Long-term grid planning is needed for the economic growth of India





India Smart Grid Forum







MODEL ASSET MANAGEMENT **GUIDELINES FOR INDIAN DISCOMs**

Global Asset Management **Experience**

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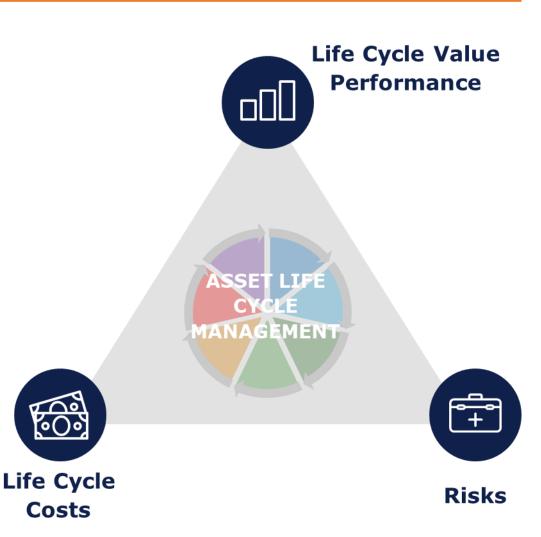




Topics for discussion today



- 1. Key drivers of implementing Asset Management in utilities globally
- 2. How is ISO55k series evolving
- 3. Examples of how utilities globally used Asset Management for grid planning





Asset Management vs Managing Assets



Managing Assets

Systematic response to problems

Application of technical solutions

Pro-active planning of maintenance & replacement

Managing people, skills, and work management

Siloed approach

Asset Management

Comprehensive organisational strategy to meet top-line challenges and goals

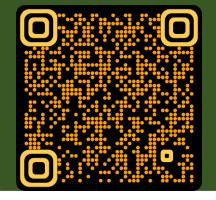
Holistic approach to different funding streams. i.e. OPEX and CAPEX

Determine how assets **create optimal value** for the organisation

Balancing risk, cost and performance at grid level

Collaborative behaviours internally and with the supply chain

Asset Management' is "the coordinated activity of an organization to realize value from assets".







Global Drivers of Asset Management

High energy prices and energy security focus due to the war in Ukraine has a strong short-term impact, but will not slow the long-term transition

Despite urgency of action, global CO₂ emissions remain at record levels.

We forecast global warming at 2.2°C by 2100

Electricity is growing and greening everywhere – reaching an 83% renewable share in 2050 electricity mix

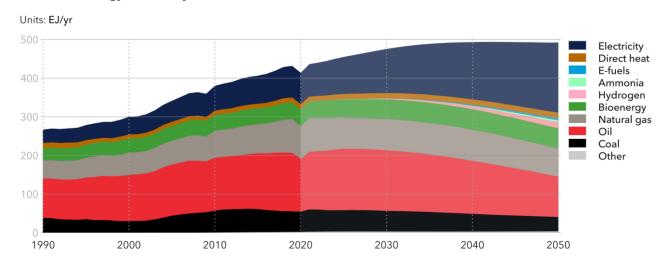
Hydrogen reaches 5% of the 2050 global energy mix – a third of what it should be in a net zero future

World energy mix and the role of electricity



The share of electricity in the final energy demand mix doubles

World final energy demand by carrier



- Global electricity share doubles from 19% to 36% in 2050
- Variable renewables come to dominate the power mix - solar PV and wind with a 69% combined share in 2050
- Grid infrastructure needs significant improvements
 with storage, connectivity and demand-response
 key to integrate variable renewables



The ISO 55k TC 251 has a global gathering



6

published ISO standards *

under the direct responsibility of ISO/TC 251

5

ISO standards under development *

under the direct responsibility of ISO/TC 251

35

Participating members

21

Observing members

- Australia
- Netherlands
- Germany
- United Kingdom
- Norway

- Switzerland
- United States of America
- And more!





Canada

France

^{*} Number includes updates

The Journey of ISO 55k series and its relation to IEC





O&G engineers to integrate risk into management decision making

PAS 55-1 is published by BSI

2004

ISO PC251 releases ISO 55000, 55001 & 55002

Management of network assets in power systems

IEC TC 123 starts working

on:

2014

2018

1990-

2008

2018

2019

IAM makes significant changes and releases

PAS 55-1: Specifications for the optimized management of physical assets

PAS 55-2: Guidelines for the application of PAS 55-1

ISO 55002 is issued in revised form

A new addition to the ISO55k series is added, ISO 55010:

Today @ ISO T

The ISO 55k details and what is to be expected





ISO 55000

Overview, principles, and terminology

Product improvement and revision in-line with wider adaptation of ISO 55000 and changing operational landscape. Currently at CD 2.



ISO 55001

Management Systems and requirements

A revision is under-way to address the overall AM landscape changes and maturity in organisations and technology. Currently at CD 2.

ISO 55002

Management systems – Guidelines for the application of ISO 55001

No current running projects.

