



SOUTHERN AFRICA
REVENUE PROTECTION
ASSOCIATION



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OPERATING IN A DARK REVENUE PROTECTION
ENVIRONMENT WITH DIMINISHED CASH FLOW -
IN THE LIGHT OF SCARCE RESOURCES

THE IMPACT OF NON-TECHNICAL LOSSES:

*A SOUTH AFRICAN PERSPECTIVE COMPARED TO
GLOBAL TRENDS*

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Agenda



- ▣ **Introduction**
- ▣ **Global Trends**
- ▣ **South African perspective**
- ▣ **Comparative Analysis**
- ▣ **Conclusion**
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Introduction



- ❑ **Global NTL account for approximately \$80-100bn annually.**
- ❑ **NTL are attributed to poor administration, fraud, non-payment of services, gratis electricity and the largest component theft.**
- ❑ **NTL have a direct impact on the:**
 - ✓ **Economy**
 - ✓ **Social wellbeing of the population**
 - ✓ **Safety of the population**
 - ✓ **Environmental conditions**

Global Trends

(Non-Technical Losses)



- It is estimated that out of 20TWh produced annually globally, 1.4TWh lost due to NTL.
- World losses per country (World Bank-2014)



Global Trends

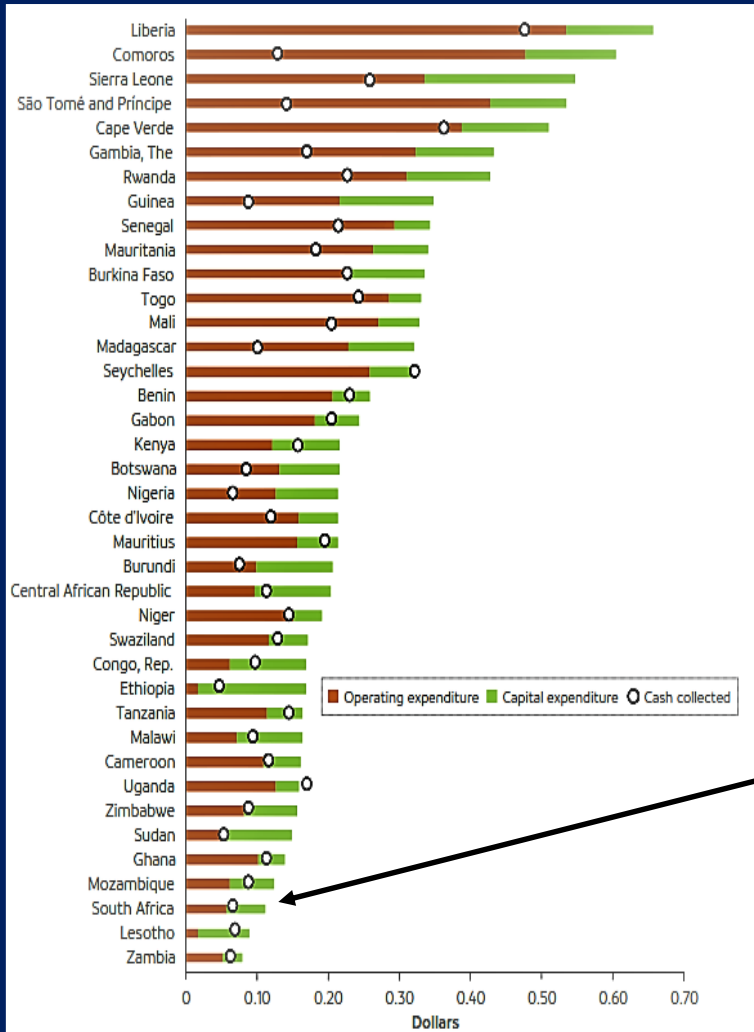
(Non-Technical Losses)



- ▣ **Sub-Saharan African (SSA) losses in 2009 highlights that due to inefficiencies an estimated 50% of revenue lost in relation to generated capacity.**
- ▣ **Nigeria highlighted the largest inefficiency where only 25% of generated electricity was paid for (2009).**
- ▣ **Botswana considered the best performing with NTL reported at 10% (2009).**
- ▣ **South Africa NTL reported at 15% for 2009 and 9.15% in 2018.**

