An evaluation of the impact of cable theft on free flow of traffic in South Africa

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ABSTRACT

Cable theft is a severe problem affecting South Africa, the loss of signal due to theft causes trains and all other forms of transportation to derail or collide, and many innocent lives and livelihoods are lost and this also affects the free flow of traffic. It disrupts the movement of people, goods and costs of the South African economy. The inability of law enforcement agencies to combat cable theft is a significant problem in South Africa and more should be done to counteract this problem as to a greater extent cases of cable theft are reported daily. This article focused on the impact of cable theft on the free flow of traffic in South Africa. The article is based on a qualitatively rooted methodology including a wide range of primary and secondary sources. The article further draws on the findings from the world on the impact of cable theft on the free flow of traffic and formulate steps to counteract the problem. The research-based key steps lead to the prevention of cable theft in South Africa. The first step related to capacitating law enforcement agencies with resources to combat cable theft; strengthening partnerships between law enforcement agencies, the business community, and all other significant stakeholders; increasing the visibility of traffic officials to ensure the free flow of traffic.

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Introduction

Cable theft is a growing crime in South Africa where criminals are destroying the road network infrastructure and sell it to the scrap metal companies and as a result it affects the free flow of traffic as some of the traffic lights would not work. This in turn cause unnecessary traffic congestion, road rage and road traffic accidents especially at intersections. According to Manana (2011) the N1 freeway carries some of the highest traffic volumes in South Africa, with more than 157 000 vehicles travelling on it per day and a traffic growth rate of 7% per year and there are currently 300 000 cars per week on the N1 between Pretoria and Johannesburg. Furthermore, traffic congestion on this portion of the N1 freeway is estimated to cost more than R300 million per year, including production time lost during travelling time, higher transport costs and above average accident rates. Cable theft is a form of organised crime that has had a significant impact on businesses, communities, road safety and the economy. The biggest driver of cable theft is the demand for copper by scrap metal owners who are illegally trading copper to other countries or other established businesses while the uses for copper have changed and technology infrastructure has advanced, it is still an essential component for infrastructure across many industries, including telecommunications and transportation.

According to Sidebottom, Ashby and Johnson (2014) stated that metal prices are an example of a macroeconomic environmental factor that influence criminal’s decision making from a crime opportunity perspective, all things being equal, increases in the price of metals would be expected to make the theft of metal more attractive which, in turn, should lead to an increase in the frequency of metal theft. Copper being a valuable commodity, this has inevitably created an illicit market for this metal and it contribute road traffic accidents in South Africa and it add to the factors affecting fatalities on the road such as human, vehicle and environmental factors. Most of these incidences of cable theft happen at night from 23:00 to 04:00 in the morning. These syndicates are armed,
dangerous and operating nationwide. Lack of knowledge from law enforcement agencies to combat this crime is one of the major contributors to the rise of cable theft in South Africa. The syndicates are always on the lookout for loopholes and trying to be ahead of the utilities, so Intelligence information should be gathered through various sources and used to review the integrated strategy and tactical plans from time to time. Sidebottom, Ashby and Johnson (2014) noted that the ubiquitous use of copper means there are plentiful opportunities for theft, though clearly some are easier to exploit than others. In relation to scrap markets, little effort is typically required to prepare copper for resale and opportunities for disposal in the form of scrap metal dealers and pawnshops are readily available. Joint operations with law enforcement agencies could ensure successful prosecutions because the police alone cannot succeed in dismantling these syndicates and it is of paramount importance to ensure that the investigators and prosecutors work together to ensure efficient evidence collection and case management (Eskom, 2012).

This article aimed to evaluate the impact of cable theft on free flow traffic and identify the existing challenges of combating this problem and suggest key steps leading to prevention of cable theft based on international standards and procedures.

This article utilized qualitative, case study-based approach. The approach is supported by analysis of primary and secondary sources focusing on the impact of cable theft on free flow of traffic. This article draws on the findings from the world on the impact of cable theft on free flow of traffic and formulate steps to overcome road traffic accidents, road rage and traffic congestion as a result of cable theft. Road traffic accidents can be prevented, governments need to take action to address road safety in a holistic manner and this requires involvement from multiple sectors such as transport, police, health, education, and actions that address the safety of roads, vehicles, and road users (World Health Organisation, 2021).

Furthermore, effective interventions include designing safer infrastructure and incorporating road safety features into land-use and transport planning, improving the safety features of vehicles, improving post-crash care for victims of road crashes, setting and enforcing laws relating to key risks, and raising public awareness. Law enforcement agencies, Eskom, passenger rail agency of South Africa, telecommunications and transportation industries as well as all other major stakeholders should play a vital role in curbing cable theft in South Africa as this crime is amount to economic sabotage.

This article also seeks to produce wide range of methods to curb cable theft as it has a direct impact on free flow of traffic causing unnecessary delays, head-on-collisions between trains due to loss of network or connectivity and road traffic accidents at intersections across the roads in South Africa and also to check other strategies or measures used in other countries around the world especially on cable theft as a contributory factor to traffic congestion and road traffic accidents. The epistemological grounding of the study is rooted in the interpretative methodology as exemplified by Saunders, Lewis and Thornhill (2007).

