



*Bringing ideas
to life*

DISTRIBUTECH SANDTON JULY 2018

Unlocking value from Utility Assets with a cohesive
approach

Managing for success

At van der Merwe and Louis Fourie

At.vandermerwe300@gmail.com

lewies91@gmail.com

2018/07/17

aurecon

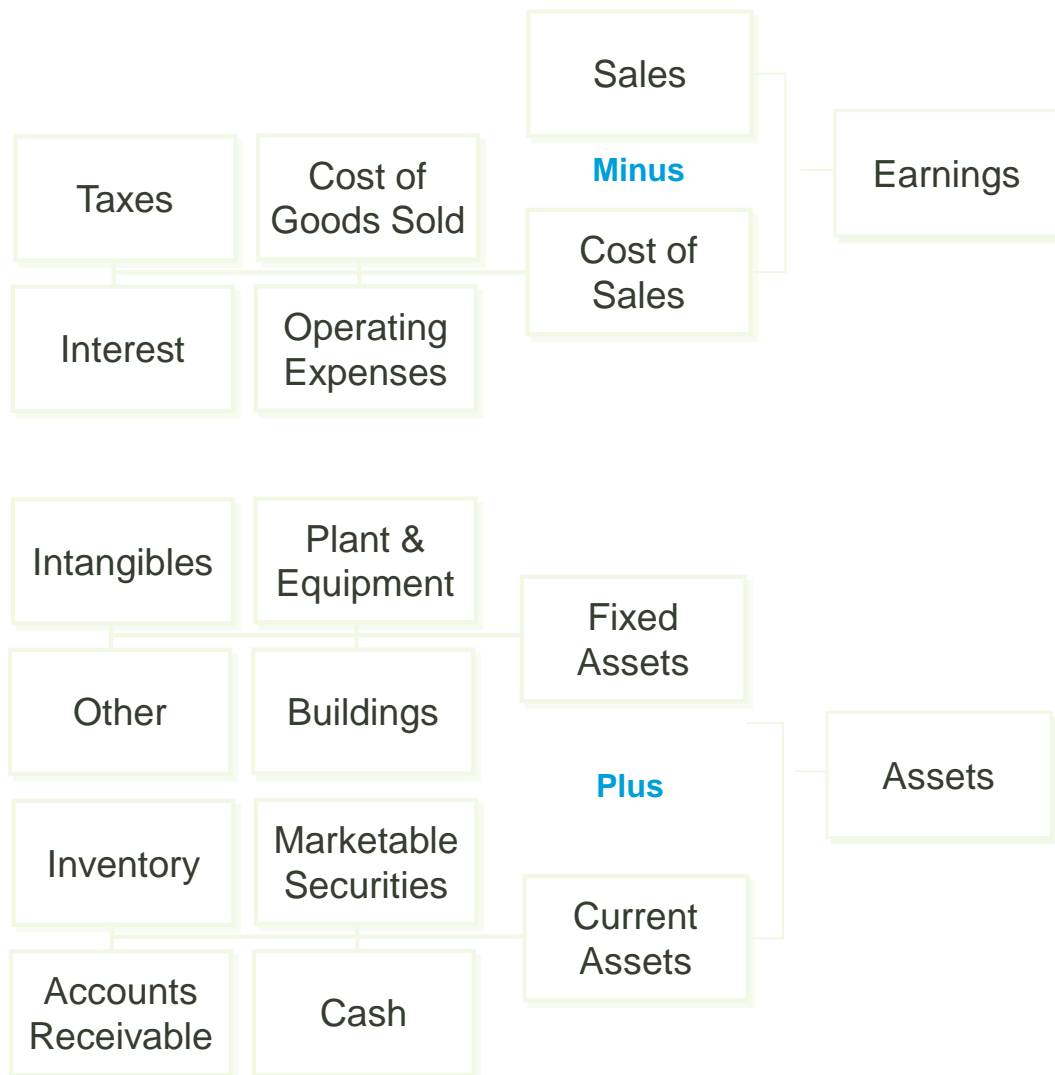
- What is the meaning of *sweating the assets*
- The approach focussed on *optimising (or improve) ROA*
- Historic approach *focussed* on ROA & ROI
- Not very helpful to get *more* from the assets
- Better way is through a *holistic* approach and understanding of the utility (cannot sweat the asset alone without looking at the complete utility)
- Paper deals with *how* do you do this

Content

1. Traditional financial perspective (ROI & ROA)
2. Holistic approach to achieve sustainability
 - i. Traditional Financial performance vs Utility sustainability/health
 - ii. Utility sustainability model
 - iii. Optimising the assets
3. Utility performance management
4. Case examples
 - i. Business Economic Turnaround
 - ii. ATC&C reduction
 - iii. Quality of supply

