



## Sustainable Distribution Asset Management & Financing

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Sustainable financing · Asset management · Smart Grids · Active network management · Economical crisis

## Outcomes summary

### Theme 1 : Major drivers for asset management policies

1. Condition assessment methods and risk based asset management methods are progressing very well and will probably lead to a real change in asset management practices. The quality of data is the key to the effectiveness of the emerging approach.
2. The importance of an appropriate regulatory framework for the implementation of good asset management practices has been underlined many times. It seems that, in all countries, we are in a learning process with regulation practices progressively improved to better take into account the technical and economic features which characterize DSOs' activities.
3. Many speakers have underlined the need for specific regulatory provisions to foster innovation.
4. Solutions to deal with HILP (High Impact Low Probability) events were discussed. It seems that Europe is somehow less advanced in defining solutions to protect networks against cyber attacks and maybe European DSOs should allocate more resources to work on this topic.
5. Decentralized generation is developing very quickly almost everywhere in Europe and this raises very difficult questions for DSOs. The forecast levels in many countries constitute a real challenge and a lot of money will have to be spent to adapt and operate the networks. Of course, this has to be properly covered by tariffs.
6. Future planning methods will have to integrate more detailed simulations of the solutions used in network operation.
7. Knowledge management issues are key to the future of asset management both because data acquisition and processing are becoming more central and because baby boomers retire and young generations have new habits for knowledge acquisition and sharing.

## **Theme 2 : Impact of future technologies and energy policy on Asset Management**

### **Overview:**

Theme 2 attracted a wide range of high quality papers and presentations, comprehensively covering the impact of future technologies and energy policy on asset management. Four excellent keynote presentations provided a solid foundation for the day, followed by six very high quality papers from each of the two subthemes providing the core of the programme. A conducted poster session then provided a valuable interactive opportunity for authors and delegates. The session concluded with an 'intercontinental' round table session featuring expertly presented case-study examples drawn from: Australia, USA, Portugal and UK.

### **Keynote Session:**

**Mark McGranaghan of EPRI** - emphasised the three core elements of smart grids: communications and information infrastructure, widespread sensors (system awareness) and model-based management, noting the importance of industry coordination in areas such as: creating a use case and information repository, agreeing a cost benefit analysis methodology and framework, and establishing advisory groups for smart grid activities and projects.

**Helfried Brunner of AIT** – described the Austrian smart grid vision as being the key for a secure and sustainable energy supply of tomorrow - providing access to a secure, cost efficient and ecological electricity supply for all consumers, supporting a competitive, sustainable and efficient electricity market place, and positioning Austrian companies in the area of Smart Grid as technological leaders in the global market.

**Olivier Huet of EDF**– noted that smart grids should enhance distribution and transmission network asset management, and described the main factors for success being: collecting the right information from the field (post mortem analysis, diagnostics, sensors) to complement existing data, research and development, reliable information (collection, integration), and sharing common needs.

**Andre Postma of ENEXIS** – spoke about smart charging of electric vehicles and noted that technology was the 'easy' part; the key questions are: who are the involved parties? who has the final control? who takes the decisions? how can we make it attractive for the customer? and how do we settle the various interests? The creation of an open market where all requirements will be supported is the biggest challenge.

### **Oral 1 - DG and RES, active network management, monitoring, network planning:**

**Simon Blake of Durham University** showed how network investment can be optimised through balancing load growth with network risk.

**Thipnatee Sansawatt of The University of Edinburgh** described how decentralised voltage and thermal management can enable higher levels of distributed generation.

**Christophe Gaudin of ERDF** concluded that while low carbon policies would increase investment and maintenance, smart grids could offset this through improved network visibility.

**Martin Hand of ESB** described a novel 'smart system neutral management' approach being applied to their 20kV system which could significantly improve reliability and quality of supply.

**Petri Valtonen of Lappeenranta University of Technology** demonstrated how smart meters could be used to improve short-term load forecasting accuracy.

**Samuele Grillo of University of Genova** demonstrated a feature of wind turbine control that could allow reduced output rather than shutting down in the event of a network constraint, and demonstrated how coupling with storage can smooth the turbulent output.

## **Oral 2 - Smart grids, smart metering, demand response**

**Francisco Lobo-Llata of CITIC** described the role of home automation in supporting DSM to balance generation and demand, and improve quality and security, but cautioned against the risk of violating rights of customer privacy.

**Paul Myrda of EPRI** described how integrated data and ICT systems would allow improved analytics based on expert systems, inference engines, and knowledge-based systems.

**Frederic Gorgette of ERDF** with reference to the French Linky project, described how smart metering data can improve network visibility, increase grid efficiency, and reduce asset risk.

**Torsten Hammerschmidt of RWE** overviewed the benefits of ICT Storage and

local voltage control to exploit grid transportation capacity, but concluded that disparity between generation and load is a major driver of grid costs especially in rural areas.

**Karstein Brekke of NVE** provided a regulatory overview on behalf of ERGEG and concluded that incentives should be technology-neutral, focusing on value and direct benefits for grid users and society as a whole, encouraging innovation within monopolies, while providing adequate customer protection against network evolution risks.

**Pierre Schlosser representing Eurelectric** concluded that smart meters will enable the grid to become a platform for suppliers and other market players to develop new business and energy services products; however barriers to a smooth and optimal implementation remain.

## **Round Table Session – business cases and case studies for smart grids**

**Paul Topfer of Accenture** provided an Australian perspective on how smart metering benefits were derived, showing the wide variation between states but noting that the demand response driver was small compared with drivers around improved service and reduced costs for smart grids - the key benefit areas being workforce management, distribution system monitoring and control, aging asset expenditure optimisation, capacity investment deferral and carbon reduction.

**Jim Mollenkopf of Current Group**, citing the Boulder City, Colorado case study, described how improved sensing and analytics on the distribution grid provided new opportunities to improve operations and asset management, improving operational response to issues once they occurred, improving fault localisation capability, identifying previously unknown voltage issues, and implementing a preventive maintenance program on the distribution system for the first time.

**Dave Openshaw of EDF Energy** described an outline proposal for a smart city development based on London, describing the characteristics of the city and its distribution network (such as high CO<sub>2</sub> emissions, high load density, high load growth, high costs of conventional reinforcement, ambitious plans for decentralised electricity production and electric vehicles, and strong local government support) that make it an ideal candidate for smart grid development.

**Luís Vale da Cunha of EDP Distribuição** described how the Portuguese InovGrid project has been used as an enabling platform to design new services and create value from information in areas such as: project planning, network supervision and control, maintenance and field operations, metering and billing, and commercial and customer relationships; concluding that while identifying major business drivers and KPIs is important to successfully managing large field trials, engaging with customers and stakeholders is crucial.