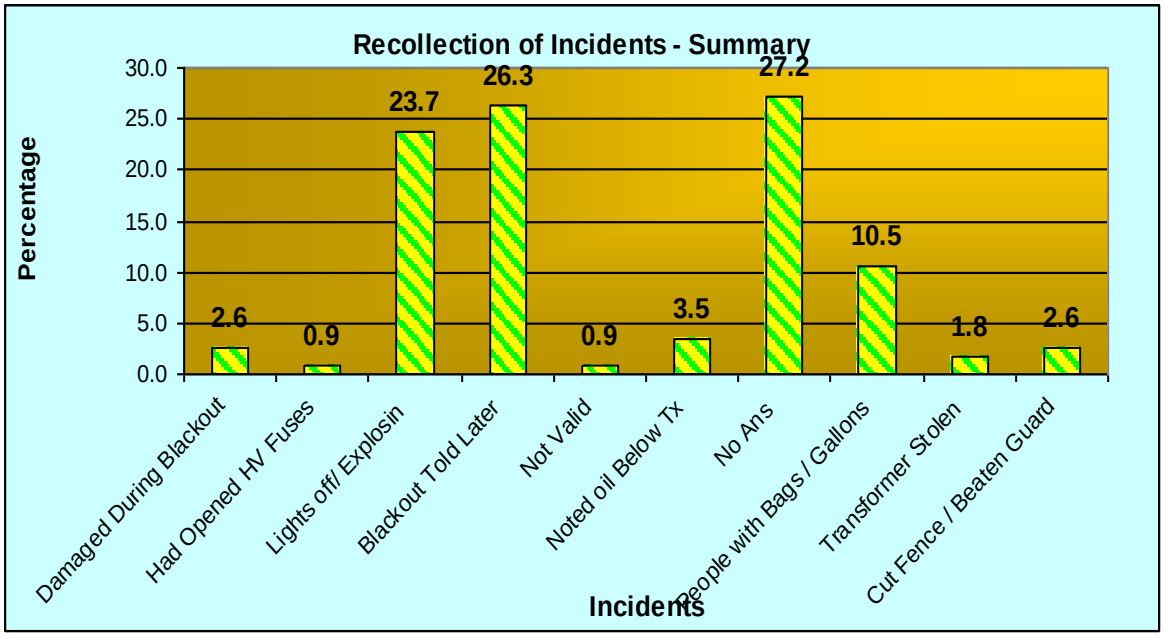

Figure 4-13 Incidents Surrounding Transformer Vandalism:

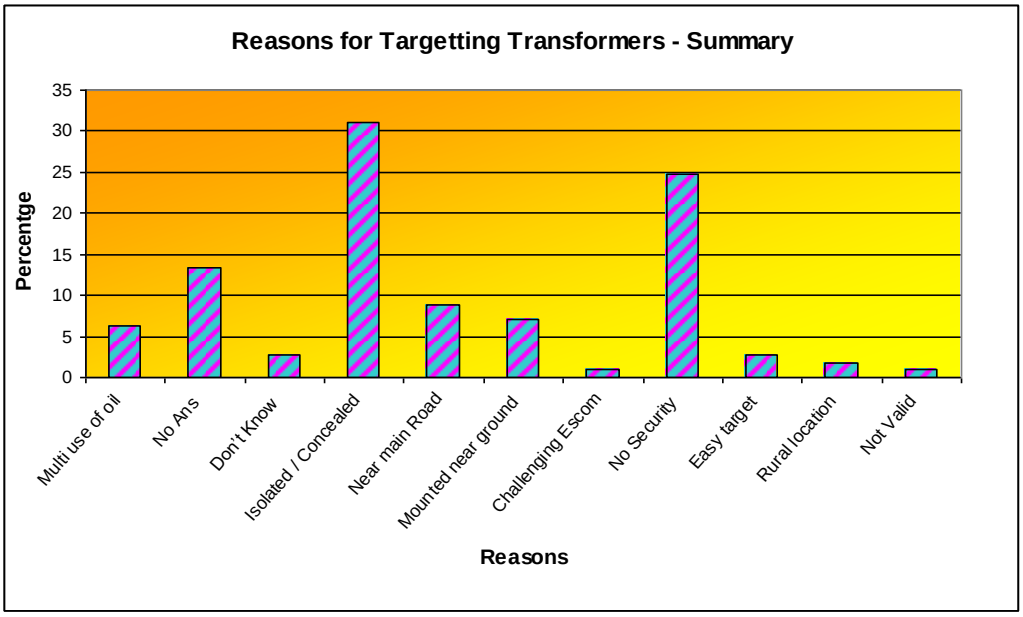

Figure 4-14 Reason for Targeting the Transformer

4.5.2 Physical Observation

Most of the vandalised transformers, 57 percent, were located in residential areas seconded by those located in commercial centers at 17 percent. Dwelling houses are the most common type of premises near vandalized transformers at 57 percent. Pole mounted transformers were the most vandalized at 84 percent.

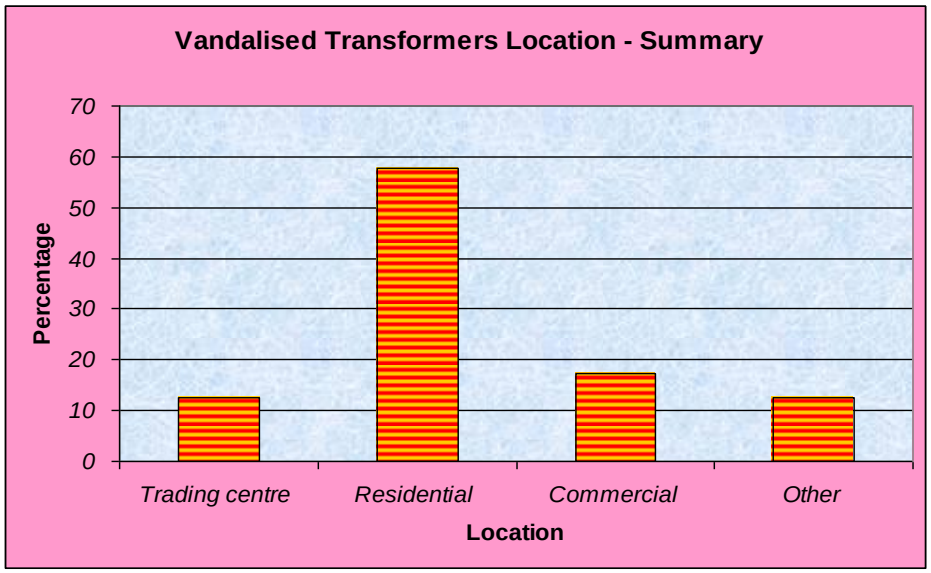

Figure 4-15 Location of Vandalized of Transformer.

About 91 percent of the vandalized transformers were within 100 metres from a road and 88 percent were also 100 metres away from a building. About 11 percent were near a building that was between 100 and 300 meters away.

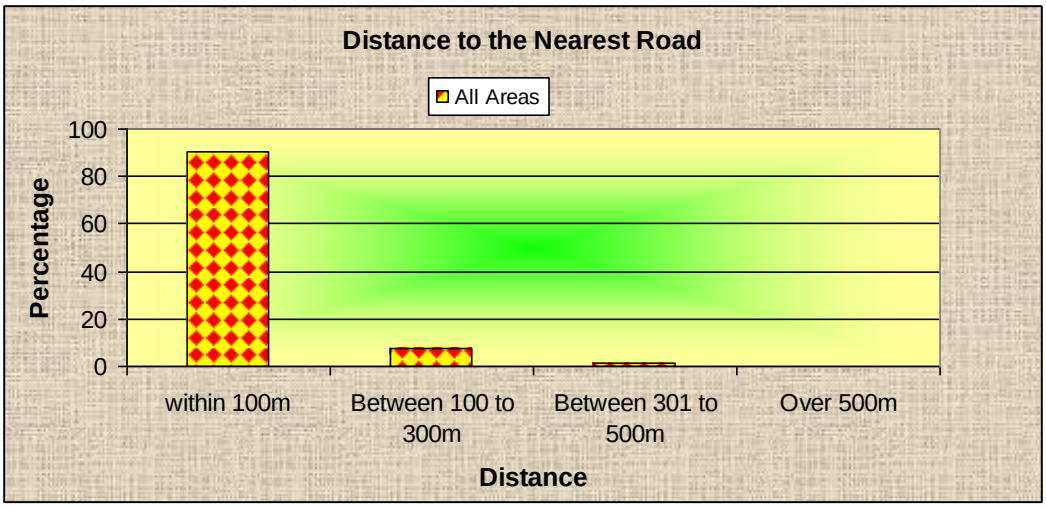

Figure 4-16 Proximity to the Road

About 90 percent of the vandalized transformers were near a building and close to 60 percent of these buildings are dwelling houses. These are seconded by trading premises that is close to 20 percent. Only about 10 percent of the vandalized transformers were between 101 to 300 metres to the road.

