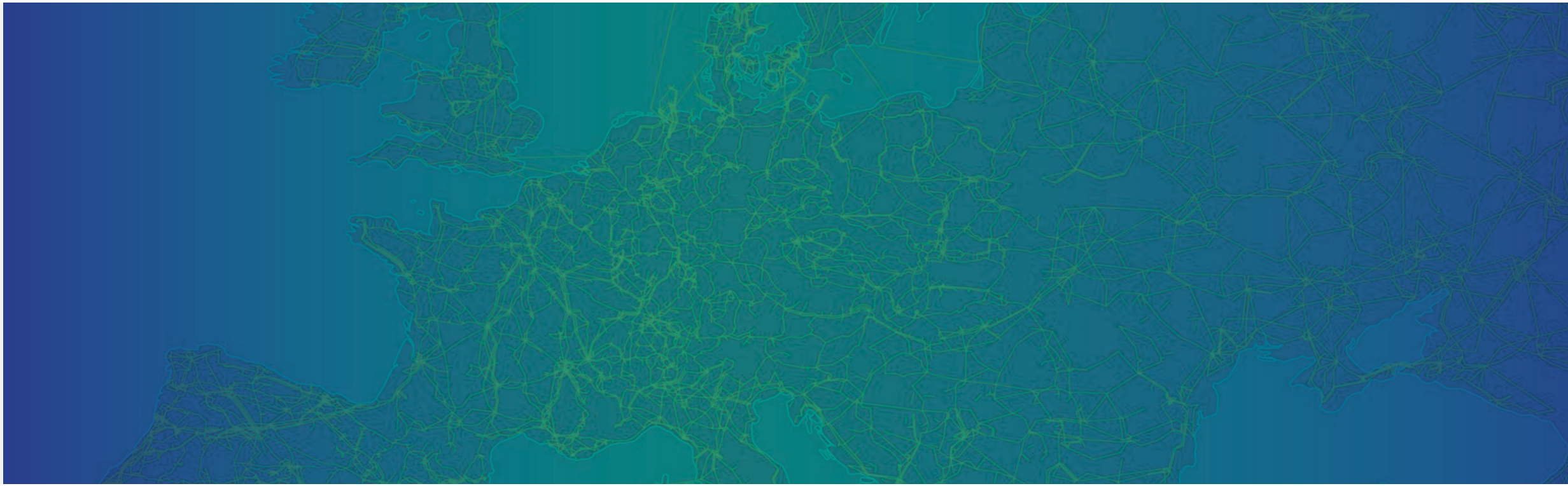
ENTSO-E's Vision 2030: major trends and developments



12 October 2020, 10h00-12h00

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Housekeeping Rules – Vision 2030 WEBINAR 1

Video and audio

- Video and audio is allowed only for Speakers or Panellists
- Speakers or Panellists will be asked to switch video and audio OFF when not talking

Participants Questions

- Participants can place their questions directly through sli.do and not through GoToWebinar. Feel also free to vote for most relevant questions posted.
- Indicate your name and company/institution when posting your question
- Moderators will select a couple of questions and ask the relevant speakers or panellists to comment
- Chat and raise the hand feature will not be used

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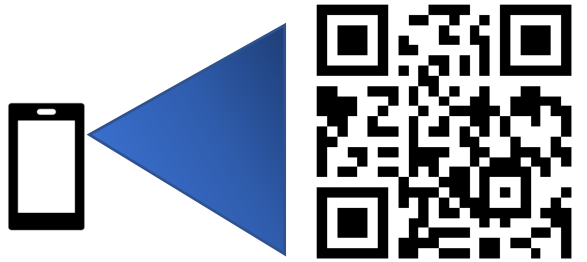

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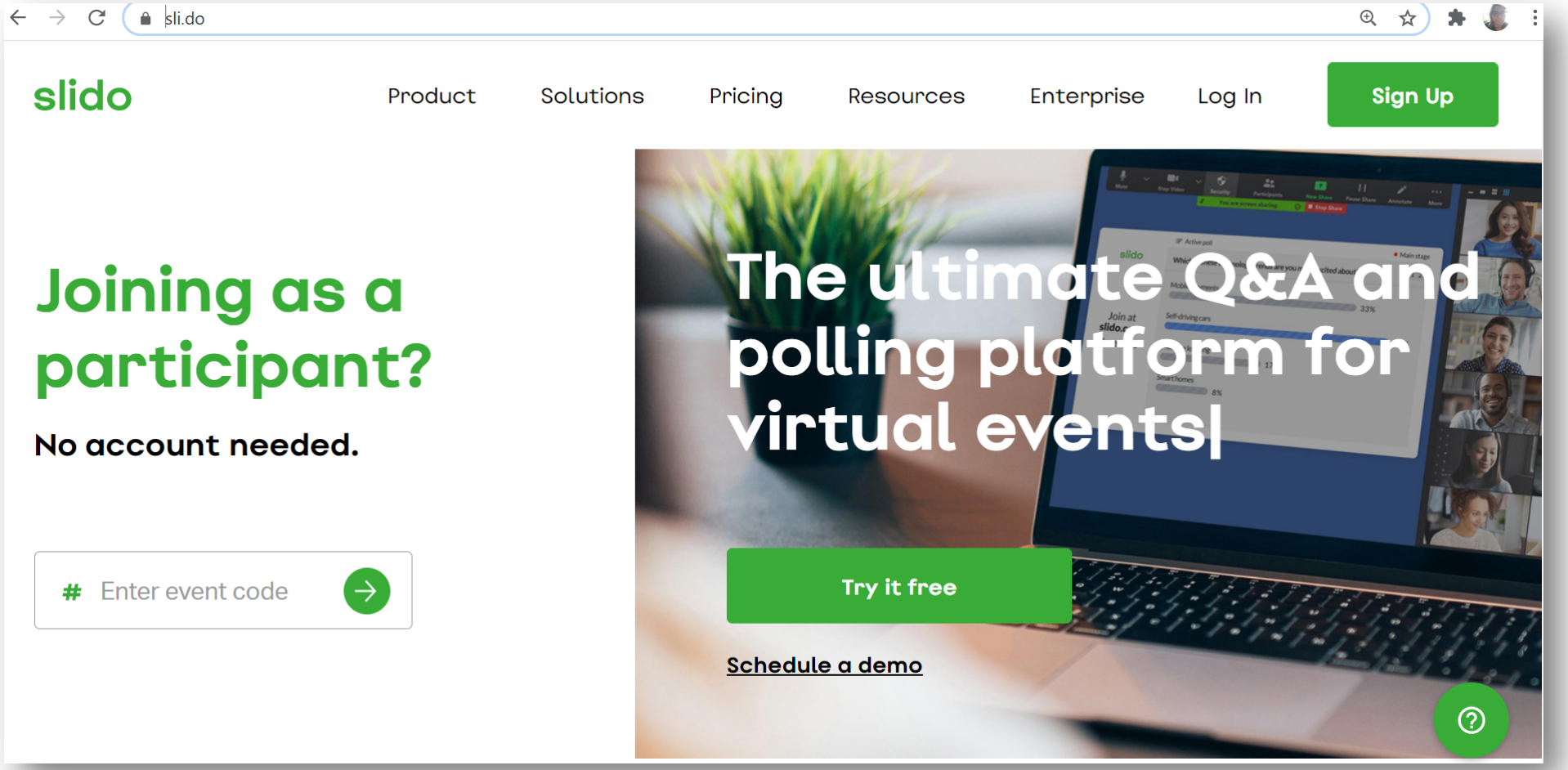