Global Trends

(Operational Cost vs Revenue)

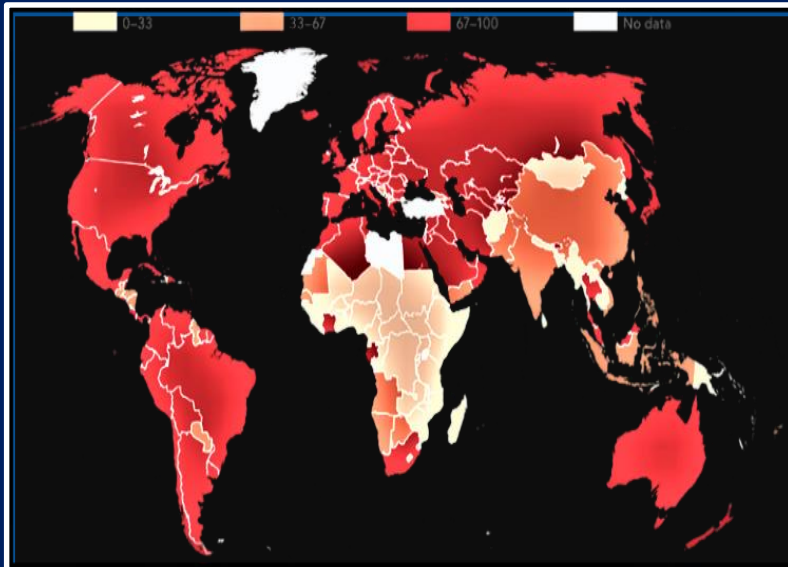


□ In 2016 the World Bank conducted research and found that only 19 out of 39 countries collected enough revenue to sustain operational costs.

□ Note South Africa.

Global Trends

(Access to Electricity)



- ▣ **Global access to electricity in 2015 on average 88%.**
- ▣ **1 out of 3 people in SSA have access to electricity (633M).**
- ▣ **SSA has a population of just over a billion people with a current growth rate of 2.66%.**
- ▣ **SSA considered the fastest growing population in the world (compared to world growth rate of 1.09%).**
- ▣ **It is expected that access to electricity would only normalise in 2040 due to the growth rate and current rate of infrastructure development.**



Global Trends

(Environmental)



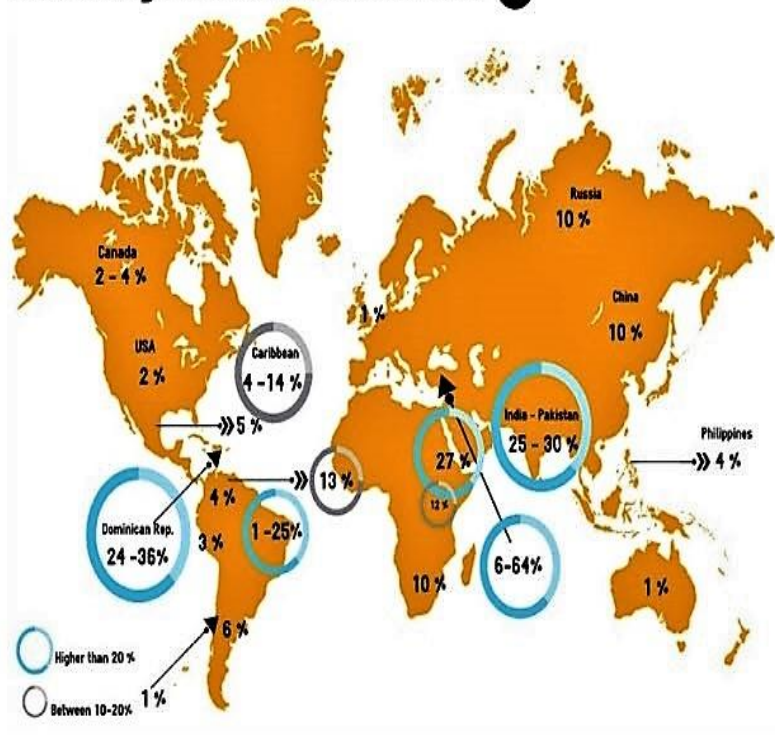
- ▣ **In regions where there is a high dependency on fossil fuels high NTL contribute to Greenhouse Gas Emissions.**
- ▣ **Significant health risks, climate change, threat to food security, floods and droughts, sea-level rise and diseases are derivatives associated with this GGE.**
- ▣ **Environmental impact on the 1.4TWh NTL's have the following impact:**
 - **Equivalent to 1.2 Trillion Metric Tons of CO₂.**
 - **If NTL's were reduced by 33% we would reduce CO₂ by 33% and reduced required electricity production by 53GW (more than half of the SSA electricity production of 90GW).**

