

A composite background image for the title section. It features a wind turbine on the left, a high-voltage power transmission tower on the right, and a satellite view of Earth's continents in the center, all set against a dark blue night sky with stars and light rays emanating from behind the turbine.

# Due Diligence Support in the Energy Markets

Capability statement

Remco Frenken, 2017

**1** Due Diligence Capability - Management Summary

**2** Sample Slides

# UMS: Combining Strategic, Commercial & Technical Insights

- UMS is a boutique Management consultancy firm established in 1989, specialising in Asset Management with a focus on the energy sector. We have offices in Australia, USA, Europe & Asia.
- UMS combines **strategic ‘best practice’ insight** with **commercial capability**. Typical services we provide are **ISO55000** Asset management Implementation, comparative analysis for power, gas & water companies and **commercial asset management** (energy portfolio management, green purchasing, energy transition impact analysis, and **Due Diligence**)
- UMS has built up a detailed and extensive asset knowledge database from Power & Gas companies all over the world. This includes a significant library of industry best practice which we package and share through our benchmarking and global learning consortia products
- We can also provide bespoke reports for both buyers and sellers involved in the acquisition process

Perspective	Preparation	Indicative Bid (IM)	Binding Bid
Vendor	1) Implementation ISO55000 AM & Risk Management 2) Best practice support 3) Comparative analysis to focus Management agenda	KPI's to put performance into perspective (reliability, safety, OPEX, CAPEX, FTE, etc.). Risk assessment	Tailored analysis, support preparation Q&A
Bidder	Market Assessment (grid companies, gas storage, power plants, water companies)	KPI's to put performance into perspective (tailored to peer group)	Data room analysis & support, by comparing key figures with peers, gap analysis. Flag report on key items

# UMS: Due Diligence support for production, transmission, distribution and commercial management

Value Chain	Available Data	Available expertise
<b>Power Production</b>	<ul style="list-style-type: none"> <li>• Gas fired power plants (including mothballing/restart data)</li> <li>• Coal &amp; lignite fired power plants</li> <li>• Hydro plants</li> <li>• Steam supply &amp; district heating</li> <li>• Solar &amp; Wind</li> </ul>	<ul style="list-style-type: none"> <li>• 20+ years of benchmarking experience, with experts based in USA, Europe and Australia</li> <li>• (De-)Mothballing projects</li> <li>• Biomass conversion projects</li> <li>• Renewable subsidy regimes (selected European countries)</li> </ul>
<b>Transmission &amp; System Operations</b>	<ul style="list-style-type: none"> <li>• Power transmission</li> <li>• Assuring System Security (methods, costs)</li> <li>• Gas storage &amp; transmission (limited)</li> <li>• Data from every continent (but Antarctica)</li> <li>• Data from small and large companies, in desert and under artic conditions</li> <li>• Library of 'common &amp; best practices'</li> </ul>	<ul style="list-style-type: none"> <li>• 20+ years of benchmarking experience, with experts based in USA, Europe and Australia</li> <li>• Regulatory regime (selected countries)</li> <li>• "Deep dives" on various topics (losses, RAB, regulatory power, FTE's, IT architecture etc.)</li> </ul>
<b>Distribution</b>	<ul style="list-style-type: none"> <li>• Power &amp; Gas distribution data</li> <li>• SAIDI/SAIFI root cause analysis for developing nations as well as developed nations</li> <li>• <b>Grid</b> Loss reduction programs</li> <li>• Smart meter practices</li> </ul>	<ul style="list-style-type: none"> <li>• 20+ years of benchmarking experience, with experts based in USA, Europe and Australia</li> <li>• Regulatory regime (selected countries)</li> <li>• "Deep dives" on various topics (losses, RAB, regulatory power, FTE's, smart meters, etc.)</li> </ul>
<b>Commercial Management</b>	<ul style="list-style-type: none"> <li>• Margins in trading, retail, asset management</li> <li>• Option valuation</li> <li>• Contract valuation</li> <li>• Flexibility valuation (industry, storage, plants)</li> <li>• Costs of 'greening'</li> </ul>	<ul style="list-style-type: none"> <li>• Dedicated team headed by former trading manager with extensive experience in Due D.</li> <li>• 5+ year of commercial management projects in Europe, China and Australia</li> </ul>