**Theoretical and Conceptual Background**

**The nature of cable theft**

Cable theft is a major problem in South Africa with a huge impact on the South African economy and it puts out railway traffic lights, road traffic lights, delays trains, and puts commuters’ lives at risk and cuts off critical communications. South Africa is experiencing a rapid increase in the criminal act of cable theft, this is a crime that affects everyone as it has an impact on the delivery of crucial services, primarily the provision of electricity, public transport, telephone and Internet services (Drakenstein Municipality, 2020). Furthermore, power outages, often caused by cable theft can lead to an increase in crime as properties are more vulnerable as road traffic accidents as the traffic lights would not be working and it also results in municipalities having to spend taxpayers’ money to replace or repair cables stolen or damaged by thieves. It further diverts resources that could have been better utilised elsewhere and worst of all however is the potential loss of innocent lives due to electrocution, or fires as a result of exposed cables (Drakenstein Municipality, 2020).

Beyond the opportunistic theft carried out by petty criminals, the theft of copper cables forms a wider problem across the supply chain in South Africa (Loudon, 2022). In recent years, the combination of unscrupulous scrap dealers, the alleged involvement of large scrap processing companies and lax penalties meant that much of the stolen copper ended up back in the legitimate supply chain and more should be done to counteract this problem as it affects the economic growth of this country. Cable theft affect all the citizens, telecommunication companies, transportation and all other major stakeholders and criminals are on the rampant in stealing cables on daily basis and sell them to scrap metal owners.

Tshwane Metro Police Department recorded approximately 1498 incidents of cable theft during 2017/2018, resulting in residents’ houses and businesses being left with power cuts for weeks (Nkwana and Mpuru, 2019). The power cuts place a burden on companies which leads to loss of productivity (Burger and Lancaster, 2010). Eskom, along with other state-owned entities such as Transnet, Telkom and municipalities, is plagued by infrastructure theft with the value of material stolen remaining a serious concern, as it is indicative of organised, syndicate-driven criminal activity in the copper theft environment (Theron, 2018). The criminals are looking for copper inside those cables and since it is in demand from scrap metal owners, criminals are doing everything in their power to steal this metal. Decisive action needs to be taken to deal with the theft of non-ferrous metal. Unless proper steps are taken, the continuing theft of copper cable will continue to undermine economic growth and development in South Africa (Van Dalen, 2009). He further emphasises the fact that these non-ferrous metals are necessary for the provision of essential services such as; transport, communication, water and electricity. Cable thieves have an unlimited appetite as copper is stolen from basins, bearings, taps,
window frames, drain covers, solar panels, water meters, overhead lines, substations, signal cables, underground cables, transformers, railway carriages in fact absolutely anything that has copper in it is stolen (Geldenhuys, 2008). Safety of communities is at risk due to criminals stealing cables and it also affect road safety project as it compromises on the safety of road users due to traffic lights not working.

While copper cabling is vital to the safety and efficiency of the world’s rail networks, it’s also incredibly attractive to thieves, copper cable theft represents one of the biggest challenges faced by the global railway industry today and theft tends to increase when worldwide prices for scrap metal rise and this make cable theft valuable to criminals and those in scrap metal business (Chaudhari and Sivalenka-Cyient, 2021). Pretorias (2012) noted that the message which should be conveyed to the public, is that; copper cable theft holds a specific danger for the entire South African industry infrastructure; in that it causes a domino effect that vibrates on all levels, for example; if the transports system such as buses, the trains, or ships, were to stop being operational, all the supporting and dependant services would follow.

The indirect impact would be on the people making use of these transport services, thousands of people would be late for work, freight deliveries would be delayed and business would be without stock, etc. This could escalate into striking, angry, frustrated people, complaints and retaliation, vandalism, driver threats, hi-jacking of transport, burning of property, overcrowding, possible claims and even loss of life (Venter, 2011). Criminals steal infrastructure such as copper cables and electrical equipment to make easy money and with each incident, thousands of homes are left without electricity for many hours or days, businesses that have no access to generators have to close and unfortunately lose money as they cannot operate during that period while some of the traffic lights are not working due to cable theft causing traffic congestion and road accidents.

In urban areas of South Africa, most of roads have traffic lights as compared to rural roads, this affect the economy as some of the goods will be delayed due to traffic congestion caused by cable theft for example Passenger Rail Agency of South Africa is always caught in this cable theft and criminals take advantage of their poor security measures. After cables being stolen it causes accidents between trains or make trains to delay which also affect the workers as they rely on trains as a mode of transportation. Cable thefts cause many parts of the economy to come to a standstill and it is expensive to replace such infrastructure, the SA Chamber of Commerce and Industry (SACCI) estimates that cable theft costs the SA economy between R5-billion and R7-billion a year. This may be a very conservative estimate, as cable theft has become a national crisis with serious implications for the country’s economy, security and it disrupts and delays the delivery of essential services such as health, communication and transport (Burger, 2014).