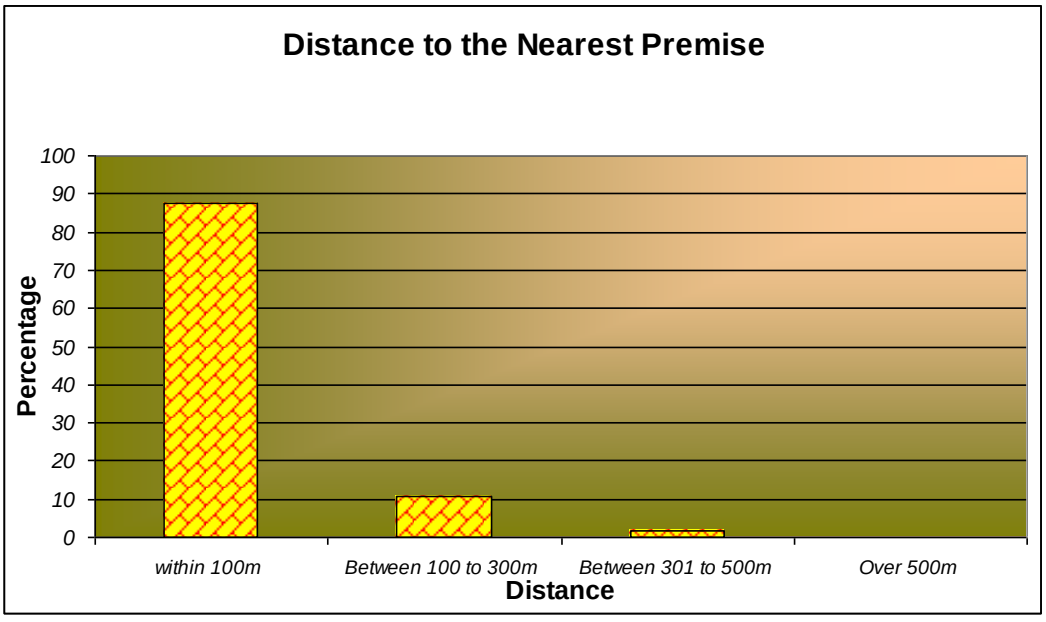

Figure 4-17 Proximity to a Building

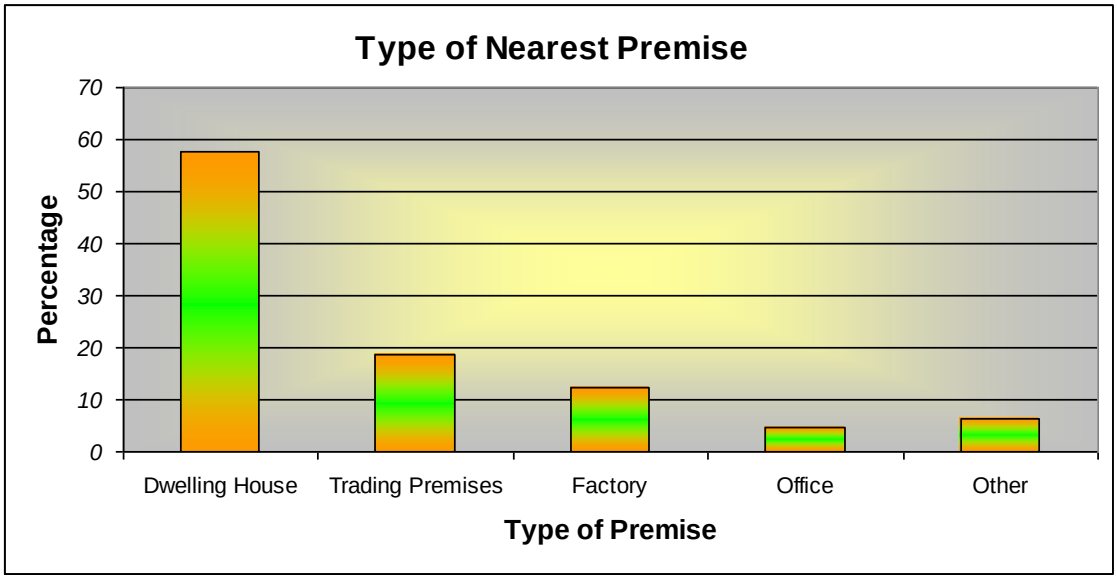

Figure 4-18 Type of Nearest Premise

4.5.3 Key Respondents

4.5.3.1 Perpetrators, Social Status, Knowledge and Motivation

The majority of the key informants, 75 percent, state that the perpetrators of vandalism are lowly educated while 16 percent think they are fairly educated. The key informants from the maintenance specialty were requested to give their opinion on the level of technical knowledge available to the perpetrators of vandalism. All of them, 100 percent, felt the people involved have a fairly technical knowledge.

Most key informants are of the view that the perpetrators of vandalism were either poor or very poor at 83 percent. Thus, 41.7 percent each, stating poor and very poor, as the level of economy on the part of the perpetrators. The motives of the act are seen as earning income at 25 percent. Earning a living is another factor cited at 16 percent. However, most respondents felt it was to get oil to sell. This was stated by 33 percent of the respondents.

4.5.3.2 Deterrence

The key respondents particularly those from prosecution were requested to comment on the level of secured conviction in courts. All of them were not satisfied with the current levels of conviction in the country. They view that the laws need to be strengthen and presiding magistrates and prosecutors to be sensitized in the seriousness of the offence and repercussions to the nation. They note that while efforts have been done in sensitization in the arms of investigations and community in order to apprehend culprits, all this ends up in courts. The court system must therefore appreciate the level of seriousness of the offences for appropriate punishment to be applied to convicts. The research established, however that there is a new Electricity Act that was passed by Parliament and stipulated stiffer punishments than currently being applied. The Act however is not operational because of other logistical problems.

Those in maintenance of vandalized transformers cited weak specification of the most targeted parts. They view improper equipment specification as one reason contributing to the problem.

4.5.3.3 Police Information

Information obtained from Police shows that from five people convicted in these districts, 80 percent were in the 20-29 age bracket. All crimes occurred between 11p.m and 3.00 am. The sentences ranged from MK2,000 fine to 60 months custodial sentence. Other information outside the research period reports of a team of people that were caught at Namadzi traveling to Blantyre from Zomba direction. Investigation revealed that the team carried out vandalism at Domasi in Zomba but the team reside in Blantyre around Limbe area.. The Police were led to several sites within and outside Blantyre where this team had successfully carried out those acts before.

4.6 Chapter Summary

The majority of the respondents from the community are of the view that former ESCOM employees are behind the vandalism at 42.5 percent. 19 percent of the respondent think thieves are the one responsible while businessmen and ESCOM employees are third and fourth respectively. They think 66 percent of the time a transformer is vandalized, the people involved have traveled from far and only 27 percent of the time do the people come from within. Most respondents, 57 percent think the people do this because of wanting oil and poverty while 7 percent think its because of unemployment

Most respondents also think that their transformers were targeted because they were either isolated or concealed from public scrutiny or there was no security at 31 percent and 24 percent respectively

Chapter Five

5.0 Discussions of Findings

5.1 Introduction

This chapter discuses the findings of the research. It focuses on reasons for vandalizing transformers, perpetrators, time and influencing factors for targeting the transformers, physical attributes and location, responses to miscellaneous questions and other information and finally summarises the chapter.

5.2 Reasons for Vandalizing Transformers

As per figure 4-1 and figure 4-10 above, oil, poverty and unemployment tops the list of reasons for transformer vandalism. Oil and poverty may be classified in one group, while unemployment can be looked at in another manner.

