Asset Management Challenges

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Chairman CIGRÉ Study Committee B3 - Substations

Electricity Engineers' Association

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Overview

- Introductions
- CIGRÉ
- Asset Management Fundamentals
- BSI PAS 55 and ISO 55000
- Perils in Asset Management
- Conclusions – What does it all mean?
- Questions

Introduction

Qualifications

BE Electrical, Honours (First Class) 1993
Graduate, Advanced Management Program, University of Adelaide,1998
Graduate, Australian Institute of Company Directors 2002

Affiliations

Fellow Institute of Engineers, Australia (FIEAust), PEng
Registered Professional Engineer (RPEQ)
Chairman CIGRE Study Committee B3 since 2012
Endorsed Asset Management Assessor, BSI PAS-55
Member Asset Management Council

Experience

37 years in industry including General Manager
Experience includes: Generation, Transmission, Distribution
Presented more than 35 papers on asset management and design
Senior Manager and Asset Manager for T&D utilities from 1995
AM Consulting in Middle East, Asia and Australasia
Previously a senior executive engineer with SKM/Jacobs,
Senior Affiliate with Lord Consulting

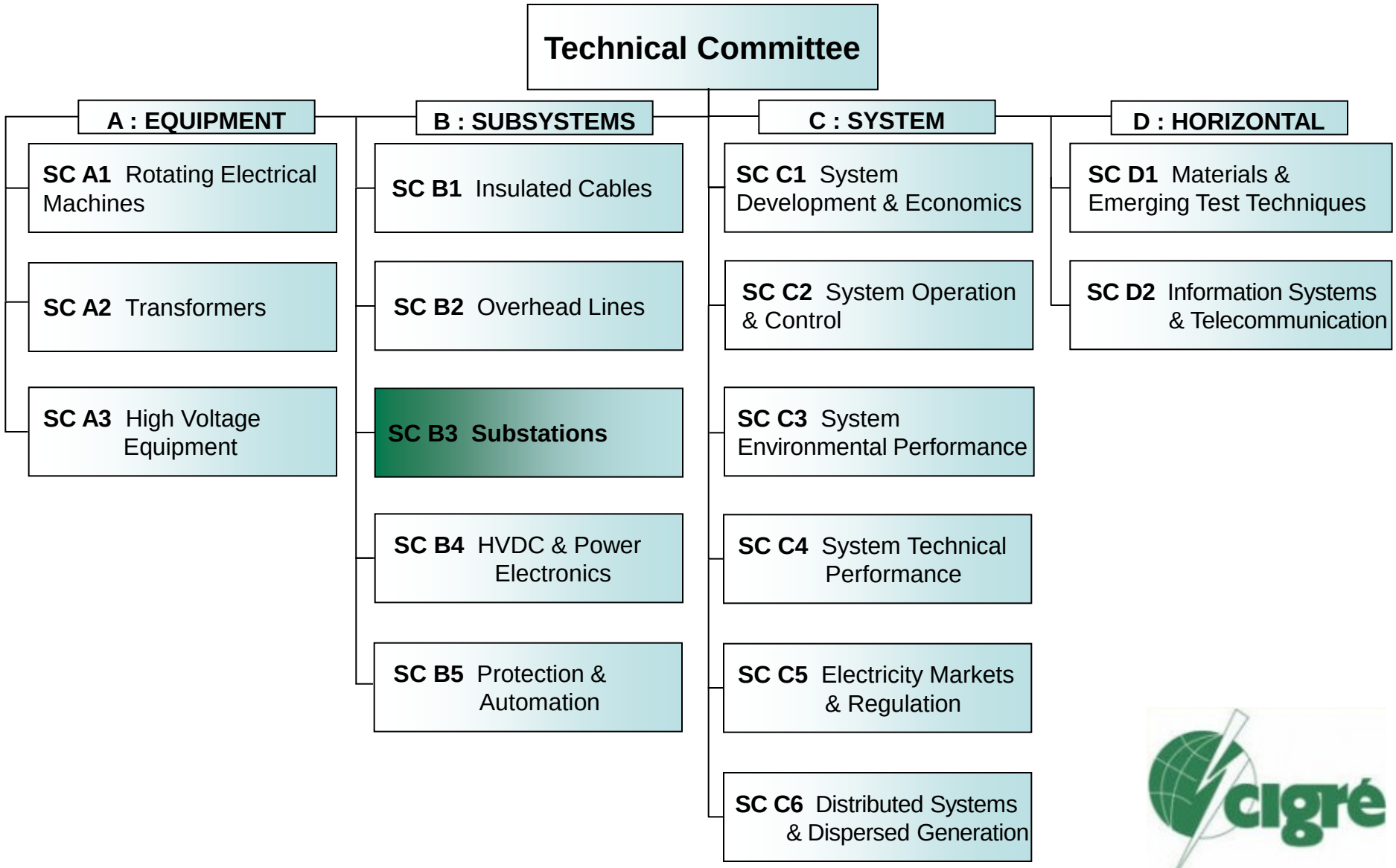
Who is CIGRÉ?