# Way of Working & References

- **UMS ‘stand alone’**
  - Providing the link between “financial data” and “engineering expertise”
  - Our flag reports are greatly appreciated by Investment Committees
- **UMS ‘subcontractor’ of main due diligence partner**
  - We often work as subcontractor for Engineering firms and/or Financial advisors
  - We enable an early identification of green and red flags; we then support the Engineering firm and/or Financial advisor with a ‘deep dive’ and/or ‘root cause analysis’.
- **Recent Due Diligence projects include**
  - Transmission Company in Australia
  - Fully integrated Power Company on Indian Subcontinent
  - Distressed Power Plant in NW Europe
  - Grid Company in NW Europe
  - Grid Company in Eastern Europe
  - Setting up data room (on behalf of Vendor) for early stage renewable project in Latin America
  - Assessing (for JV owners) performance of power plant in China
- We have local staff in Scandinavia, Germany, Netherlands, UK, USA, New-Zealand, Philippines and China. In addition, we have an extensive contractor network across the globe.

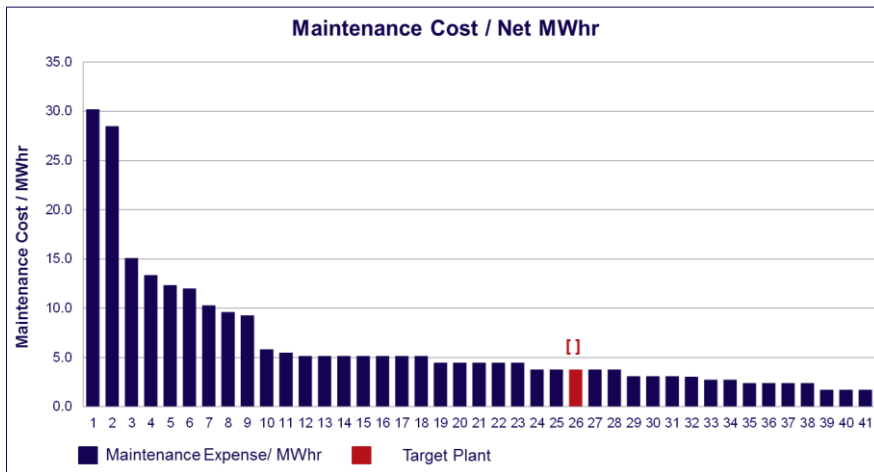
**1** Due Diligence Capability - Management Summary

**2** Sample Slides

# KPI's for initial assessment of Power Plants during Due Diligence are typical selected from list below

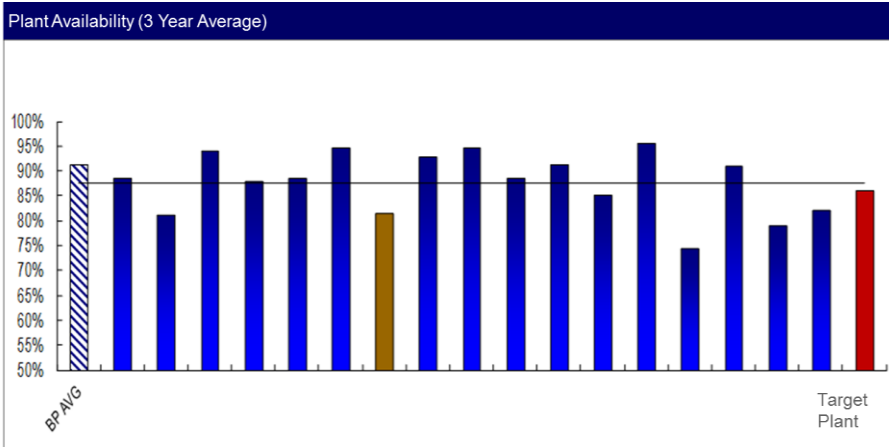
D.D. item	Item 1	Item 2	Item 3
1: Costs	Non-fuel O&M per MW	Non-Fuel O&M per MWh	Fuel costs compared to world market prices
2: Availability	Planned and Unplanned	# of forced outages	
3: People & Planet	FTE's per MW	LTIF (Safety) (LTIIR possible as well)	Environmental standards
4: Efficiency	Compared to design efficiency	Place in national/regional merit-order	
5: Market	Full load hours	Revenue split (incl. flex value)	Market Framework

**Illustrative  
Numbers & text**



### Flag Report (Power Plant XYZ)

- The availability is below average and forced outage rate is high. Improvement plan in place, but targeted timeline (2 years) is very ambitious, we presume 4 years will be required. Impact on valuation 5 mln€/y for 2019 and 2020.
- High amount of staff, not justified by performance and other cost elements. We see this more often in German plants; gradual reduction will result in 1 mln€/y savings (not in plan)
- The plant is dispatched effective and was available on the crucial moments. Indicates good interaction with commercial asset management as well as good risk management
- The safety performance is best in class, both for own staff as well as for contractors.