ISO **55010**

Guidance on the alignment of financial and non-financial functions in asset management

No current running projects

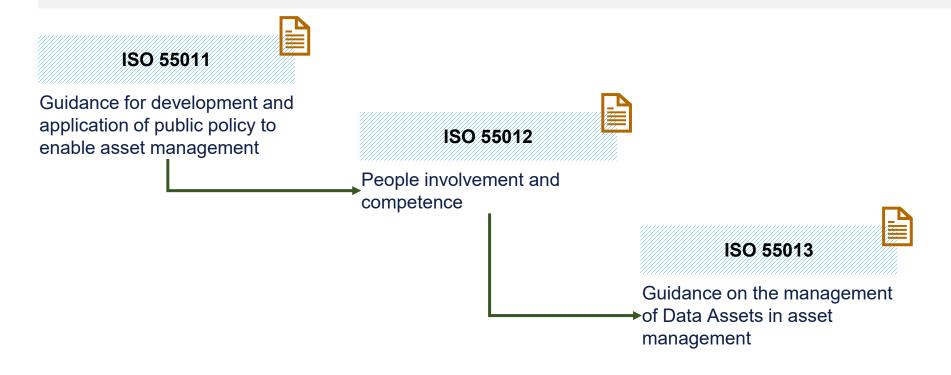




Further developments within ISO TC 251



In-line with the adaptation of ISO 55k for various sectors including government, 3 new projects have been erected to support the continuous development and maturity in ISO 55k



TC 251 WG 3 is specifically focused on communication of Asset Management



What Questions are Asset Managers asking?





Who knows the condition of my old assets?



What parts of my system is at risk?



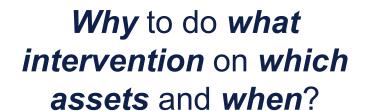
How to minimize unplanned downtime?



How and when to use limited resources and budget?



What asset data do we need to gather?
Why?





Do we face a replacement wave?

If so, when?



How do we make consistent decisions?



Do we have sufficient manpower, now and in the future?



Where do we need to focus, with thousands of assets?



How can asset data support our decision-making?



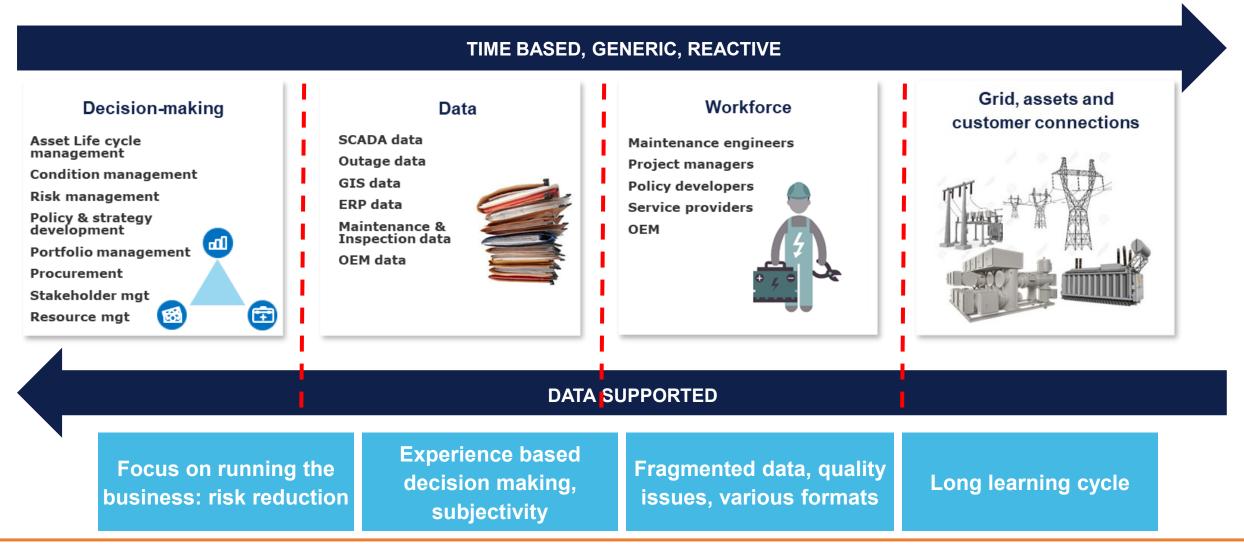


The basis of Ásset Management is often "issue-driven"





Data-based where possible, often time-based and reactive





Advanced Asset Management moves towards 'value driven DUM2022





Data enabled, making use of monitoring, digitization and data analytics

VALUE DRIVEN

Agile decision-making



Data analytics



Machine Learning Algorithms **Platforms**

Data & digitalization

Loading Static Weather GIS Soil Maintenance Sensor Inspection Forecasting **Performance Financial** Temperature Conditions Customer **Application** Outage Workforce Social media

Smart sensors







Smart meters



Digital Mobile workforce

Grid, assets and customer connections



DATA ENABLED

Optimization of decision-making processes

Real time insight in condition and performance

Integration of AM and operations

Use of digitalization, smart sensors and data





Adopting Asset Management to support grid planning has supported utilities globally. We would like to hear your thoughts and views.