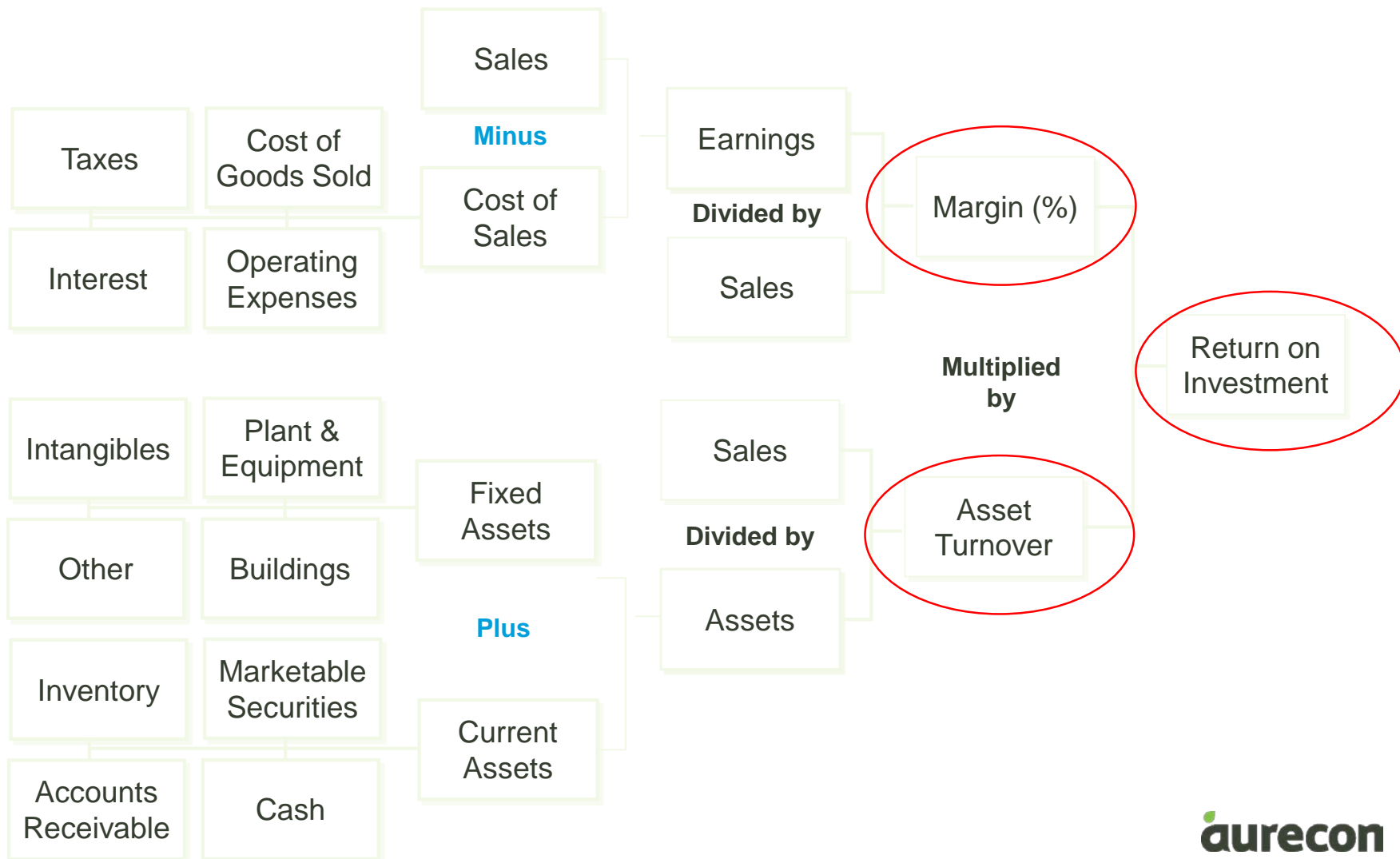
2. Traditional ROA & ROI

Value Creation – for Utility Sustainability

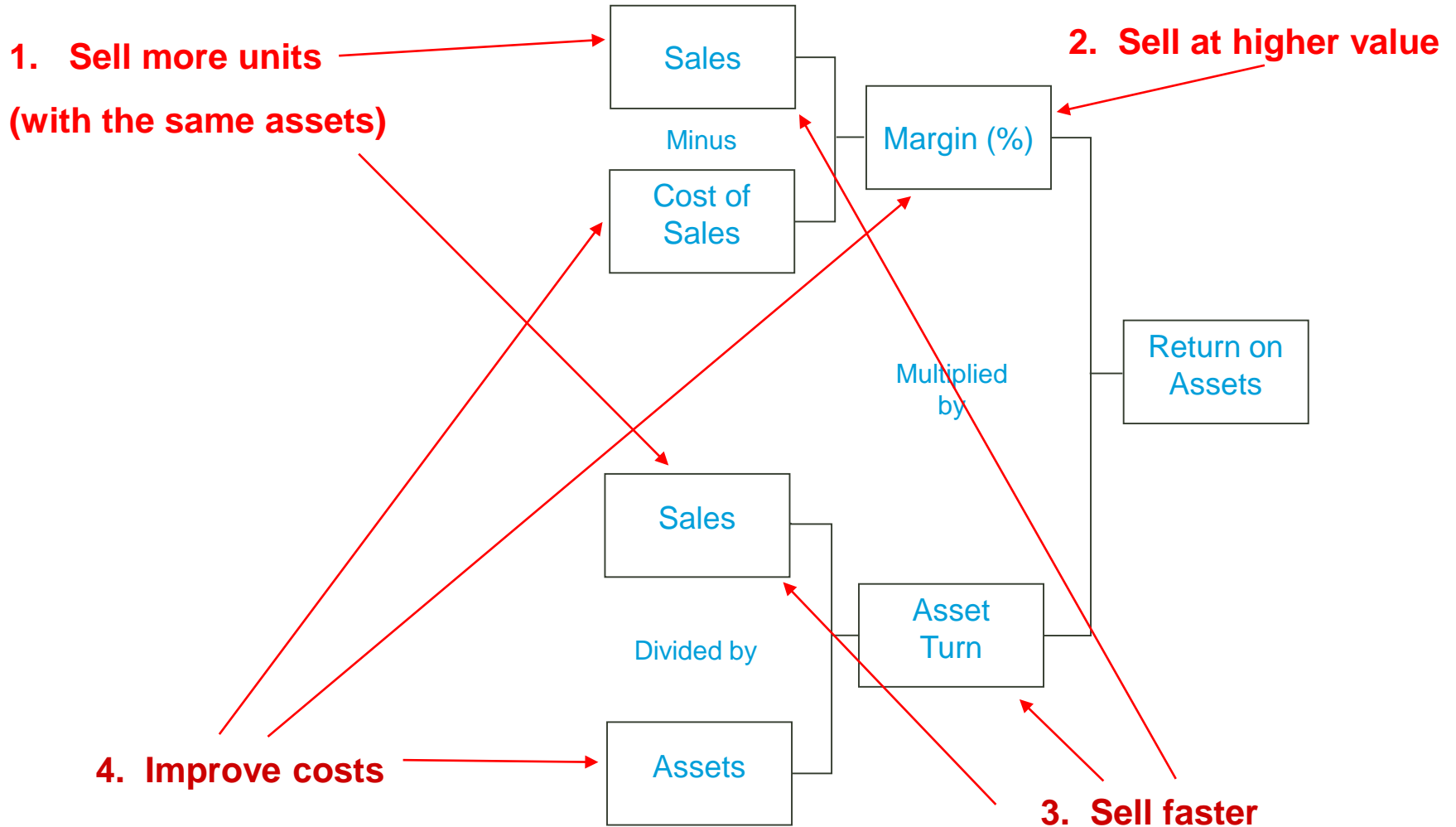


Total Returns
>
Total Costs

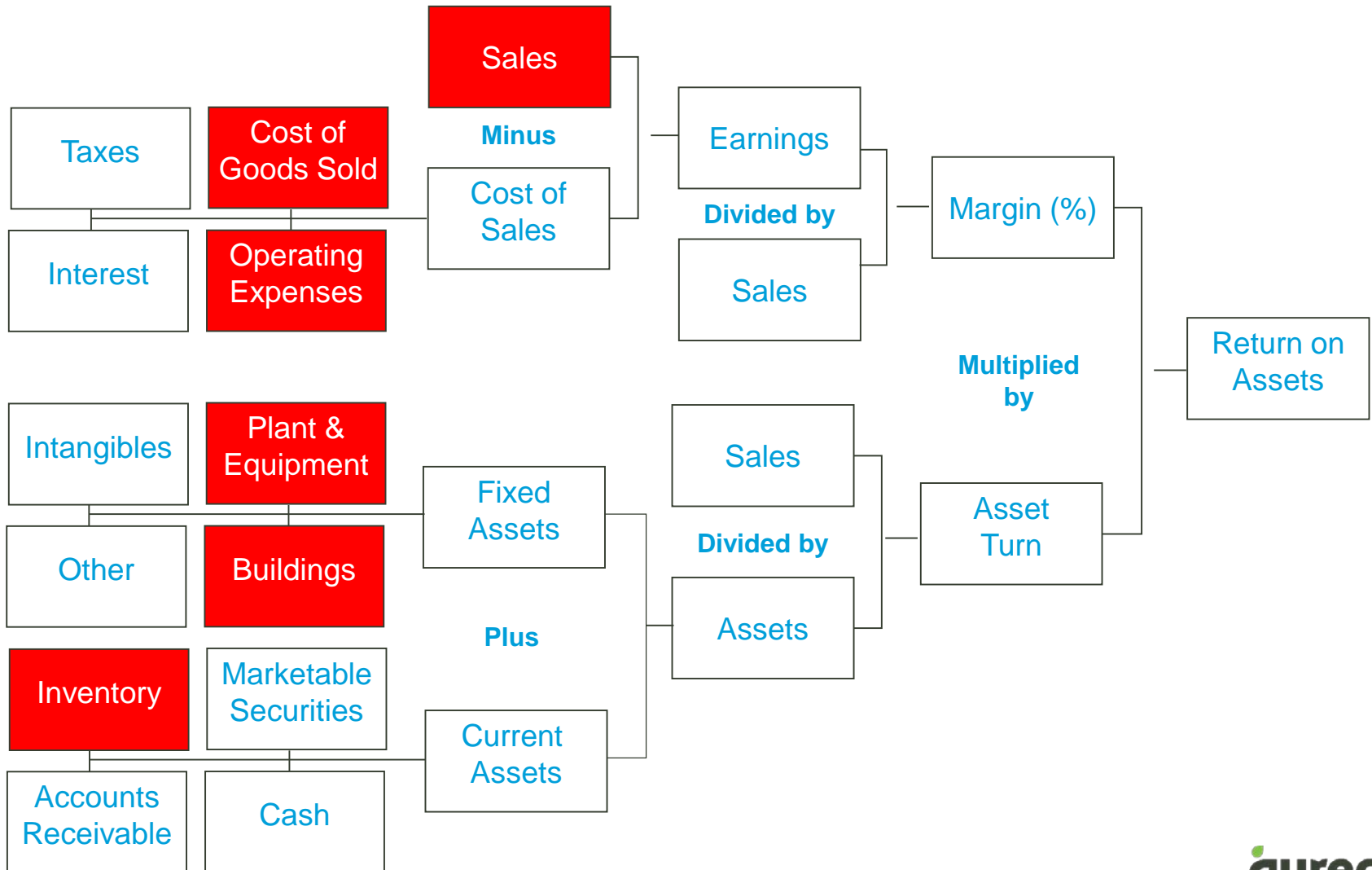
Value Creation – for Utility Sustainability



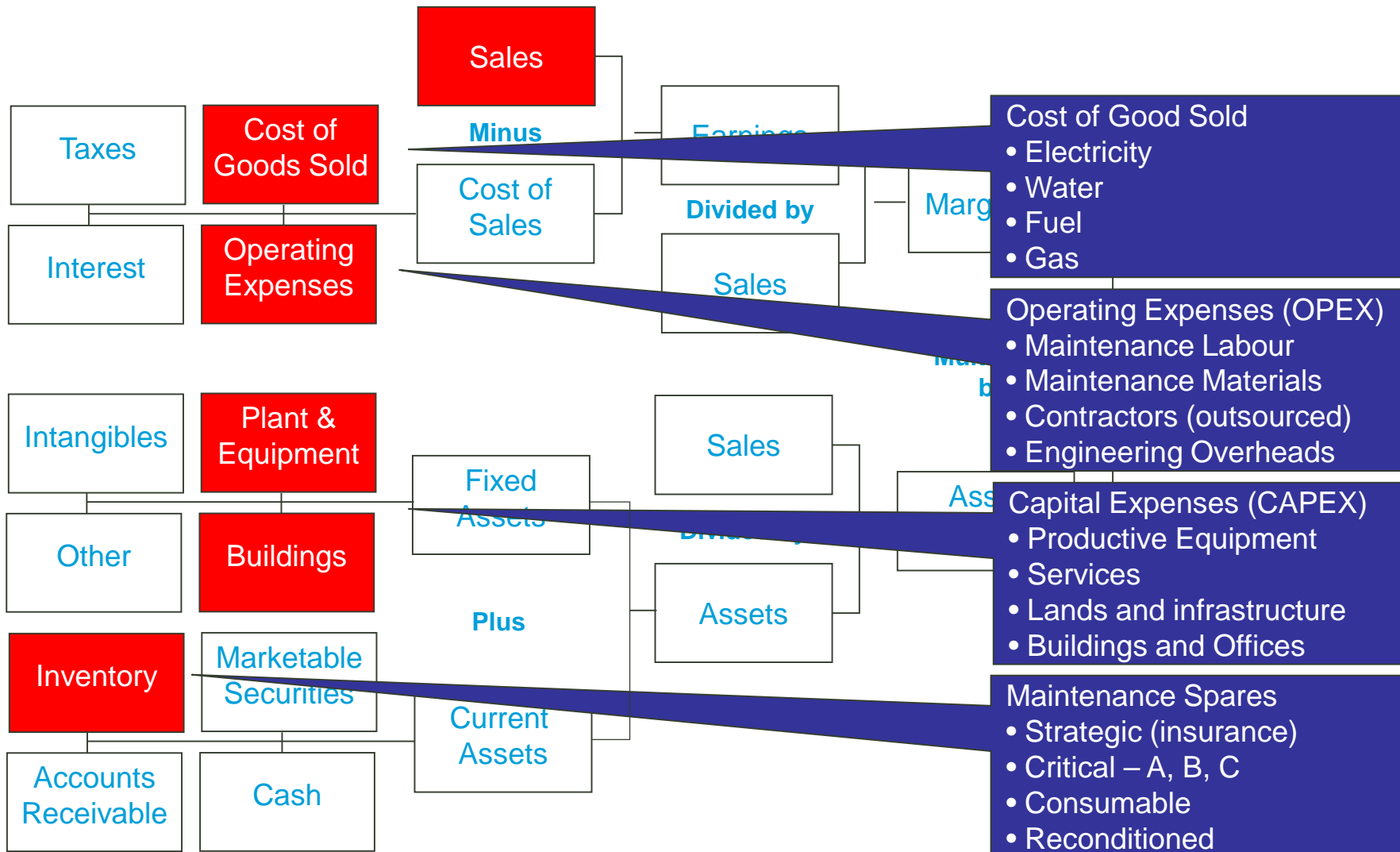
Improve Utility Sustainability



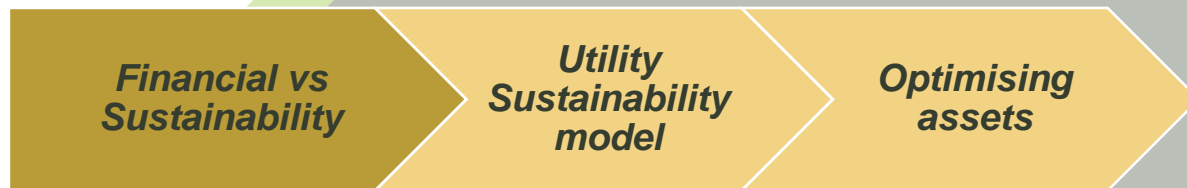
Utility Sustainability Improvement



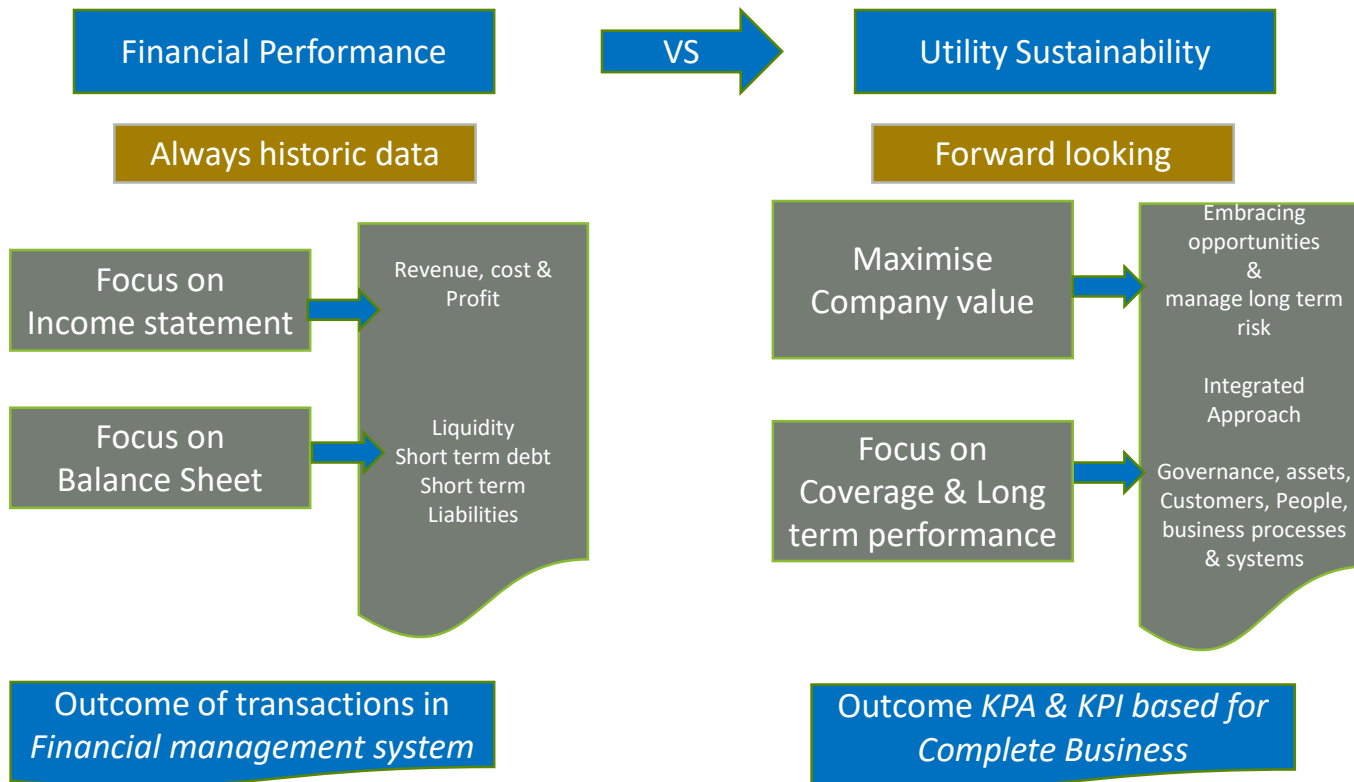
Utility Sustainability Improvement



3. Holistic approach to achieve sustainability



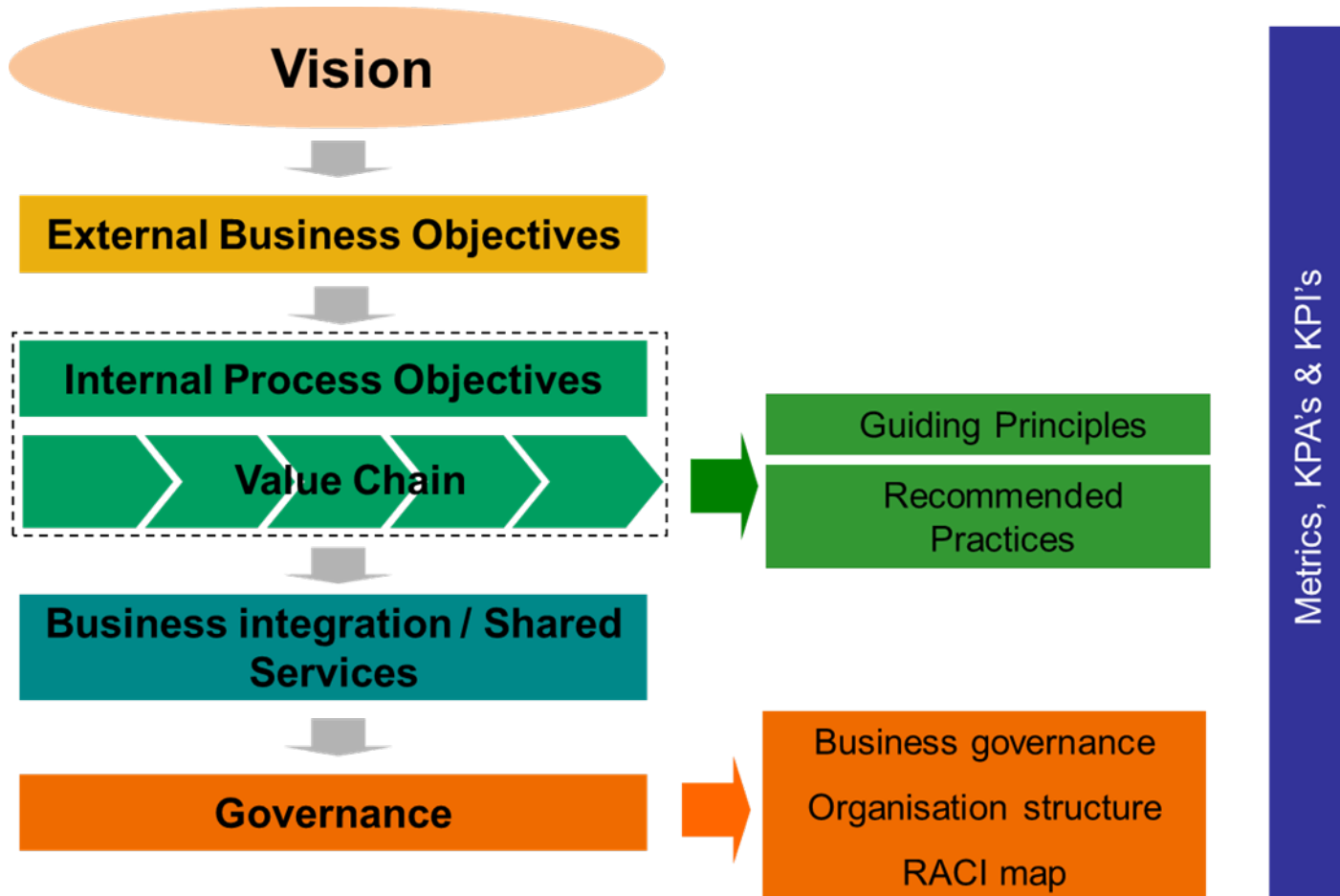
Financial performance vs Utility Sustainability