This research found that oil is targeted because of its multi purpose use and hence readily available market for conversion to cash. Looking for cables is another reason that provides cash. Poverty is linked to people not able to acquire their basic needs. It follows therefore that this was cited as the people involved need to get money for their basic needs. In taking this line of approach it is noted that a combination of poverty, oil, and cables is in the acquisitive type of vandalism according to Cohen (1973). These findings therefore show that acquisitive vandalism was cited by about 61 percent of the respondents from the community. This is supported by the findings from key informants who view source of income as the main motivating factor. In general terms it is implied that 61 percent of the respondents view poverty as the main reason. It is interesting to recall that the Integrated Household Survey established that the Southern Region of Malawi has the highest poverty prevalence than all other regions (PMS policy brief,

2000). The available figures also shows that SES had the highest number of vandalized transformers during the period of study (ESCOM Distribution July 2005)

Before concluding that poverty is the main reason for vandalizing transformers, it is pertinent to recall however, that the literature review established that transformer vandalism is rampant in major cities such as Dar es Salaam in Tanzania, Lusaka in Zambia, Harare in Zimbabwe and Jinga in Uganda. Malawi's major cities are Lilongwe, Blantyre and Mzuzu. The Integrated Household Survey, however, indicates that urbarn poverty does not follow the general trend in regional terms such that cities in Central and Northern Regions have higher poverty prevalence rate than Blantyre and Zomba. In fact Lilongwe has the highest prevalence of poverty. However, Lilongwe had 19 vandalised transformer within the same period while Mzuzu had only 2. These findings, therefore imply that while poverty is a contributing factor it may not be the major reason for vandalism of transformers.

Unemployment can be looked at from two perspectives. The first perspective is of one trying to get income from the proceeds of the acts as they have no way of getting an income. This perspective can therefore allow unemployment to be viewed as acquisitive vandalism and is taken care in above. Another view is that the people who are unemployed are in such a situation because they lost their jobs with ESCOM in one way or the other. If looked at in this way, an attitude of anger comes in. One becomes angry that the situation of unemployment has come because ESCOM caused it. This then becomes mainly vindictive vandalism. This can therefore be considered together with revenge/sabotage and frustration. These three add up to about 20 percent of the respondents implying that it is vindictive vandalism. The people who would engage in this type, logically, maybe those who have been associated with ESCOM. They may either be disgruntled employees or former employees. This view is supported by the findings from the community who, 42 percent, view that people doing the act either once worked for ESCOM.

It is interesting to note that very few respondents viewed the vandalism as political or sabotage as a combination of these were only shared by about 7 percent.

5.3 Perpetrators

The literature review established that crime occurs where there are activity nodes and pathways of high risk population. In this case high risk population are the perpetrators of transformer vandalism. It is being argued that the vandalism incidents are high in the SES because this region has high presence of perpetrators. About 60 percent of the respondents from members of the community feel that the people behind these acts either once worked for ESCOM or are working for ESCOM currently. This seems to augur well with the information from key respondents who assert that the perpetrators have fairly technical knowledge but are lowly educated. It should be noted that the Headquarters of ESCOM is located in SES's geographical area and so are all the major generating power stations. This makes SES have the highest concentration of workers conversely labour turn over. In addition, Blantyre is the commercial city of Malawi, making it a home to more people with fair technical knowledge, who, should an opportunity arise, may become perpetrators of vandalism.

Another section of the community view the perpetrators as business people and mere thieves at 36 percent. When approaching the subject as those involved are just other people with the main motivation of doing business, it is brings in an elements of criminology. Thieves steal to sell and make money hence can distinguish themselves as businessmen when they are disposing the stolen property. Legally, business cannot be conducted over stolen items hence referring the perpetrators as businessmen is not correct. Therefore, this section of the community was portraying the message that the perpetrators are just another criminal section of the society that is interested to make money. They may not necessarily have been associated with ESCOM earlier on. By identifying them as thieves it implies that they are people who rely on theft and it is their habit. This fact is supported by the findings that the perpetrators, in most cases, do not stay within the locality where they carry out their acts.

While other studies have identified teenagers as the main culprits of vandalism, This research finds the late teens to early thirties is the age group most involved. This further underscores the motive of the vandalism, which is acquisitive.

What is coming out clear from the above is that the high risk population are the people with fair technical knowledge and are assured of converting the vandalized item into money. Key respondents view them as either poor or very poor (at 83 percent) and are motivated by money, 74 percent. (Thus, a combination of earning a income, earning a living and oil for sell).

5.4 Reasons and Time for Targeting the Transformers

Most respondents (31 percent) feel that the transformers were targeted because they were isolated and concealed from public scrutiny. However, the findings show that 90 percent of the vandalized transformers were within 100 meters to the nearest road, and over 80 percent were within 100meteres to the nearest building. This shows that most sites are open to the public. Nevertheless, the argument makes sense when we note that 87 percent of the vandalism is done at night. This is the time where roads are deserted and people are asleep. The sites are then out of public scrutiny. It must be noted further that most of the transformers that were vandalized in the afternoon were from estates. This time too is when the estates are deserted offering an opportune time for the activity. This point further agrees with 25 percent of the section that stated no security as the reason why the transformers were targeted. These responses basically are articulating one point which is the absence of capable guardian. From these results, it is therefore noted that 51 percent of the respondents view absence of capable guardian as a major contributing factor to vandalism of transformers. These findings agree with Newman (1972) that crime is high in places which are isolated from public scrutiny.

Some respondents, 18.6 percent, were of the view that the transformers were targeted because it was easy to do so as either they were near the road or they were ground

mounted. While the issue of proximity to the road may not be easily dismissed, the findings do not support the reason of ground mounting as key. The results shows that over 90 percent of the vandalized transformers are pole mounted hence, dismissing the ground mounting argument.

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5.5 Locations and their Physical Attributes

As noted earlier in figure 4-16, over 90 percent of the vandalized transformers are within 100 metres from the nearest road. While this attribute, as viewed from the Defensible Space theory perspective, may assist in reducing vandalism, it is not effective for distribution transformers. Vandalism is reduced in daytime as seen in figure. 4-2 while at night, the proximity to the road is an advantage to the perpetrators. In line with the physical design and kinetic management theory, the proximity to the road offers the shortest route and makes the perpetrators spend little time to accomplish their goal.

Most victimized transformers, 87 percent, are within 100 meters of the nearest building. The majority of the buildings, 57 percent, that are within 100 meters from vandalized transformers are dwelling houses. Most transformers vandalized are located in residential, commercial and trading areas. These are places which are most frequented by different people for different reasons. These are activity nodes and pathways as a lot of activities take place in these areas. These findings agree with Felson, (1979) and Brantingham and Brantingham (1981). The perpetrators therefore find it easy to plan in sinister activities in daytime in the course of doing their other normal activities. The fact that transformers are vandalized at night near dwelling houses shows that there is lack of capable guardian. A lot of dwelling residents do not have watchmen and those that have the watchmen may not feel obliged to guard the transformers. However, it is interesting to note that while, residential, commercial and trading areas are found in all cities and town, these acts are prominent in specific locations. This observation supports the fact that apart from the location physical attributes, there is another contributing factor. This factor is the presence of high risk population in these areas. These findings therefore

support the pathways theory that crime happens on pathway and activity nodes where there is presence of high-risk populations.

5.5 Responses to Miscellaneous Questions and Other Information

The findings show that the surrounding community either hears an explosive noise during the going out of power or just noted power failure. They do not immediately recognize that the transformer supplying them has been vandalized until competent people inform them. This happens more than 50 percent of the time. Ten percent of the time people have been seen around the victimized transformers but are never confronted by the surrounding community members. This is due to the assumption that the said people are on duty. It is also worth noting that 3.2 percent of the respondents from the community, confirms that whole transformer was stolen. ESCOM officials confirmed this claim.

Information accessed in the research shows that perpetrators are in the 20 –29 age bracket and are capable of traveling longer distance to commit these vandalism acts. They go to different sites and the punishment handed over by the legal system is not deterrent enough.

5.6 Chapter Summary

In the discussion and analysis in this chapter, it has been observed that the major motivation to vandalism is the need for money. However, poverty alone cannot be the explanation as some areas with high poverty prevalence rate have low vandalism incidents. The perpetrators, who are in the age bracket of 20-29 act in organized groups and often travel far from their residential places. Transformers in places where there are more activities are likely to be vandalized than other.

Chapter Six

6.0 Conclusions and Recommendations

6.1 Introduction

This chapter draws conclusions from the findings of this study and makes recommendations. The recommendations include areas for further research.

6.2 Conclusions

6.2.1 The main reasons for Vandalizing Distribution Transformers

This study has established that distribution transformers are vandalized mainly for their oil, which has got many uses and is easily converted into cash at the black market. This is done by people who have fair technical knowledge of how transformers work. These people mostly do not leave within the surrounding of the victimized transformers and have organized groups. While poverty is a contributing factor, the perpetrators are habitual thieves living on illegal business. There is a more ready market for the vandalized items such that the products of vandalized transformers infiltrate the system without trace.