Global Trends

(Electricity Theft)



Electricity Theft Rates Worldwide ▼



- ❑ **First electricity theft incident was recorded in 1886.**
- ❑ **Recorded as the largest contributor of NTL's.**
- ❑ **3rd most stolen item in the world.**
- ❑ **Attributed to:**
 - **Inadequate infrastructure**
 - **Poor service delivery**
 - **High tariffs**
 - **High unemployment**
 - **Corruption & Fraud**

South African perspective



- ❑ **Eskom the largest utility in SSA with a estimated generating capacity of 46GW.**
- ❑ **In 2018 Eskom produced 216TWh and sold 212TWh to 6.3M people.**
- ❑ **Eskom recorded losses of approximately 21.5TWh highlighting approximately 10% of generated capacity.**
- ❑ **At a rate of 89.13c/kWh these losses equal R19.1bn for 2018 and further broken down highlights R54M per day (NTL = 7% of 21.5TWh = R11bn annually).**

South African perspective



- ❑ **These losses further highlight that the loss to the South African economy was approximately 0.004% of GDP.**
- ❑ **These losses are generally mitigated for through tariff increases which further burdens the economically active population and businesses.**
- ❑ **These losses are mostly due to electricity theft and occurs across all sectors (i.e. households and businesses).**

South African perspective



- ❑ **Approximately 58% of electricity is supplied by Eskom and 42% by Municipalities (approximately 257) to the South African market.**
- ❑ **Municipalities impose higher tariffs than that of Eskom and are much more reliant on the sale of electricity with revenues accounting up to approximately 40% of budgeted revenue requirement.**
- ❑ **The purchase of electricity from Eskom is also the largest expense for Municipalities (on average 21%).**
- ❑ **It is thus clear that Municipalities are highly reliant on revenue streams from the sale of electricity as well as the mitigation of operational costs.**