Furthermore, cable theft interrupts the flow of traffic on the country’s roads, the rail system and even air travel, resulting in increasing levels of public frustration and financial losses to businesses.

As cable theft results in power outages, this affects traffic lights, causing more congestion on the roads, and disrupting street lights, telephone lines, and networks (Mail & Guardian, 2021). It is of paramount importance for all major stakeholders to work together and come-up with measures to combat cable theft so that criminals could not steal this copper metals and make the country to suffer as it affects all sectors of economy. Theft is typically high, with thousands of miles of trackside copper cabling to steal from that is generally far away from densely populated areas and cannot easily be monitored and when a portion of signalling cable is removed, a track circuit failure occurs and this results in train services and traffic lights being disrupted potentially for hours causing a huge loss of revenue for operators (Chaudhari and Sivalenka-Cyient, 2017). They further elaborate that the problem has plagued transport networks for years, affecting some of the world’s strongest economies and emerging markets alike and the U.S. alone reports that the amount of copper successfully stolen and redeemed exceeds $1 billion annually. With metal prices remaining high or going up, members of organised crime continue to steal copper while the export market is available to them and amendments to the International Trade Administration Act will have to be undertaken urgently with all role-players to criminalise trade in stolen copper and other metals (Mbhele, 2011).

Furthermore, the fact that South Africa exports 350 000 tons of copper scraps per annum must indicate what large quantity of copper, which is stolen each year, gets exported without a problem, it is just too easy and government has certainly not been on top of the problem. A high unemployment rate is expensive for the government since the cost of unemployment benefits increases, but according to various crime theories, this is not the only cost; an increase in unemployment may also lead to an increase in crime (Lundqvist, 2018) and more should be done to create job opportunities for young people since most of them end-up in criminal activities due to unemployment. Scrapyard dealers and second-hand goods dealers who are charged with being in possession of stolen infrastructure must receive a fine of at least R100 million. The only way to put an end to this type of crime is to enforce the maximum penalty on the perpetrators and send the message that it will not be tolerated (Ncwane, 2022).

**The impact of cable theft on free flow of traffic**

**Traffic congestion**

Cable theft has a big impact on crucial services like public transport, electricity, telephone and internet and when cables are stolen from the rail system, trains are delayed and cancelled because the infrastructure is badly damaged (Western Cape Government, 2019). Furthermore, this affect the free flow traffic as road users would be stuck in traffic causing congestion and also affecting the economy. Traffic congestion has been increasing in much of the world, developed or not, and everything indicates that it will continue to get worse, representing an undoubted menace to the quality of urban life. Its main expression is a progressive reduction in traffic speeds,
resulting in increases in journey times, fuel consumption, other operating costs and environmental pollution, as compared with an uninterrupted traffic flow (Bull, 2003). Cable theft made traffic congestion to be worse in developing and developed countries as criminals are destroying the telecommunication and transportation infrastructure and as a result it contributes negatively to the economy. Cable theft affects the community in various ways, the inconvenience of power outages, the loss of appliances, when there are power surges, loss of revenue, loss of perishable produce, traffic congestion, loss of business/production, loss of communication and business (Nganga, 2021). Starting the day with no morning coffee, dressing in the dark and then rushing off to work, only to be stuck in traffic because of a power outage is something that South Africans are all too familiar with and learning that the cause of this outage is cable theft (Bloem, 2016). However, although cable theft impacts daily activities heavily, it has far more serious financial implications causing road congestion, negatively affecting travelling time, and thus contributing to huge economic costs. As cable theft results in power outages, this affects traffic lights causing more congestion on the roads, street lights, telephone lines, and network (OpenServe, 2022). Power outages causes the traffic lights not to work and as a result it contributes to traffic congestion where many motorists are left frustrated as some will not reach their destinations on time while others are given warnings at work. This is a major setback for transportation and telecommunication sectors as they are at the centre stage to ensure free flow of traffic. Managing traffic congestion in developing and newly industrialised countries is challenging due to unreliable road infrastructure and in South Africa, electricity power cuts coupled with traffic light cable theft leads to severe traffic congestion (Mathibela, 2017). Criminals are crippling the road infrastructure and telecommunications cables by selling the them to scrap metal owners to get quick money while the law enforcement agencies are unable to curb this problem. According to Seifularo (2022), Joburg City Power said that its infrastructure in the Eldorado Park area had been under attack by criminals targeting copper cables, with more than 10 underground cables stolen. Furthermore, the continued vandalism and cable theft in the Lenasia, Eldorado Park area continued to affect the supply of electricity to consumers and also affect the free flow of traffic as the traffic lights are not working as a result of cable theft. According to Randburg Sun (2022) stated that the streets of Johannesburg are becoming quite the mission to navigate due to traffic lights that do not work and load-shedding due to cable theft. Furthermore, the City’s Metro Police Department help alleviate the heavy traffic congestion associated with this by deploying their officers and Traffic Free Flow sponsored by OUTsurance to main arterials, heavy congested and major routes and the public is always encouraged to report any issues pertaining to traffic lights, cable theft, flooding, vandalism, accidents, broken-down vehicles, traffic violations, areas where traffic is gridlocked and where homeless people are controlling traffic. Peters-Scheepers (2015) stated that cable theft lead to the disruption of essential services and jeopardize public safety and traffic signals are cut down for their copper wire, electrical components and traffic light poles. Furthermore, it is estimated the knock-on economic impact of traffic signal downtime due to stolen power or copper cables or other traffic light equipment, could run into billions of Rand, as non-functioning traffic lights lead to congested roads and impact on transit time for commuters. City of Johannesburg entities such as City Power, Johannesburg Metro Police, as well as other role players that include the South African Police Service, (National Prosecuting Authority) NPA, Directorate of priority crime investigation) Hawks, scrap dealers and security organizations, to ensure a consolidated campaign to combat this scourge (Peters-Scheepers, 2015).

