

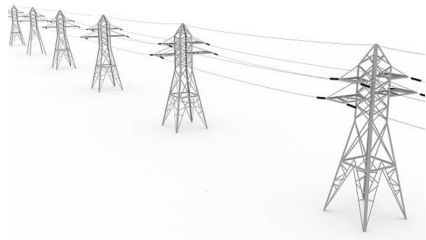
# Long-term Energy Scenarios for the Clean Energy Transition

Planning energy positive solutions

**Dolf Gielen**  
**IRENA Director Innovation and Technology**  
**G-STIC Session**  
**Brussels, 29 November, 2018**

# Innovation landscape for power sector transformation

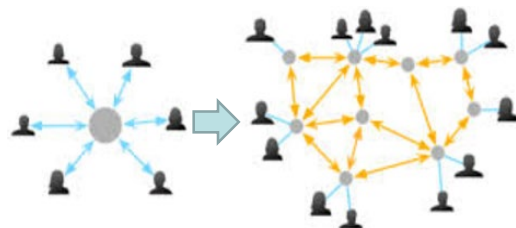
Massive expansion of interconnections and supergrids



Encourage Flexibility, pricing that supports DSM/DSR



Decentralized system and Distributed generation



Electrification of end use sectors



Value complementarities in VRE



Electric Vehicles and smart charging



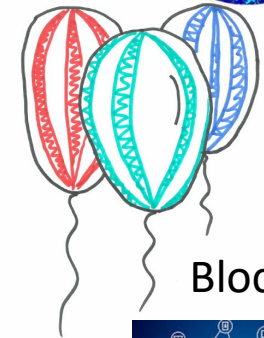
Storage



Artificial Intelligence



Digitalization - IoT

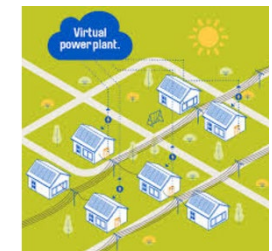


Hydrogen PtX

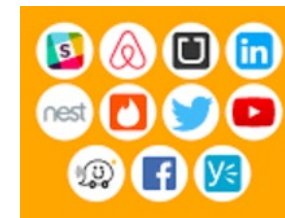
Blockchain



Aggregators- VPP



Platform business model



## Long-term energy scenarios for the clean energy transition (LTES)

- » **Launch:** May 2018 at the 9<sup>th</sup> CEM meeting, Copenhagen
- » **Duration:** one year (possible extension to multiple years)
- » **Lead countries:** Denmark, Germany
- » **Operating agent:** IRENA



Denmark



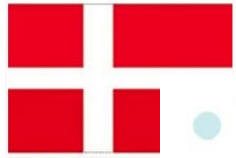
Germany

**Goal:** promote the wider adoption and improved use of long-term energy scenarios for clean energy transition

### Three pillars:

- (1) Better scenario development;
- (2) Better scenario use;
- (3) Building capacity in 1 & 2

# Current LTES country members



Denmark



Danish Ministry  
of Energy, Utilities  
and Climate



Germany

In cooperation with



Federal Ministry  
for Economic Affairs  
and Energy

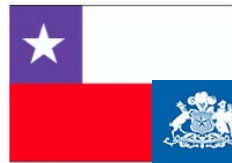


Brazil



Canada

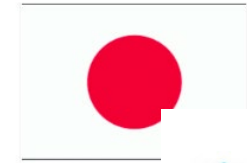
Natural Resources  
Canada



Chile



Finland



Japan



Mexico

**SENER**  
SECRETARÍA DE ENERGÍA



The Netherlands



PBL Netherlands Environmental  
Assessment Agency



United Arab Emirates

UNITED ARAB EMIRATES  
MINISTRY OF ENERGY & INDUSTRY



United Kingdom



Department for  
Business, Energy  
& Industrial Strategy

# Current LTES technical partners



The European Commission's  
science and knowledge service

Joint Research Centre



国家电网有限公司  
**STATE GRID**  
CORPORATION OF CHINA

## To explore answers to three guiding questions:

- » What aspects of the relationship between centralised and new decentralised technologies or solutions are missing in current long-term scenarios of clean energy transitions to 2030-2050?
- » How can the relationship between centralised and new decentralised solutions be better reflected in long-term energy scenarios?
- » How can long-term energy scenario development be harmonised among national and sub-national levels and stakeholders (where decentralised solutions are often planned)? Examples of good practice?