

Challenges and Achievements in Revenue Loss Management in the Zambian Electricity Industry

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PRESENTATION OUTLINE

1.0 Introduction

- About ZESCO
- Background to the ZESCO Revenue Loss Problem

2.0 Understanding what the causes of high Revenue losses were

3.0 What were the major challenges in Revenue Loss Management?

4.0 How did ZESCO manage to reduce its Revenue Losses?

5.0 Major achievements

6.0 Conclusion



1.0 INTRODUCTION: ABOUT ZESCO



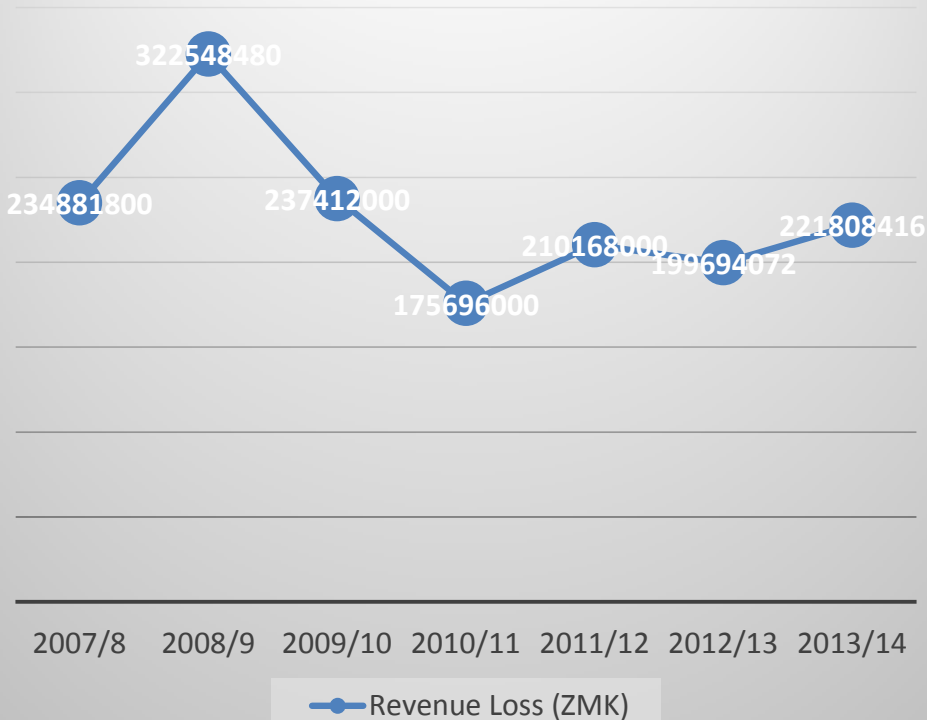
- **Ownership:** Zambian govt.
- **Primary Business:** To generate, transmit, distribute & supply electricity to local & international markets.
- **Gen. capacity:** 1,849 MW.
- **Transmission & Distr. Capacity:** 39,000 km & 5,000 MVA
- **Customer base:** 612,204



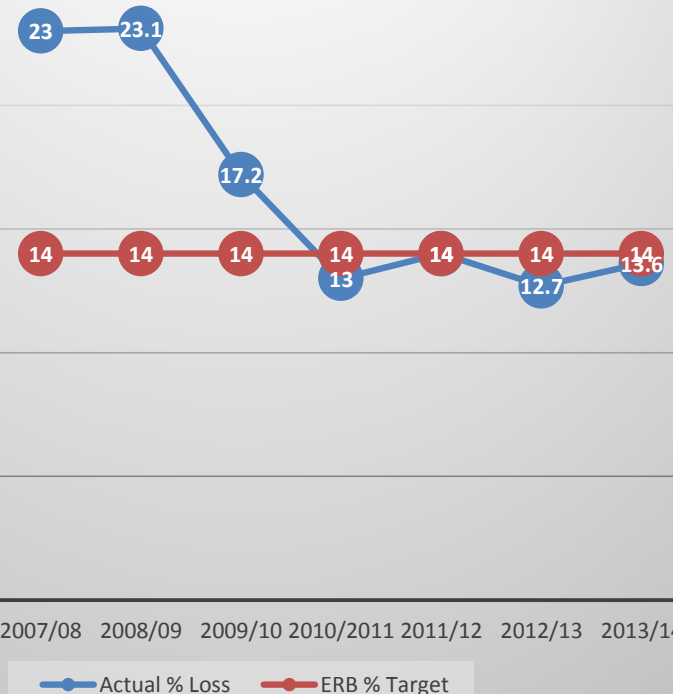
INTRODUCTION:

BACKGROUND TO THE ZESCO REVENUE LOSS PROBLEM

Annual Corporate Revenue Loss
Trend (ZMK)



Annual Corporate Distribution Loss
Performance Trend (%)



	2007/8	2008/9	2009/10	2010/11	2011/12	2012/13	2013/14
Annual Distribution Loss (%)	23	23.1	17.2	13	14	12.7	13.6
Annual Energy Loss (GWh)	1,094	1,098	854	632	756	718	798
Annual Revenue Loss (ZMK)	234,881,800	322,548,480	237,412,000	175,696,000	210,168,000	199,694,072	221,808,416

INTRODUCTION Cont'd



- To analyse what the causes of high revenue losses were and the challenges faced in revenue loss management in the Zambian electricity industry.
- To look at the processes and strategies which were developed and implemented in order to successfully address trends and causes of revenue losses in the Zambian electricity industry.



2.0 WHAT WERE THE CAUSES OF HIGH REVENUE LOSSES IN ZESCO?

High power distribution losses

- **Technical Losses**
- **Non-technical losses**



Technical Losses:

- Long power distribution lines
- Overloaded distribution networks and
- The ageing distribution infrastructure.



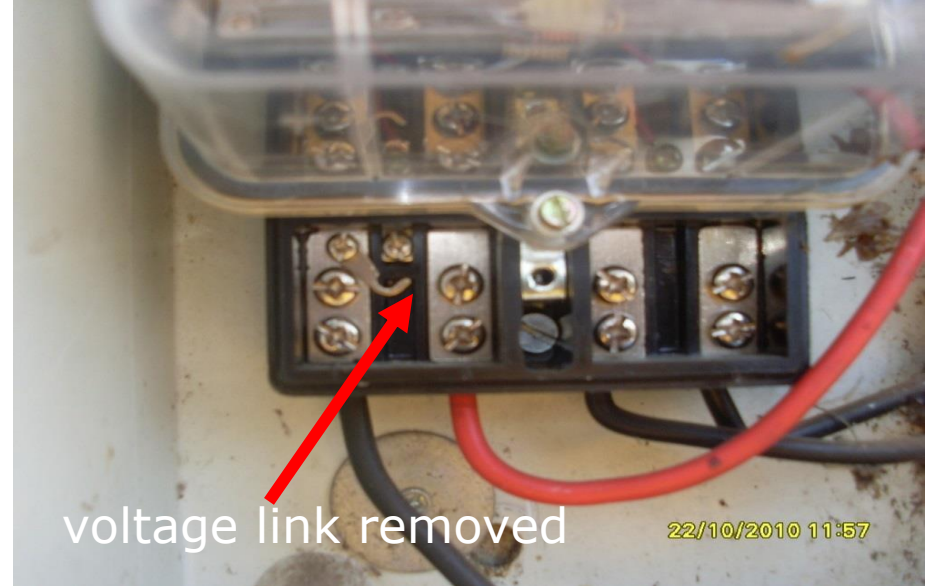
Non-Technical Losses:

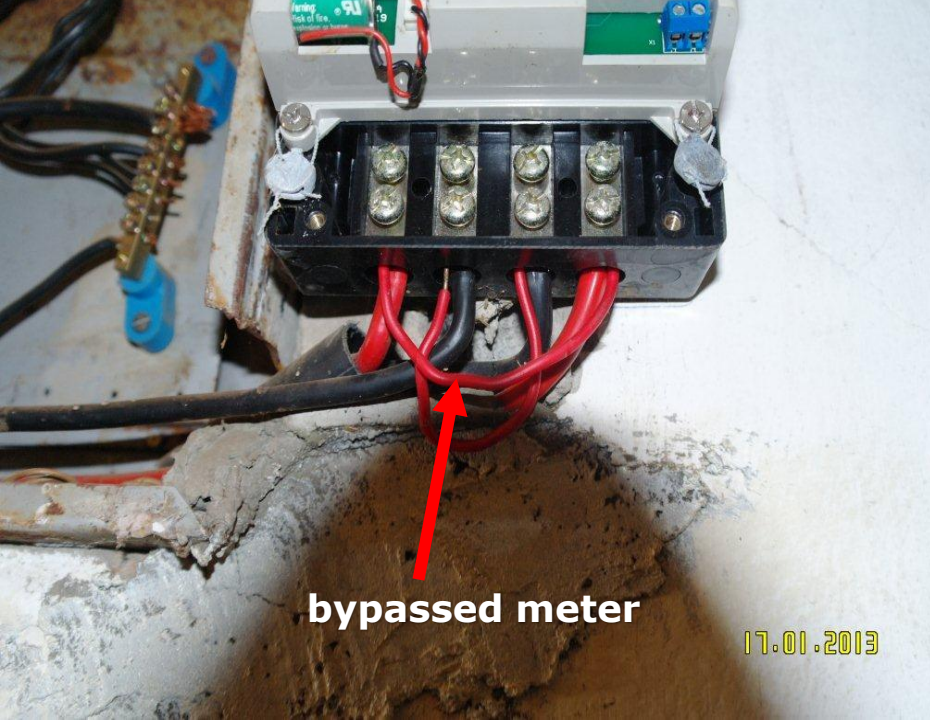


- Poorly managed Commercial cycle processes
- Theft

Most common ways in which Electricity was being stolen

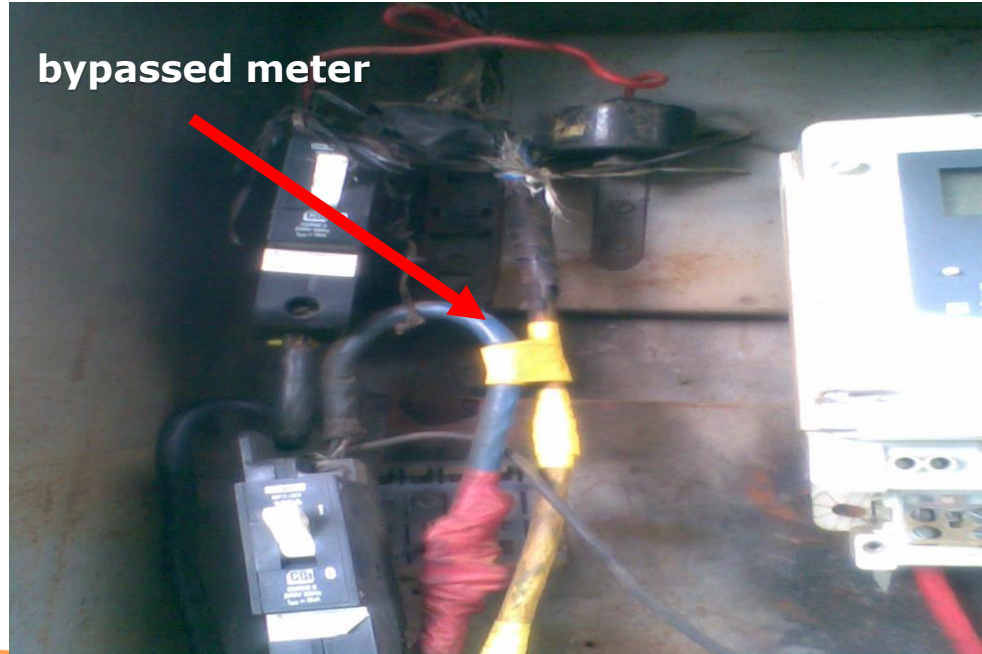
- Removal of voltage links (analogue meters)
- Switching off of voltage MCB's
- Shorting of CT's
- Swapping of phases
- Mismatching of the meter CT ratios
- System frauds – Tokens, S1





Most common ways in which Electricity was being stolen

- Meter bypasses (Partial/Complete) and meter tampering



Most common ways in which Electricity was being stolen



- Illegal connections
- Illegal reconnections
- Illegal extensions/Subletting

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Other causes of Revenue losses



- **Diesel power stations.** Tariff not cost reflective. The operating costs are more than the revenue collections.
- **System use:** Lighting, maintenance, etc. for ZESCO Sub-stations and offices.
- Aged electromechanical metering technology.
- Builder's supply.