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Welcome & Introduction

Laurent Schmitt

ENTSO-E Secretary-General

Agenda

No	Subject	Time	Presenters
1	**Welcome and introduction**	10:00-10:05	**Laurent Schmitt**, Secretary-General, ENTSO-E
2	**Keynote speech: The Green Deal: Pathways to deliver on the European long-term ambitions**	10:05-10:15	**Joachim Balke,** Head of Unit B1: Networks and Regional Initiatives, DG ENER
3	**Keynote speech:** **Key milestones on the path to climate neutrality by 2050 and delivering the Green Deal – views of the European Parliament**	10:15-10:25	**Morten Petersen,** MEP, Vice-Chair, ITRE Committee, European Parliament
4	**The fundamentals of ENTSO-E vision: a view of the future:** - **Scenarios and what they tell us about the future** - **System needs & major trends and developments**	10:25-10:40	**Dimitrios Chaniotis**, Chair, System Development Committee, ENTSO-E
5	**ENTSO-E Vision 2030: towards a 'system of interconnected systems':** **- Overview of the main elements of the Vision**	10:40-10:55	**Timothée Decroix,** Chair, Policy & Communication Expert Group, ENTSO-E **Damian Cortinas,** Vision 2030 Project Leader, ENTSO-E
6	**Reactions from stakeholders to the ENTSO-E Vision 2030**	10:55-11:30	**Wendel Trio**, Director, CAN Europe **Monique Goyens**, Director General, BEUC **Jorgo Chatzimarkakis**, Secretary General, Hydrogen Europe
7	**Discussion with all participants**	11:30-11:50	Moderated by Laurent Schmitt
8	**Wrap up & overview of the webinars for the week**	11:50-12:00	Timothée Decroix, ENTSO-E

The Green Deal: Pathways to deliver on the European long-term ambitions

Joachim Balke

Head of Unit B1: Networks and Regional Initiatives, DG ENER

Key milestones on the path to climate neutrality by 2050 and delivering the Green Deal – views of the European Parliament

Morten Petersen

MEP, Vice-Chair of ITRE Committee, European Parliament

The fundamentals of ENTSO-E vision: a view of the future

Dimitrios Chaniotis

Chair of System Development Committee, ENTSO-E

The starting point: the TYNDP long-term scenarios

National Trends

- Policy Scenario based on member states' National Energy and Climate Plans (NECPs)
- EU 2030 Energy and Climate Framework (-40% CO2, 32 % RES, 32.5 % energy efficiency)
- EC 2050 Long-Term Strategy: 80 – 95 % CO_2 reduction

Benchmarked with the EC Long-Term Strategy

2 x COP 21 scenarios

+1.5°C target with 66.7 % probability

Carbon neutrality by 2050

Distributed Energy

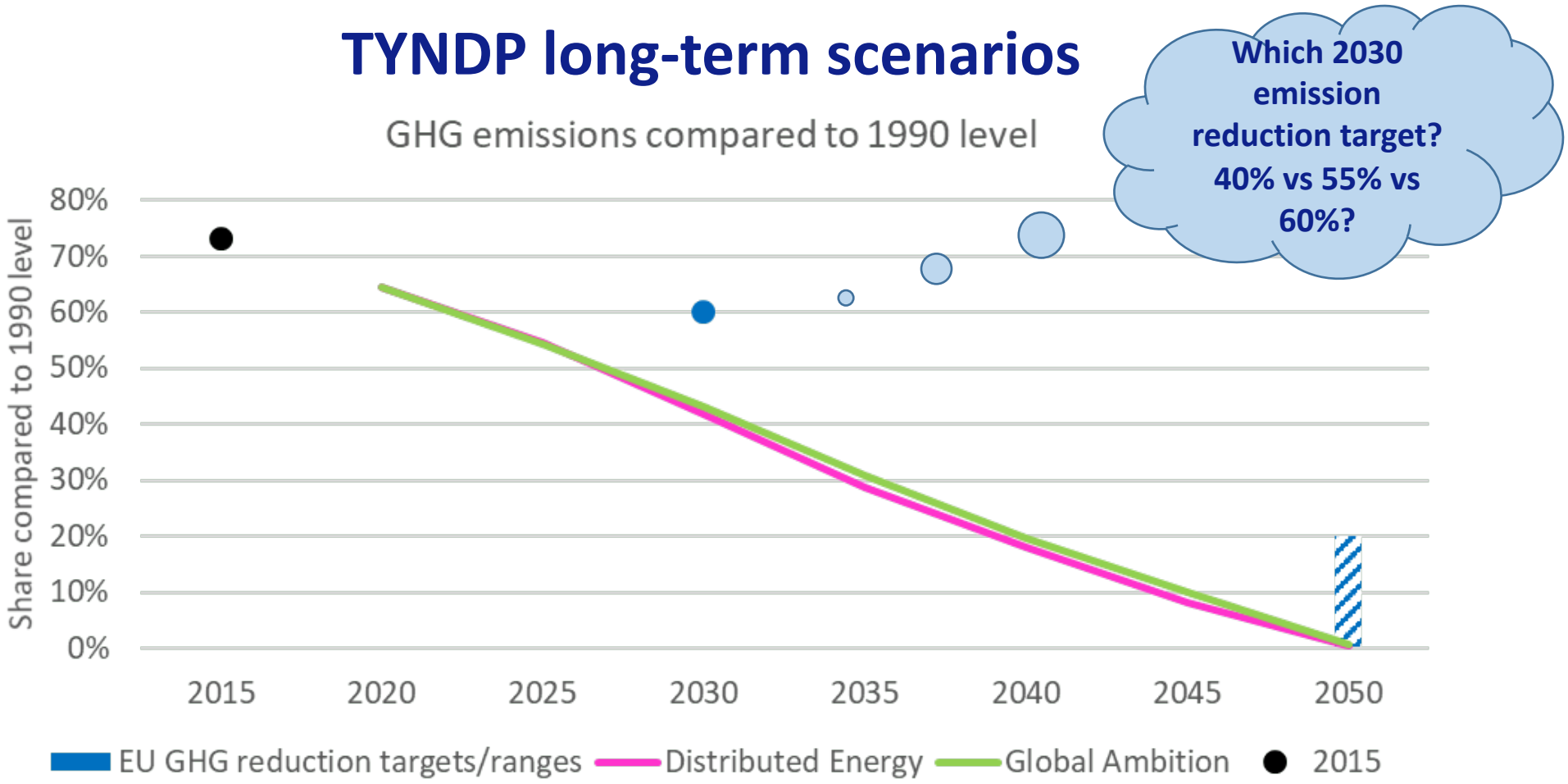
De-centralised approach to the energy transition: active customers, small-scale solutions, circular approach

Global Ambition

Centralised approach to the energy transition: large-scale renewables, imports and decarbonisation

- **The long-term scenarios are the basis for the discussion on the Vision of System Operation in 2030**