Bigger picture



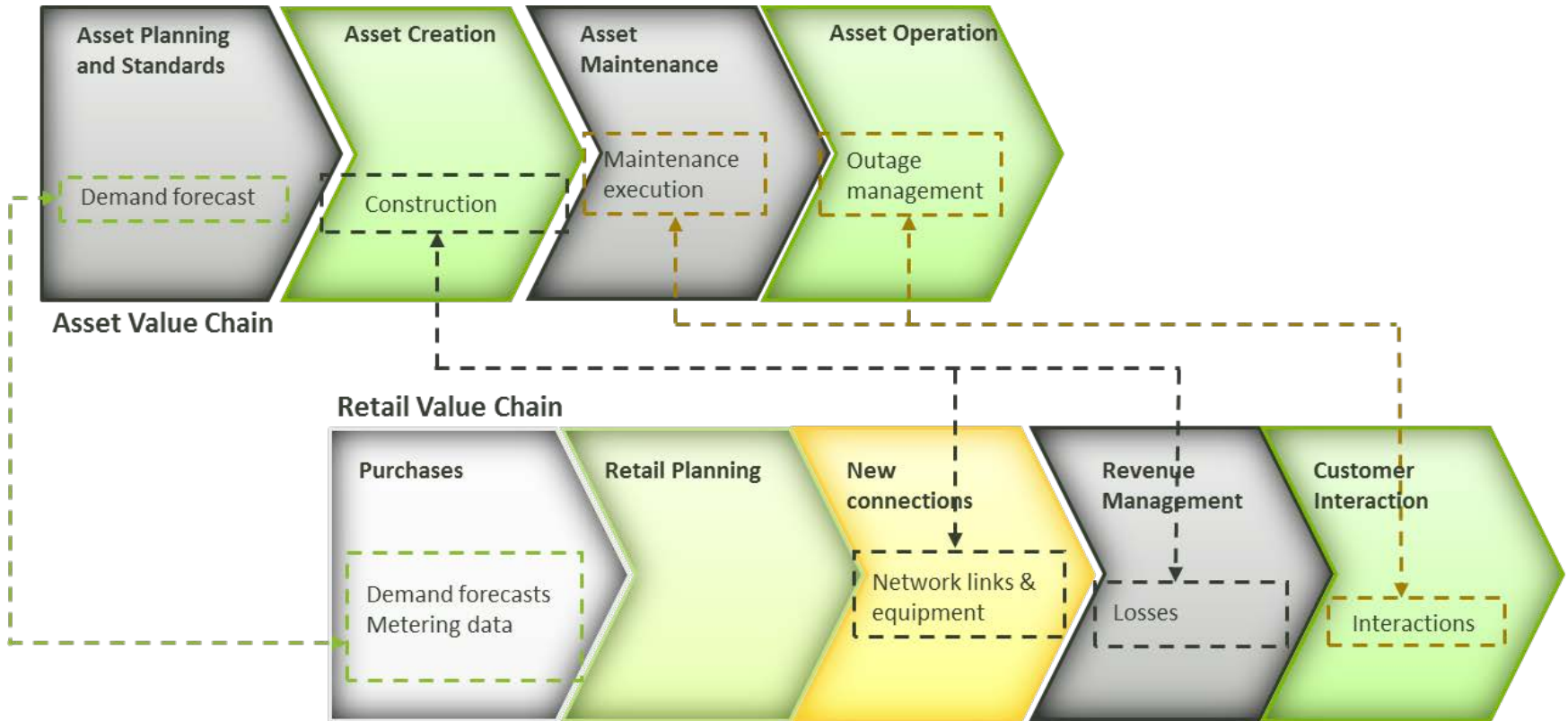
Bringing ideas to life



Bigger picture



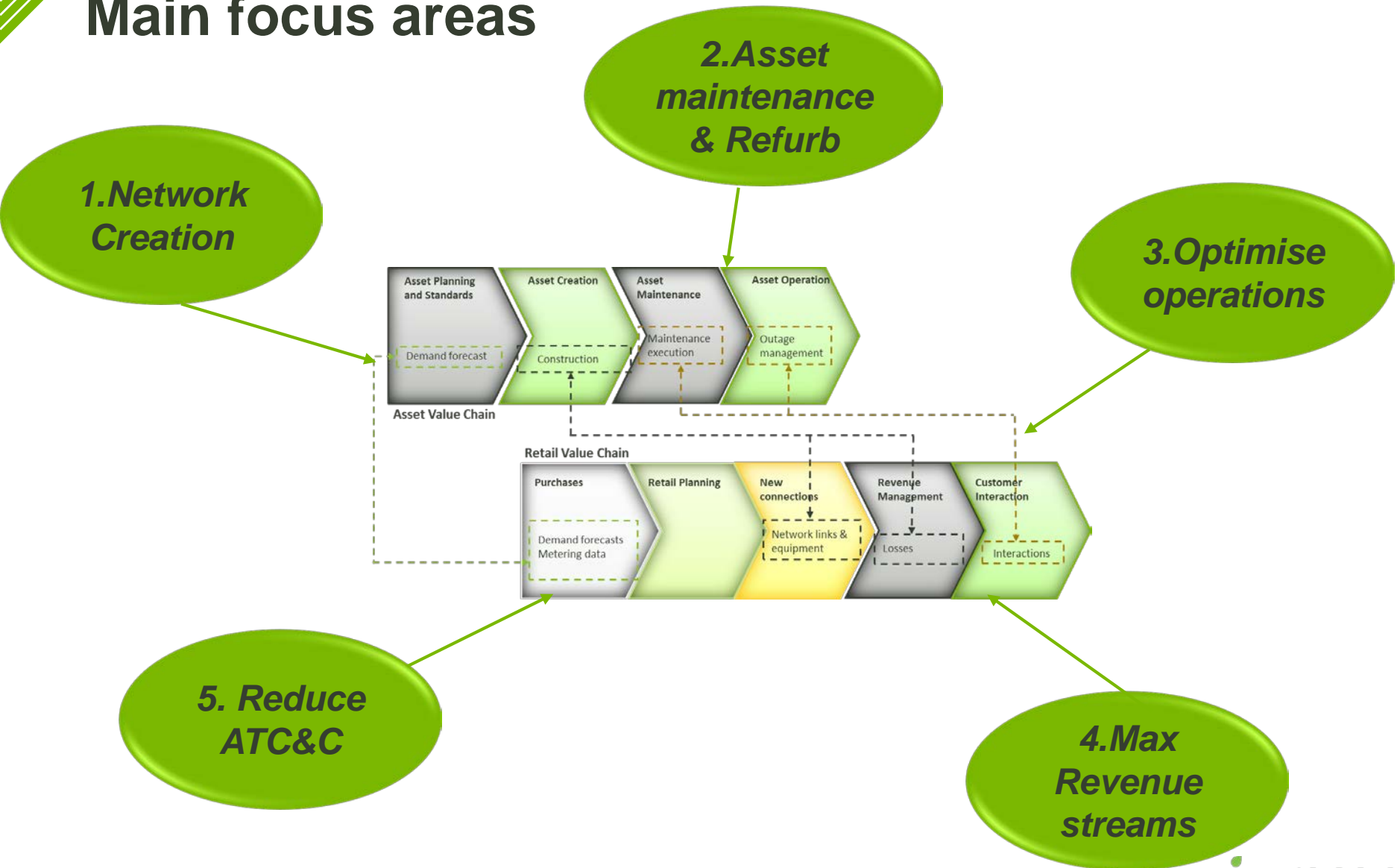
Bringing ideas to life



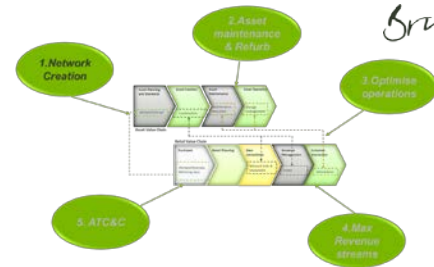
How do you sweat/maximise the assets?

*Bringing ideas
to life*

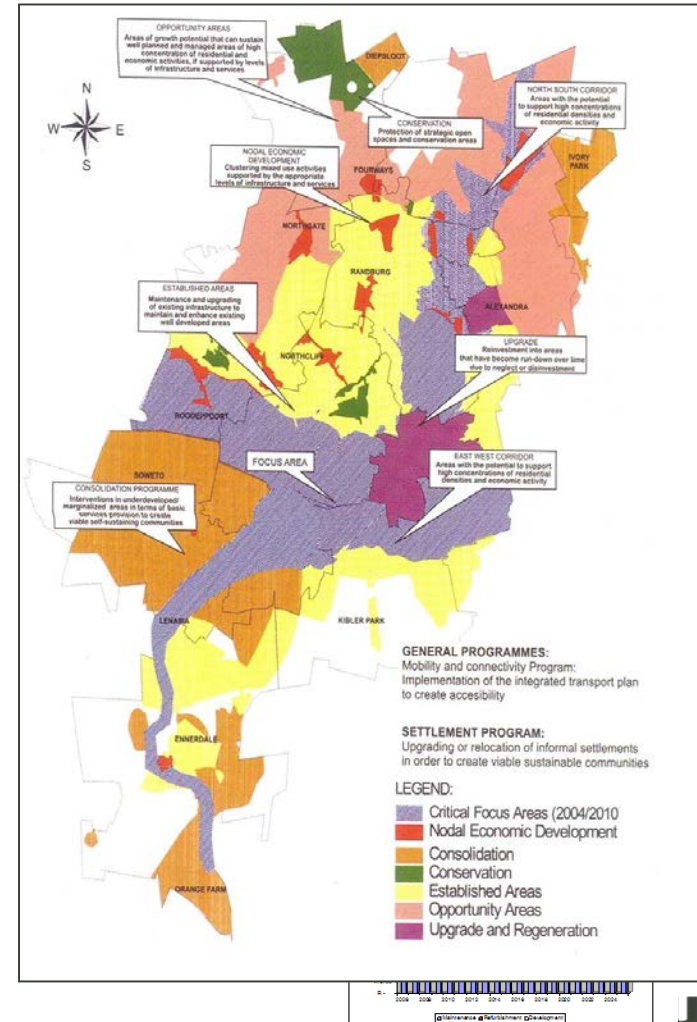
Main focus areas



Network creation

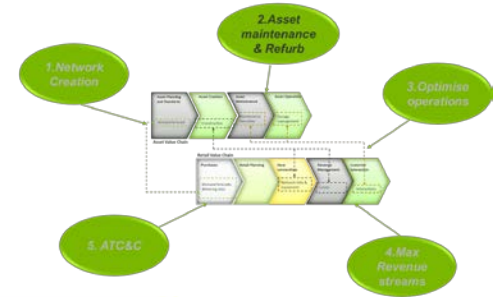


Bringing ideas to life



Asset maintenance and refurbishment

Bringing ideas to life

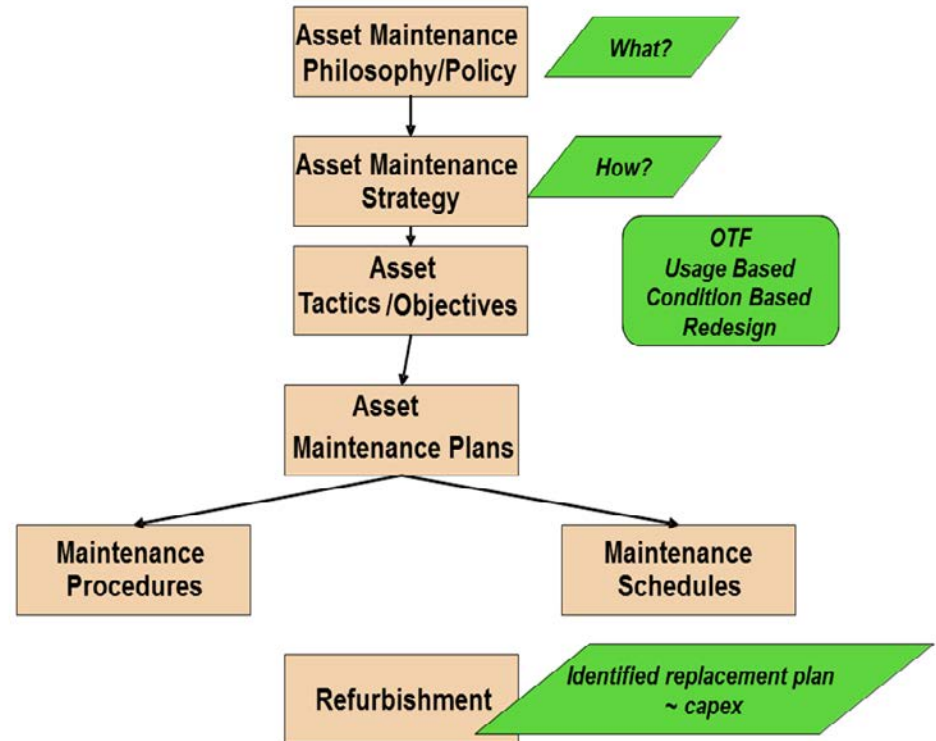


■ Asset maintenance

- Maintenance policy/strategy and planning
- Condition based maintenance
- Benchmarking
- Standardisation
- Skills and training

