• 41 TSOs from 34 countries
• Fully operational since **July 2009**
• A trans-European network
  • 525 million citizens served
  • 828 GW generation
  • 305,000 Km of transmission lines
  • 3,400 TWh/year demand
  • 400 TWh/year exchanges

• Replaces former TSO organisations: ATSOI, BALTSO, RTSO, NORDEL, UCTE, UKTSOA
• **Article 4: ENTSO-E**
  - Completion of IEM

• **Article 6: Establishment of network codes**
  - Legally binding through Comitology

• **Article 7: Issues addressed by network codes**
  - Cross border network issues and market integration issues without prejudice to the Member States’ right to establish national network codes

• **Article 8: Tasks of ENTSO-E**
  - Ten-Year Network Development Plan, incl. a European generation adequacy outlook
  - Work programme, annual report, summer/winter outlooks, monitoring
  - Research and Development Plan

**Network Codes 12 topic areas**
- Network connection rules
- Balancing rules including network-related reserve power rules
- Network security and reliability
- Operational procedures in an emergency
- Third-party access rules
- Data exchange and settlement rules
- Interoperability rules
- Capacity-allocation and congestion management
- Rules for trading
- Transparency rules
- Rules regarding harmonized transmission tariff structures including locational signals and inter-transmission system operator compensation rules
- Energy efficiency regarding electricity networks
“ENTSO-E shall adopt a non-binding Community-wide ten-year network development plan”

- Transparency
- Decision making process
- Networks/scenarios/Generation outlook/resilience
Results of the Pilot TYNDP 2010

The TYNDP projects represent ~14% of existing lines

€ 23 to 28 billion for the first five years!
The debate has now started

• “The first 10-year network development plan (TYNDP) forms a solid basis to identify priorities in the electricity infrastructure sector”

• “Future infrastructure and non-binding TYNDPs should be consistent“.

• “Now, the TYNDP - elaborated by ENTSO-E - is an important first tool [for a clear vision for the development of integrated EU energy grids], which might need to be complemented by other instruments”.

EC Communication
Energy infrastructure priorities for 2020 and beyond
28 February 2011

Council conclusions on
Energy 2020: A Strategy for competitive, sustainable and secure energy
28 February 2011

working document
on Energy infrastructure priorities for 2020 and beyond
Committee on Industry, Research and Energy
Rapporteur: Francisco Sosa Wagner
And « taboos » are dropping in view of the Energy Infrastructure Package

• “It is important to streamline and improve authorisation procedures, while respecting national competences and procedures, for the building of new infrastructure; the European Council looks forward to the forthcoming proposal from the Commission in that respect.”

• “The bulk of the important financing costs for infrastructure investments will have to be delivered by the market, with costs recovered through tariffs. It is vital to promote a regulatory framework attractive to investment”.
Time to table proposals

- **Permitting/public acceptance**
  - Avoid undue burden on TSOs: 3 - 5 year limit for final decision
  - One-stop shops
  - Compensation for municipalities?
  - Communication: debate “Champions”
  - Improvements and streamlining for ALL projects

- **Investments**
  - Business case for expansion investment often not stable and attractive enough
  - International cost allocation!
  - Innovative financing aids, partly to overcome regulatory blockages
Working towards a longer term

• Transmission Grid infrastructures peculiarities:
  – Long life cycle: Decision today - Commissioning 2020 - Economic value 2020 – 2050 +

Changing the structure of the grid is a slow process
Longer term approach (20 to 30 years) also needed

• Target Year 2050:
  – define policy targets, underlying scenarios,
  – identify candidate technologies, grid structures, R&D efforts

• Intermediate Target Year (2030…)
  – ensure a viable path between present and long term,
  – avoid short term decisions leading to stranded investment
Optimised integrated offshore grid development

Reduced connection capacity (10%)

HVDC Transmission
AC Transmission
‘In Flight’ or current

Electricity Networks | Dimitrios Chaniotis | 30 March 2011 | Page 10 of 12
Towards 2050 pan European System: the ENTSO-E study roadmap

- An ENTSO-E Study Roadmap will be available by July 2011 (after consultation process).
- Describe a comprehensive study package covering all relevant Electricity highways issues:

  - Technological issues
  - Economical/financial issues
  - Political/sociopolitical issues

- In context of SET Plan, the realization of study package will be done by a large consortium (TSOs, DSOs, universities, institutes, manufacturers, …).

- First comprehensive concept on **Electricity Highways System** (also showing important corridors) is intended to be available by end 2014.
Conclusions

• SoS and RES development taken by EU policy call for massive development of transmission grids, both between and within countries

• ENTSO-E’s first Ten-Year Network Development Plan has been a timely initiative that has enabled the policy debate

• Seamless integration of Electricity Highways into the 400kV grids demands that TSOs operate and have strong ownership stakes

• Permitting and public acceptance is the key issue; without radical changes policy objectives will not be met

• A huge financial effort requires new financing tools and regulatory stability