# KPI's for Transmission/Distribution Company for initial assessment are typical selected from list below

Benchmark item (*)	Compared per (1)	Compared per (2)	Compared per (3)	Compared per (4)
OPEX	Network Length	Customer	MWh distributed	CVU(**)
CAPEX	Network Length	Customer	MWh distributed	CVU
Reliability	SAIDI (Avg. Duration per customer)	SAIFI (Avg Frequency per customer)	TOTEX	CVU
Grid losses (%)	Network length	MWh distributed		CVU
FTE	Network length	Customer	MWh distributed	CVU
Safety (LTIR)	TOTEX			CVU

(\*) Typical 2-3 year average values are used

(\*\*) Comparison of companies relative sizes using only Customer Count, Network Length, and Volume of Energy Distributed can be problematic. For this reason, the international best adopted normalizer CVU is used. UMS calculates each company's Composite Variable Unit (CVU) to normalize each company's characteristics into a single comparable unit

(\*\*\*) For gas, a similar but shorter matrix will be used; reliability is e.g. less relevant for gas

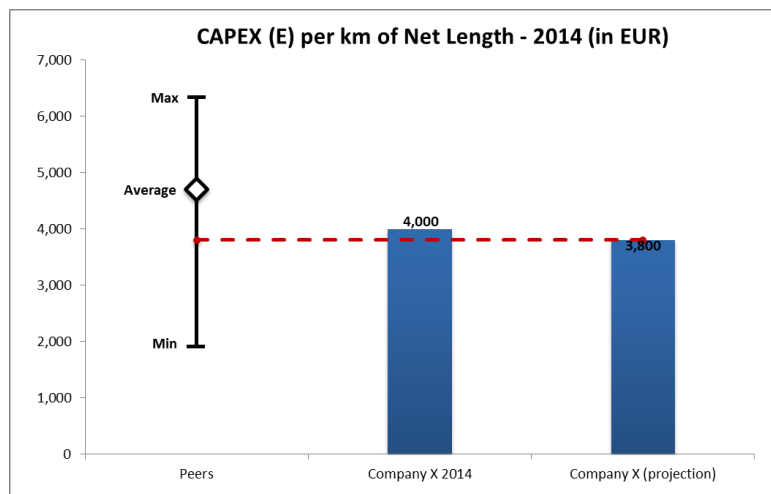
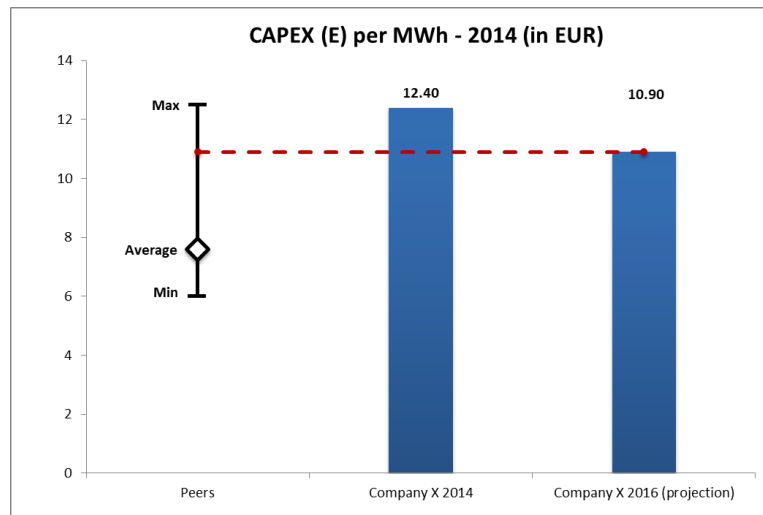
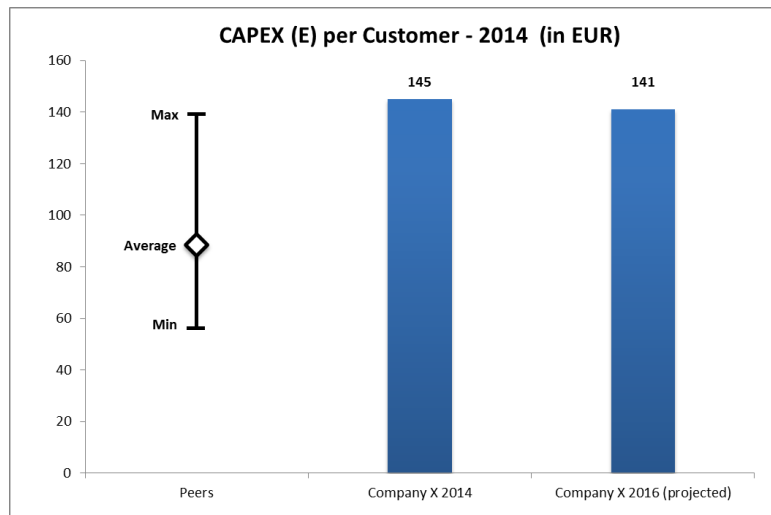
## Example: selection peer group for Distribution Company