TYNDP long-term scenarios



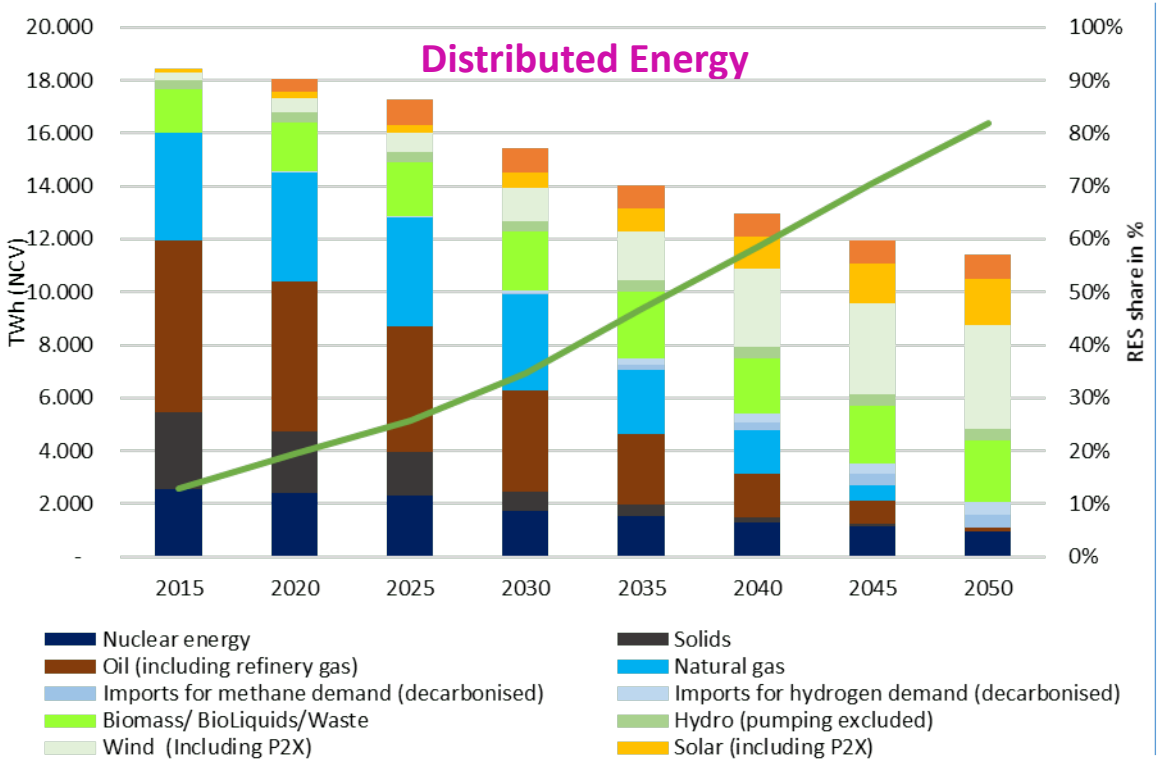
TYNDP COP21 Scenarios have assessed all GHG emissions on the path to 2050 - targeting net zero by 2050!

COP21 Scenarios reach >55% GHG emissions reduction by 2030

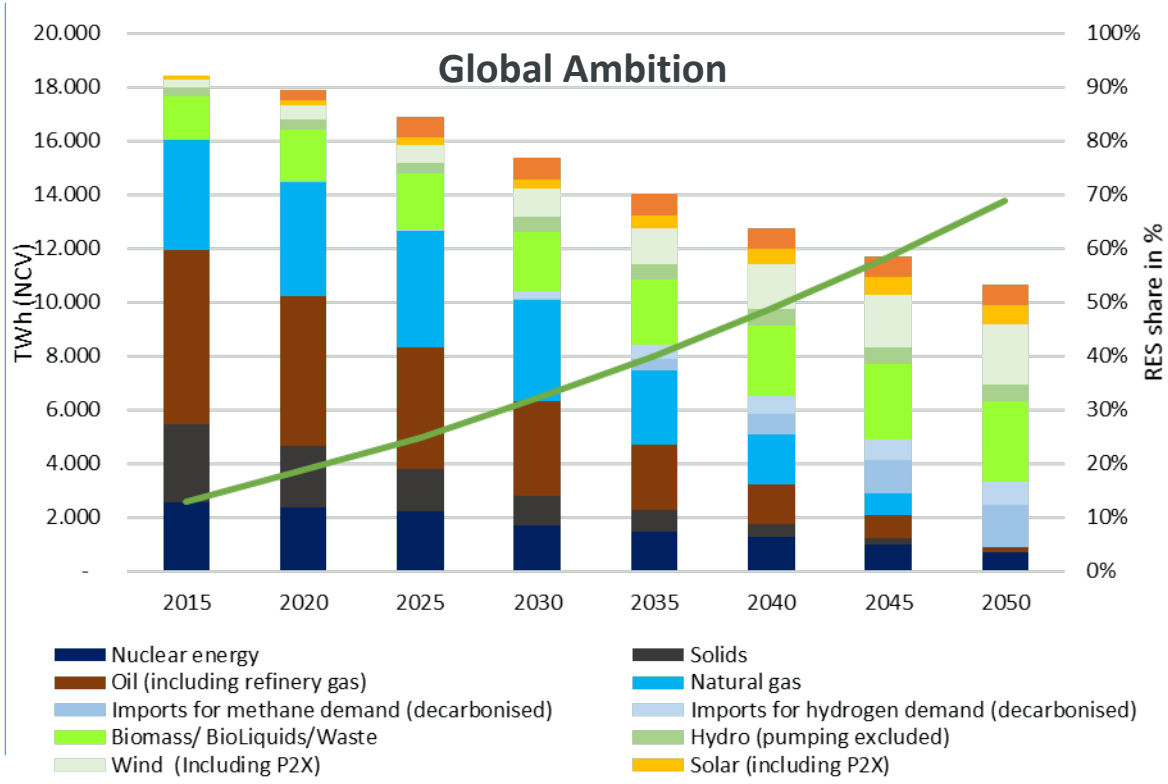
Cumulative GHG emissions in 2050 confirms EC LTS 1.5TECH/LIFE calculations (63.5 vs 65 GtCO2)