Conseil **I**nternational des **G**rands **R**éseaux **É**lectriques

International Council On Large Electric Systems

- Founded in Paris in 1921
- Worldwide non-profit association.
- Development, operation and management of electric power systems
- Design, construction, maintenance and disposal of plant.
- 8000 members in 89 countries

CIGRE Technical Committees



SC B3 – Pref. Subjects 2014

PS 1 : **Substation Developments to address future needs**

- Integration of new approaches to grid automation in Transmission and Distribution substations
- Impact of new grid developments on substation design
- Off shore substations
- Low cost and fast deployment distribution substations

PS2 : **Life-cycle management of substations**

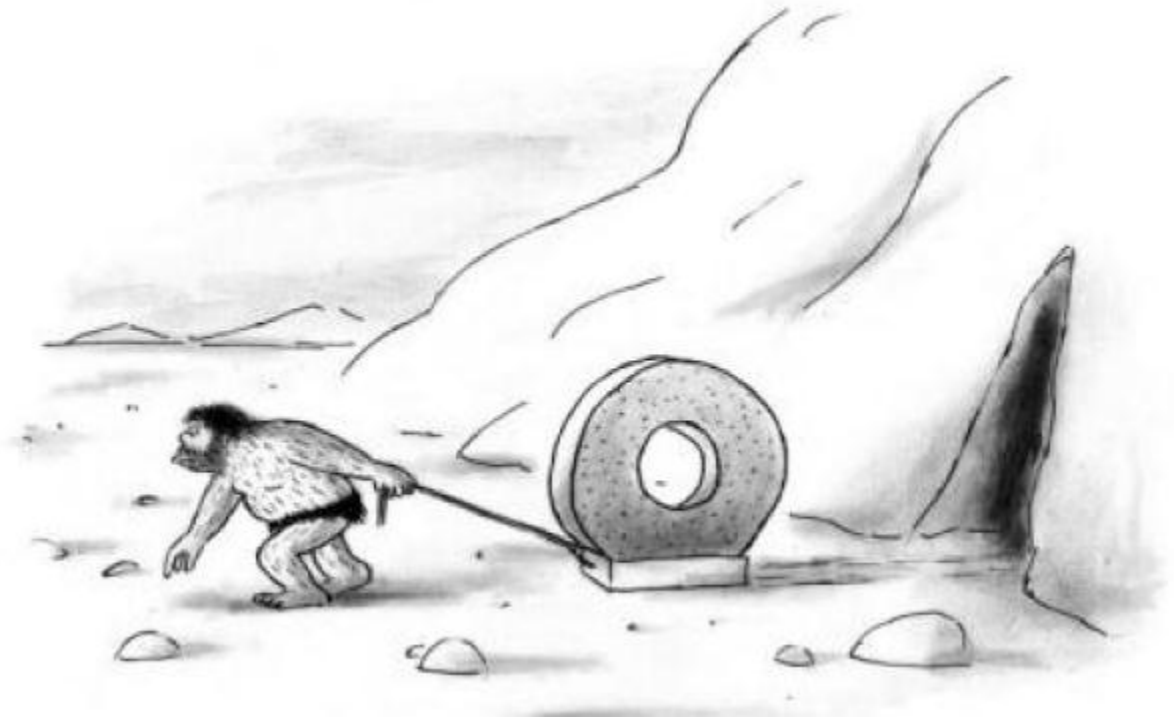
- Renovation, refurbishment, extension and up-rating substations
- Asset management, maintenance, monitoring, reliability and sustainability issues
- Managing risk in design, installation and operation of substations

