

# START2030

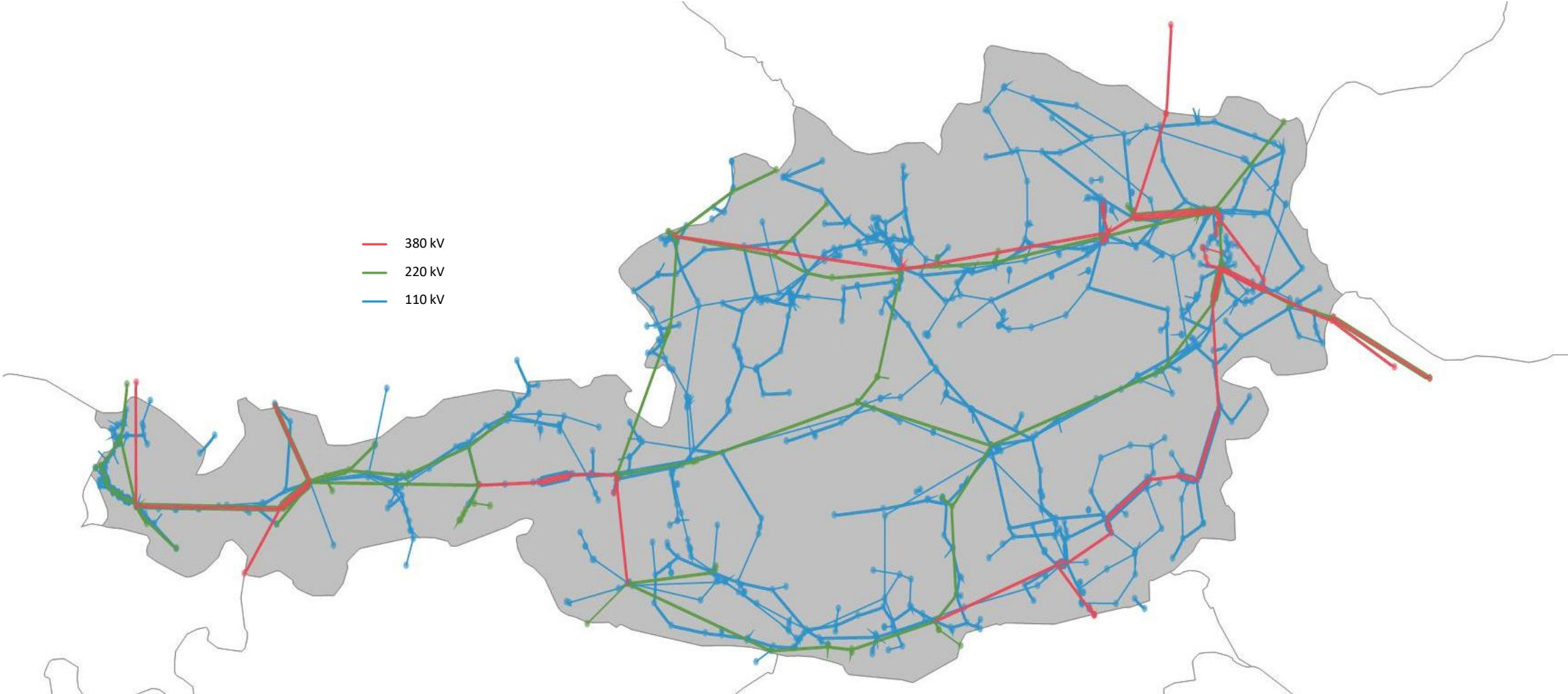


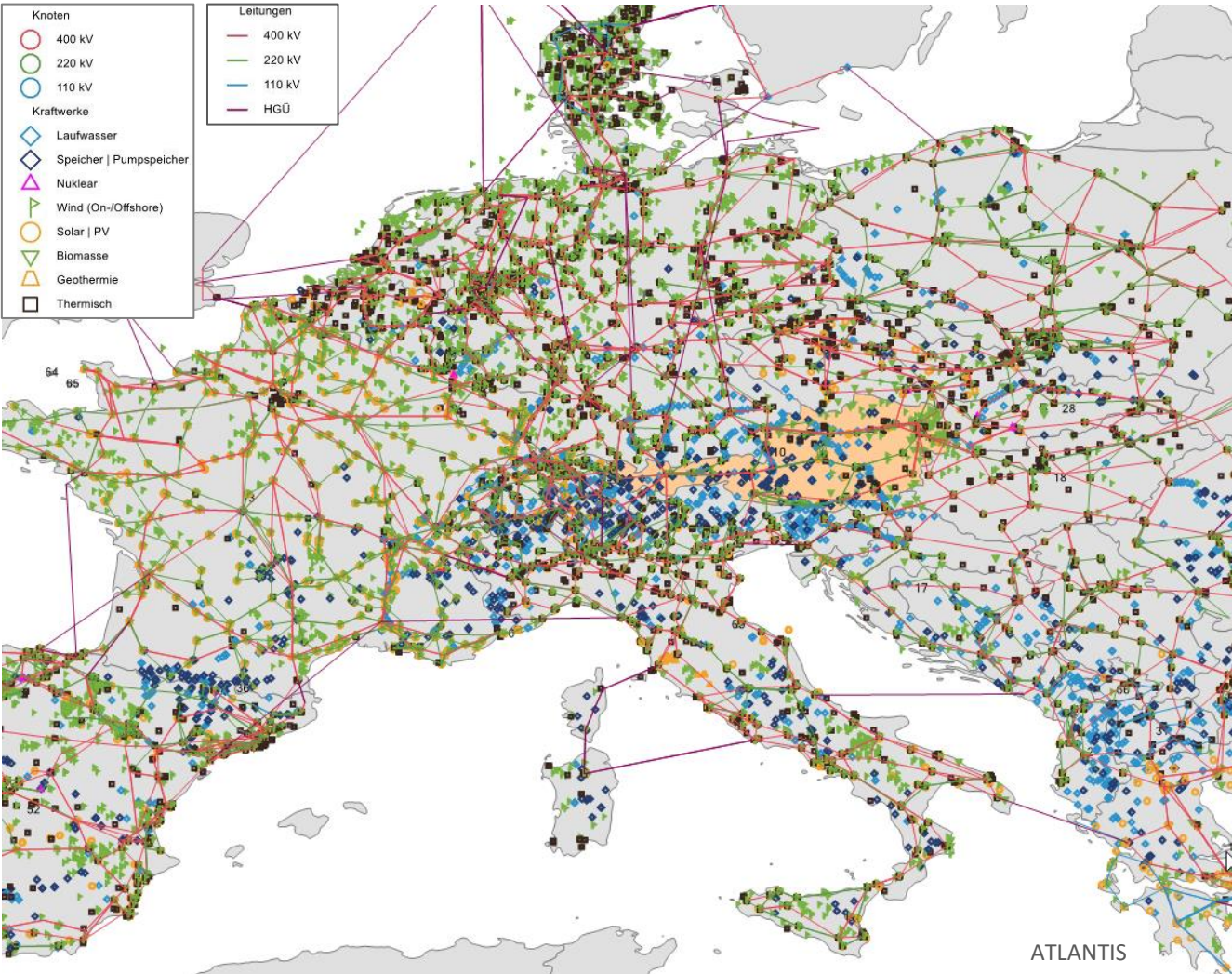
## A baseline Scenario for the European Electricity System

Analyses of different European Scenarios

## ➤ Main Objective

- Find a suitable baseline scenario for the European electricity sector which is considered to be “most likely” until 2030





### ➤ Key Parameters

#### ➤ Yearly Consumption

(country-specific)

#### ➤ Power Park Development

(country-specific)