Renewables in Primary Energy

RES share reaches 82% in Distributed Energy by 2050

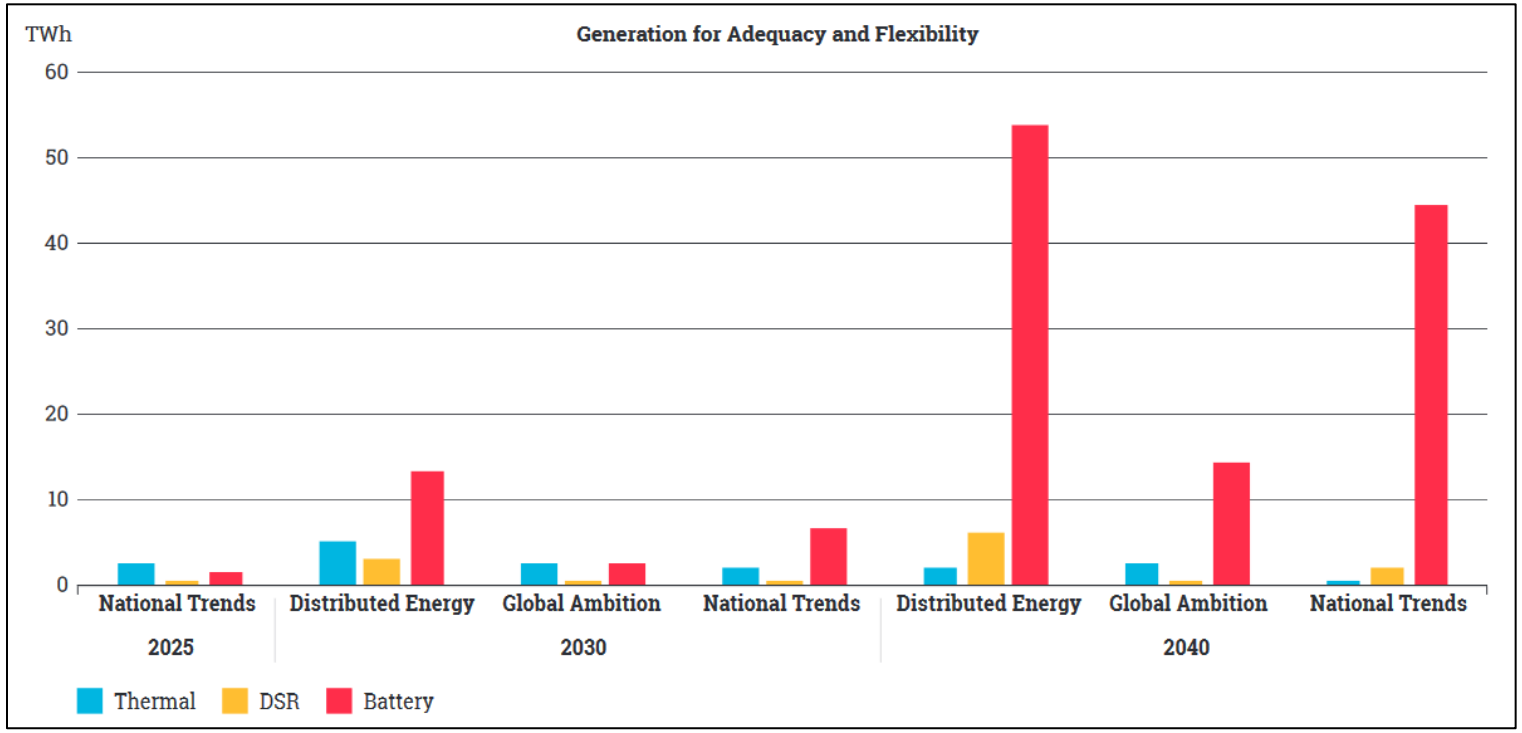


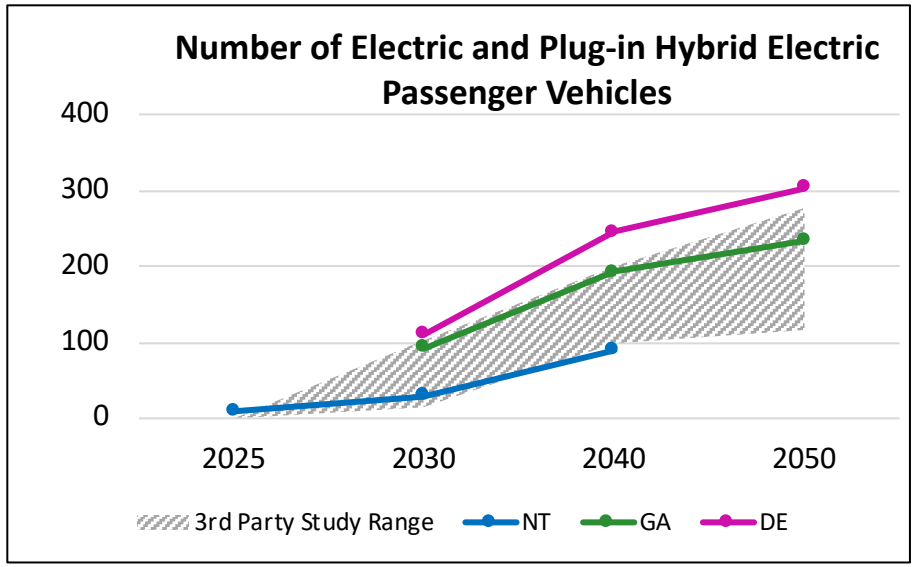
RES share reaches 69 % in Global Ambition by 2050

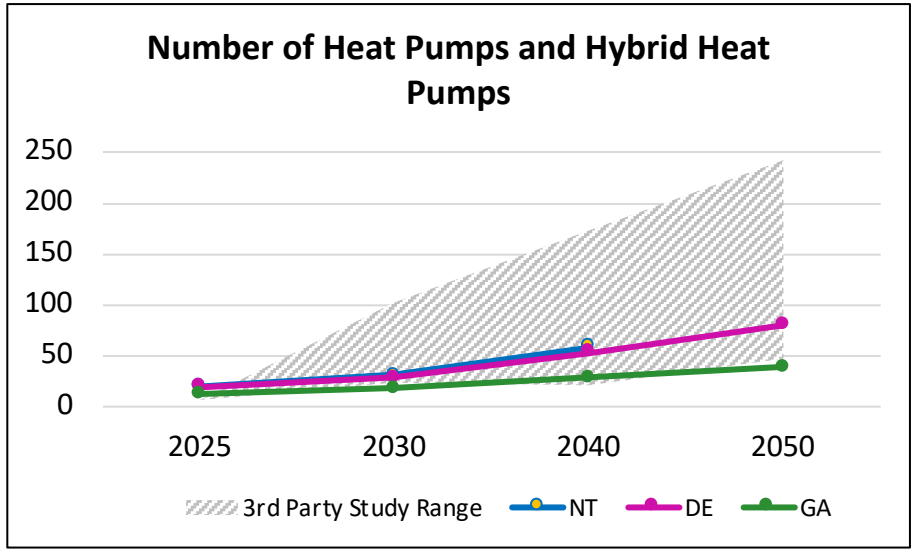


COP21 Scenarios are in line with the EU's current 32% target for Renewables in 2030

Increase in distributed resources and unlocking ‘distributed flexibilities’ to deliver new services: TSO/DSO cooperation is key