Road Traffic accidents

World Health Organisation (2021) noted that approximately 1.3 million people die each year as a result of road traffic crashes, the United Nations General Assembly has set an ambitious target of halving the global number of deaths and injuries from road traffic crashes by 2030 (A/RES/74/299). Furthermore, road traffic crashes cost most countries 3% of their gross domestic product, more than half of all road traffic deaths are among vulnerable road users: pedestrians, cyclists, and motorcyclists and 93% of the world's fatalities on the roads occur in low and middle-income countries, even though these countries have approximately 60% of the world's vehicles and road traffic injuries/death are the leading cause of death for children and young adults aged 5-29 years. Road traffic accidents produce considerable delays owing to lane closures, police, fire, or emergency services activity, diversions, and general traffic snarls caused by rubbernecking and chain reaction braking (Périquet et al., 2018). As each road traffic accident is unique, it is more difficult to estimate the costs of these delays. These delays incur costs in terms of lost time, wasted fuel, and increased air pollution.

There are increases in congestion on South African roads after an accident has occurred which negatively affects the movement of people and goods to their intended destinations (Périquet et al., 2018). The problem is that copper cabling can easily be stolen, not a week goes by without reports in South African media of cable theft and this is not a happy state of affairs essential services provided by Eskom and Transnet are disrupted, whilst the loot gets exported to countries such as China and India (Lawful Living, 2022). In South Africa one of the contributory factors to road traffic is accidents is cable theft. Criminals steals cables so that they could sell copper to scrap metal owners and as a result it affects the transportation sector as some of the traffic lights would not work as a result as well as affecting the movement of trains.

Cable theft is a major problem in Gauteng Province and this lead to high level of road traffic accidents as some of the traffic lights at intersections or wherever would not be working as a result of cable theft. The theft of the copper cable, relating to the traffic lights, is one of the major causes of traffic light downtime in the City of Johannesburg and this have negative effect on the road as some of the motorists’ end-up causing accidents (Phillips, 2016). Copper cable theft believed to be the root cause of a passenger train accident near Saulsville in Pretoria that resulted in at least 200 people being injured, according to a preliminary finding, it was reported that at least 50 metres worth of copper cable was stolen from different parts of the railway track (Independent Online, 2013).
Furthermore, cable theft on the rail lines and system is a serious crime as it deprives the commuters of safe travel when using trains to their various destinations and it also destroys infrastructure into which large sums of money are being invested to provide commuters with a safe and reliable public transport service. It was reported that a senior citizen was fatally wounded while trying to cross a road at a non-functioning traffic light at an intersection and according to the JRA (2022), like many other intersections in the City, vandalism, theft, power outages and illegal connections are the main factors to traffic light outages, such as was the case in Martindale. Such vandalism is also the cause of chaotic and frustrating traffic delays across roads in the CBD and main roads of Johannesburg and this puts pedestrians and motorists at risk as many drivers become impatient and less likely to be courteous to others. It is of utmost importance for law enforcement agencies together with major stakeholders to ensure that they protect cables as the problem of cable theft is on the rise in South Africa especially in Gauteng Province and this affect road safety as many road users lose their lives on the road as a result of crime such as cable theft. On the socio-economic front cable theft and vandalism have interrupted the schedules of Gautrain (Johannesburg’s electric-powered inter-city railway transport system) resulting in incessant delays due to signalling problems, disruptions of telephone networks and numerous accidents at faulty robots leading to traffic jams (Dzansi, Rambe and Mathe, 2014).

The high number of road traffic crashes and their associated consequences have a significant impact on the South African society, which in turn continues to hamper socio-economic development and impacts on the well-being of all South Africans. This impact is measured in terms of human lives lost, ‘pain, grief and suffering’, as well as an increasing cost to the economy (Arrive Alive, 2017). Furthermore, road users must adhere to the terms of the Road Traffic Act which states motorists must treat every intersection where traffic lights do not work as stop signs. Motorists can only move after all other vehicles and pedestrians that arrived at the stop line before have moved.