SC B3 – Brochures

2010	Combining Innovation with Standardisation	389
	Obtaining value from Substation Condition Monitoring	462
	Cost Reductions of Air Insulated Substations	354
	Primary /Secondary system interface modelling for total asset performance optimization	472
2011	Residual Life Concepts Applied to HV GIS	499
	Mixed Technologies Switchgear MTS	390
	SF_6 Tightness Guide	430
2012	Turnkey Substations	439
	Tech. requirements for substations exceeding 800kV	400
	Guidelines for uprating and upgrading of substations	532
2013	Guidelines For The Design of AC Offshore W/F Substations	483
	Field Tests for UHV Substations	562
2014	**SF_6 Analysis for AIS, GIS and MTS Condition Assessment**	567
	Circuit Configuration Optimisation (JWG)	585
	IT Strategies for AM of Substations-Gen. Princ.	576
Soon	**AIS Design for Severe Climate Conditions - Draft**	

Asset Management Fundamentals

Where did it all begin?



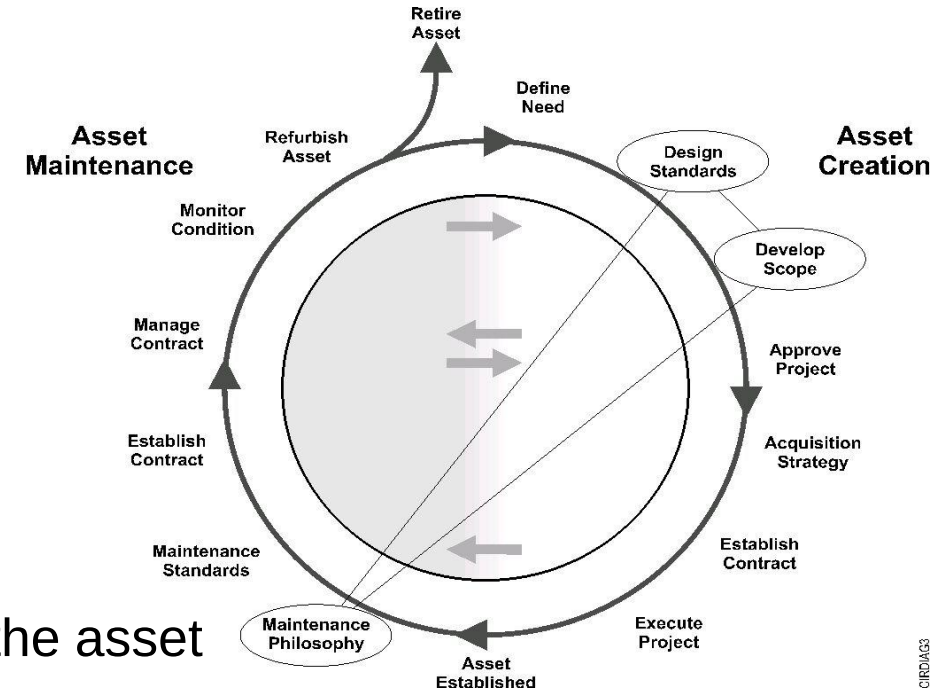
- We have been managing assets since the dawn of man
- GOOD asset management involves optimising several factors

What is Asset Management?

- Financial Sector:
  - Optimising risk, yield (performance) and long term security from a mixed portfolio of cash, stock and shares
- Oil and Gas Sector:
  - Asset Management was adopted following the oil price crash ‘86 after the Piper Alpha disaster in 1988…
  - Radical change was needed - small, dynamic, multi-disciplined teams managing each oil platform (i.e. full asset lifecycle view).
- Public Utilities Sector:
  - UK, Australia and NZ challenges – Regulator pressure, reliability problems, escalating prices, poor planning
  - Optimising **Cost**, **Risk** and **Performance**
  - **whole of life cycle**

What is Asset Management?

- Balancing conflicting objectives:
  - Government, Statutory and Regulators – license
  - Customers
  - Shareholders:
    - Risk and Liability
    - Financial Performance
    - Safety
    - Reliability
- Its whole-of-life management of the asset
- There are different interpretations!
- Not just about information systems!