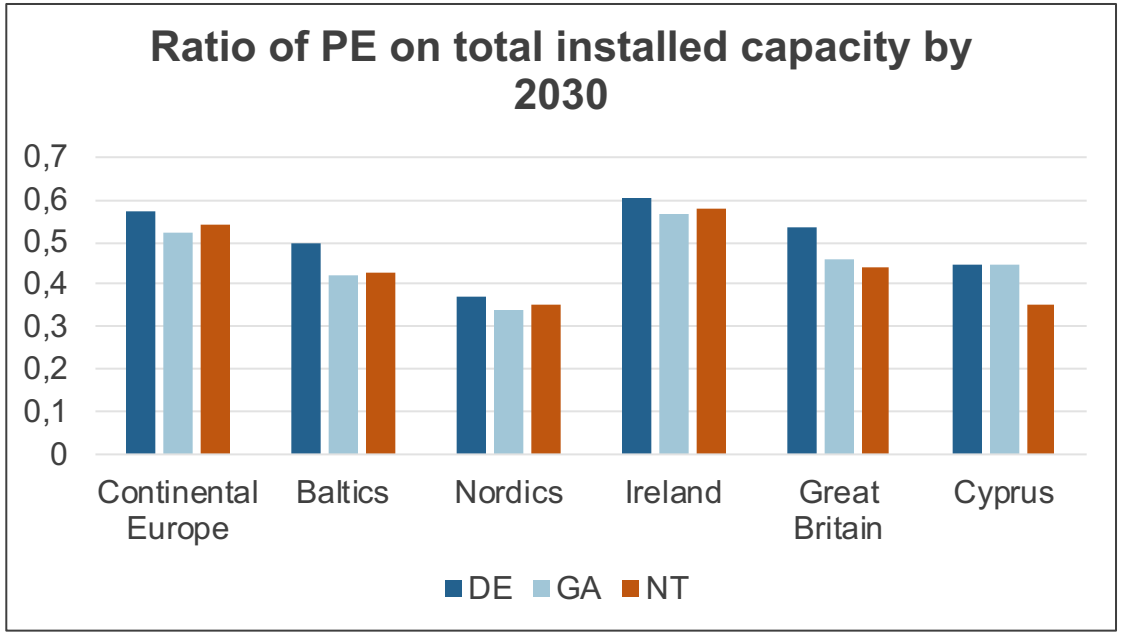


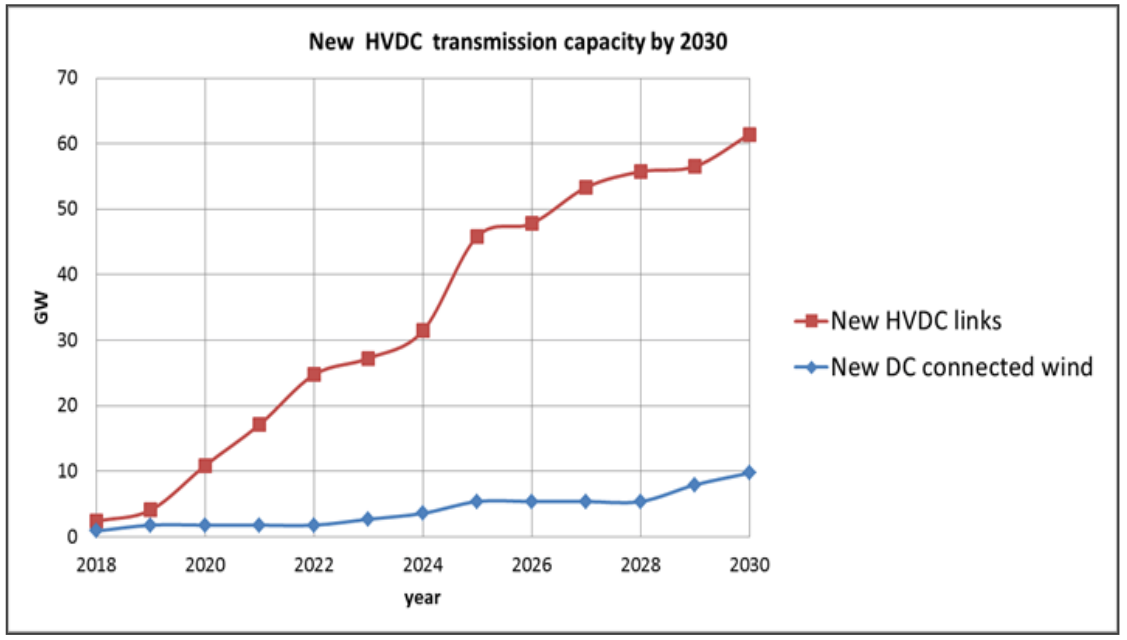




- At least 50% of all new RES will be connected to the distribution networks, as well as primarily Storage, Electric Vehicles & Heat-pumps
- **TSO/DSO coordination and cooperation will be increasingly more relevant**

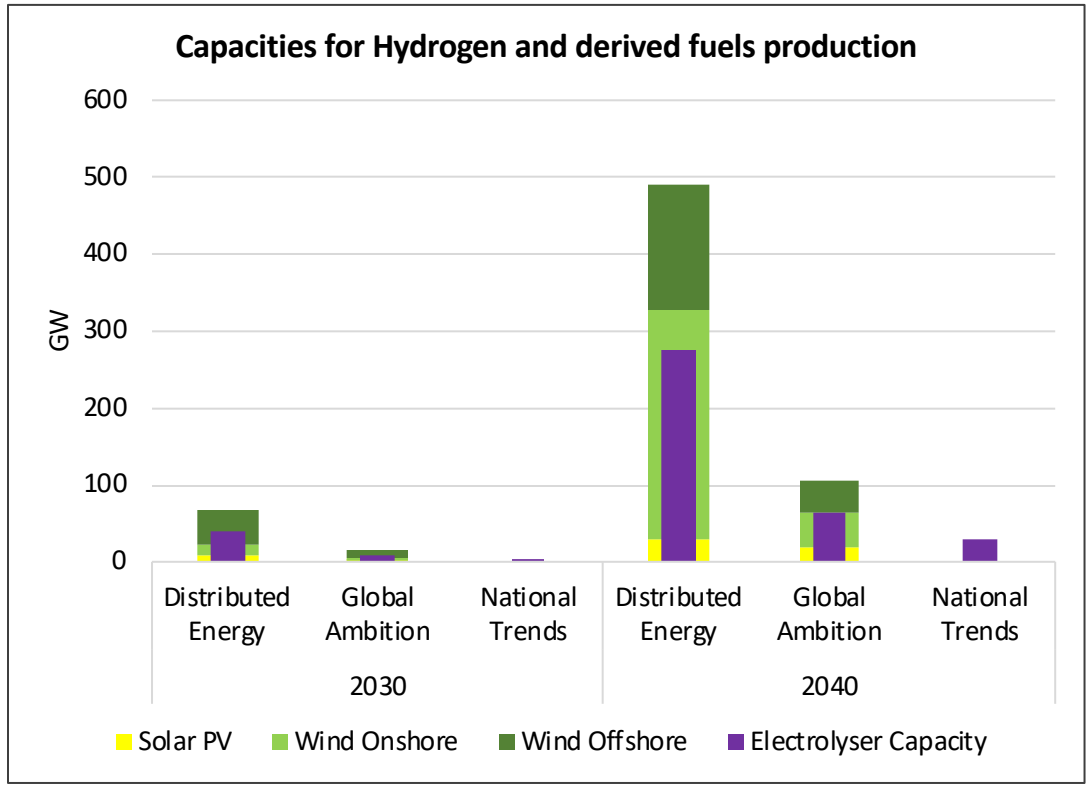
Grids with high penetration of power electronic based generation and transmission

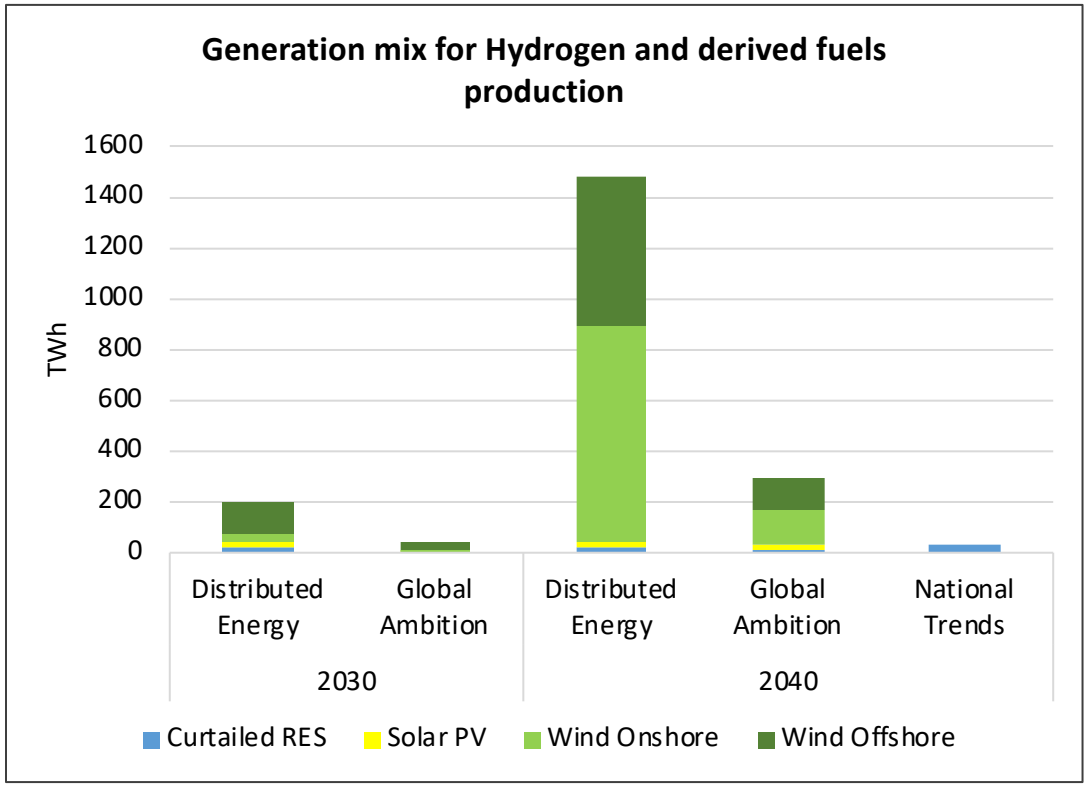




- The RES increase leads to an increase of power electronics interfaced generation connection
- Significant uptake of high-voltage direct current (HVDC) transmission driven mainly by offshore development