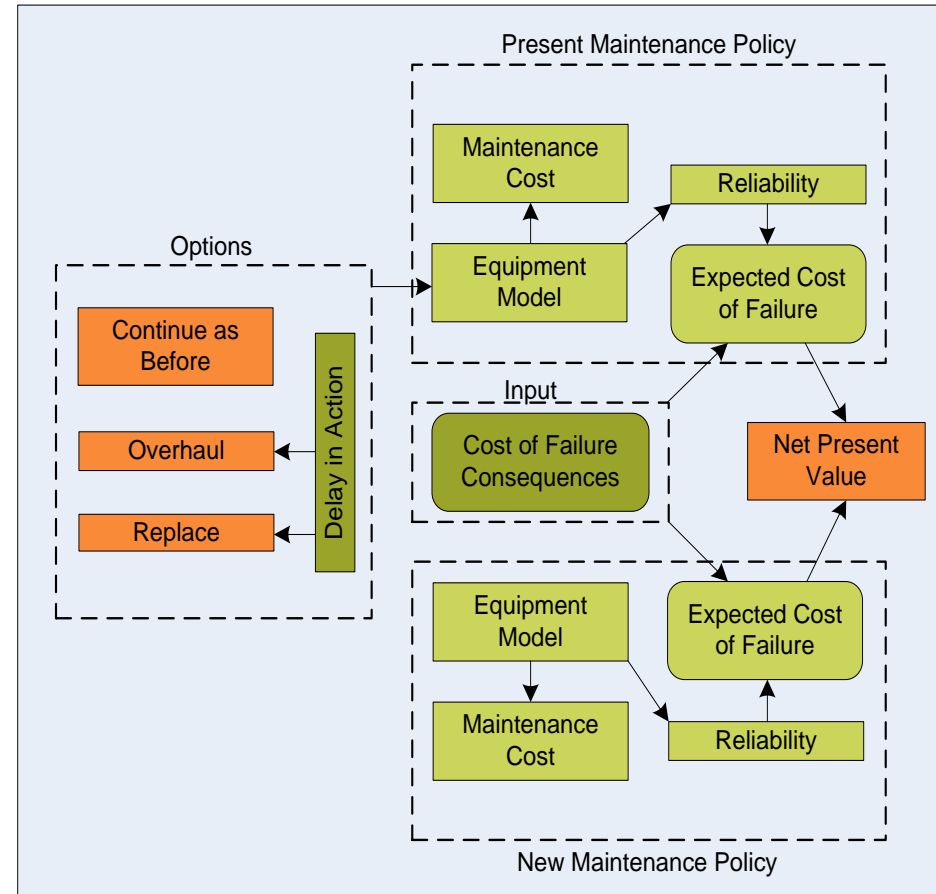
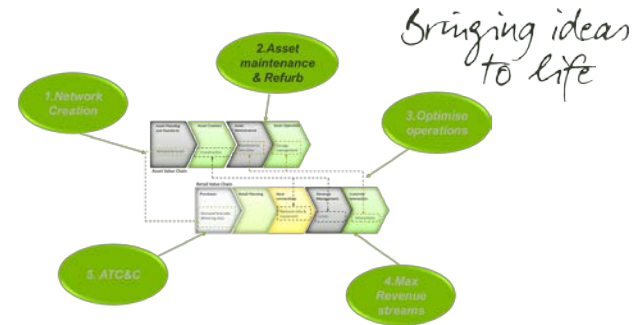
Strategic
Operational

Asset Maintenance

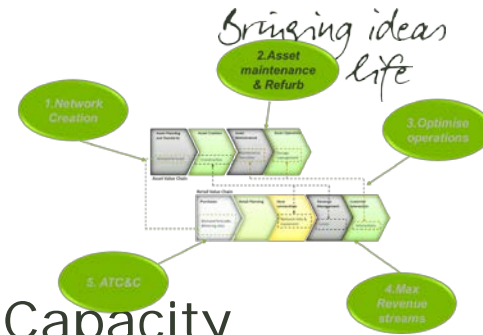


Strategic Life Extension Options

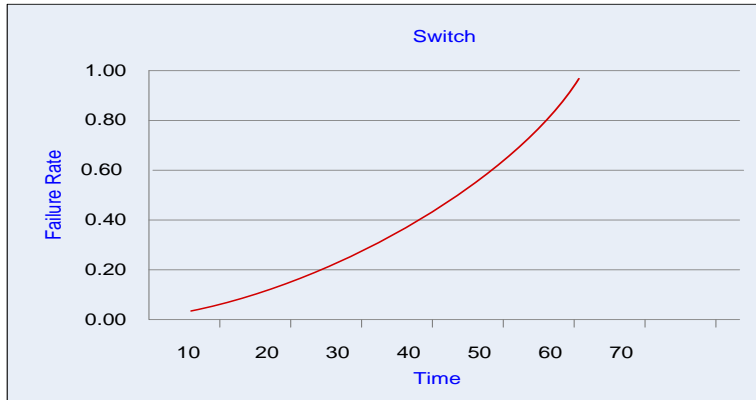
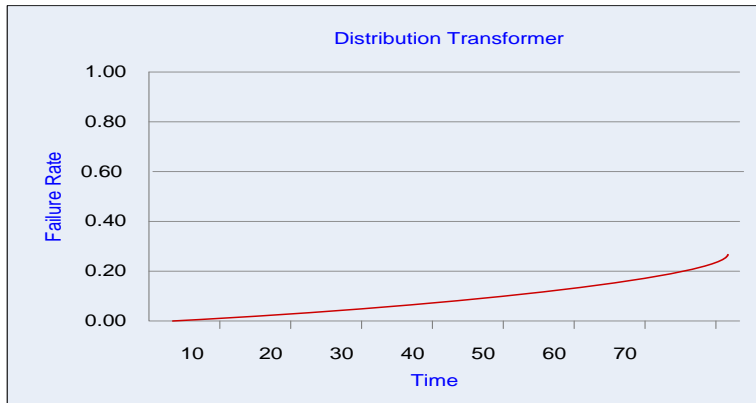
- Once an **asset condition assessment** exercise has been completed, **strategic life extension / renewal options** can be identified and evaluated. This is done on an equipment and system basis. Strategies include:
 - Maintain existing maintenance and loading policy,
 - Change maintenance or loading policy,
 - Develop short- to long-term **refurbishment and replacement** Capital programs,
 - Develop **failure and capacity models** to match current performance with primary failure causes,
 - Develop **reliability** models to predict network performance and possible mitigation strategies and test against performance targets.



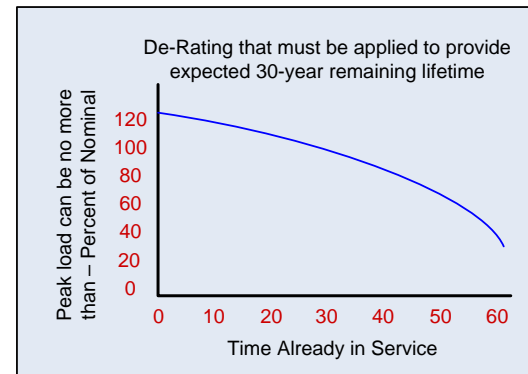
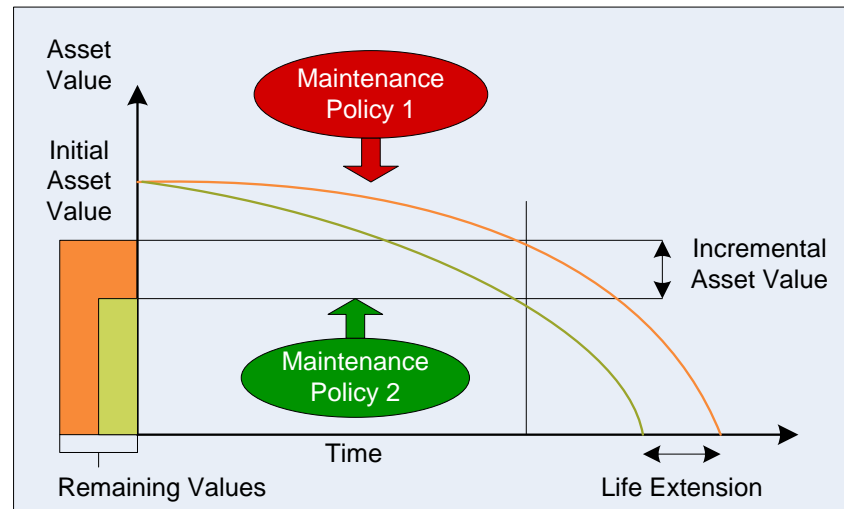
Ageing & Reliability / Capacity



Failure Rate / Reliability



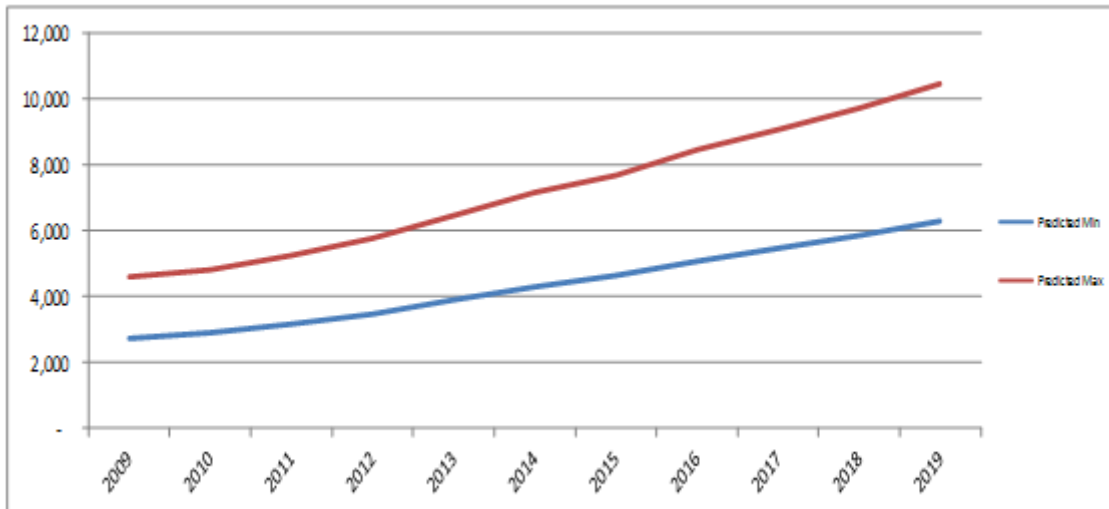
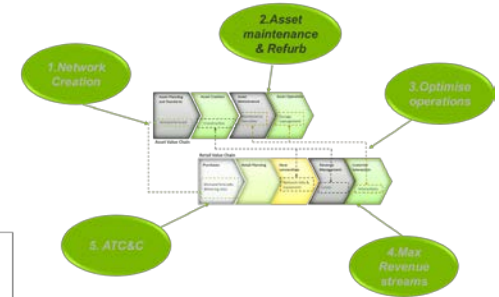
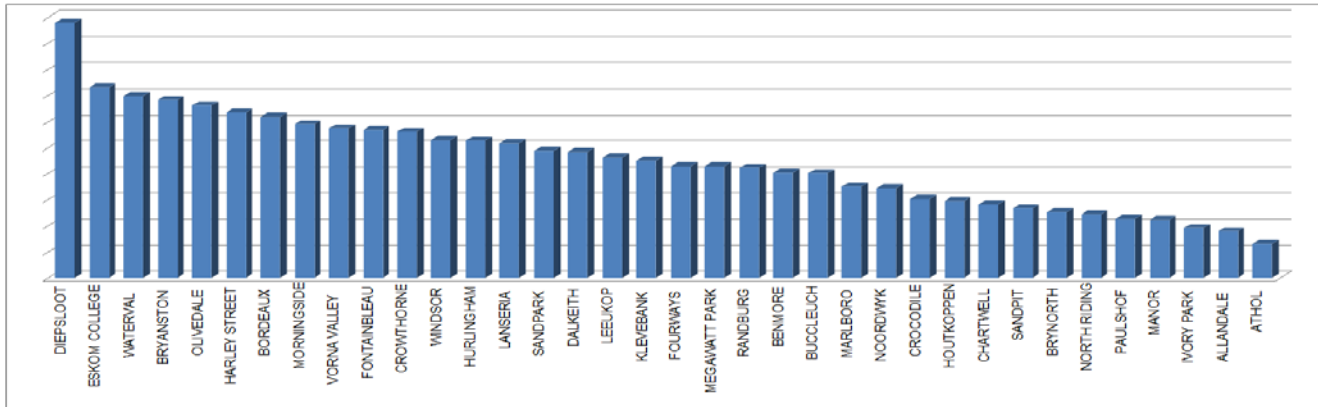
Life Expectancy & Capacity