South African perspective

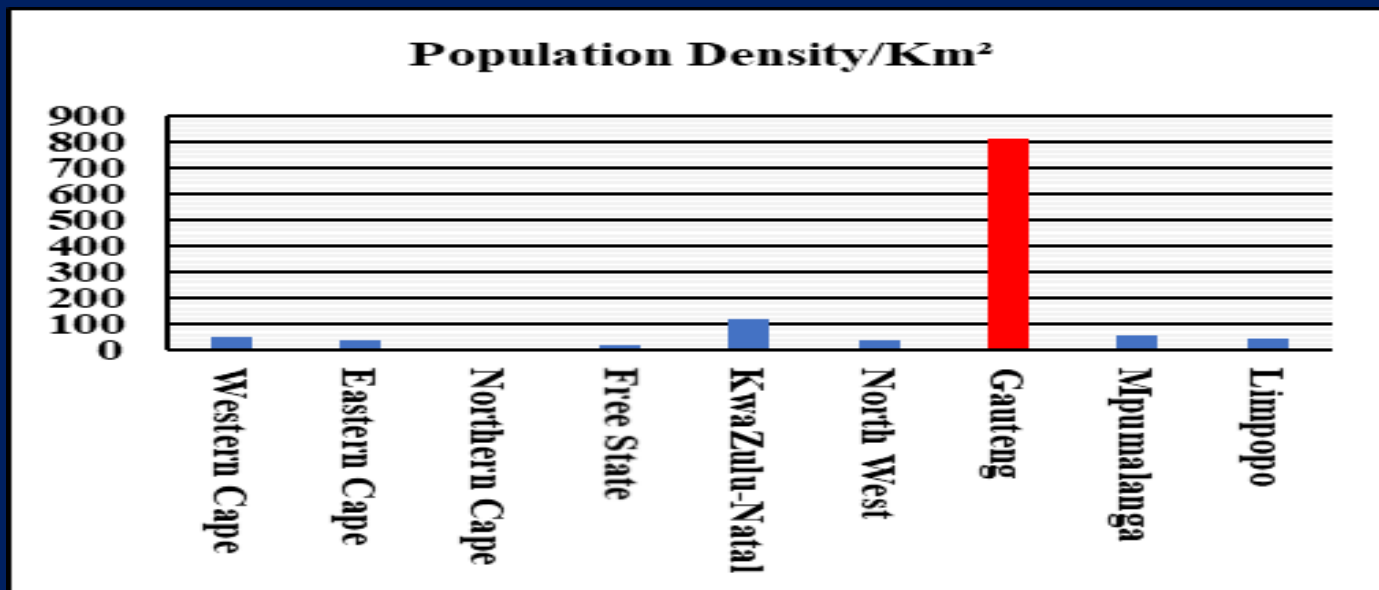


- ❑ **Municipalities are thus also exposed to the proliferation of NTL's and these are attributed to:**
 - ✓ **Electricity Theft**
 - ✓ ***Gratis* electricity**
 - ✓ **Non-payment culture**
- ❑ **Access to electricity in South Africa is at 84.7% for 2018 with the informal urban settlement of 10% of the population presenting large challenges.**
- ❑ **These challenges perpetuates the formation of illegal connections.**

South African perspective



- ❑ **Socio economic conditions a key driver for NTL's:**
 - ✓ High unemployment rate
 - ✓ Affordability
 - ✓ Migratory patterns between provinces (Gauteng 35% of GDP)
 - ✓ Population density increase in provinces
 - ✓ Places significant strain on government deliverables and resources



South African perspective



- ❑ **Non-payment culture must be viewed from a collective economic perspective and not in isolation.**

Contributing factors:

- ✓ **Unemployment (27%)**
- ✓ **Affordability (i.e. high tariffs)**
- ✓ **Population debt levels (Last decade on ave 58% debt to income ratio)**
- ✓ **High living expenses (Food, transport costs, etc)**
- ✓ **Taxes**

❖ *Note on Taxes*

- **South African population 58M people**
- **Only 16.4M people employed in 2018 (working age 15-64 years old)**
- **Tax revenue collected grew by 8.7% in 2018 (R1216.5bn)**
- **Personal income tax accounted for 38.1% followed by VAT of 24.5%**
- **Only 30% of the working population (4.9M people) was subject to income tax**

South African perspective



- ❑ **Challenges to sustained revenue streams**
 - ✓ **Corrupt officials**
 - ✓ **Electricity theft syndicates**
 - ✓ **Poor service delivery** (attracts violence and damage of infrastructure)
 - ✓ **Enforcement of legislation and bylaws**
 - ✓ **The perception of punitive measures** (i.e. only 16% believed they would get caught and only 14% believed they would be prosecuted if caught – Operation Khanyisa)
 - ✓ **Increased NTL's as a result of more connections to the grid as part off electrification program and the risk of non-payment for services**
 - ✓ **Losing the paying customer to grid-tie and off-grid renewable solutions**

South African perspective



Comparative Analysis

Item	South Africa	Global
Financial Losses (NTL)	≈ \$96m	≈ \$96bn
Access to Electricity	84.7%	88%
% Electricity Theft	10%	≈ 1 to 50%
% Losses to GDP (USD)	0.004%	0.113%
NTL Financial Losses per Capita (USD)	≈ 1.6	≈ 12.5
% NTL of Total Losses	≈ 7%	≈ 7%
%CO2 Emissions	9.5tCO2e	6.8tCO2e

South African perspective



Conclusion

What must be done to ameliorate the situation?

- ❖ **Improve the economic climate in South Africa**
- ❖ **Create employment on an urgent basis**
- ❖ **Address the tariff structure**
- ❖ **Address health & safety of communities**
- ❖ **Employ SMART technologies at all customer points of supply**
- ❖ **Employ technologies to detect tampering and electricity theft at the distribution transformer node and even disconnect the supply should theft be detected**
- ❖ **Ensure law enforcement understands the consequential impact and becomes part of the solution**
- ❖ **Consider employing punitive risk and reward strategies on the supply authorities to ensure tariffs are kept in check**

**Thank you for your interest in this
presentation**