What Asset Management 'IS'

- Asset Management starts with:
  - Recognising assets have a life cycle… they respond to their environment, they change, deteriorate, grow old, fail, stop and die!
  - Understanding the benefits that Asset Management can bring to a business
  - A belief that those benefits are worthwhile
  - Clear leadership and making it "the way we do things here"
  - Understanding that good practice is NOT a "quick fix"
- Asset Management can be further defined as:
  - the art and science of making the right decisions and optimising processes in selection, creation, maintenance, inspection and renewal/decommissioning of assets
  - wanting more than a 'symbol on the wall'

Asset Management is NOT:

- **NOT** a substitute for quality management or project management
  - but should have the same level of scrutiny
- **NOT** just for engineers or an accounting exercise,
  - everyone working in a company that owns, or operates, assets should be interested
  - should involve every part of the organization
- **NOT** a purely academic discipline
  - A worthy subject but should be pragmatic & hands-on
- **NOT** just about maintenance
  - Maintenance is part of the ‘Asset Lifecycle’
- **NOT** ISO 55000 or PAS 55
  - But these provide guidance for good practice

Summary of Asset Management

Good Asset Management Practice is about:

•People (Knowledge, Skills, Competency, Attitude etc), and organisational culture

•Business processes, to help deliver "the optimum way of managing assets to achieve a desired and sustainable outcome“

•Borrowing from several disciplines to provide cross-sector consistency

•Involving the whole business; connecting finance, operations and engineering

•Aligning the management of the assets with strategic company objectives and business plans

•Integrating risk assessment into decision-making

•Providing ‘systems’ to support and enable AM

Proving it:

BSI PAS 55 and ISO 55000

BSI PAS-55

- British Standards Institute – Publicly Available Specification 55
- Developed by industry, initially UK in 2004, but now an international consensus of good practice;
- Promotes sustainable investment decisions
- Avoids long-term problems arising from attention to short term efficiency gains;
- Able to prove to stakeholders that the organisation is employing good practice asset management ;
- Widespread acceptance of the specification, cross sector and geography.
- Now progressed to ISO standard

Features of ISO 55000

- Comprised of:
  - 55000:2014 – Asset Management - Overview, principles and terminology
  - 55001:2014 – Asset Management - Management Systems - Requirements
  - 55002:2014 – Asset Management - Management Systems - Guidelines for the application of ISO 55001
- Based on 'WHAT' rather than 'HOW'
- Intentionally generic to allow for a range of industry sectors
- Similar approach to other established management systems i.e. ISO 9001 and ISO 14001

Key Themes of ISO 55000

- Some important PAS 55 themes retained:
  - Alignment of day to day activities with organisational objectives
  - Whole of life cycle focus
  - Risk based decision making is a core requirement
  - Enablers – leadership, consultation, communication, competency and information management
- Scope of 55000 is broader and includes any asset type
- Less emphasis on decision optimisation (PAS) to “clear and documented methods and criteria for decision making and prioritising”.
- Less consideration of risk management (31000)

Typical Steps to Implementation

Strategy
- Management commitment
- Stakeholder driven

Gap Assessment
- Current state assessment
- Where are we now?

Roadmap
- Steps to reach end result
- Requires allocation of resources

Implement
- Can take years!
- Will involve the whole business

Pre-Audit
- Determines readiness for Certification
- If required

Certification
- The start!

Why consider improved Asset Management?:

The Business Case

Some Commercial Drivers

1. **Competitive Advantage**
   - Tool for achieving Operational efficiencies
   - Better balancing of risk
2. **Part of Due Diligence**
   - Providing a benchmark of performance
   - Legal protection for safety, environmental or financial issues
3. **Marketing Opportunity**
   - “Tick-in-the-box” approach a possible outcome
4. **Regulator Requirement**
   - ISO status will enhance value for Regulators
   - Are we getting “value for money”?

10 Benefits

1. Ability to demonstrate and prove good asset management practices
   - Important for internal and external stakeholders
   - Government, regulators, financiers, insurers, customers, staff
2. Structured Documentation
   - Clear ownership, structure, linkages
   - Regular reviews to ensure currency
3. Clear linkage of processes with corporate objectives and strategy
   - Alignment of strategy, objectives, policies, processes and plans
4. Improved control of workflow
   - Improved transparency of workflow processes
5. Better understanding of risk
   - Integrated into all decision making

10 Benefits

6. Improved budgeting and priortisation
    - More consistency in budgets, reduced low priority projects
7. Lower funding costs (interest rates and insurance costs)
    - More credibility with lenders and insurers
8. Easier audits
    - Regulators and accountants value auditing
9. Better bargaining position with Regulators
    - Alignment of plans and objectives with strategy allows robust justification of costs and needs
10. Improved company reputation
    - Certification a major achievement!

Perils in

Asset Management

Information Systems

Information and Data

- Information is important for Asset Management!
  - But it's not <u>just</u> about about information systems
- Integration can be a nightmare - Integrated system is easier
- Avoid customisation when implementing off-the-shelf systems
- IT systems are about people too!
- Look for quick wins
- Aim for information, not data!