Additionally, they should only move forward once it is safe to do so. Road traffic accidents is a collective responsibility, it is important for all role players involved in road safety to ensure that they deal decisively with cable theft as it sabotage the economy of South Africa and more should be done to ensure that cables are protected. The effect of cable theft on RTA (Arrive Alive, 2022) are as follows:

i. Theft of cables which reduces lighting on the streets, reducing visibility and endangering lives of drivers & pedestrians.

ii. Theft of cables causing many traffic lights at intersections to be malfunctioning or out of order.

iii. Theft of crash barriers and man-hole covers sold as scrap metal.

iv. Fences are stolen especially in rural areas and next to informal settlements, creating increased risks of animals entering and crossing roads.

v. Stones and other large obstructions placed on the roads with the intention of causing vehicles to crash and providing an opportunity to rob crash victims.

vi. Stones thrown from cross-over bridges causing road crashes and leaving the victims defenceless to robbery.

**Law enforcement agencies in curbing cable theft**

The power utility has had to spend millions in security at hot spots in an effort to curb cable theft, which ultimately led to power outages and compromised the supply of electricity and crimes like cable theft, railway infrastructure vandalism hampers the economic activity and discourage investment in the country (Bizcommunity, 2022). Furthermore, the theft has severe implications for both service delivery and businesses, which are losing revenue and the money been spent on replacing stolen cables could have been channelled into building millions of houses, providing new electricity and water connections, building and maintaining roads, installing new street lights, fixing potholes and infrastructure.

Law enforcement agencies are given the authority to ensure law and order in communities and it is important for them to ensure the smooth operations of public transport, trains, and all other important aspects which make the country to fully participate in the economy and ensure public services are rendered to the people and most cases these services are affected by cable theft, law enforcement agencies should ensure that there is a clear plan on how to combat cable theft as the country is losing lot of money due to cable theft. Law enforcement agencies have been granted an extension of powers, giving them the authority to conduct raids on second-hand goods dealers to ensure compliance and seal off errant businesses (News24, 2017).

Furthermore, it also gives them authority to enter and conduct searches and seizures, and seal off premises at which second-hand goods are found in order to prevent a person from conducting business in contravention of the act. In most cases cable theft is run by syndicates, they steal knowing where to sell the cables and scrap metal workshop are in cahoots with most of them, making this type of crime to increase in Gauteng Province. Transnet has said it will continue to intensify efforts to stop cable theft and infrastructure vandalism, an issue that has become a national problem in recent years and in 2021 there have been 600 arrests (Freight News, 2021). Transnet’s interventions also include the redeployment of personnel and other resources to the most affected lines, increased use of technology, and collaboration with law enforcement agencies, customers and other state-owned companies affected by these criminal activities. Law enforcement agencies are ineffective in dealing with cable theft as the cases of cable theft are reported on daily basis on social media and criminals are not arrested for this economic sabotage.
As in some cases this is the responsibility of municipality to protect their infrastructure. Lack of visibility by Metro police officials in protecting the infrastructure contribute to the increase of these cases. All these law enforcement agencies need to work together and safe guard the infrastructure as it affects everyone and it contributes to criminality when there is no electricity, most people become victims of crime. Law enforcement lacks an understanding of the severity of the crime and therefore the slipshod general prosecuting actions and the slack bail conditions imposed (Pretorius, 2012). For example; after many hours of intense investigation several members of a crime syndicate were successfully arrested, and the normal prosecution route had been followed accordingly for the suspects to appear in court, but without much ado, they were released on bail the very next day Overstrand Municipality (2017), stated that the aim of law enforcement in a municipality is to create an environment that will further the social and economic development of the community. Given that context, the quality of life within a municipality depends to a large extent on the possibility that individuals and their families will be safe, and they will also feel safe while using public open spaces and equipment and that conflicts within communities could be resolved peacefully (Overstrand Municipality, 2017).

On a provincial level, the law is enforced by the South African Police Services and other law enforcement agencies. They have an extremely heavy workload and therefore certain laws (By-laws) and laws applicable only to a municipality, are enforced by the Law Enforcement Officers appointed within its area of jurisdiction (Overstrand Municipality, 2017). Law enforcement is a key component of efforts to ensure safe and secure travel options and it also has a role to play in setting policies, raising awareness about safety issues, influencing behaviour and social norms and reinforcing and supporting educational and engineering programs and strategies (Pedestrian and Bicycle Information Centre, 2017).