The practice is further encouraged because of seemingly lenient punishment handed out by the courts. While a lot of sensitization has been done to the members of the public and some sections of the police service, some departments such as the prosecution and the judiciary itself have not received much of it. As asserted in the rational choice theory, the offender decides to risk breaking the law after considering his or her own needs. They weigh the chances of getting caught, and if caught, they weigh the expected

punishment and the value gained in vandalizing transformers for cash. The current scenario provides more gain to the offenders in vandalizing the transformers.

Due to the level of the technical knowledge they posses, it is more likely that the people involved must have worked, or some are still working, for ESCOM. This however has not been proven in this research

6.2.2 The Relationship between Transformer Location and Vandalism

The findings have shown that most of the transformers that are vandalized are located in activity nodes. These activity nodes are residential areas, commercial areas and trading areas. In addition to the above attributes, these locations have high presence of people capable and motivated to carry out vandalism. In other words they contain high risk population. In Malawi, Blantyre has the highest rate of high risk population in terms of transformer vandalism. Their pathways include many active districts in the southern region. Transformers that are nearest to a road and are located in residential or commercial areas are more prone to vandalism than any others. Further to those attributes, distribution transformers that are in concealed places are more vulnerable to vandalism.

6.3 Recommendations

6.3.1 More Sensitization Particularly to Judiciary and Prosecution

Since distribution transformers are more scattered, the most effective provision of capable guardian is by multi sector approach. Sensitization on the evils of vandalism should be enhanced and on going. Crucial stakeholders such as the Prosecution Department of the police, Judiciary, particularly the magistrates should not be over looked. There should be a general agreement on what sections of the law to be applied in

dealing with cases of vandalism in general and distribution transformer vandalism in particular.

6.3.2 Application of Stiff Punishment

The current laws pertaining to punishments to convicted offenders on distribution transformer vandalism must be reviewed and amended to reflect the seriousness of the matter. It should recognize that electrical installation in general and distribution transformers in particular play a vital role in the economy of the country. Their deliberate destruction of distribution transformers should be viewed as an act of sabotage to the state. Punishments of a fine of MK2,000 surely is not deterrent enough on crime of this nature.

6.3.3 Regulation of the Market Particularly Oil, Cables and Scrap Metals

The market for the illegal materials coming from vandalized transformers must be choked. This will make the practice without incentive and hence divert flow of likely offenders to other activities. This can be achieved by properly regulating the market for scrap metals, oils and other related material. Minimum standards of compliance on these items coupled with proof of where they were obtained can be a good starting point.

6.3.4 Restriction in Imparting Knowledge

ESCOM should ensure that knowledge pertaining to its operations be restricted to trust worthy and long term employees. Employees who the organization is aware are engaged on short term basis should not have sufficient technical knowledge to vandalise distribution transformers.

6.3.5 Development of Close Ties with Customers

ESCOM should develop more close ties with its customers. When a transformer is vandalized the customers also suffer and it is in their interest that this does not happen. Customers should always be aware of what is happening to their transformer through proper screened communication. This will empower customers to identify and confront those vandals who would want to pose as its employees.

6.3.6 Areas for Further Research

Further studies can be conducted to establish the impact of vandalizing distribution transformers to third world economy countries. This may focus on both the economical and social impact that vandalism of distribution transformers cause.

Chapter Seven

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Appendix 1 Detailed Findings - Figures