<b>Characteristics (power)</b>	<b>Peers</b>	<b>All</b>	<b>Client</b>
Number of Peers	6	28	1
Average Number of Customers	1,6 mln.	4,4 mln.	1.8 mln.
Average kms of Electric Dx Line	48,000 km	155,567 km	56.000 km
Average Service Territory (sq. km)	7,000 sq.km	9,700 sq. km	8,400 sq.km
Average TWh Distributed	18	41	21

The selected data from the peer group is aligned with the data provided by Client; it covers the period 2014-2016

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Numbers & text

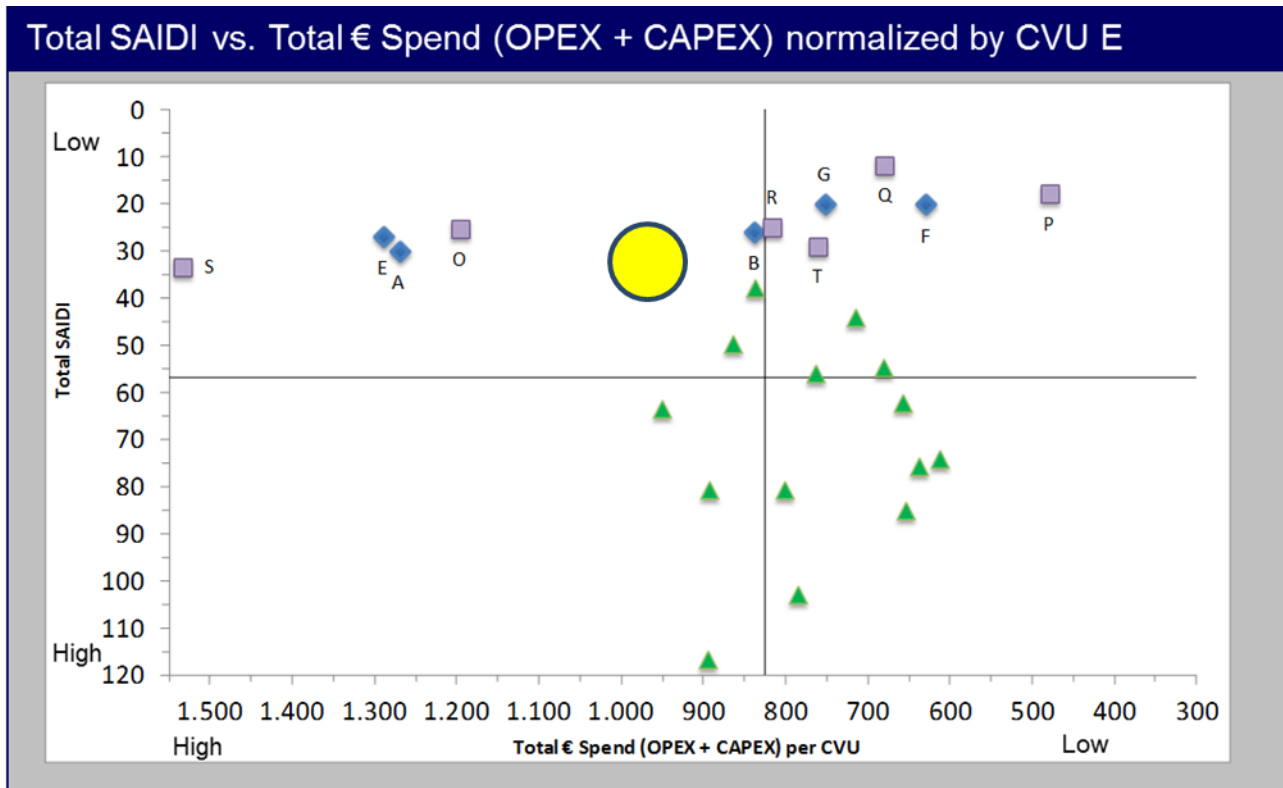
## Company X has relative high CAPEX (E) for the portfolio