Cable theft is a collective responsibility and Department of Trade and Industry (DTI) should incorporate more stringent legislation that would see stricter regulation of import and export processes, which would ensure that the exporting of stolen goods, including copper, was punishable by a jail sentence of up to ten to fifteen years (Naidoo, 2011). Furthermore, South Africa’s International Trade and Administration Act does not allow for the policing of these processes, which makes it an open door for syndicated criminal activity to successfully enable stolen goods and nonferrous metals to leave the country and unfortunately, law enforcement agencies and international trade administration authorities do not have the resources to check every container that leaves South Africa. The international demand for copper, particularly from developing economies like India and China, as well as Saudi Arabia were also driving organised syndicated crime in South Africa and increasing the level of incidents of theft (Naidoo, 2011). Therefore, it is of paramount to amend some of the laws to ensure that they curb this crime and increase the visibility of law enforcement officials at national key point areas such as airports and security measures should be strengthened to dismantle this syndicate and protect the electricity infrastructure as it contributes to the free flow of traffic in terms of traffic lights. Crime casts fear into the hearts of South Africans from all walks of life and prevents them from taking their rightful place in the development and growth of the country and it inhibits the citizens from communicating with one another freely, from engaging in economic activity and prevents entrepreneurs and investors from taking advantage of the opportunities which our country offers.

Furthermore, the National Crime Prevention Strategy was initiated by the Cabinet in March 1995, the strategy is the result of an extensive process of research and analysis and has drawn on international experiences. Both Business Against Crime and NGO’s concerned with crime prevention have made a substantial contribution to this strategy. The NCPS has the following objectives:

i. The establishment of a comprehensive policy framework which will enable government to address crime in a coordinated and focused manner which draws on the resources of all government agencies, as well as civil society.

ii. The promotion of a shared understanding and common vision of how we, as a nation, are going to tackle crime. This vision should also inform and stimulate initiatives at provincial and local level.

iii. The development of a set of national programmes which serve to kick start and focus the efforts of various government departments in delivering quality service aimed at solving the problems leading to high crime levels.

iv. The maximisation of civil society’s participation in mobilising and sustaining crime prevention initiatives.

v. Creation of a dedicated and integrated crime prevention capacity which can conduct ongoing research and evaluation of departmental and public campaigns as well as facilitating effective crime prevention programmes at provincial and local level.

**International perspectives on cable theft**

Cable theft is growing problem worldwide and even in South Africa is prevalent where criminals are on rampant in stealing cables. They sell copper to scrap metal owners and get quick cash and, in most cases, they are dealing with scrap metal businesses that are not registered. Copper is among the world’s most widely used metals, it is used extensively in several industries, including construction, transport, and telecommunications (Sidebottom, Ashby and Johnson, 2014). High global consumption rates alongside the development and industrialization of emerging economies such as China and India have seen available copper reserves strained under mounting demand (International Copper Study Group, 2013).

Metal prices are an example of a macro-economic environmental factor that might influence offender decision making from a crime opportunity perspective (Sidebottom, Ashby and Johnson, 2014). Furthermore, all things being equal, increases in the price of metals would be expected to make the theft of metal more attractive which in turn, should lead to an increase in the frequency of metal theft and that is, changes in the choice-structuring properties associated with the crime in question directly influence the rate of crime. Scrap metal buyers provide the necessary link for creating profit from scrap metal theft and this problem is driven entirely by the...
ability to sell stolen goods to recyclers, and often these recyclers facilitate crime (Kooi, 2010). Furthermore, thieves and sellers of scrap metal succeed when they find vulnerable targets at particular places during particular times when capable guardianship is lacking. These offenders may not necessarily be seeking out metal, but instead happen upon unsecure sites where valuable metal is left out in the open and those who know local scrap metal dealers will not question where the metal came from and will foresee the opportunity to sell the unsecured metal, if it is easy to do so.

Other countries have put their scrap metal dealers out of business by refusing to allow them to export their product. For example, some African countries (e.g., Uganda, Tanzania, Kenya) suspended the export of scrap metal as a means to combat electrical and water equipment thefts that were causing critical infrastructure problems (Dow Jones Newswire, 2008). Furthermore, a group of United States steel scrap industries created the American Scrap Coalition in response to global scrap-metal trade barriers while the price of metal rose dramatically and many countries restricted their exports, but U.S. exports continued at record levels and the scrap metal supply did not keep pace with the international demand, causing a crisis of scrap metal availability and increased pay from scrap metal dealers.

Cable theft has been a thorn for law enforcement agencies due to the rise of scrap metal businesses and it bring instability to countries all over the world as this impact on vital sectors of economy. The cost to replace a metre of cable ranges from R1 000 to R1 400, and equates to about R14 millions annually (roughly 10 000 meters of cable are stolen on an annual basis) and this does not include the damage caused to sub-stations because of this theft (Knott, 2017).

Furthermore, replacement of a 40 megavolt-amp transformer costs in between R15 and R20 million, while repair of a 33 kilovolt oil cable costs approximately R600 000 per joint, including material. The theft of cables often results in the cable exploding and this affects the transformers, which take time to replace, often results in power being switched on, and off in order to work on the line. The replacement of underground copper cables with aluminium is ongoing and has occurred in streets such as Glover Road in Ruimsig, however, this has not deterred thieves, as either one of two things now happens. Furthermore, the thieves cut into the cables over certain distances to find copper cables, and although they do not steal the aluminium cable, cutting causes damage resulting in an outage, and the cables have to be replaced.

