Well below 2 Degrees - The TSOs contribution

Bente Hagem
Chair of the Board, ENTSO-E

Energy Transition Conference
26 March 2019, Trondheim
Enabling the energy transition in Europe

- Ten year investment plans
- Market platforms
- Network Codes
- Regional Coordination Centers
- Adequacy analysis
EU on the way to meet the Paris targets

- 40% CO2-emission reductions by 2030
- 32% RES by 2030
- 32.5% energy efficiency by 2030
EU on the way to meet the Paris targets

- 40% CO2 emission reductions by 2030
- 80 - 90% CO2 emission reductions by 2050
- 32.5% energy efficiency by 2030
A system in fundamental change

- European Market
- Centralised System
  - National Markets
  - Decentralised System

Connecting customers
140 billion € by 2040

More grids
If we stopped investing in grids?

- ~ 10 €/MWh higher electricity price
- ~ 100 TWh more curtailment of renewable energy
- ~ 50 Mton more emissions of CO₂
Expand existing markets

**DAY-AHEAD MARKETS**
- ~1400 TWh (~50% of consumption) traded on exchanges

**INTRADAY MARKETS**
- ~155 TWh traded on main power exchanges in 2018

**BALANCING MARKETS**
- European platforms 2022
  - <3 min
  - <15 min
  - <30 min

Source: Nordpool, EpexSpot, OMIE, GME
Better markets

We need real time markets
We need capacity markets
We need better locational signals
Deviation between nominated flows and physical flows

Commercial flows (market schedule)

Physical flows

Aggregated annual figures for 2017
Red numbers indicate big differences
Commercial flows between DE and AT are information to TSOs from market algorithms

Source: ENTSO-E transparency platform
Customers will be digitalized. Datahubs will facilitate decentralized flexibility.
An affordable energy transition is needed
Mission Possible – just 1% of GDP
Thank you for the attention