Bringing ideas to life

Asset maintenance and refurbishment

Substation Weighted Average Condition

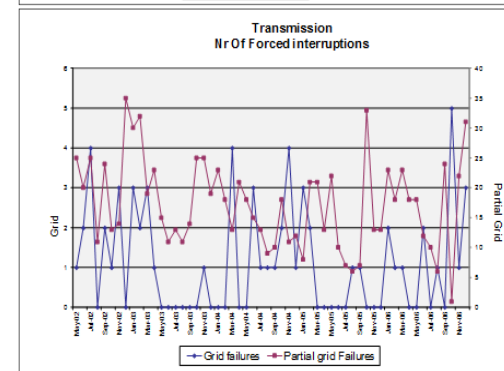
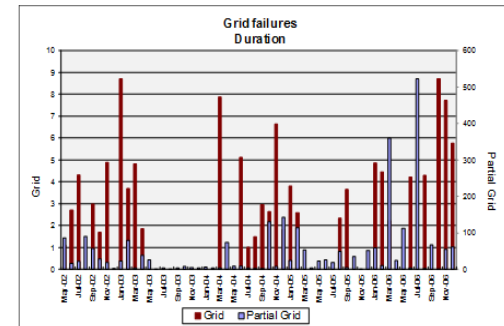
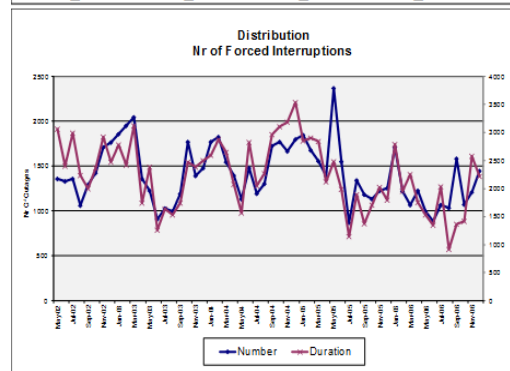
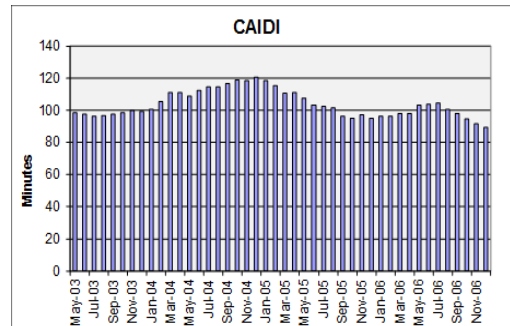
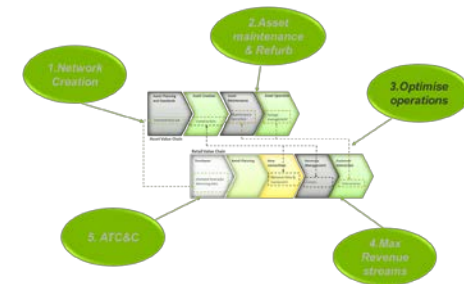


- Energy sold
- Average Supervised labour(USD/yr)
- Service area coverage (square km)
- OH Lines
- Customers

Optimised Operations

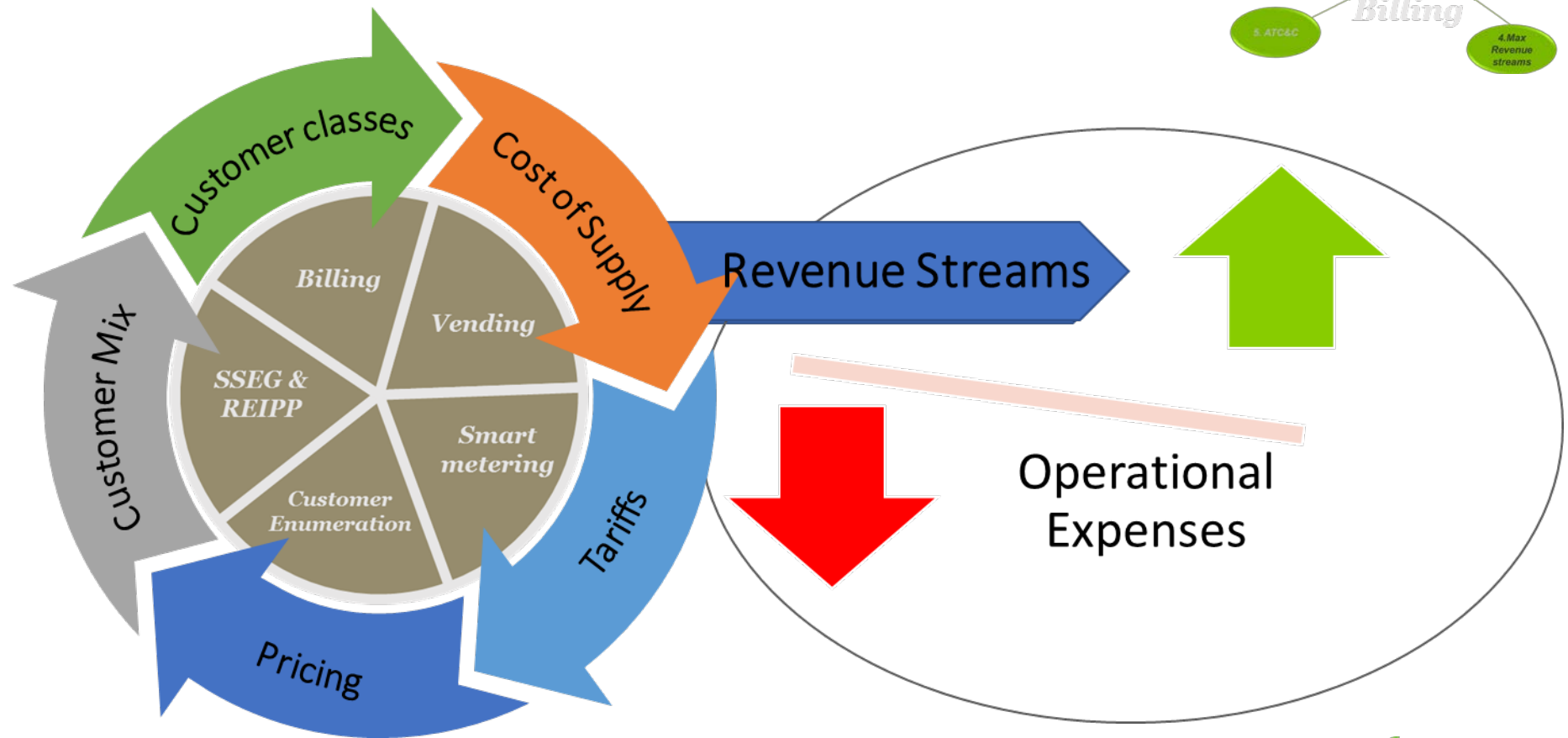
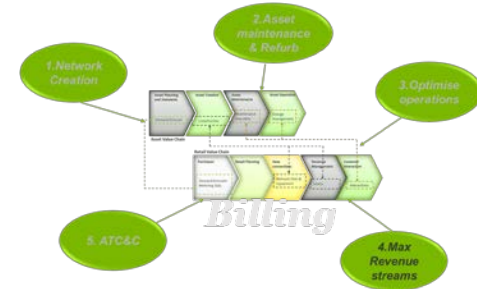
■ Operations

- Quality of supply (SAIDI/SAIFI)
- Minimised outages
 - Proper scheduled maintenance
 - Fault investigations
- Open point analysis (minimise technical losses)



Bringing ideas
to life

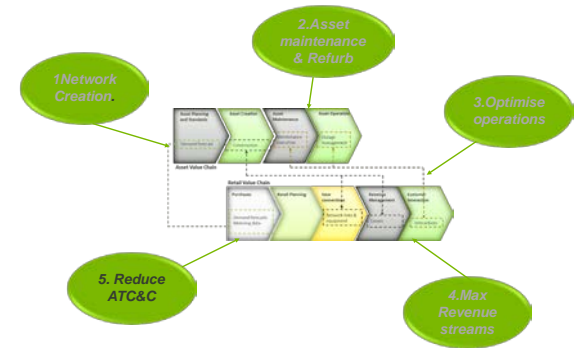
Maximise revenue streams



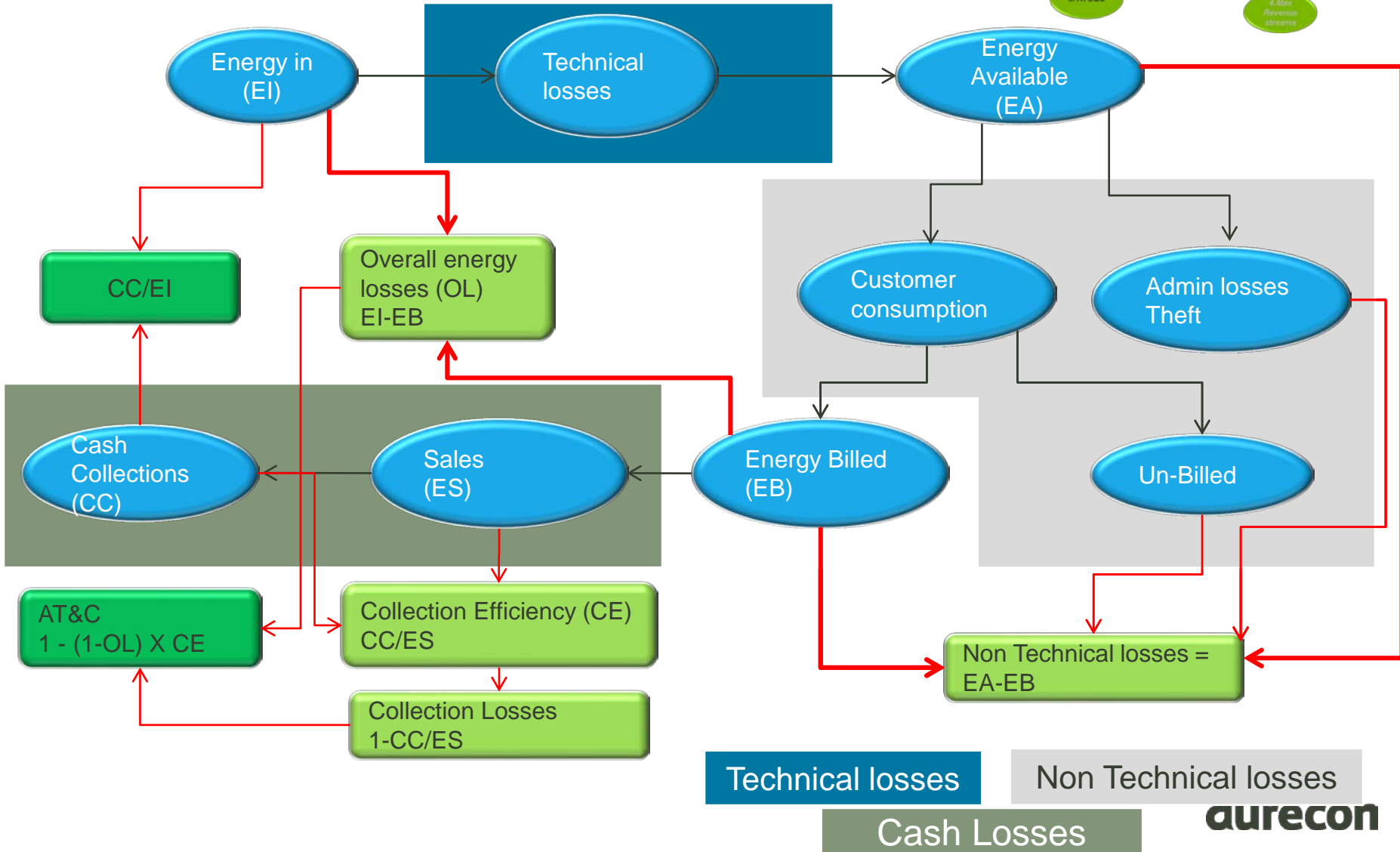
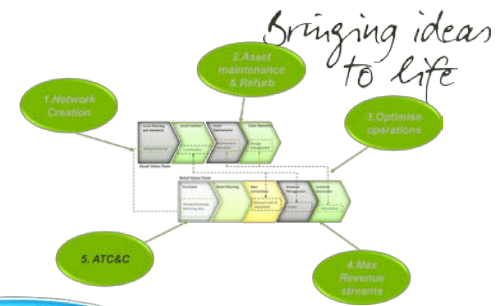
*Bringing ideas
to life*