Alternatively, the thieves actually steal the aluminium cabling and use it to make all sorts of items, the most recent being cooking pots that are sold on the roadside. The main issue with such pots is that the metal remains untreated and people are now at risk from a health perspective (Knott, 2017). Copper thieves are threatening US critical infrastructure by targeting electrical substations, cellular towers, telephone landlines, railroad, water wells, construction sites, and vacant homes for lucrative profits (FBI Criminal Intelligence, 2018). Furthermore, copper thefts from these targets have increased since 2006; and they are currently disrupting the flow of electricity, telecommunications, transportation, water supply, heating, and security and emergency services, and present a risk to both public safety and national security. Copper thieves are typically individuals or organized groups who operate independently or in loose association with each other and commit thefts in conjunction with fencing activities and the sale of contraband (FBI Criminal Intelligence, 2008).

Furthermore, organized groups of drug addicts, gang members, and metal thieves are conducting large-scale thefts from electric utilities, warehouses, foreclosed and vacant properties, and oil well sites for tens of thousands of dollars in illicit proceeds per month. China, India, and other developing nations are driving the demand for raw materials such as copper and creating a robust international trade and copper thieves are receiving cash from recyclers who often fill orders for commercial scrap dealers (Wapt.com, 2008). Furthermore, recycled copper flows from dealers to smelters, mills, foundries, ingot makers, powder plants, and other industries are re-used in the United States or for supplying the international raw materials demand and as the global supply of copper continues to tighten, the market for illicit copper will likely increase and as a result it will affect critical sectors of economy globally. Industrial and metal theft has become a growing problem over recent years, with copper theft at the forefront of that problem and the loss is costing utility companies millions of dollars in repairs and replacements (Datadot Technology USA, 2008).

Additionally, with the cost for copper increasing globally and with economic conditions in a downward trend, utility companies are faced with this crime problem. Internal and external theft drains companies of profits and may even result in business closures and many times thieves are caught with copper cable, but police have no way of identifying whether or not it is stolen, leaving both the victim of the theft and the police very disappointed. According to the Western Cape Government, “The Criminal Matters Amendment Act, regulates bail and imposes minimum offences for essential infrastructure-related offences.” The act, which came into effect in 2018, recommends sentencing for cable theft, with the minimum sentence for first-time offenders being three years and for those who are involved in instigating or causing damage to infrastructure, the maximum sentence is thirty years (Loudon, 2022).

In January 2021, the South African reported that a Johannesburg man was sentenced to eight years behind bars for cable theft in Turffontein while the longer term outlook is a positive one for industry, the best advice for businesses seeking to alleviate the problem of cable theft in the immediate future is to invest in technology and all other pro-active strategies to tackle the problem and make life difficult for criminals. Most of the municipalities in Gauteng province and all other business community are affected by cable theft and more should be done to counteract it by means of collaborating with law enforcement agencies, installing CCTV'S, concrete manholes which could not be stolen, the delegation of powers to municipal law enforcement agencies, robust community engagement, naming and shaming, working with scrap metal buyers, and conducting research and measurement of theft and vandalism (Parliamentary Monitoring Group, 2014).
Steps to overcome cable theft in South Africa

Capacitate law enforcement agencies with resources

Law enforcement agencies should be more equipped with resources such as the use of cameras to combat cable theft. South African Police Services, City of Johannesburg, City of Tshwane, Gauteng provincial community service department and all other major stakeholders in community safety should ensure that they install cameras at targeted or hotspot areas where cables are being stolen on daily basis. Mobile video surveillance cameras provide a visible deterrent to potential cable thieves and capture video evidence to assist with any law enforcement investigations (Wireless CCTV LLC, 2022). Furthermore, surveillance cameras backed by remote video monitoring act as a virtual security guard tracking criminals, gathering evidence, and allowing remote deployment of law enforcement or private security to respond as the situations unfold. The use of technology should be used as a supporting mechanism to law enforcement agencies while more law enforcement officials are deployed to ensure visibility at hotspot areas to safeguard the economic infrastructure. Municipalities should priorities cable theft by allocating millions of rand on public safety departments to deal with the problem effectively. Law enforcement officials should be trained and acquire knowledge and skills about cable theft. Cable theft is run by well organised syndicate therefore it needs knowledgeable officials who could dismantle it and ensure that the infrastructure is protected in order to deliver quality services to the public. Marketing in the law enforcement agencies should be more advanced to ensure that the message of counteracting cable theft is on the media platforms and create payments for those who come-up with valuable information about cable theft as this would encourage the public to report such cases. During road safety campaigns they should also inform the communities about cable theft as it impacts on the flow of traffic and ensure that communities are empowered with knowledge about road safety and the implications of not adhering to the laws of this country.