- Based on the normalized CAPEX figures, Company X needs a “lot of grid” for the portfolio.
  - Per customer / transported MWh, the capital expenditures are higher than for peers
  - Per kilometer net length, capital expenditures are below average (so Company X builds efficiently)
  - Company X has high percentage of windmills and embedded solar; see slide YY and ZZ for our assessment of this topic on capex

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Numbers & text

# Company X has good reliability, but relative high cost



**Metrics:**

**Service Level Driver**

- 3 year Average SAIDI (MV & LV)

**Cost Driver**

Total Spend normalized by CVU:

- Total € Spend (OPEX + CAPEX) average over the last 3 years normalized by CVU Electricity

 Target Company

Performance within normal bandwidth, but room for improvement; Target has a high reliability but spends 20% more than average

Recent investments in Distribution Automation (see page XX of annual report) could be an explanation. Relative high percentage of rural area is another explanation.

### Flag Report (Distribution Company)



The Percentage Energy Losses are the highest in the benchmark, and the energy losses per CVU are above average. (Reduction in losses to the median result would create € nn of savings, taking current wholesale prices into account)



Average maintenance costs of a km MV network are almost three times the peer group average.



The average costs of a new MV/LV stations and a new connection 3x25A are considerably lower than average



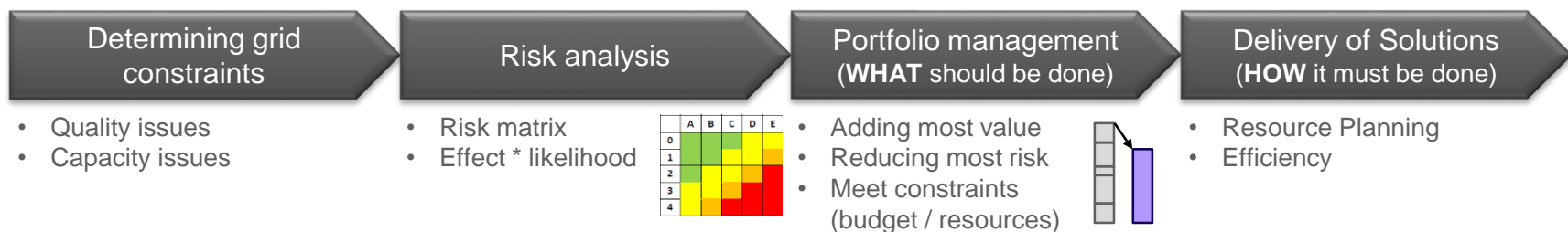
The average age of high voltage infrastructure is 5 years less than the peer group.

# XXX's business plan predicts stable Capex and Opex this is common for distribution companies

- Investments of distribution companies typically consists of many projects with a relative low price per project (per component).
  - Please note that investments for transmission companies (like YYY) tend to be more volatile, as they have a low number of highly expensive projects.
- Investment projects for Distribution Companies can, typically, easily be deferred.
  - For example, a program to replace all transformers originating from before 1970 typically takes several years. Adding one or two additional years does not impact reliability materially, but allows “smoothing out” of Capex.
  - This “smoothing out” effect is especially strong with grid companies who deliver good reliability and safety and have good asset management.
    - XXX is in “best performers quadrant” in reliability and gas leakages.
    - XXX is working according to the principles of asset management (like their peer group).
    - XXX could afford slowing down replacement programs. A potential negative effect in reliability will not make XXX ‘overnight’ a company who provides poor reliability.
      - XXX has a ‘buffer’ to take some reliability risks.
        - Also [regulator] acknowledges reliability of XXX is of high standards and much better than [country] peers (doc 1.2.3.4 in DataRoom).
- Next slide gives further background.

# A DSO with established asset management should be able to smoothen its CAPEX over multiple years

### Typical Asset Management processes



### How to realize a stable CAPEX portfolio

- Focus on the highest (red) risks
- Fill remaining budget with solutions for medium (orange / yellow) risks based on resource availability
- Defer other solutions for lower (yellow / green) risks to subsequent years

### Characteristics of a DSO (compared to a TSO)

- Owning a lot of assets per asset population ► possibility to spread asset population investments over time
- Relatively cheap per asset ► no sudden peaks in investments expected

### Exception

- Large grid expansions (typically multi-year-projects to complete) which are uncommon for DSOs in economically well-developed countries as these are mostly needed when regional load patterns change significantly.

## Contact

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