Reducing ATC&C

- Minimising of overall losses
 - Better utilisation of assets
 - Increased cash returns (ROI)
- Understanding losses



Understanding ATC&C

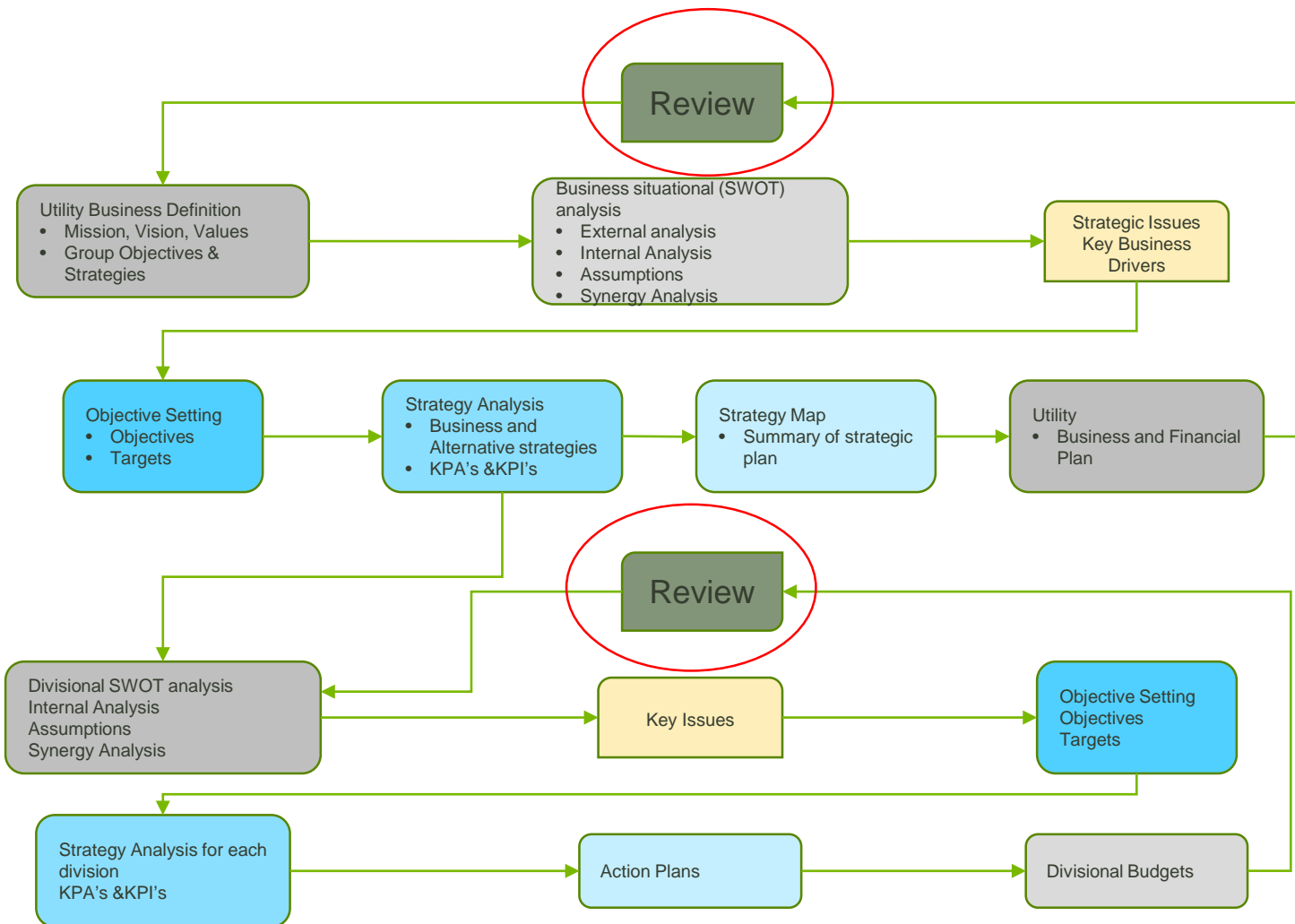




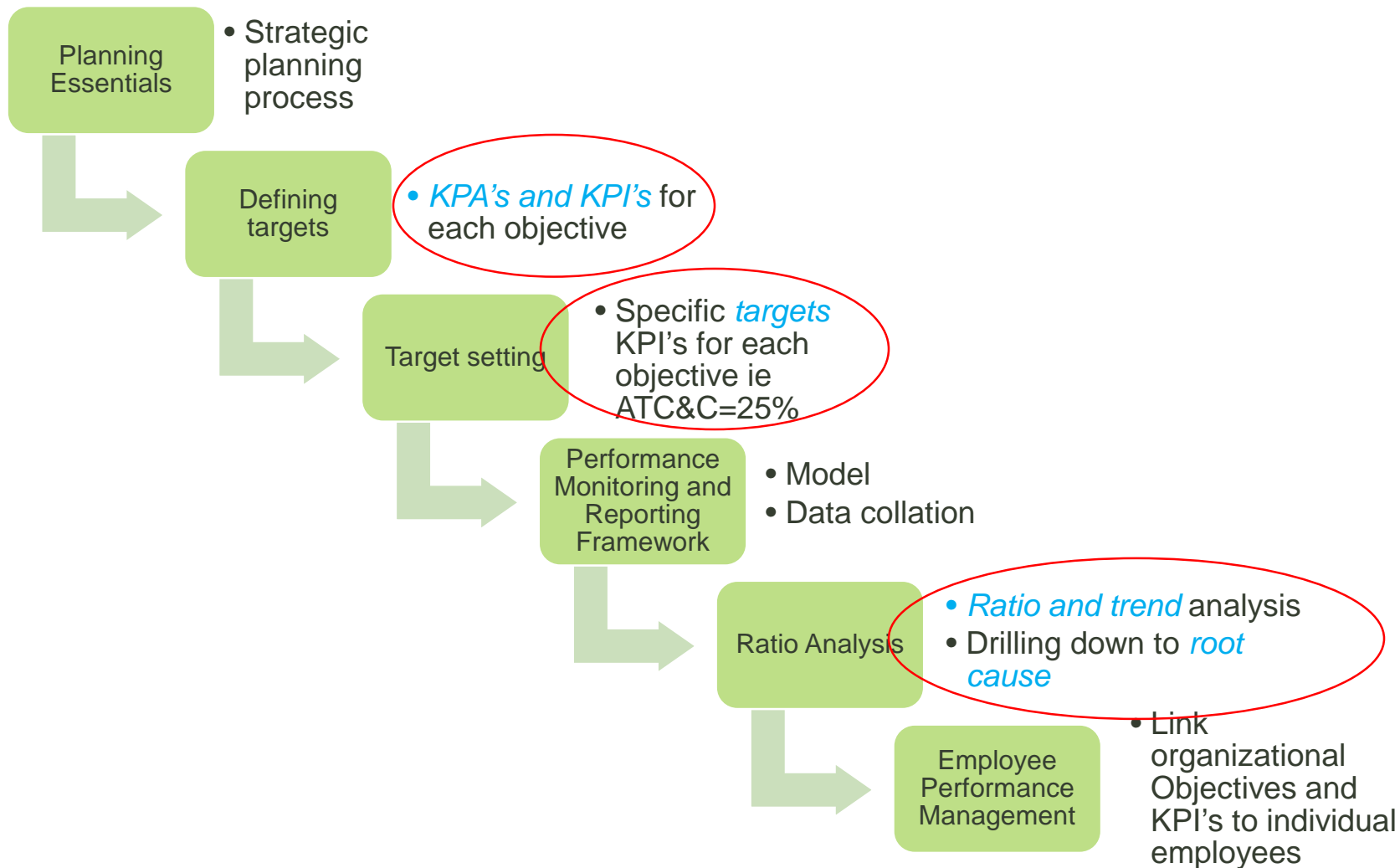
4. Utility Performance Management (Monitoring and Reporting)

- Need to have a *strategic plan* to understand how to maximise & sweat assets
- Performance management is to make sure you are *on target & monitor regularly*

Strategic Planning Process



Utility Performance Monitoring and Reporting



Performance Monitoring and Reporting for sweating the assets

- Identify typical KPA's for *measuring sweating* of the assets
 - Asset management
 - Customer Service
 - Finance
 - Business Performance
- Trend and ratio analysis based on KPA/KPI selected

Asset Management (Wires)

– Quality of supply

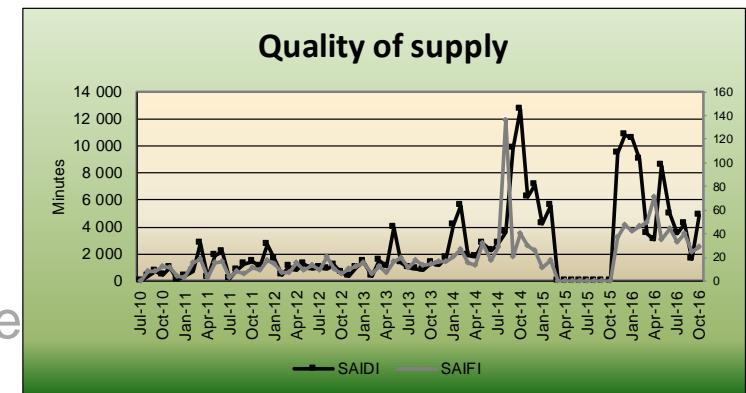
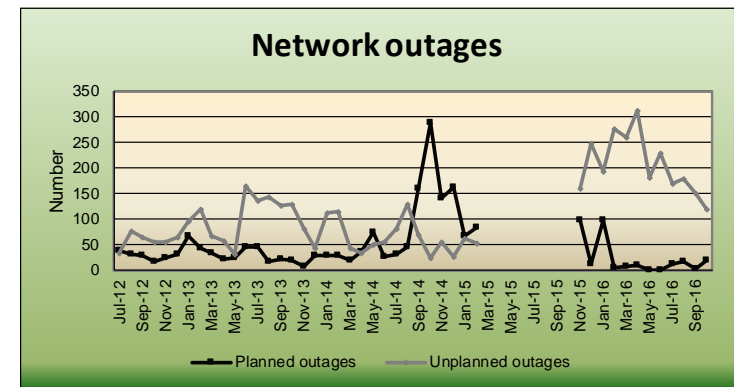
- SAIDI/SAIFI
- Planned/unplanned interruptions

– System

- Maximum demand
- Load factor
- Technical losses

– Assets

- Summary of plant
 - Substations: installed capacity
 - Overhead lines: km of lines installed
- MVA and km of lines commissioned
- Maintenance: Works orders complete
 - Maintenance cost



Customer Services (Retail)

– Customers

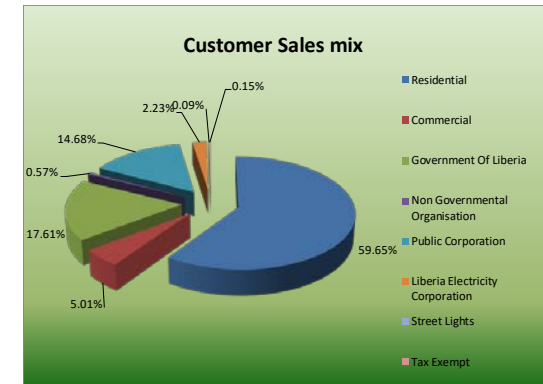
- Number of customers per customer category and tariff class
- Total energy billed or vended per customer category and tariff class
- Revenue per customer category and tariff class

– Revenue Management

- Cash collected per customer category and tariff class
- Debt per customer category and tariff class
- Number of disconnections and reconnections
- Age analysis
- Debtor days
- Non-technical losses