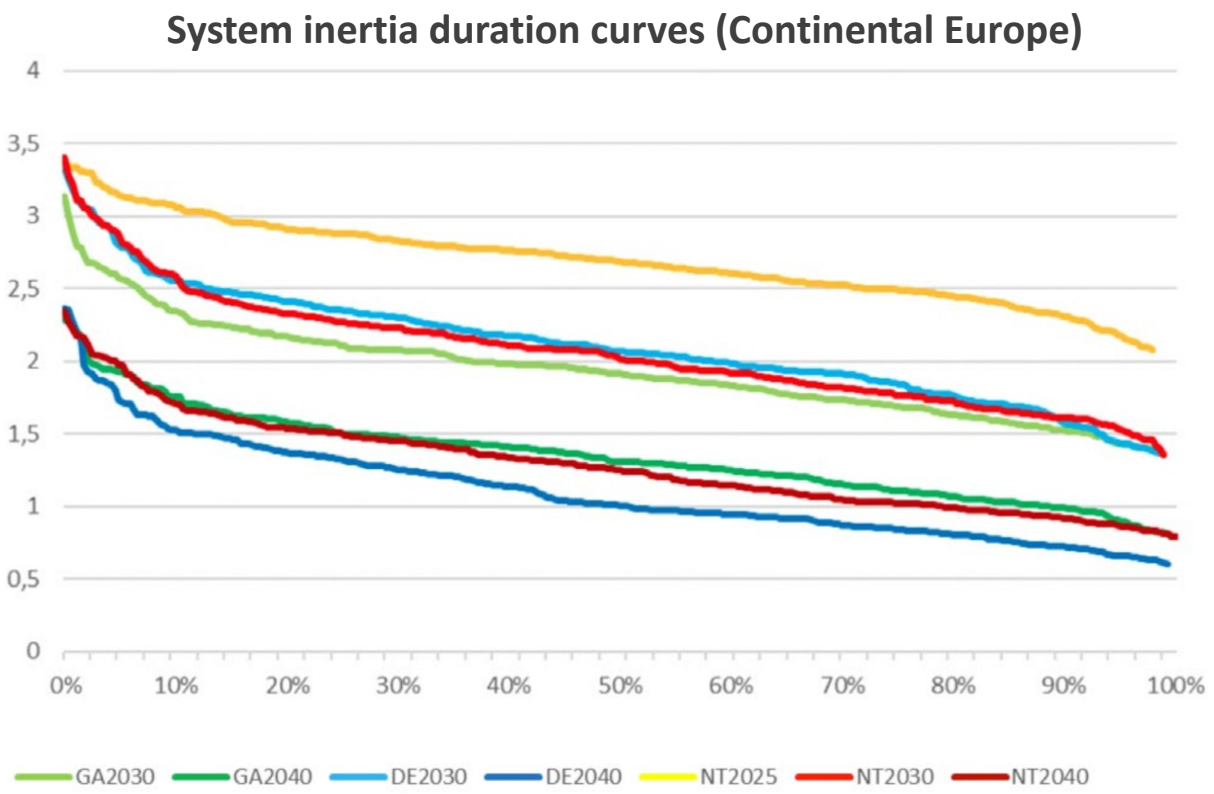
Further challenges and opportunities for market and system operation – sectorial integration





- Sector Coupling enables the link between energy carriers and sectors. It becomes key to achieving EU decarbonisation targets.
- In the long-term, Power-to-Gas will play a key role in both the integration of excess electricity from variable renewables and decarbonising the gas supply.

New system stability challenges: how to adapt?



- **Connection codes**
- **Coordinated R&D**
  - Coordinated efforts of TSOs, DSOs, industry, research and policy makers
  - Grid-forming converters
- **New fast frequency response sources**
  - Converted connected RES, storage, demand response, etc.
- **New roles for existing generators**
- **Network investments**
  - Voltage supporting units
  - Interconnectors
  - Internal reinforcements

The system in 2030: Grid reinforcements are needed

+85GW of transmission
1,3 b€/year investment

No action scenario

2030 generation and demand with the grid of **2020**

Economic needs grid 2030

The 2030 grid identified in ENTSO-E's **socio-economic based needs** study

Copper plate

Infinite transmission across Europe

Savings in generation costs

- 4,9 b€/year

- 2,2 b€/year

Other solutions combined with network reinforcements could take Europe even further: **storage, power-to-gas, hybrid offshore infrastructures, etc.**