3.0 What were the major challenges in Revenue Loss Management?



- Socio-economic problems.
- Difficult to collect revenue from some sensitive customers.
- High number of Unmetered services and BSP's.
- Resistance by customers to inspect their premises.
- Inspector-to-Customer ratio was very low.
- Corruption.
- Load shedding.
- Introduction of prepayment metering system - NV.

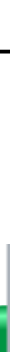
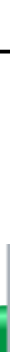
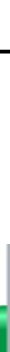
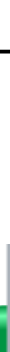
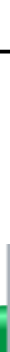
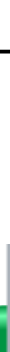
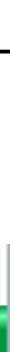
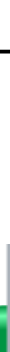
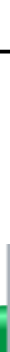
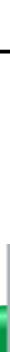
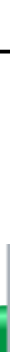
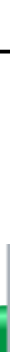
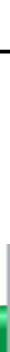
What were the major challenges in Revenue Loss Management?

Cont'd



- Non compliance to procedures in the system by employees.
- Billing System: Billing period overlap for post-paid customers.
- Meter Reading challenges.
- Incorrect customer data base e.g. Wrong addresses etc.
- Boundary issues (misaligned sales).
- Non availability of funds to rehabilitate and upgrade the ageing and overloaded distribution infrastructure.

Major challenges Cont'd



4.0 How did ZESCO manage to reduce its Revenue Losses?

Strategies to reduce Non-technical losses



- Strategy 1:** To identify the greatest revenue loss potential areas and prioritize investigations.
- Strategy 2:** To meter all customers esp. high loss areas such as markets and to resolve boundary issues.
- Strategy 3:** To improve meter reading and billing.
- Strategy 4:** To restructure revenue protection department.
- Strategy 5:** To strictly and consistently monitor the commercial cycle processes.

How did ZESCO manage to reduce its Revenue Losses? Cont'd

Commercial Cycle Process	Activities
1. Planning	<ul style="list-style-type: none">Constantly monitored all quotations issued in order to reduce opportunities for corruption and illegal activity.
2. New Installations/ Construction	<ul style="list-style-type: none">Monitored and audited all connection in progress requests, un-contracted service points, reported site connected supplies, and system failed inspection jobs.Monitored material utilization.
3. Metering and Meter reading	<ul style="list-style-type: none">Replaced all electro-mechanical meters with digital meters and prepaid meters.Ensured all late itineraries were resolved in time.

How did ZESCO manage to reduce its Revenue Losses? Cont'd

Commercial Cycle Process	Activities
4. Billing	<ul style="list-style-type: none">• Ensured correct and timely resolution of all billing exceptions.
5. Debt Control	<ul style="list-style-type: none">• Strictly managed all debt control system activities by:<ul style="list-style-type: none">• Constant review of all site disconnected services.• Constant review of all over due reconnections.• Carried out periodical door to door inspections.• Introduced flexible bill payment plan.
6. Customer Service	<ul style="list-style-type: none">• Improved management of all commercial activities in the Business units by training staff and providing services on time in order to reduce opportunities for corruption and illegal activity.
7. Operations /Maintenance/Faults	<ul style="list-style-type: none">• Provided guidance on commercial operations to all Operations, Maintenance and Faults staff.