Asset Management

Management Commitment

Management Commitment

- Are we an Asset Management Company?
- Essential for any improvement process or certification
- Similar to safety or QA management commitment
- You can’t fake it!

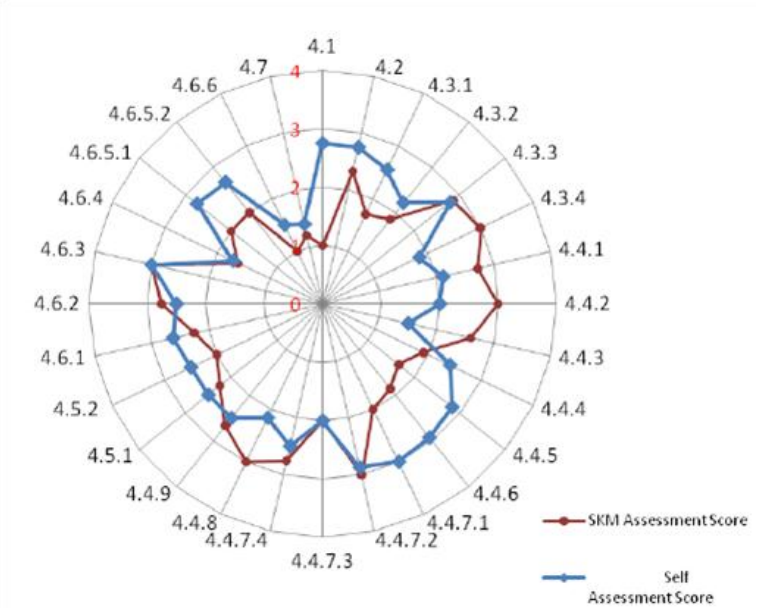
Asset Management

Fear

Fear

- Asset Management is not always driven from top-down
  - So why would an Asset Manager want his work assessed?
- “Our asset management systems are great now!”….are they?
- Gap assessment and road map approach can be used
- Good Regulatory arguments
- Can be done in stages
- Certification is not essential