ENTSO-E Vision 2030: towards a system of interconnected systems

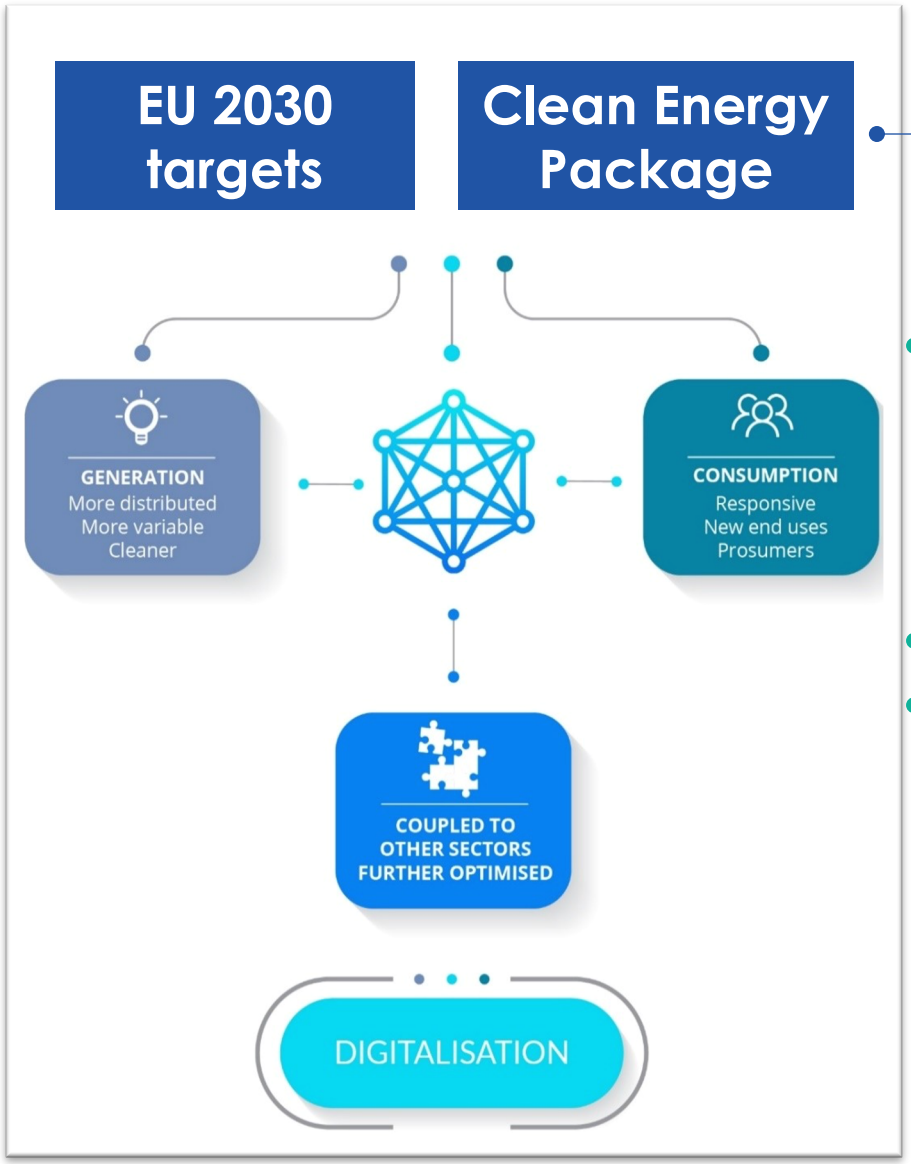
Timothée Decroix

Chair of Policy & Communication Expert Group, ENTSO-E

Damian Cortinas

Vision 2030 Project Leader, ENTSO-E

A Vision reconciling political objectives and technical reality



2030 Scenarios
a shared view of the future

System Operation **Market Design**

Working together towards a closer integration of system operation and markets

A robust and resilient expert-based 2030 vision
adapted to a **dynamic future**

Green Deal **Climate law**

A step towards 2050

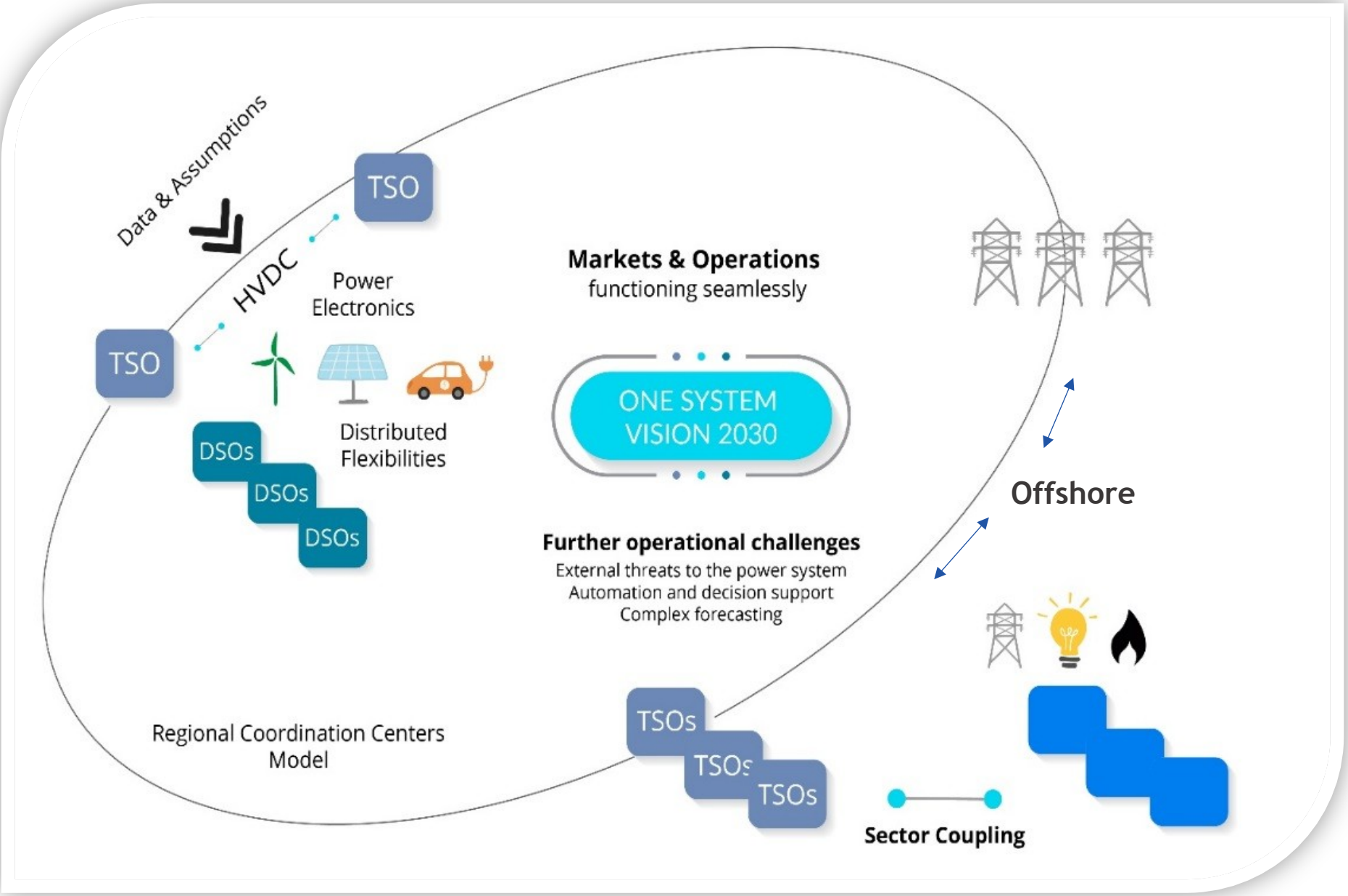
- This Vision is ENTSO-E's contribution to enabling technically the political objectives.
- Issues and solutions have to be discussed and coordinated between actors and across sectors.
- We have to prepare for an uncertain future with the clear horizon of a climate neutral Europe.
- The 2030 Vision is a stepping stone towards 2050, and has to prepare the longer term future.
- Main trends will further accelerate and system change will become even more radical.