Strengthening partnerships between law enforcement agencies, business community and all other major stakeholders in combating cable theft

Collaborations should be strengthened across all sectors of law enforcement, business and all other major stakeholders. Law enforcement agencies alone could not eradicate cable theft; therefore, it is of paramount importance for law enforcement agencies to work together with all other stakeholders to combat the problem. Collaborative partnerships with communities, sector policing forums, neighbourhood watch, private security sector, scrap metal businesses and law enforcement agencies are the only sustainable solution to protect transportation sector and ensure free flow of traffic. Law enforcement agencies should come-up with pro-active strategies such as internet payment for cables in the scrap metal businesses and this will help law enforcement agencies and legitimate scrap metal businesses in the investigation and apprehension of suspects dealing with stolen cables and this will also help to eliminate those who are dealing with stolen cables in the scrap metal business. Interventions to cable theft should include redeployment of personnel and other resources to the most affected lines, collaboration with law enforcement agencies, customers and other State-owned companies affected by the theft and vandalism. This could ensure that all the stakeholders play a vital role in counteracting the problem. Cable theft is a collective responsibility. Therefore, all major stakeholders should participate in preventive strategies and work together with law enforcement agencies to deal with cable theft efficiently and effectively.

Increasing visibility of traffic officials at hotspot areas

Free flow of traffic is affected as a result of cable theft as the traffic lights would not work due to power failures. Traffic officials should be deployed at affected areas to control traffic, reduce traffic congestion and prevent road traffic accidents. Law enforcement agencies should intensify law enforcement in the province’s roads through visibility of traffic officials thereby reducing cable theft and vandalism of road infrastructure. The public should refrain from controlling traffic during power failures or when traffic lights are not working as they are not trained to do so. This could be prevented by deploying traffic officials at hotspot areas where people are taking advantage of the problem to get money from motorists. Visibility of traffic officials during power failures as a result of cable theft would eliminate non-adherence to the rules of the road and road traffic accidents. High Visibility Enforcement combines enforcement, visibility elements, and a publicity strategy to educate the public and promote voluntary compliance with the law (National Highway Traffic Safety Administration, 2022). Furthermore, Checkpoints, saturation patrols and other HVE strategies should include increased publicity and warnings to the public although forewarning the public might seem counterproductive to apprehending violators, it actually increases the deterrent effect. Law enforcement agencies should provide information about traffic lights which are not working on their websites as well as on their media platforms and build a good relationship with media to spread the message of road safety to the public.

Conclusions

Cable theft made traffic congestion, road rage and road traffic accidents to be worse in developing and developed countries as criminals are destroying the telecommunication and transportation infrastructure and as a result it contributes negatively to road safety. Cable theft affects the community in various ways, the inconvenience of power outages, the loss of appliances, when there are power surges, loss of revenue, loss of perishable produce, traffic congestion, loss of business/production, loss of communication and business (Nganga, 2021). Criminals are exploiting the loopholes in the criminal justice system by conducting their illegal activities and not be arrested. Law enforcement agencies are ineffective in dealing with cable theft as the cases of cable theft are reported on daily basis on social media and criminals are not arrested for this economic sabotage. Therefore, it is of paramount
importance for law enforcement officials to be trained on how to curb cable theft in the country and it should be given attention by government, law enforcement agencies, private sector as well as communities as it impacts negatively on the economy and free flow of traffic. Furthermore, law enforcement agencies should play a critical role in dismantling the syndicates involved in cable theft and ensure that all role players are arrested and prosecuted. Proactive measures should be introduced to address the high rate of cable theft and be implemented by highly skilled law enforcement officials as well as private sector security officials as this problem is a collective responsibility. Based on the discussions above more should be done to counteract this problem in terms of in-depth research and this could be done by reviewing or evaluating the current strategies and implement the steps to overcome cable theft in South Africa.

Acknowledgement

Author contributions: Conceptualization, M.M.; Methodology, M.M.; Data Collection, M.M.; Formal Analysis, M.M.; Writing—Original Draft Preparation, M.M.; Writing—Review and Editing, M.M.; Author has read and agreed to the published the final version of the manuscript.

Institutional Review Board Statement: Ethical review and approval were waived for this study, due to that the research does not deal with vulnerable groups or sensitive issues.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy.

Conflicts of Interest: The author declares no conflict of interest.

References


Bloem, A. (2016). Cable theft has an impact on all aspects of daily life. Roodepoort Record, South Africa.


Dzansi, D. Y, Rambe, P & Mathe, L. (2014). Cable Theft and Vandalism by Employees of South Africa’s Electricity Utility Companies: A Theoretical Explanation and Research Agenda. Department of Business Support Studies; Faculty of Management Sciences Central University of Technology, FS; Bloemfontein, South Africa.


Manana, MC. (2011). The Impact of the Gautrain Service Disruptions Due to Cable Theft on The Viability of Modernised Public Transport and Commuter Confidence (Subject for Discussion). National Assembly, South Africa.


Mbhele, PD. (2011). The Impact of the Gautrain Service Disruptions Due to Cable Theft on The Viability of Modernised Public Transport and Commuter Confidence (Subject for Discussion). National Assembly, South Africa.


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