

**ENARD:-  
the IEA Implementing Agreement on  
Electricity Networks Analysis, Research  
and Development**

**by  
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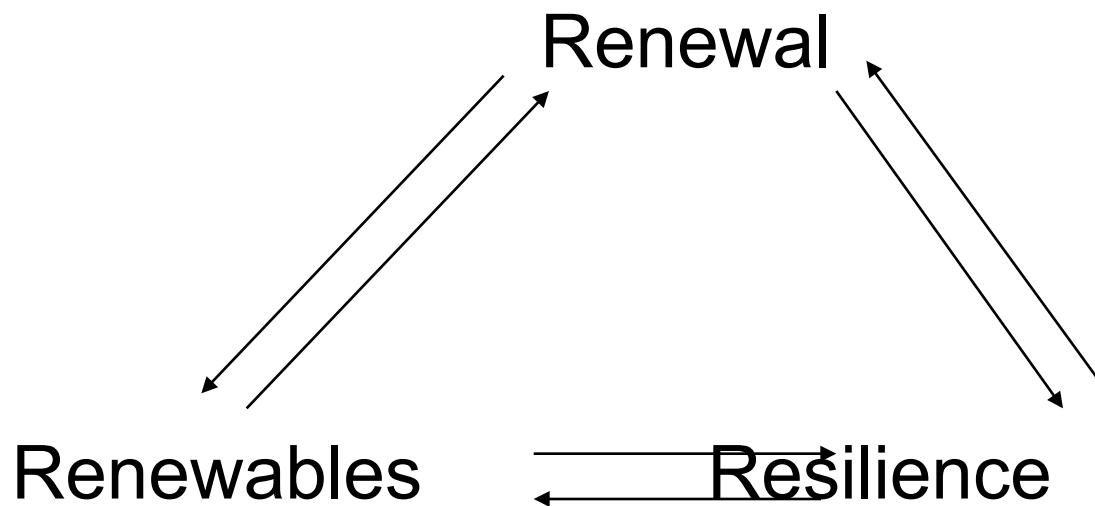
# Presentation Structure

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# The IEA Implementing Agreement on Electricity Networks Analysis, Research and Development (ENARD)

- ENARD:- an IEA Implementing Agreement addressing a variety of electricity T&D network issues
- Annex I work programme initiated September 2006

# Context: The Three Rs of Power Systems Development



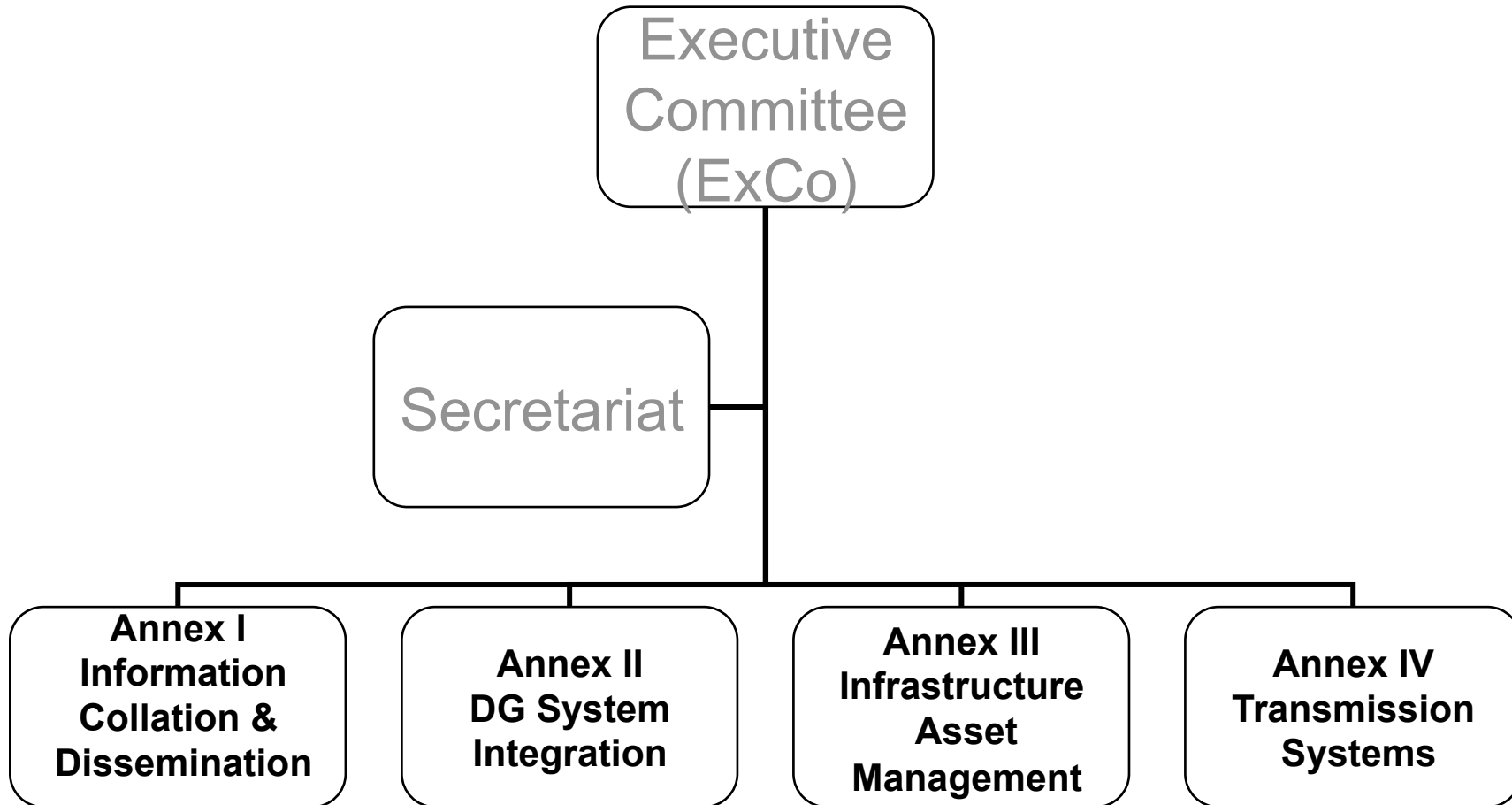
# Mission:

“To provide a major international forum for information exchange, in-depth research and analysis and collaborative R&D in relation to electricity T&D networks”

# Core Objectives

- the collation, exchange and dissemination of information and data
- the in-depth review and analysis of a range of key issues relating to the R&D, design, operation and management of T&D networks
- the complementary review and analysis of prevalent and anticipated regulatory frameworks and their impact on the economic evaluation and optimisation of network asset portfolios

# Organisational and Management Structure



# Participation



Austria



Belgium



Denmark



Finland



France



Italy



Netherlands



Norway



Spain



Sweden



Switzerland



UK



USA



# Annex I (Information Collation and Dissemination)

- combination of collation and dissemination of pertinent T&D network related information and data, complemented by organisation and delivery of series of topical workshops
- Operating Agent and National Co-ordinator (expert) roles defined
- further role as the springboard for the development of future (R&D) Annexes

# Annex I Workshops (delivered)

<b>Date</b>	<b>Venue</b>	<b>Theme</b>
<b>September 2006</b>	<b>Milan, Italy</b>	<b>Distribution Systems and Associated End User Issues</b>
<b>March 2007</b>	<b>Vienna, Austria</b>	<b>Integration of Distributed Energy Sources and New Business Models</b>
<b>May 2007</b>	<b>CIREN, Vienna</b>	<b>Managing an Ageing Infra-structure</b>
<b>June 2007</b>	<b>Leuven, Belgium</b>	<b>Economic &amp; Regulatory Issues</b>
<b>September 2007</b>	<b>Trondheim, Norway</b>	<b>Transmission Systems Issues</b>
<b>April 2008</b>	<b>Chester, UK</b>	<b>Intelligent Networks</b>
<b>May 2009</b>	<b>Gotland, Sweden</b>	<b>Communications &amp; Control</b>

# Annex I Workshops (planned)

<b>Date</b>	<b>Venue</b>	<b>Theme</b>
October 2009	Fredericia, Denmark	System Balancing

# Workshop Objectives

In general terms, workshops aim to identify:

- key challenges
- information requirements
- opportunities for future collaborative R&D
- complementarities with other initiatives and programmes
- associated opportunities to develop structured follow-on (R&D) Annexes

# Supporting Information and Data Collation Activities

- addressed on a collaborative basis with the network of National Co-ordinators
- Phase One (Sept 2006 to Sept 2008)
  - addressed via a series of detailed questionnaires
  - collation of national returns allowed for compilation of authoritative digest of T&D developments
  - digest delivered to National Participants, Sept 2008
- Phase Two (Oct 2008 on)
  - further specific topics being addressed via a small series of focussed studies

# Annex I Associated Activities

- Information Dissemination
  - Confidential information and data, within context of Annex I and further Annexes
  - Public dissemination via overview reports, outputs and events
- Web-site development and maintenance

