Annex I
“Information Collation & Dissemination

Overview

- Annex I established from the outset of the Implementing Agreement;
- All ENARD participating countries also participate in Annex I;
- Very close and symbiotic working relationship between Annex I and the ExCo

Annex I – Modus Operandi

3x principal elements of Annex I Work Programme, viz:-

- Development and delivery of series of topical Workshops;
- Information sub-Task activities; and
- Representation, engagement and outreach activities

Topical Workshops

- Organised from the outset of the Implementing Agreement;
- Dual role:-
    - To inform the ExCo
    - To act as the effective “springboard” for future (R&D) Annexes
- Fully documented proceedings, for the benefit of the ExCo;
- Highly participative and interactive in nature, typically with circa 40 to 50 Expert Participants
- Highly effective in the overall development of the Implementing Agreement

The Inaugural Annex I Workshop on Distribution Systems and End User Aspects, held Milan, September 2006

- Inaugural Annex I Workshop effectively defined the key priority theme areas for distribution systems aspects;
- Then taken up in more detail in subsequent Workshops; and thence…
- to the definition of Annexes II and III, respectively addressing DG System Integration and Infra-structure Asset Management

“Here and now” – today’s networks	“New” Systems – tomorrow’s networks
Characteristics • 30 to 40 years old • Will still be very much in existence and operation for next 10 plus years	**Characteristics** • Penetration of DG routinely up to circa 30% level • Active networks • Network automation
Aim: Management of the effective transition from today’s networks to tomorrow’s	
Priorities • Management of an ageing infra-structure • Condition monitoring • Lifetime estimation/indicators • Development/application of risk based methodologies • Safe operation • Network management and control, with incomplete/imperfect data seta	**Priorities** • Active network management • Measurements, control and communications aspects • Standards development • Definition of developing market needs • Management of inter-utility system dependencies
Common themes/activities • Contribution to the development of appropriate regulatory frameworks (“educating the regulator”) • Definition of developing market needs • Quality/security of supply considerations • Development of the distribution system and associated DG databases (including identification of data requirements) • Network management and control, with incomplete and imperfect data sets • Development of DG charging and pricing mechanisms • Dynamic modelling of loads and DG • Identification of barriers and response mechanisms	

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ENRD Electricity Networks Analysis, Research and Development

The Annex I Transmission Systems Workshop, held Trondheim, Norway, September 2007

- Similarly effectively defined the future direction of the Implementing Agreement in terms of its coverage of transmission systems issue, since taken up and developed as Annex IV;
- Key themes identified in terms of:-
  - Expansion planning and market analysis;
  - Operational management and security issues;
  - Technology

Balancing the Variability in Renewable Electricity Supplies – key messages from the Fredericia Workshop, held October 2009

- Clear consistency of message, in terms of the challenges to be addressed;
- Future development of the transmission system will be essential, to contribute towards system balancing on a large scale;
- No single “silver bullet”, rather the adoption of a truly holistic approach, calling upon developments in:-
  - Electrical Energy Storage;
  - Thermal Energy Storage
  - Demand side developments and DSM

Smart Grids

- Identified as a key platform for:-
  - The provision of a high quality, secure and affordable electricity supply;
  - Accommodating and effectively integrating a whole new range of distributed resources;
  - Providing added value customer services
- Benefits span a full range of stakeholders, which raises the issue of market and regulatory structures – who pays and how?
- Regulatory challenges in terms of ownership and benefits, must be addressed to fully realise concepts in practice
- To form theme of Madrid Workshop, September 2010

Emerging “Top Level” Policy Messages

- Crucial and essential role of electricity networks in meeting energy policy objectives which requires due consideration in the development of overall energy policies;
- Clear requirement for substantial investment, in order to accommodate high penetrations of variable generating resource;
- Crucial and essential role of networks in the realisation of market and trading arrangements, with large scale societal benefits

Emerging Top Level Policy Messages (cont…)

- The considerable challenge of operating, maintaining and renewing an ageing asset base, whilst maintaining quality and security of supply, must be properly recognised and addressed;
- Networks will need to evolve to service the requirements of a new generation of “active” customers, utilising various “smart” loads and distributed generation media;
- Crucial role for technology in satisfying all the above, with developments of such technologies as electrical energy storage, HVDC, FACTS and electric vehicles likely to be particularly significant;
- Essential requirement to address market and regulatory challenges, in order to realise and exploit the full potential of such concepts and technologies.