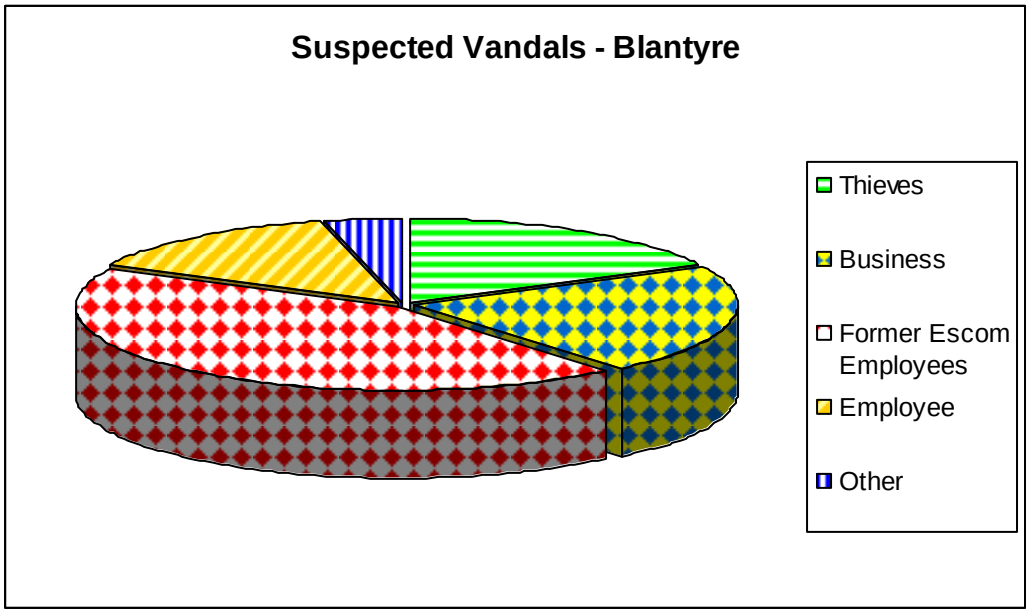

Figure 7-1 Suspected Perpetrators for Vandalising Transformers-Blantyre

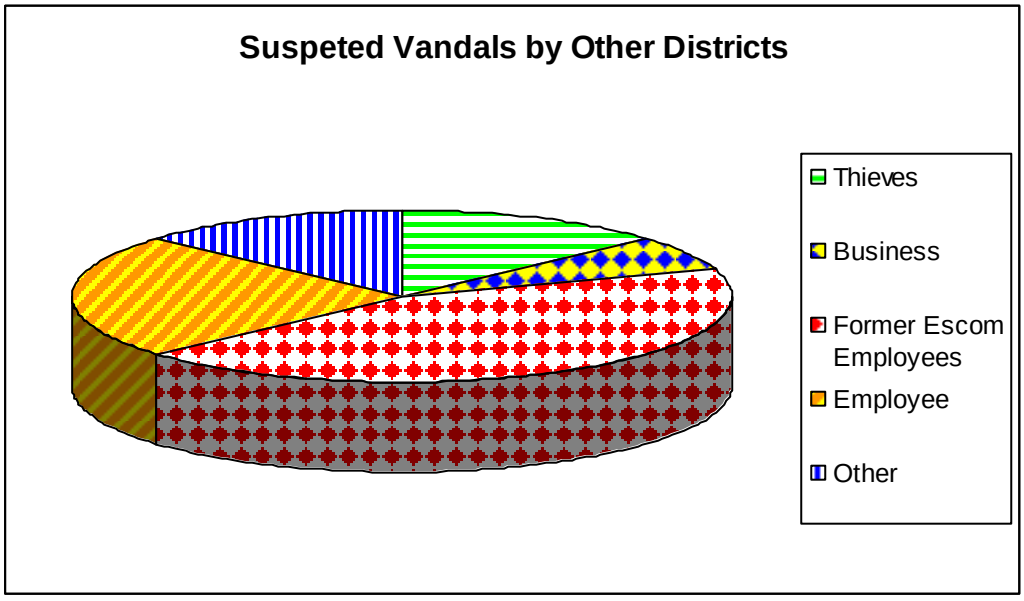

Figure 7-2 Suspected Perpetrators for Vandalising Transformers-Other Districts

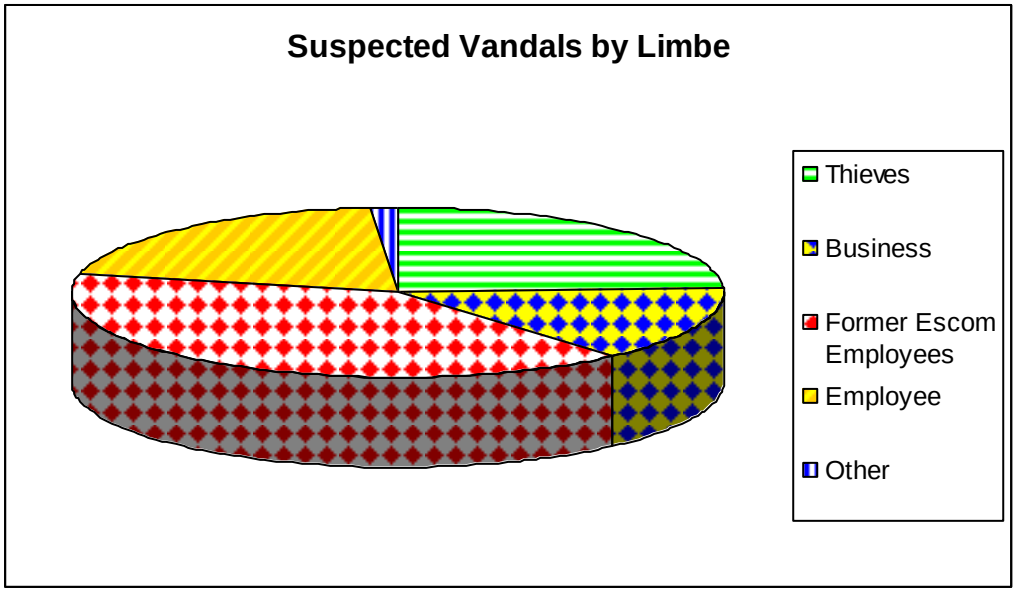

Figure 7-3 Suspected Perpetrators for Vandalising Transformers- Limbe

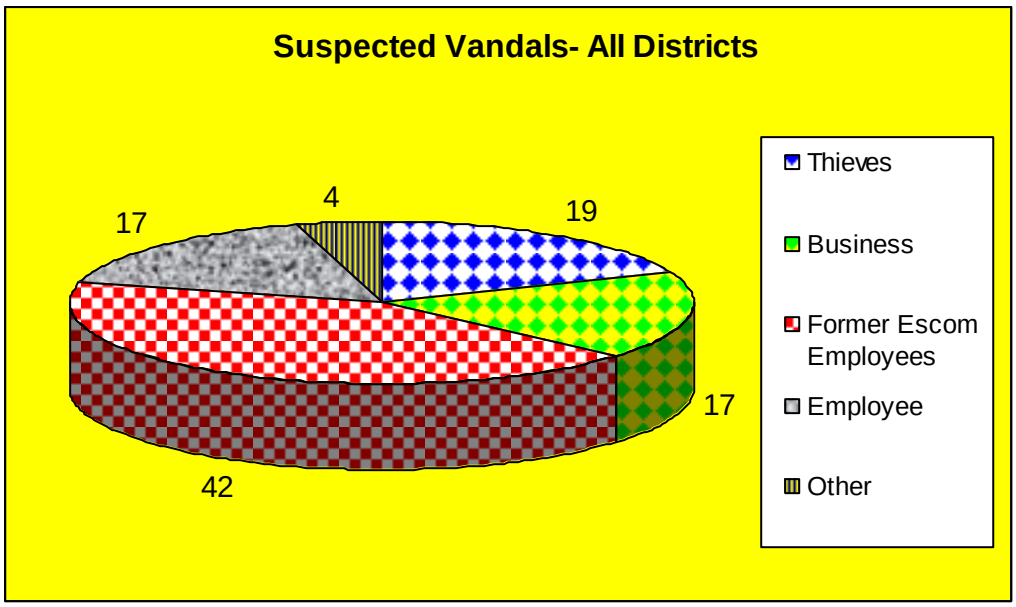

Figure 7-4 Suspected Perpetrators for Vandalising Transformers- Summary

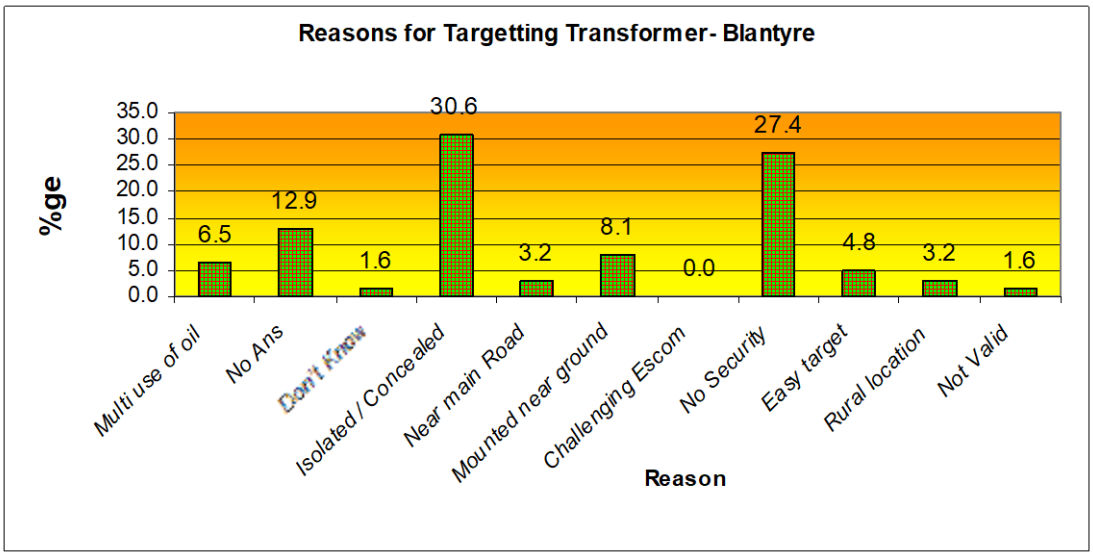

Figure 7-5 Reasons why Specific Transformers were Targeted - Blantyre

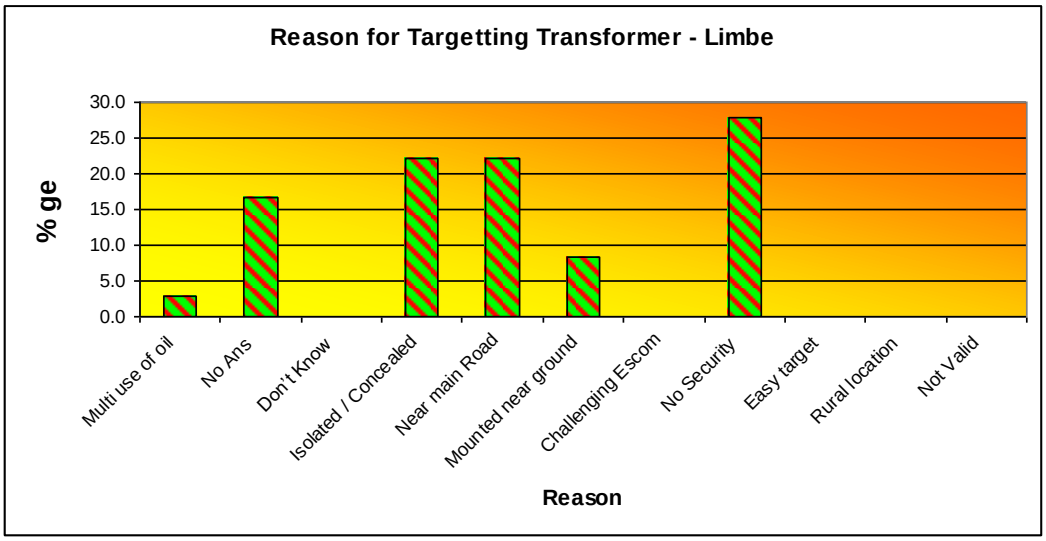

Figure 7-6 Reasons why Specific Transformers were Targeted – Limbe

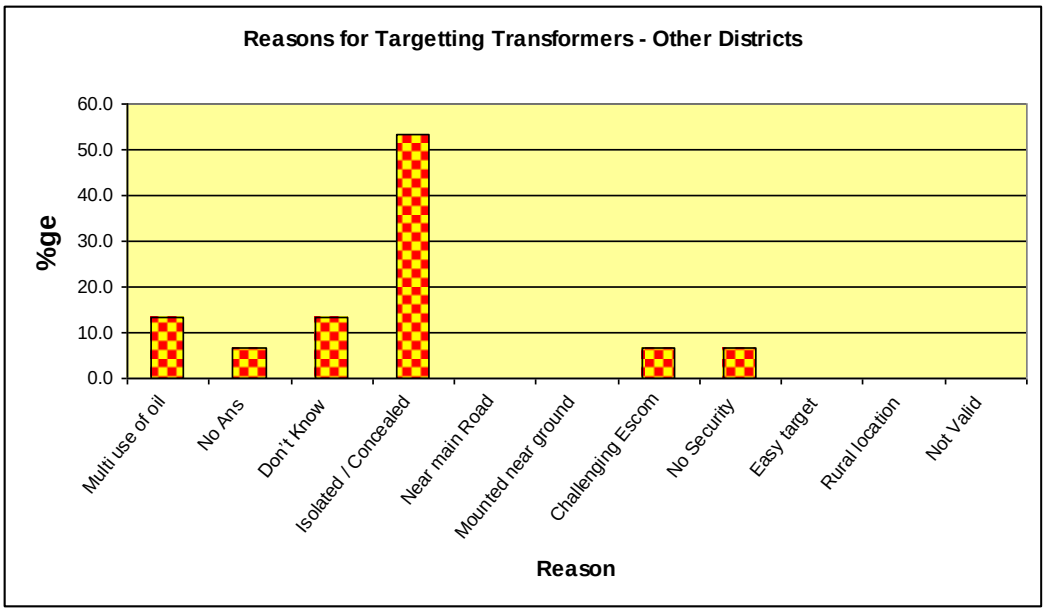

Figure 7-7 Reasons why Specific Transformers were Targeted – Other Districts

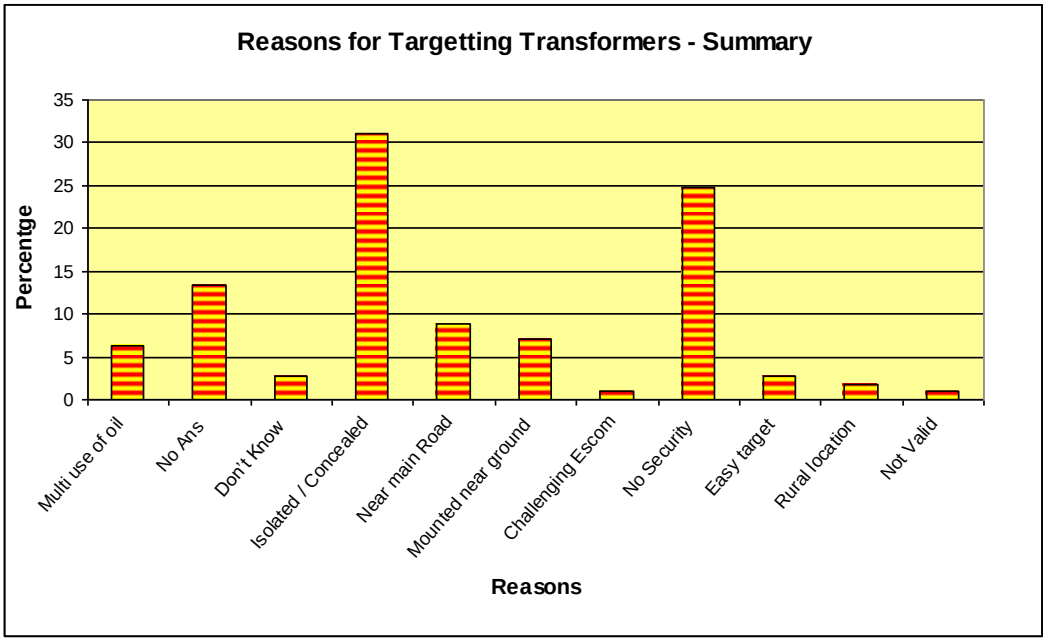

Figure 7-8 Reasons why Specific Transformers were Targeted – Summary

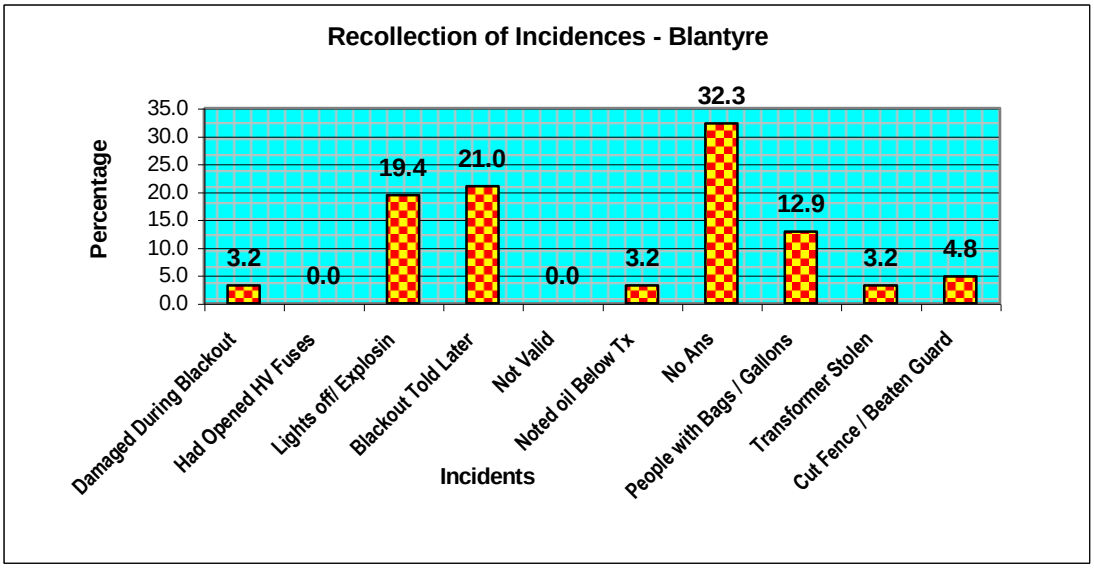

Figure 7-9 Recollection of Incidents Prior the Vandalism - Blantyre

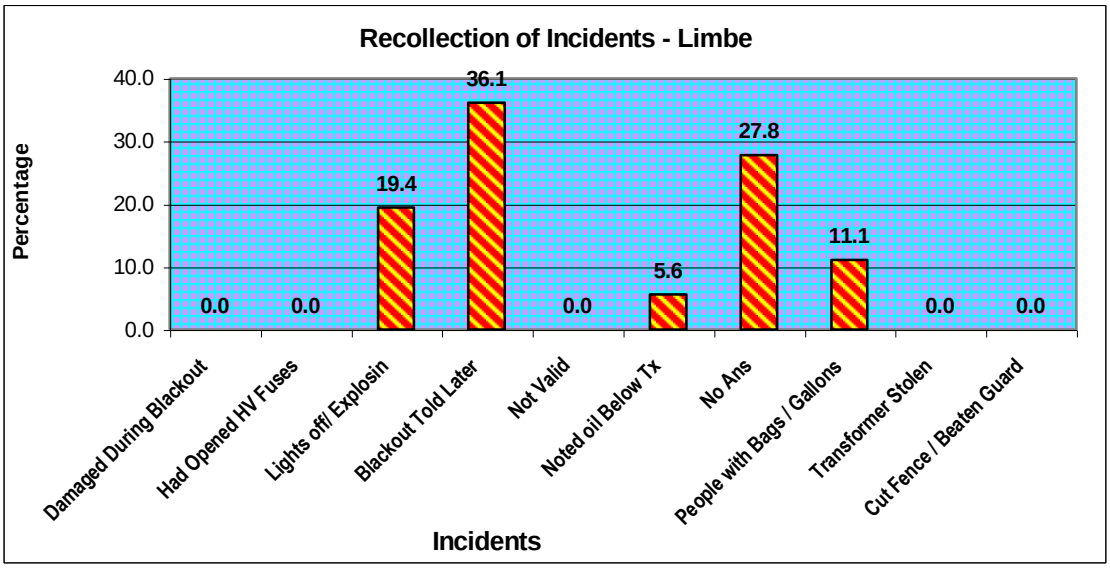

Figure 7-10 Recollection of Incidents Prior the Vandalism - Limbe

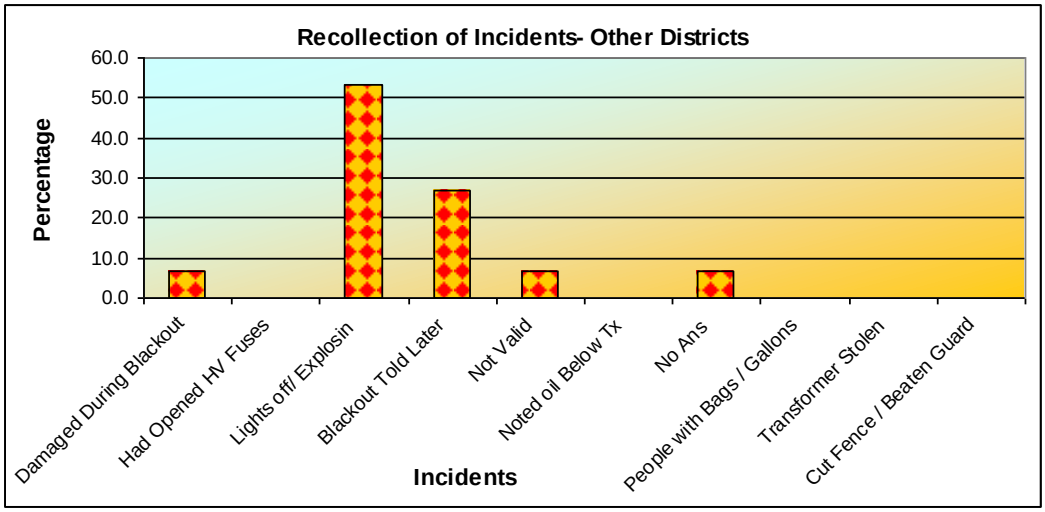

Figure 7-11 Recollection of Incidents Prior the Vandalism – Other Districts

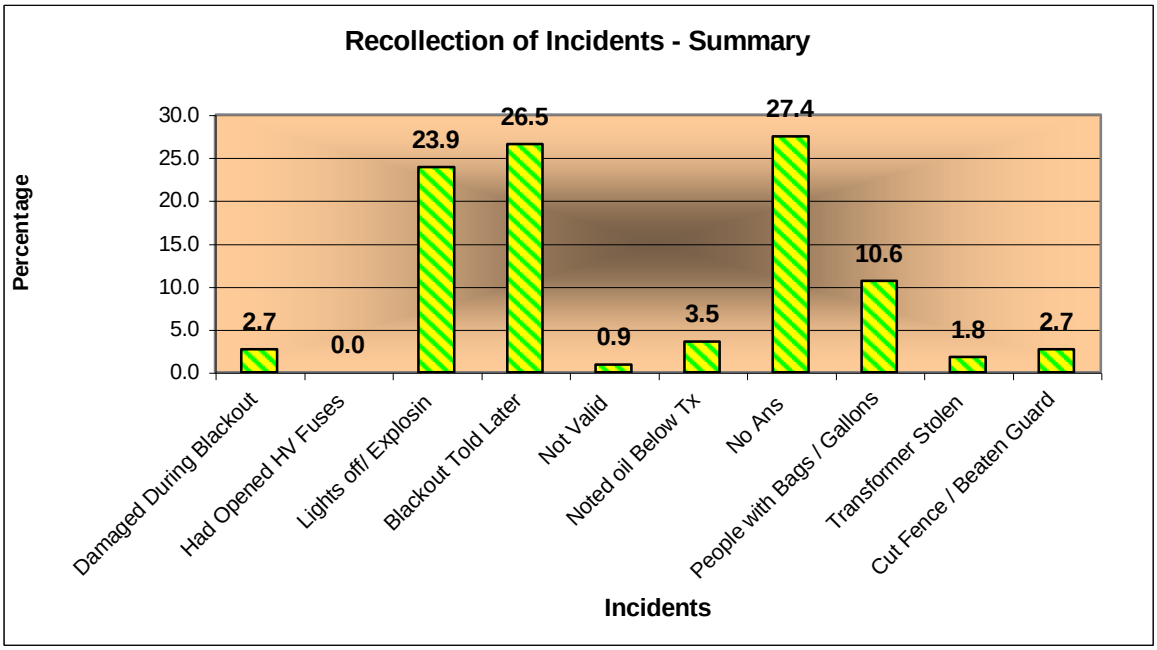

Figure 7-12 Recollection of Incidents Prior the Vandalism - Summary

Appendix 2 Detailed Findings-Tables

Table 7-1 Physical Observations from Vandalised Sites - Blantyre

PHYSICAL OBSERVATION - BLANTYRE				
Structure			**Nearest Road**	
	Percent			**Percent**
Pole mounted	87.10		within 100m	96.77
Ground mounted	12.90		Between 100 to 300m	3.23
Total	100.00		**Total**	100.00
Location			**Nearest premises**	
	Percent			**Percent**
Trading centre	16.13		*Dwelling House*	54.84
Residential	64.52		*Trading Premises*	25.81