Asset Management

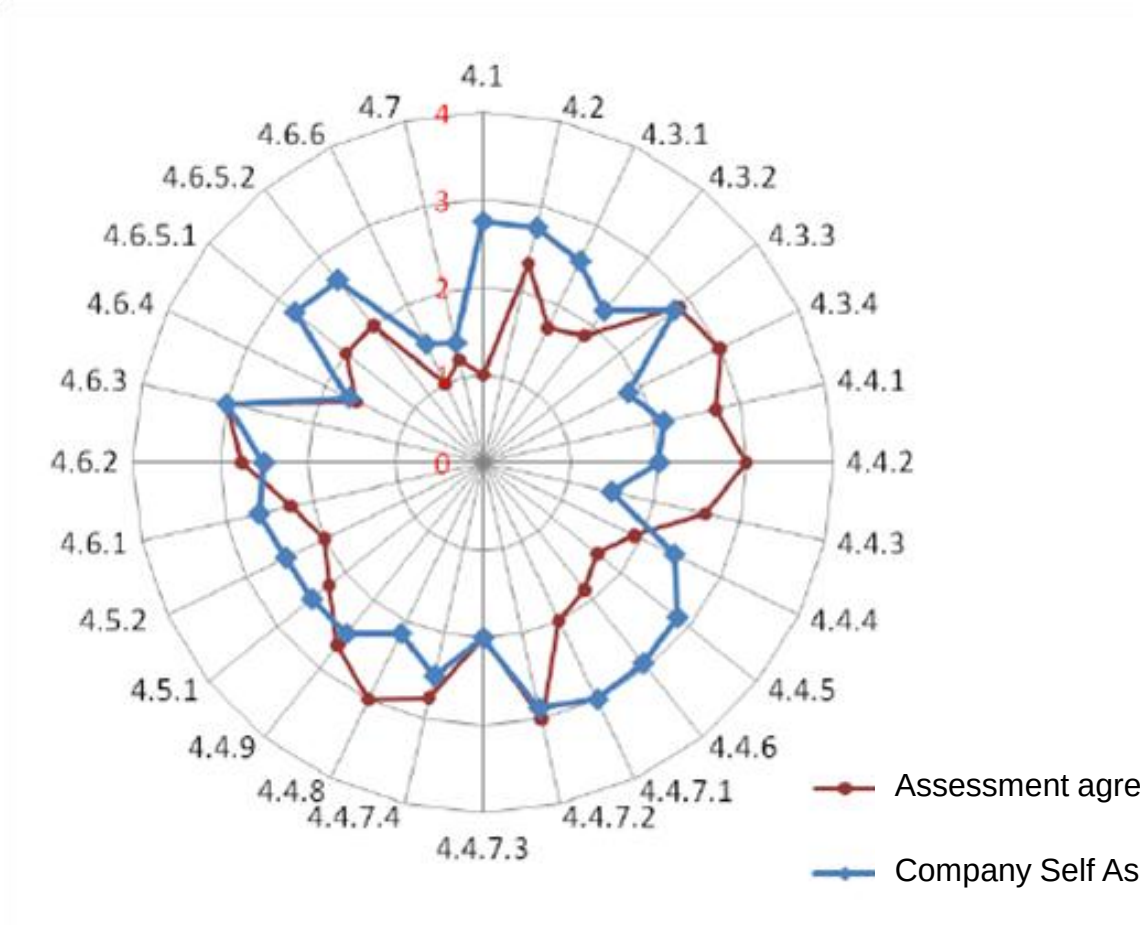


Self Assessment

Self assessment of AMS

- Internal self assessment, monitoring, inspection and audits are vital parts of an asset management system

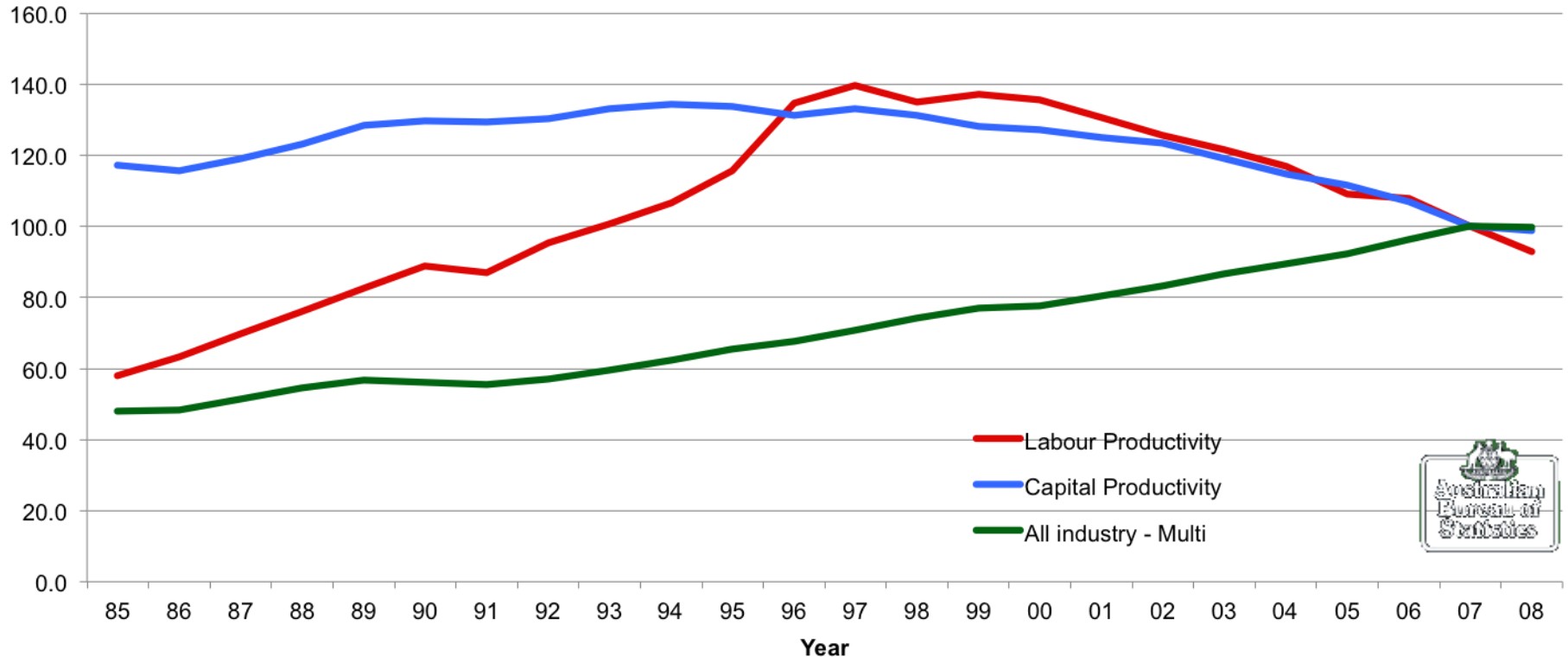
- **But it can be difficult to be truly <u>objective</u>**