How did ZESCO manage to reduce its Revenue Losses? Cont'd



Strategies to reduce Technical Losses

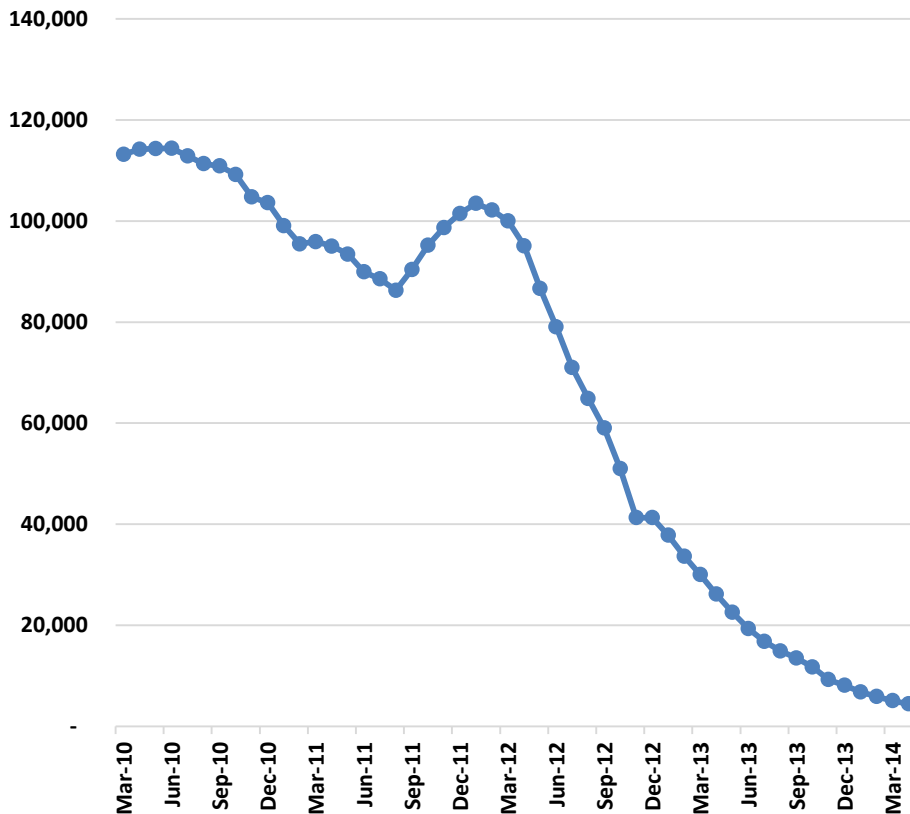
- Distribution Expansion and Reinforcement Project (DERP).
- Reinforce overloaded transformers.
- Relocation of distribution transformers to load centres.
- Increased Access to Electricity services project (IAES).
- Balanced loads between phases on feeders.
- Eliminate loose and poor connections at jointing points (transformers & lines).

5.0 Major Achievements

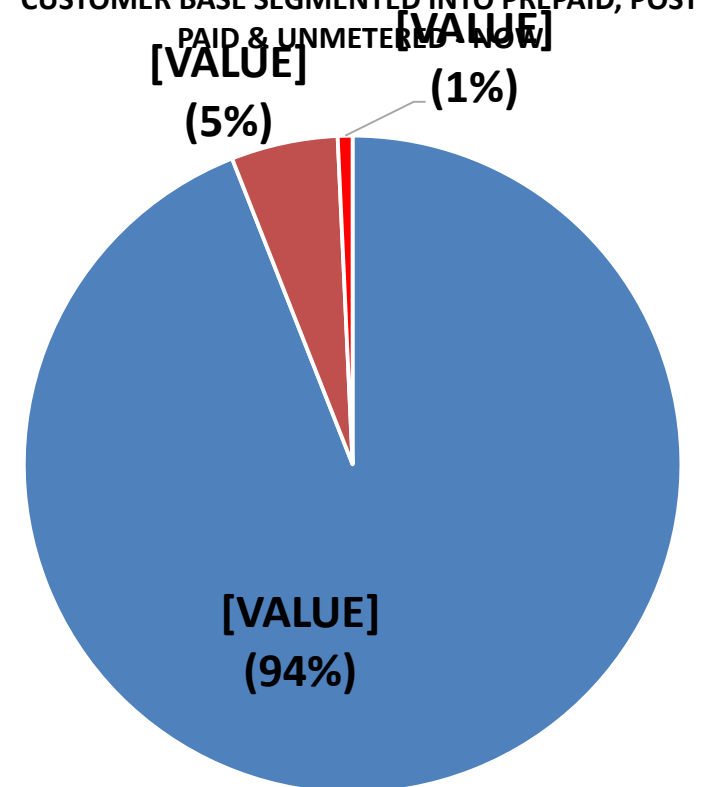


1. Metered **99.3%** Customers from a total customer base of 612,204 as at April 2014

UN-METERED TREND



CUSTOMER BASE SEGMENTED INTO PREPAID, POST PAID & UN-METERED



■ PREPAID ■ POST PAID ■ UN-METERED

Major Achievements Cont'd



- Constructed 33kV/11kV overhead lines.
- Established new substations.
- Reinforced and upgraded existing substations and associated overhead lines.