Commercial	9.68		*Factory*	9.68
Other	9.68		*Office*	6.45
Total	100.00		*Other*	3.23
			Total	100.00
Dist to nearest premises				
	Percent			
within 100m	93.55			
Between 100 to 300m	6.45			
Total	100.00			

Table 7-2 Physical Observations from Vandalised Sites - Limbe

PHYSICAL OBSERVATION - LIMBE				
Structure			**Nearest Road**	
	Percent			**Percent**
Pole mounted	77.27		within 100m	95.45
Ground mounted	22.73		Between 100 to 300m	4.55
Total			**Total**	**100.00**
Location			**Nearest premises**	
	Percent			**Percent**
Trading centre	0.00		Dwelling House	72.73
Residential	68.18		Trading Premises	9.09
Commercial	31.82		Factory	18.18
Other	0.00		Office	0.00
Total			Other	0.00
			Total	**100.00**
Dist to nearest premises				
	Percent			
within 100m	100.00			
Between 100 to 300m	0.00			
Total				

Table 7-3 Physical Observations from Vandalized Sites – Other Districts

PHYSICAL OBSERVATION - OTHER			
Structure		**Nearest Road**	
	Percent		**Percent**
Pole mounted	90.91	Within 100m	63.64
Ground mounted	9.09	Between 100 to 300m	27.27
Total	100.00	Between 301 to 500m	9.09
		Total	**100.00**
Location			
	Percent	Nearest premises	
Trading centre	27.27		**Percent**
Residential	18.18	*Dwelling House*	36.36
Commercial	9.09	*Trading Premises*	18.18
Other	45.45	*Factory*	9.09
Total	100.00	*Office*	9.09
		Other	27.27
Dist to nearest premises		**Total**	**100**
	Percent		
Within 100m	**45.45**		
Between 100 to 300m	45.45		
Between 301 to 500m	9.09		
Total	**100.00**		

Table 7-4 Physical Observations from Vandalized Sites – Summary

PHYSICAL OBSERVATION - SUMMARY			
Structure		**Nearest Road**	
	Percent		**Percent**
Pole mounted	84.38	within 100m	90.63
Ground mounted	15.63	Between 100 to 300m	7.81
Total	**100.00**	Between 301 to 500m	1.56
		Total	**100.00**
Location			
	Percent	Nearest premises	