# Current Status

- Annex I: Operational and ongoing activities
- Annex II: “DG System Integration”; adopted by September 2007 ExCo Meeting and started work, May 2008
- Annex III: “Infrastructure Asset Management”; adopted by September 2007 ExCo Meeting and started work, April 2008
- Annex IV: “Transmission Systems”; adopted by September 2008 ExCo Meeting and started work, April 2009

# Annex II: “DG System Integration”



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- formally adopted by ENARD ExCo, September 2007
- Operating Agent: Arsenal Research, Austria
- 24 month initial work programme, May 2008 on
- 11 countries participating

# Annex II – Overall Objectives

- to build up and **exchange knowledge** on DG system integration aspects and existing active network approaches **amongst the global players** in distribution networks
- to **promote implementation possibilities** for active distribution networks as an overall goal of Annex II
- to develop **guideline(s)** for network operators and political decision makers on how to manage and implement the **transition from passive to active distribution networks**

# Annex II: Deliverables and Outputs

The Annex II deliverables will include:-

- Detailed in-country surveys of current state-of-the-art, lessons learnt, limitations, future developments
- Complementary foresighting activities and abstraction of visions/goals for the future (eg growth of future fully integrated active networks)
- Compilation of an international overview report drawing out key messages
- Formulation of guidelines document to assist DNOs and Governments to progress from passive to active networks
- Identification of requirements and needs for future work

# Annex III: “Infrastructure Asset Management”

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- formally adopted by ENARD ExCo, September 2007
- Operating Agent: EA Technology, United Kingdom
- 21 month Phase One work programme, addressing the distribution asset base, April 2008 on
- 6 countries participating

# Annex III “Infrastructure Asset Management”

**Aim:** To address the challenges associated with the management of increasingly ageing T&D asset bases within the participating countries and beyond, via the exchange of information and data in relation to the ageing, degradation, failure and end-of-life characteristics of the T&D asset base and the complementary development of new asset management techniques and methodologies

# Annex III “Infrastructure Asset Management”

## **Objectives (Phase 1; related to the distribution asset base)**

- development of a robust international information base
- development of detailed understanding of risk based definitions and methodologies
- to source, collate and analyse relevant case study material
- to cross-reference above with that for transmission systems
- to compile a comprehensive information base and digest

# Annex III: Principal Deliverables and Outputs

The principal deliverables and outputs associated with Annex III will include information/data bases, experts' meetings and reports addressing:-

- ageing, degradation, failure and EoL characteristics
- existing and proposed methods of quantifying asset related risk
- international case study experience
- lessons learnt and implications/recommendations for successful asset management



# Annex IV “Transmission Systems”

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- formally adopted by ENARD ExCo, September 2008
- Operating Agent: SINTEF Energy Research (Norway) and ERSE SpA (Italy)
- 24 month initial work programme
- start-of-work, via Inaugural Experts meeting, Milano, Italy, 28<sup>th</sup>-29<sup>th</sup> April 2009
- 7 countries participating

# Annex IV “Transmission Systems”

## Aim:

- To develop a long term vision for transmission systems, beyond 2020

## Objectives:

- To address the main barriers towards the development of transmission capacity
- To identify the most promising solutions and challenges in terms of expansion planning and market analysis, and secure operation of transmission networks
- To identify the need for new transmission technologies

# Annex IV: “Principal Deliverables and Outputs”

The principal deliverables and outputs associated with Annex IV will comprise a small series of experts’ meetings and workshops and two detailed reports, addressing, respectively:

- Availability and application of planning tools, market and network models and the identification of the need for new tools
- Availability and application of advanced operational tools and on the need for new operational monitoring and control tools

# Complementarities and Linkages and Other Work Programmes

- current IEA framework addresses discrete aspects of electricity networks, DG, renewables, communications, DSM, network technologies
- ENARD actively pursuing the development of exchange mechanisms within the above framework and with other international programme activities, including:-
  - CIRED
  - CIGRE
  - Eurelectric
  - European Commission

# Key Advantages and Benefits of Participation in ENARD:-

- timely ability to address a series of inter-related technological and policy related issues
- highly cost effective platform for international collaboration and peer group information exchange
- provision of high level advice to Governments, G8 and associated policy makers
- essential role in stimulating new initiatives and actions
- common challenges/shared solution mechanisms!

# For further information....

Further information on ENARD, including participation in the Implementing Agreement and its activities, may be obtained from the ENARD web-site, at [www.iea-enard.org](http://www.iea-enard.org) or from the ENARD Secretariat at EA Technology:-

e:mail: [enquiries@iea-enard.org](mailto:enquiries@iea-enard.org)

or

Tel. +44-(0)151-347-2425

# ENARD Web-site

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