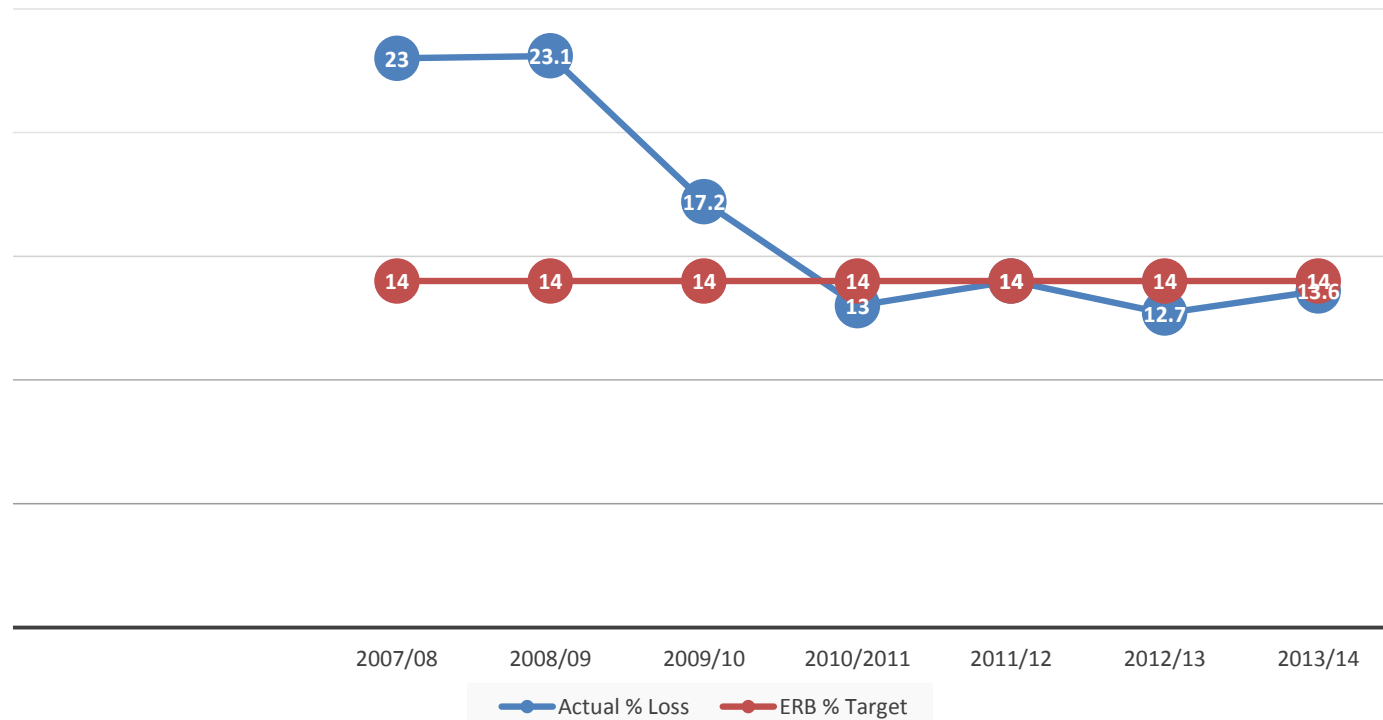


Major Achievements Cont'd



1. Reduction of Distribution Losses to below the ERB target of 14%

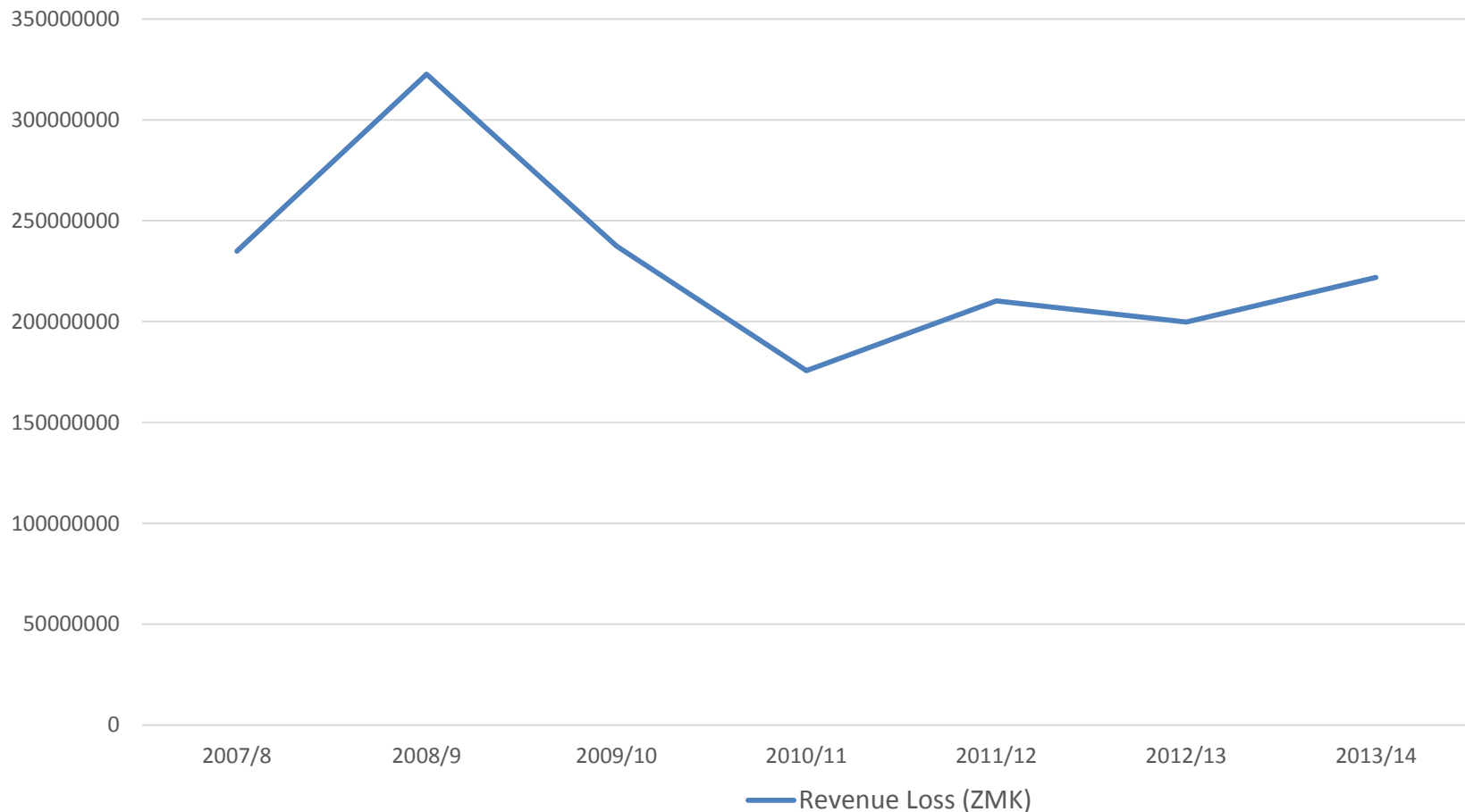
Annual Corporate Distribution Loss Performance Trend (%)



Major Achievements Cont'd



Drop in Revenue Losses compared to year 2007/8



CONCLUSION



- This performance was achieved by understanding the revenue loss problems at hand and then choosing the right strategies.
- For utilities to be competitive, they must use all their resources to effectively bill and collect revenue. A healthy revenue protection program is vital to any utility's bottom line.
- Successful revenue loss management requires strategies and solutions that allows utilities to institutionalize best practices across the organization.



Nelson Mandela

Long Walk to Freedom

*"I have walked that long road to freedom. I have tried not to falter; I have made missteps along the way. But I have discovered the secret that after climbing a great hill, one only finds that there are many more hills to climb. I have taken a moment here to rest, to steal a view of the glorious vista that surrounds me, to look back on the distance I have come. But I can rest only for a moment, **for with freedom come responsibilities**, and I dare not linger, for my long walk is not yet ended."*



**END OF PRESENTATION &
THANK YOU FOR YOUR ATTENTION**

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Questions ?