– Customer Service

- Number of complaints
- Number of complaints resolved



Finance

– Income statement

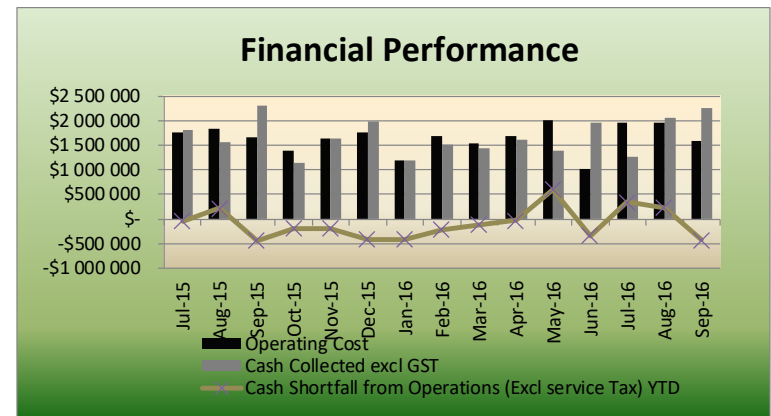
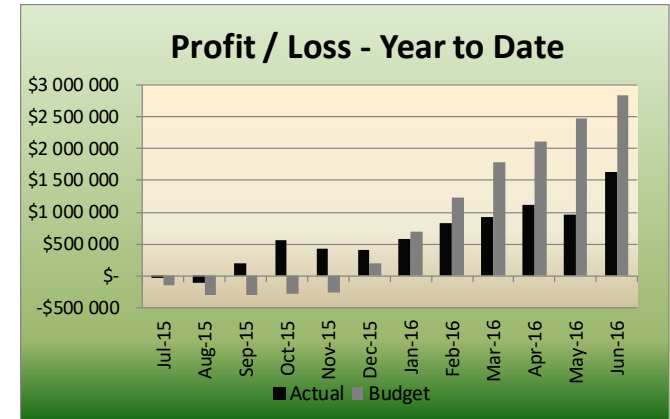
- Revenue
- Cost of sales
- Operating and maintenance cost
- Administrative cost
- Finance cost
- Depreciation
- Provisions: bad debt, obsolete stock
- Profit

– Balance Sheet

- Working capital
- Assets
- Liabilities

– Cash flow analysis

- Net cash from operations
- Net cash from investing activities
- Net Cash from financing activities



Business Performance

– Employees

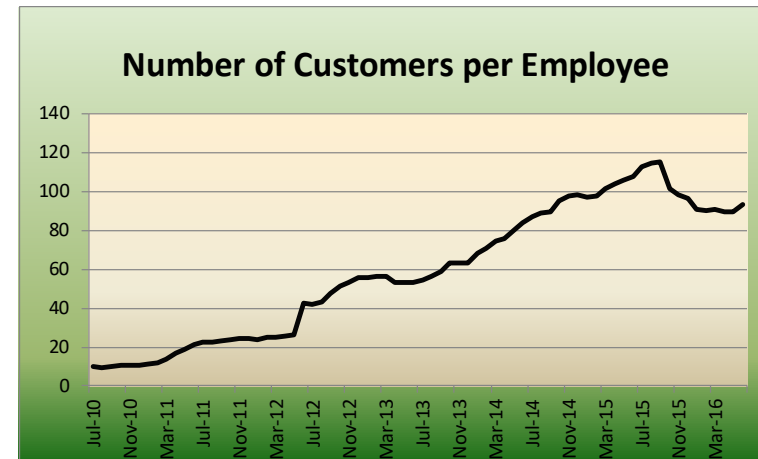
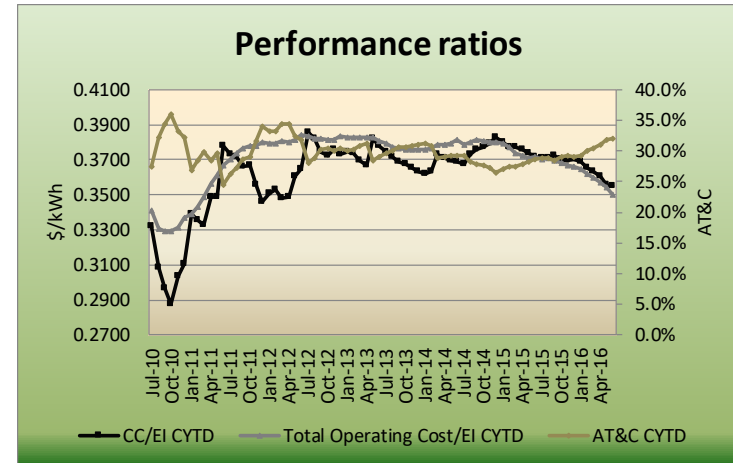
- Total
- Resignations/new appointments

– Safety

- Number of lost time accidents
- Number of fatalities
- Man days lost

– Ratio analysis and efficiency ratios

- Nr of customers per employee
- kWh sold per employee
- Average tariff per customer group
- Average consumption per customer group
- Billing efficiency
- Collection efficiency
- Cash collected/Energy In
- ATC&C



5. Case examples

Utility Turnaround

ATC&C

Customer statistics

Cash collections

Overall efficiency

Analysis must help to identify mitigation strategies

Case study 1

- Utility Turn Around

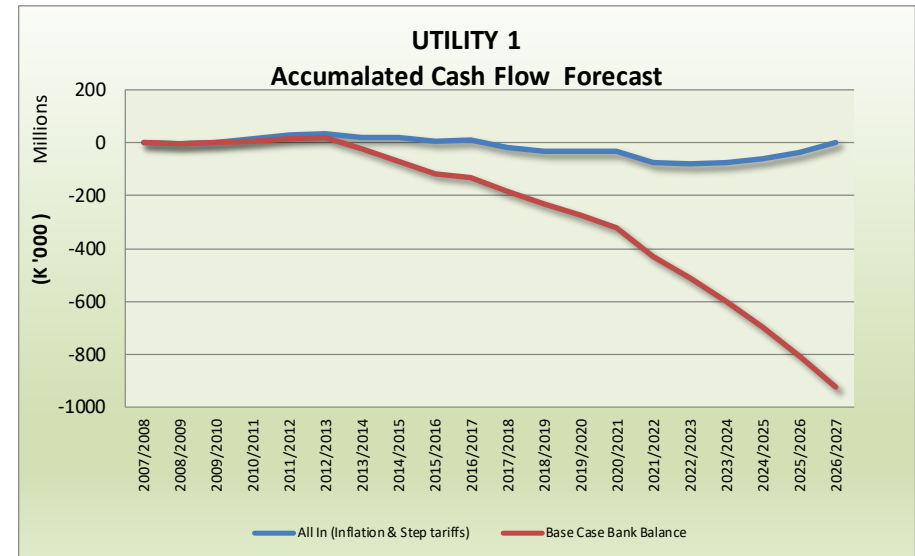
Business economic turnaround (Case Studies)

- Results from typical *mitigation strategies* for two ailing utilities to improve on sweating the assets
- Utility 1
 - High losses
 - Operational inefficiencies
 - Insufficient cash flow
- Utility 2
 - Extreme drought caused lack of (cheap) hydro generation
 - Insufficient tariffs for additional (non hydro) generation cost
 - Opex exceeded revenues
- Objective is to ensure positive cash flow from operations

Case Study: Utility 1

Mitigation Strategies

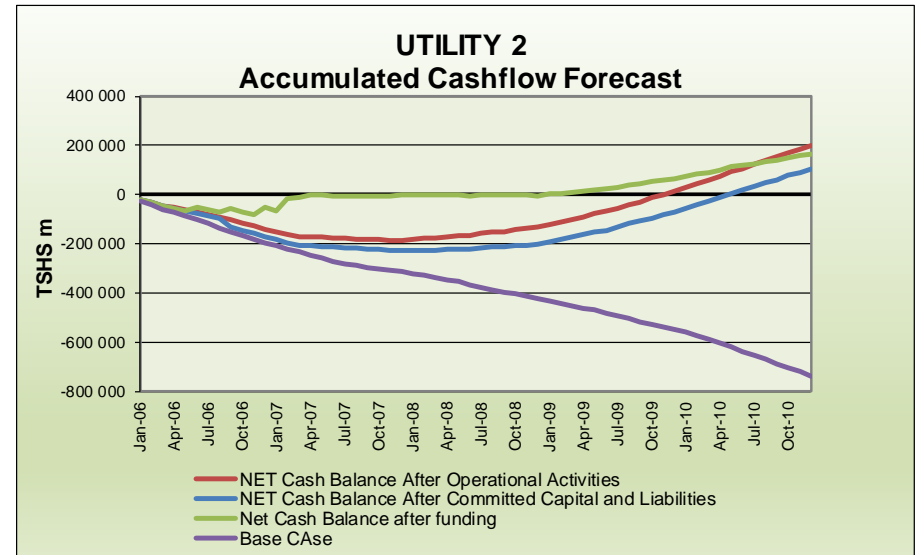
- **Reduce technical losses** from 16 to 14 % **and non technical losses** from 5.5% to 2.5% ,
- **Increase the collection efficiency** from 93% to 97.5%,
- Collection of old debtors over a 3 year period,
- **Increase in operational efficiency** with 40% (measured in kWh per employee or number of customers per employee).
- Increase revenue through **additional step tariffs** above inflationary tariffs
- Monitoring and reporting through appropriate KPI's



Case Study: Utility 2

Mitigation Strategies

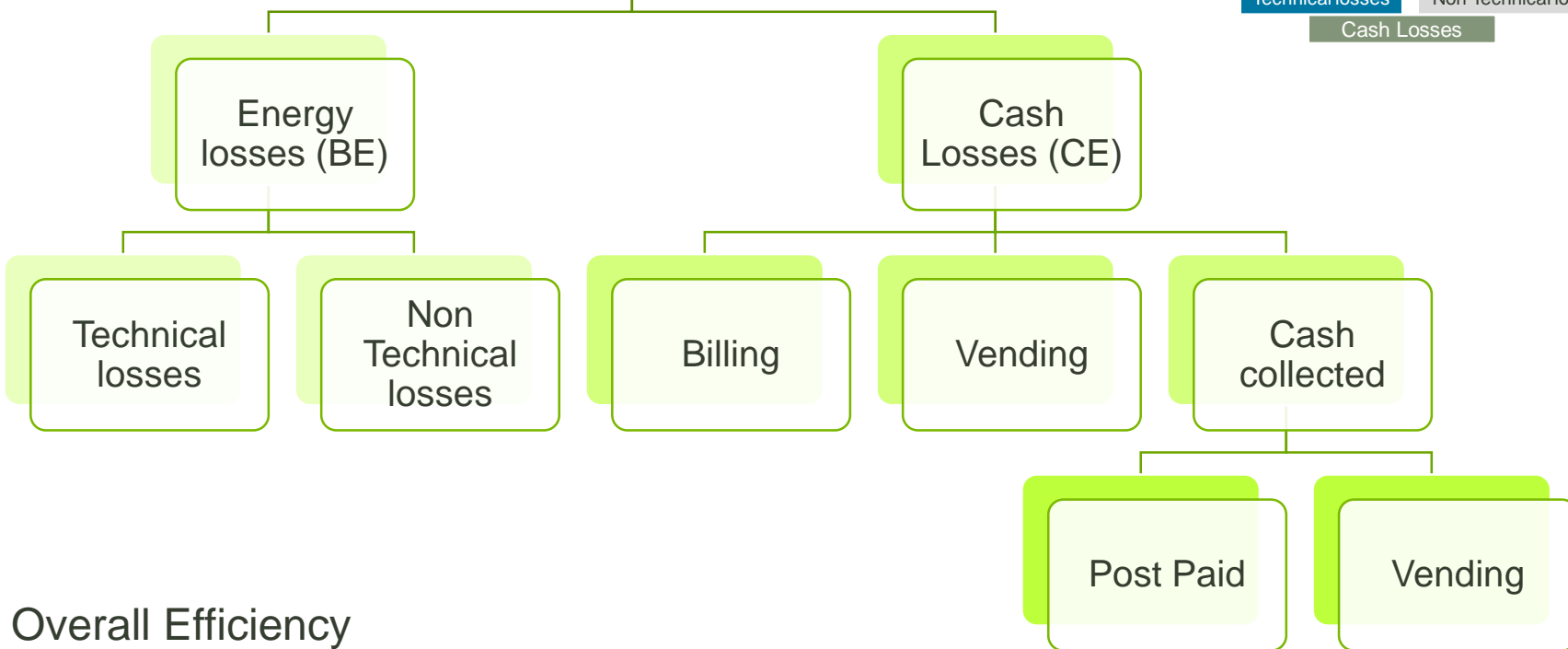
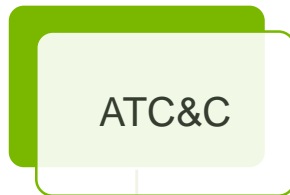
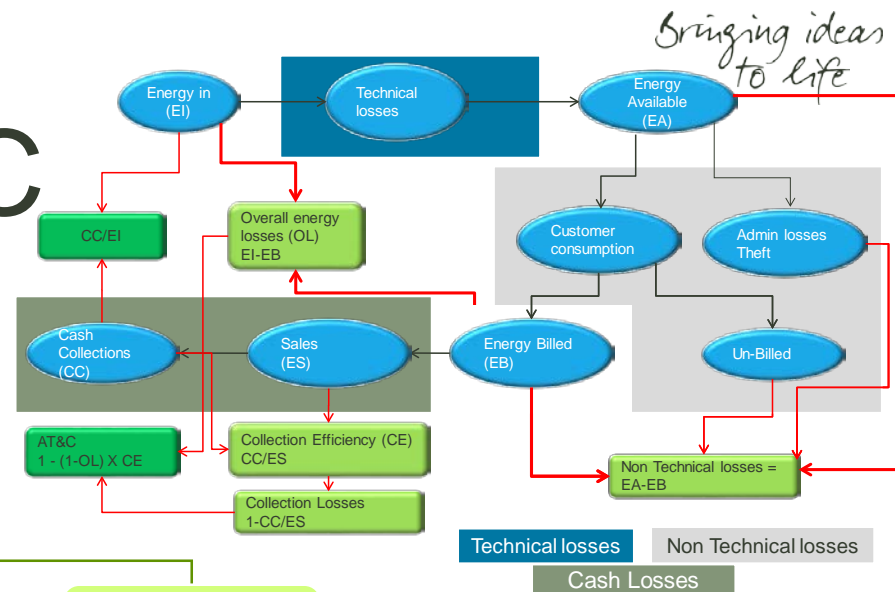
- **Technical Loss reduction** from 20% to 17%, non technical losses from 6% to 3%,
- **Maintain collection efficiency,**
- **Convert expensive diesel generation to gas** based, and optimise generation mix,
- Restructuring of debt,
- **Increase the quality of supply and reducing outages,**
- **Increase sales through electrification and large mining loads,**
- Additional **step tariffs** in short term and
- **Short term funding through overdraft** to support short term cash deficit