Global Asset Management

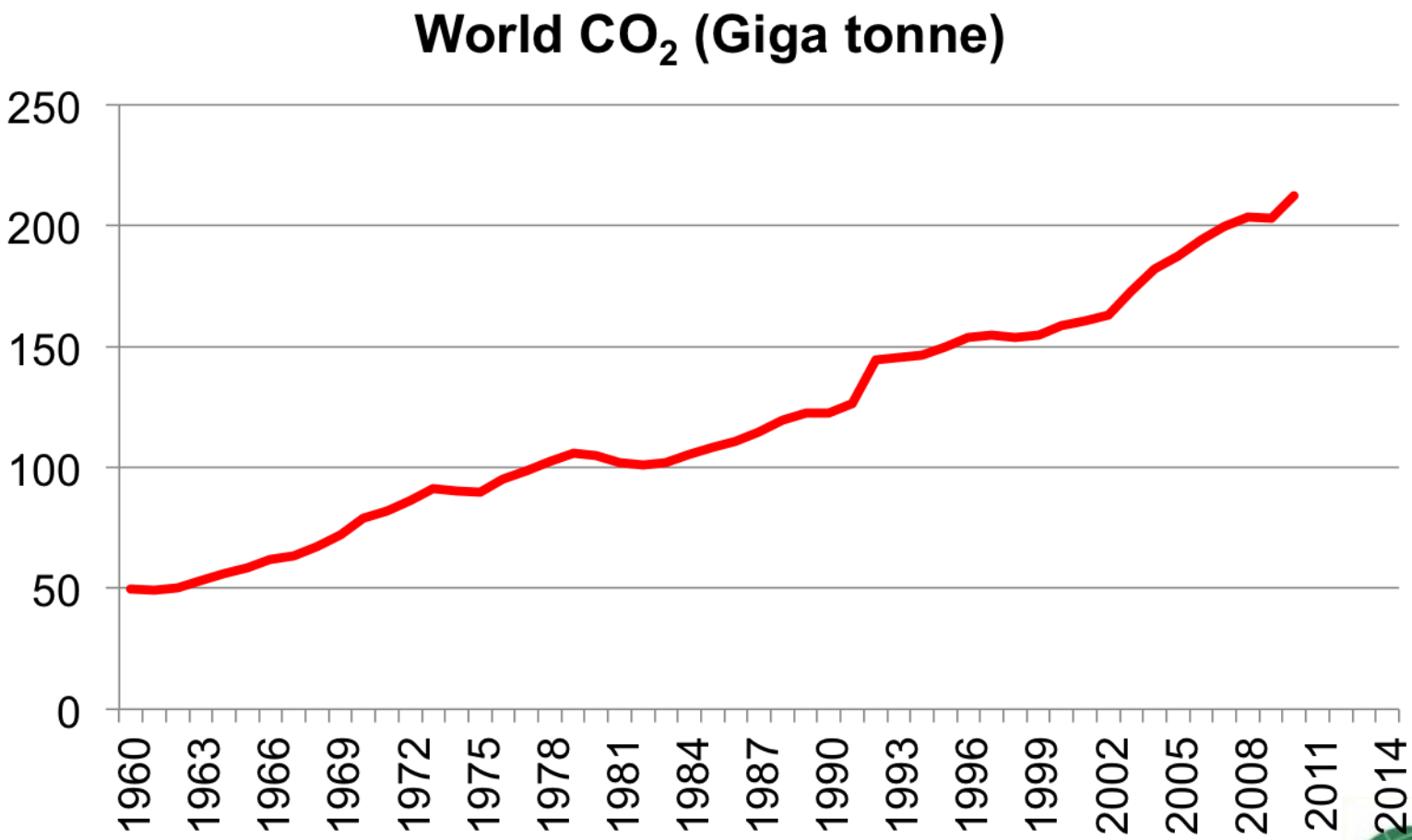
The Big Picture

Australian Productivity



- Combined power, gas, water and waste (source ABS)
- Ranked 28th in EAPI (source WEF EAPI 2013)
- Not doing too well!