Key drivers and major trends in the power system towards 2030

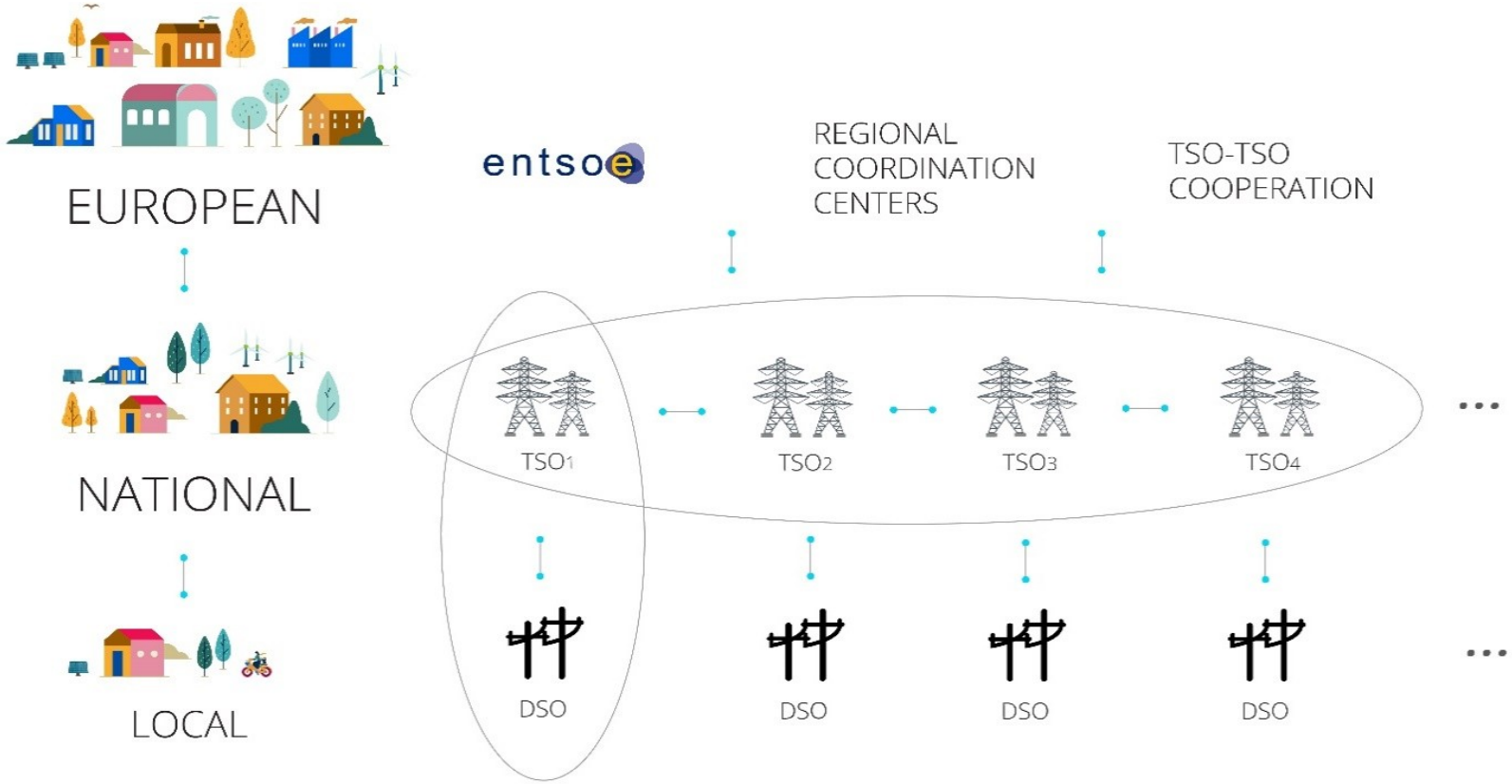
- **Distributed flexibilities** with close TSO & DSO cooperation
- **Power Electronics** towards hybrid AC/DC systems
- **Markets and physics** seamlessly integrated
- Wind generation and interconnections in the seas, **Offshore Grids**
- **Energy System Integration**, beyond power
- **Mastering operational challenges** - resilience, forecast, automation, artificial intelligence

A true System of Interconnected Systems

For the benefit of all European consumers



Building a ‘System of Systems’



- Geographical scales
- Multilateral interfaces
- Interoperability
- System operators = key facilitators
- Governance involving stakeholders
- Putting consumers at the heart of the Energy Transition

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Reactions from stakeholders to the ENTSO-E Vision 2030

Wendel Trio

Director,

CAN Europe

Monique Goyens

Director General,

BEUC

Jorgo Chatzimarkakis

Secretary General,

Hydrogen Europe

Discussion with all participants

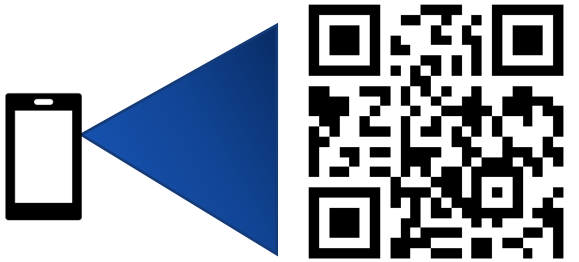
Laurent Schmitt

ENTSO-E Secretary-General

Open floor to Questions & Answers

- *For questions and comments use Sli.do!*
- *Don't forget to add your name and title to your question*

Sli.do # EWeek-1



Wrap up & overview of the webinars for the week

Timothée Decroix

Chair of Policy &
Communication Expert Group,
ENTSO-E

Concluding remarks

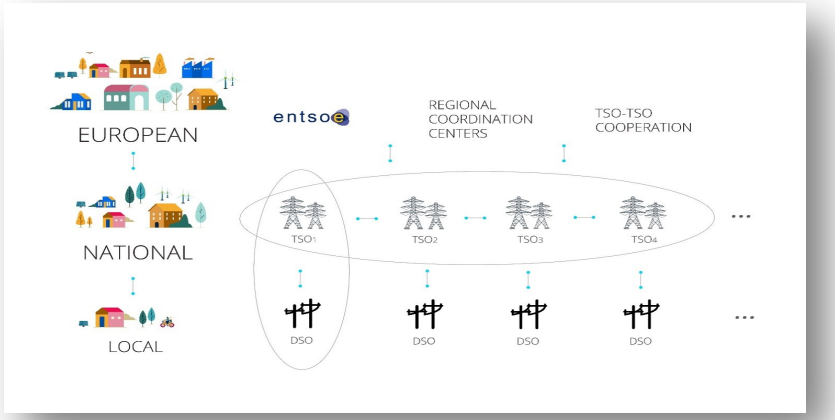
- ENTSO-E's 2030 Vision explores pathways to reconcile political objectives and technical reality.

- All major trends and drivers show the need for a **'system of interconnected systems'** at the center of the European energy transformation in the next decades to provide for the efficient integration of large-scale RES into the power grid within the 2030 to 2050 horizon and achieve climate neutrality objectives.

- All **System Operators will have a key integration and facilitation role** to enable the European energy transition.

- **How to achieve that? We need a multi-layer, multi-player, cross-sector and cross-border coordination, cooperation and integration.**

- ***Join us for the next webinars during this week to discuss further these ideas!***



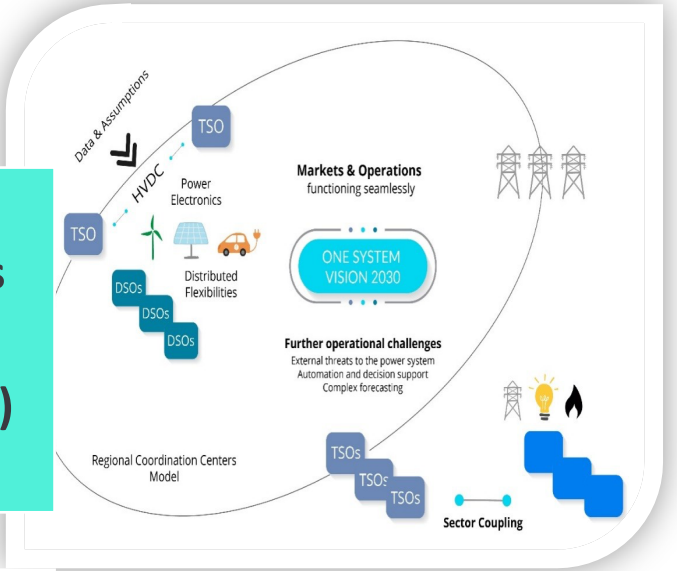
Inside the Vision – a series of webinars

Main Trends and Drivers, 2030 scenarios, overall Vision

(12 October/10-12 CET)

Market Design options for the future

(12 October/14-16 CET)



Unleashing the potential of flexibilities

(13 October/ 10-12 CET)

System Integration and Offshore Development

(13 October/14-16 CET)

Innovation for the future: AC/DC networks & operational challenges

(14 October/10-12 CET)

Putting all the pieces together: a system of systems for the future

(14 October/14-16 CET)

Thank you for your attention!