Case study 2

- Reducing ATC&C to improve sweating the assets

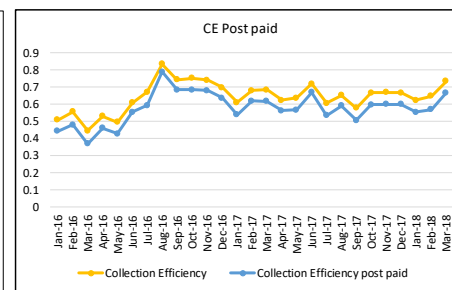
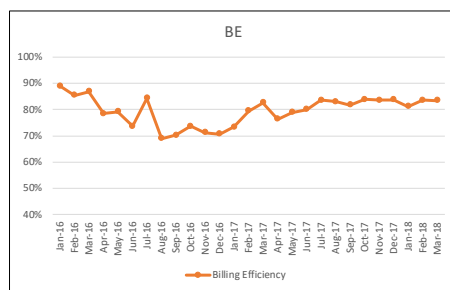
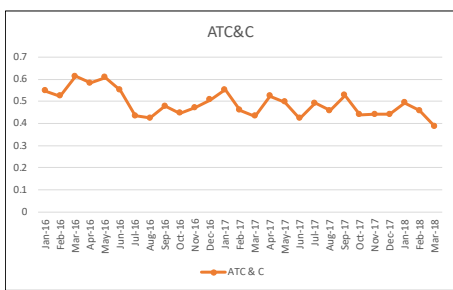
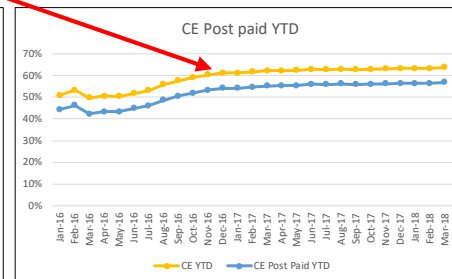
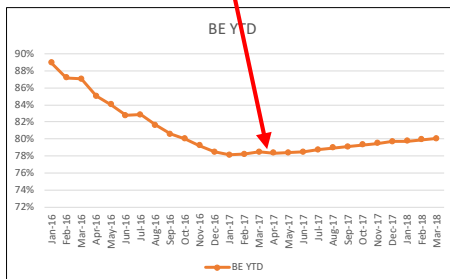
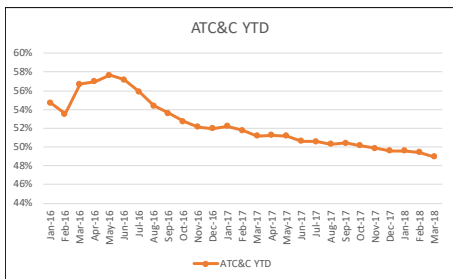
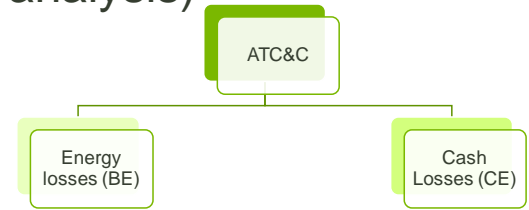
Unpacking ATC&C



Overall Efficiency
=Cash Collected/Energy in

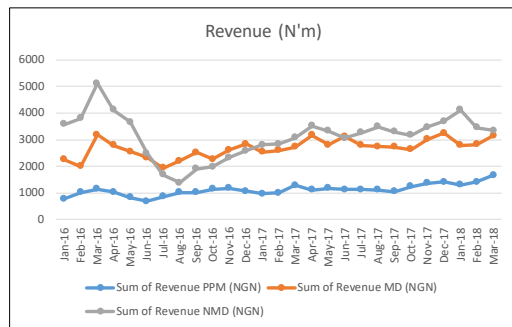
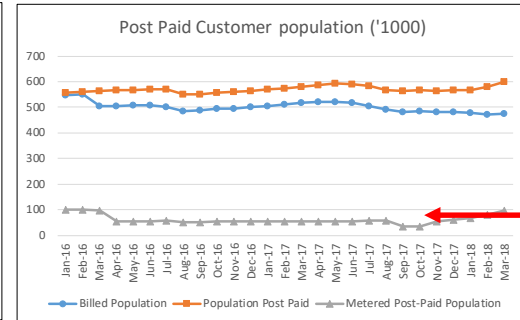
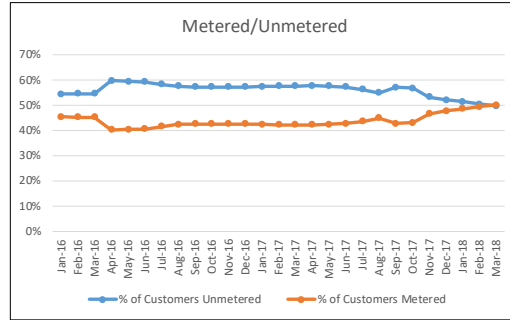
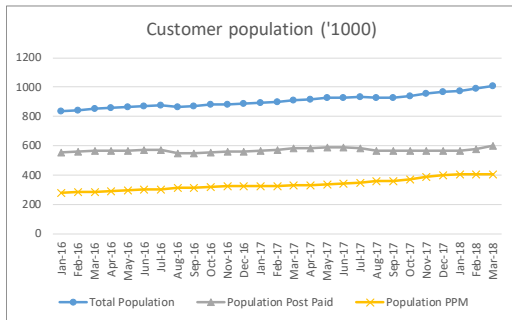
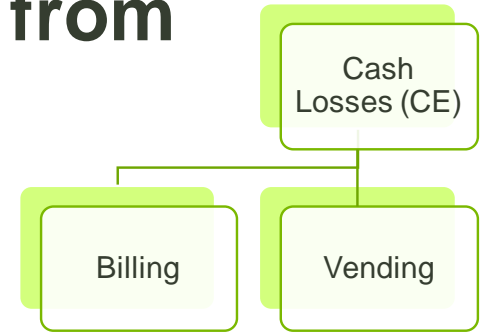
Reducing ATC&C to sweat the assets

- Identify levels and trends in components (Actual and YTD analysis)
- Problem in cash collections, low levels of CE
- Improvement in BE slowed down
- Trend of *increased BE leading to lower CE*



Understanding where cash comes from

- Understand customer mix, and
- Contribution to revenues and cash
 - prepaid customers theoretically has 100% CE,
 - CE improvement only possible with post paid customers



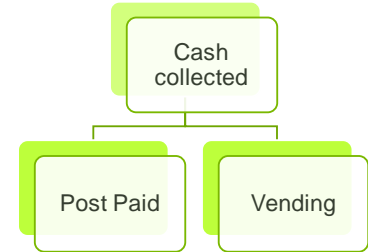
The bulk of NMD post paid customers do not have meters and therefore receives estimated bills

Estimated bills can be manipulated to assist in reducing non-technical losses

Bringing ideas to life

Improve Cash collected to improve sweating assets

- Analyse revenue contribution and **cash collected from post paid**



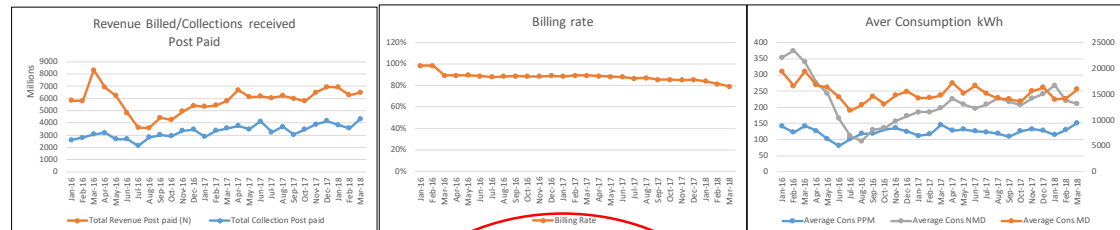
- Review average consumption

- MD and post paid very consistent, NMD (Post paid customers) mostly vary based on available energy
- Review estimated average consumption of NMD customers,
- Prepayment metering gives a more accurate level of average consumption, as it is based on actual consumption

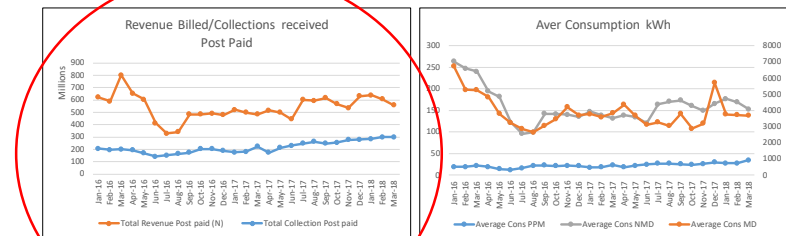
- **Collection not in relation to billing**

- Regional analysis clearly points out that **customers rather pay constant/fixed amount due to estimated billing**

Utility level

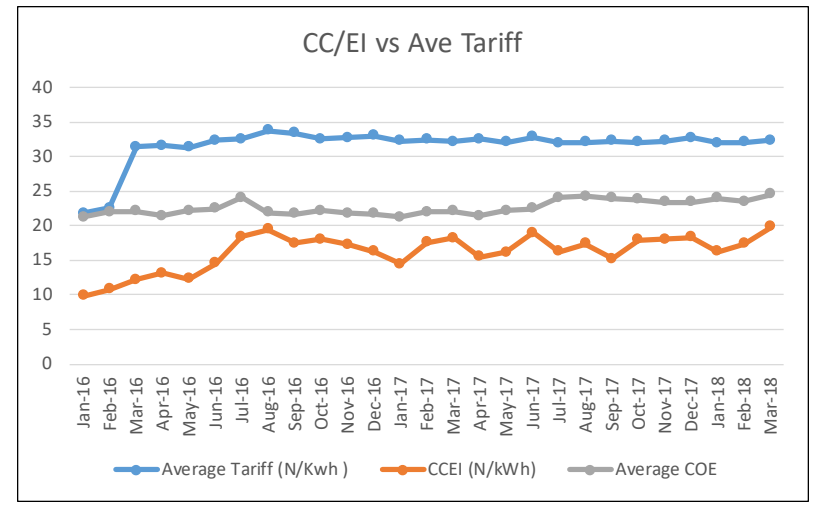
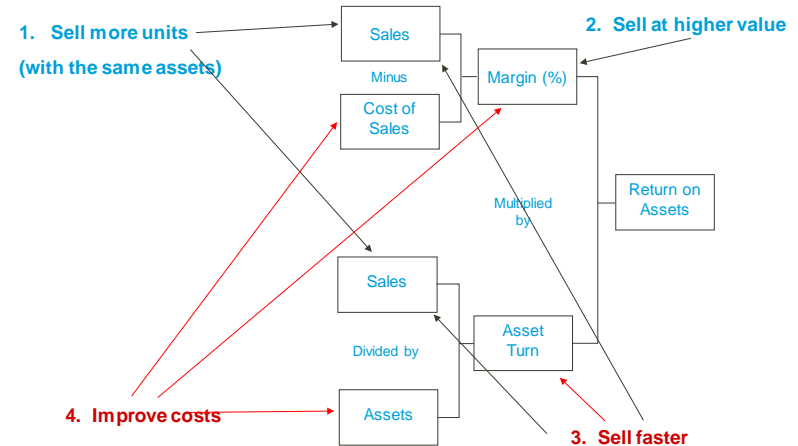


Regional level



Utility Overall efficiency

- It is evident that this utility is *not financially sustainable*
- Insufficient revenues (*Sales and cash*)
 - CC/EI is lower than the average cost of electricity purchased (COE) and
 - much lower than the average tariff
 - COE is much higher than allowed for in the current tariff
 - It is obvious that increasing tariffs will not necessarily improve the situation
 - Poor cash collections
- *Cost of supply* not recovered by cash collected



Thank You



*Bringing ideas
to life*



Follow us on
www.twitter.com/Aurecon



Join us on
www.facebook.com/Aurecon



Watch us on
www.youtube.com/user/AureconGroup



Follow us on
www.instagram.com/Aurecon



Follow us on
www.linkedin.com/company/Aurecon



Follow us on
www.slideshare.net/Aurecon