Trading centre	12.50		**Percent**
Residential	57.81	*Dwelling House*	57.81
Commercial	17.19	*Trading Premises*	18.75
Other	12.50	*Factory*	12.50
Total	**100.00**	*Office*	4.69
		Other	6.25
Dist to nearest premises		**Total**	**100**
	Percent		
within 100m	**87.50**		
Between 100 to 300m	10.94		
Between 301 to 500m	1.56		
Total	**100.00**		

Table 7-5 Reasons for Vandalizing Transformers –Blantyre

Reason for Vandalising - Blantyre	
Reason	**Percent**
No Answer	3.2
Cable/oil	3.2
Dont know	7.9
Frustration	1.6
Ign./uncivilisation	3.2
Jelousy	1.6
No comment	1.6
Oil	33.3
Political	4.8
Poverty	22.2
Revenge	1.6
sabotage	4.8
Unemployment	11.1
Total	**100**

Table 7-6 Reasons for Vandalizing Transformers – Other Districts

Reason for Vandalising - Other Districts	
Reason	**Percent**
No Answer	6.7
Cable/oil	0.0
Dont know	13.3
Frustration	0.0
Ign./uncivilisation	6.7
Jelousy	6.7
No comment	0.0
Oil	53.3
Political	0.0
Poverty	6.7
Revenge	0.0
Sabotage	0.0
Unemloyement	6.7
Total	**100.0**

Table 7-7 Reasons for Vandalizing Transformers – Summary

Reason for Vandalising - Summary	
Reason	**Percent**
No Answer	4.4
Cable/oil	3.5
Dont know	6.2
Frustration	1.8
Ign./uncivilisation	2.7
Jelousy	1.8
No comment	0.9
Oil	40.7
Political	2.7
Poverty	16.8
Revenge	1.8
Sabotage	4.4
Unemloyement	12.4
Total	**100.0**

Table 7-8 Reasons for Vandalizing Transformers – Limbe

Reason for Vandalising - Limbe	
Reason	**Percent**
No Answer	5.7
Cable/oil	5.7
Dont know	0.0
Savegery	2.9
Ign./uncivilisation	0.0
Jealousy	0.0
No comment	0.0
Oil	48.6
Political	0.0
Poverty	11.4
Revenge	2.9
Sabotage	5.7
Unemployment	17.1
Total	**100**

Appendix 3 Questionnaire for Community

Name of interviewer Date of interview……..…..

Instructions to interviewers

Please **circle** the appropriate number.

Location

Name……

District…….