CO_2 Global Emissions



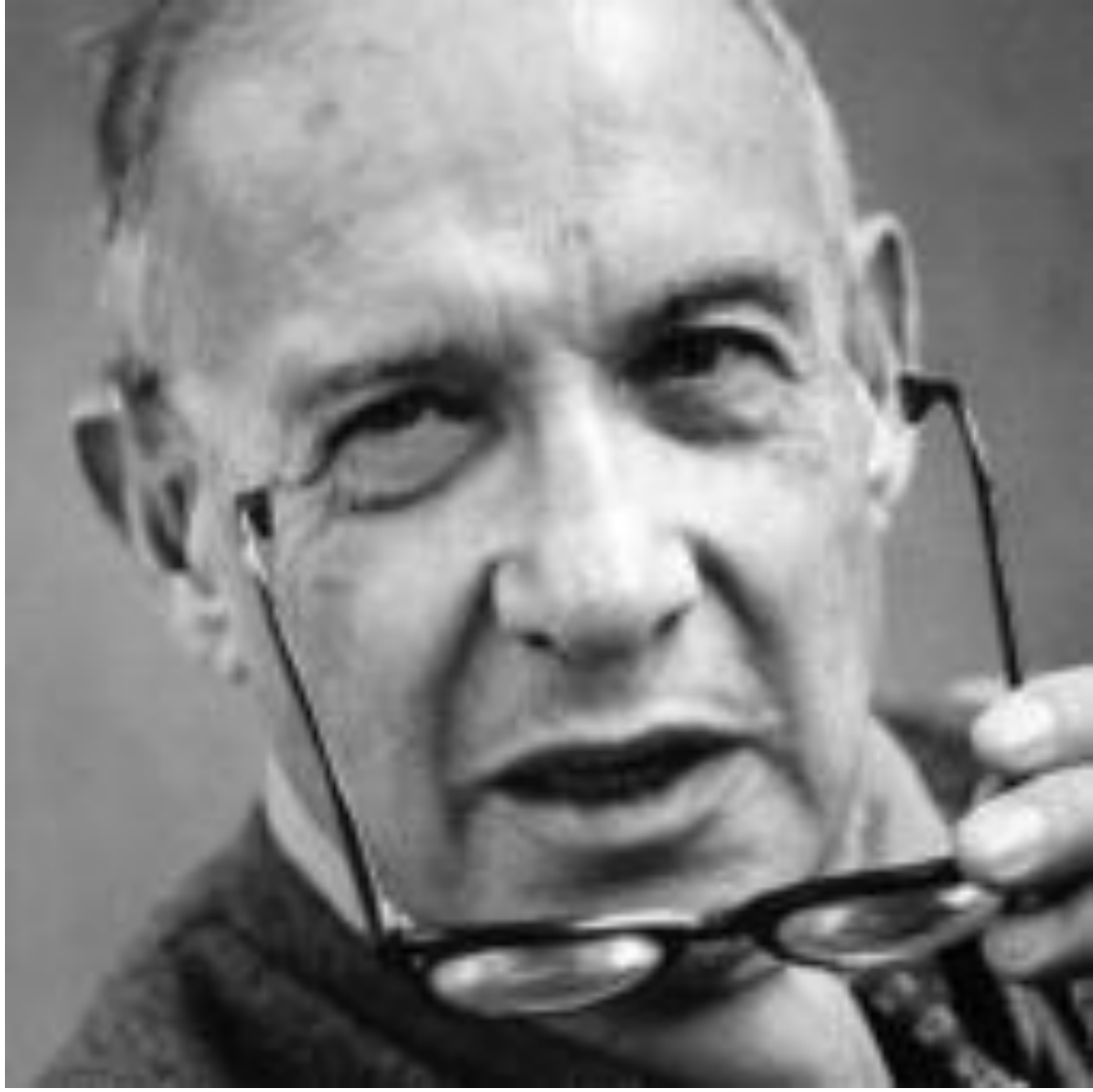
Global Electrification

- 1.5 B people have been provided electricity in last 25 years
- 1.3 B people still have no access to electricity (2011)
- Estimated 1.4 B by 2030
- Mainly developing countries
  - India and parts of Asia
  - Sub-Saharan Africa
- CIGRÉ is assisting that effort

Conclusions

- Asset Management is balancing often conflicting objectives
- Needs strong management commitment
- ISO 55000 is a major leap forward in management systems for asset management
- Beware the tick-in-a-box approach to certification
- Productivity is declining
- Large parts of the world with no electricity
- We need to do better!
- CIGRE is aiming to assist improvement

Questions



“Most of what we call management consists of making it difficult for people to get their work done.”
— Peter Drucker

Thankyou

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