Gender	Marital Status
1= Male	1 = Married (monogamous)
2=Female	2 = Married (Polygamous)
	3 = Widowed
	4 = Divorced
	5 = Separated
	6 = Single

Age 1=……

Home district 2=……

Ethnic group 3=……

Nationality 4=……

Education	Religion	Employment and Income
1= No Education 2= Primary 3= Secondary 4= Technical College 5= University	1= Christian 2= Moslem 3= Other 4= Non believer	1= Professional / Managerial 2= Clerical / Secretarial 3= Driver / Messenger / Security guard and related workers 4= Skilled Technical worker / Trade person 5= Semi-skilled worker 6= Unskilled / Casual Labourer 7= Sales person / Services related workers 8= Business (Formal Sector) 9= Small Scale Business (Informal Sector) 10= Agriculture (Own farm) 11= Unemployed

1. How long have you been to this area?

   ……Years

2. What do you think is the reason for damaging ESCOM transformers?

   ……

3. Which group of people do you think are involved in vandalising distribution transformers? (choose at most two)

   1. Thieves
   2. Businessmen
   3. Former ESCOM employees
   4. ESCOM employees
   5. Other (please specify)……..

4. What time of the day was the transformer vandalised?

   1. Morning
   2. Afternoon
   3. Evening

4. Night

5. What do you recall happened during or before the damage to the transformer?

……
……
……
……
……
……
……
……
……

6. Who do you think carried out those acts?

1. People from within the area
2. People from far away

7. Why do you think this transformer was targeted?

……..
……..
……

Substation details ……
……
……
……
……
……

THANK YOU FOR YOUR RESPONSES.

Appendix 5 Questionnaire for Vandalism Participants

Name of interviewer Date of interview……..…..

Instructions to interviewers

Please **circle** the appropriate number.

Location

Name……

Gender	Marital Status	Relationship to Person Paying Premiums
1= Male	1 = Married (monogamous)	1 = Spouse
2=Female	2 = Married (Polygamous)	2 = Son / daughter
	3 = Widowed	3 = Parent
	4 = Divorced	4 = Other Relative
	5 = Separated	5 = Employer
	6 = Single	6 = Other

Age 1=……

Home district 2=……

Ethnic group 3=……

Nationality 4=……

Education	Religion	Employment and Income
1= No Education 2= Primary 3= Secondary 4= Technical College 5= University	1= Christian 2= Moslem 3= Other 4= Non believer	1= Professional / Managerial 2= Clerical / Secretarial 3= Driver / Messenger / Security guard and related workers 4= Skilled Technical worker / Trade person 5= Semi-skilled worker 6= Unskilled / Casual Labourer 7= Sales person / Services related workers 8= Business (Formal Sector) 9= Small Scale Business (Informal Sector) 10= Agriculture (Own farm) 11= Unemployed

6. Have you ever worked for ESCOM ?

……

7. If yes when did you stop working for ESCOM?

……

8. What was your department and position?

……

9. Why did you stop working with ESCOM.

……

10. Do you know what a distribution transformer is?

……..……

11. What parts in the transformer do you know?

……..

……

12. What crime are you alleged / convicted on?

…….

13. When and where were the alleged crime committed?

……

14. What part did you did you want from the transformer?

1)Oil 2) Windings 3) Casing 4) Bushing 5) Other

9 If other please specify……

……

……

10) What did you want to do with that/ those part(s).

……

11) If the parts were being passed / sold to third parties, what do they use them for?

…….

……

12) Where are the parts used?

……

13 What dangers are associated with this practice to you ?

……..

15. What health hazards do you think are associated with vandalising transformers?

……

THANK YOU FOR YOUR RESPONSES.

Appendix 6 Questionnaire for Key Informants

Instructions to interviewers

Please **circle** the appropriate number

Part I (General Information)

Location

Name……

District…….

Gender	Marital Status
1= Male 2=Female	1 = Married (monogamous) 2 = Married (Polygamous) 3 = Widowed 4 = Divorced 5 = Separated 6 = Single

Age 1=……

Home district 2=……

Nationality 3=……

Education	Religion	Main Areas of concentration
1= No Education 2= Primary 3= Secondary 4= Technical College 5= University	1= Christian 2= Moslem 3= Other 4= Non believer	1= Investigation 2= Prosecution 3= Maintenance / repair 4= Other (specify below) ----------

1. How long have you been involved in this job?

……..

2. What do you think are two main causes of distribution transformer vandalism?

……

3. What makes you think the above two are the main causes of vandalism

……

……

Part II (Those involved in investigations)

4. The age group generally involved with this practice is

1 = Below 14 yrs 2= Between 14 – 19yrs 3= Between 19 – 30yrs

4=30 – 40 yrs 5= Over 40 yrs

5. What is the most common motive cited for vandalising distribution transformers?

……

……

6. Are you convinced with that reason ? State the reason of your answer.

……..

7. How can you describe the people involved

A) ***Economic Level***

1= Too poor 2= Very Poor 3= Poor 4 = less Poor

5= Not poor

B) ***Educational Level***

1= Not educated 2= lowly educated 3=Fairly educated 4= Educated

5= Very educated

Part III (Those involved with Maintenance/Repairs)

8. What are the most targeted parts for a distribution transformer vandalism?

……

……..

9. What do you think is the reason for that?

……
……

10. What type of substation is most targeted?

1= Pole mounted 2= Ground mounted 3= Both equally

11. What make of transformers are most targeted

……

12. How can you describe the level of technical knowledge on the people involved? They have

1= no technical knowledge 2=less technical knowledge 3=fairly technical knowledge

4=Technical knowledge 5= More technical knowledge

13. What do you think is the motive behind this activity?

……

……

14. Why do you think the above is the motive?

……
……

Part IV (Those involved with Prosecution.)

15. What has been the general reason given for vandalising distribution transformers by suspects?

……

……

16. What is your view about those reasons?

……

……

17. How can you describe the people the suspects?

A) ***Economic Level***

1= Too poor 2= Very Poor 3= Poor 4 = less Poor

5= Not poor

B) ***Educational Level***

1= Not educated 2= lowly educated 3=Fairly educated 4= Educated

5= Very educated

18. Do you think the number of cases that secure conviction are

1= unsatisfactory 2= less satisfactory 3= fairly satisfactory 4 = satisfactory

5= very satisfactory

19. If you answer is between 1- 3 what do you think is the reason for that status

PART V (Others)

20. Please give your information in relation to your experience with vandalised transformers.

……

……

……

……

……

……

ALL:

21. What do you suggest is the solution to curb vandalism of transformers?

……

……

……

……

……

……

<u>THANK YOU FOR YOUR RESPONSES AND COOPERATION</u>

Appendix 7 Observation Sheet

(To be completed by data collector)

Substation number……..

Area…….District……Region……

1. **Substation Structure**

1= Pole mounted 2= Ground Mounted

2. **Location:**

1= Trading Centre 2= Residential Area 3= Commercial Area

4= other(specify)……..

3. **Nearest premises/ building**

1=Within 100m 2= Between 100 to 300m 3= Between 301 to 500 m

4= Over 500m

4. **The nearest premises is a**

1= Dwelling House (s) 2= Trading Premises 3= Factory 4=Factory

5= Entertainment place 6= Office 7= Other (Specify)……

5. **The nearest road is**

1=Within 100m 2= Between 100 to 300m 3= Between 301 to 500 m

4= Over 500m

6. **How many households are fed from the transformer?**

…….

7. **Any Other Observations:**

……

……

Appendix 8 Informed Consent for Participants

Dear Participant.

A Research Study in Analysing the Causes of Distribution Transformer Vandalism in the Developing Countries – The Case of Malawi.

My name is Macvittie Chiphwanya and I am currently studying for an Executive Master of Business Administration degree programme at the Polytechnic a constituent college of the University of Malawi. This study, which aims at analyzing the causes of distribution transformer vandalism in developing countries – the case of Malawi, is part of requirement for completion of the programme. You are selected to participate in this study.

The interview is expected to take approximately twenty minutes and you will be expected to answer questions from an instrument that will be given / read to you and the responses will written either by you or me or my assistant on your behalf.

In signing this document I am giving my consent to participate in this study. I understand that I was selected to participate in this study because I am considered to have important information / leave in an area where a distribution transformer was vandalized. I understand that in participating in this study, I will be expected to answer questions from an instrument.

I understand that there are no risks associated with the study and that participation is voluntary. I am allowed to withdraw my consent and discontinue participation at any time and may also refuse to answer any specific questions.

I understand that confidentiality will be maintained through out the study.

I understand that if I have any questions relating to the study, I can contact Mr. Macvittie Chiphwanya at Electricity Supply Corporation of Malawi, P.O. Box 2047 Blantyre, or on 08 339 224 or 01 622 000.

Principal Investigator

Mr M. Z. Chiphwanya
University of Malawi
The Polytechnic
P/B 303
Chichiri,

Blantyre 3

I, the undersigned have read the above information and I understand it fully and wish to participate in the study.

Date…….Signature or fingerprint……