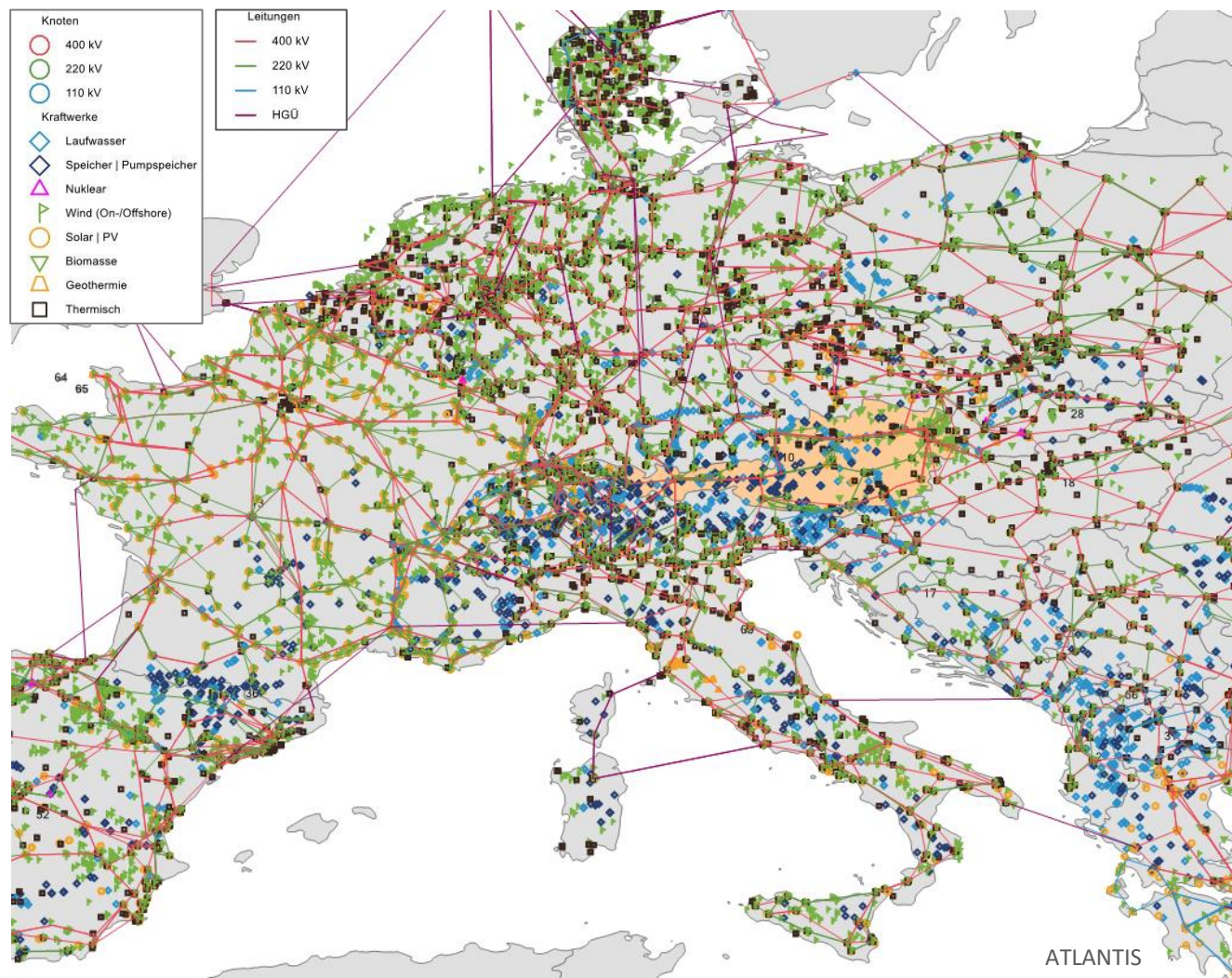
#### ➤ Fuel Prices & CO<sub>2</sub> Price Assumptions

#### ➤ Grid Extension

### ➤ “Most Likely”

#### ➤ Data From Transmission System Operators

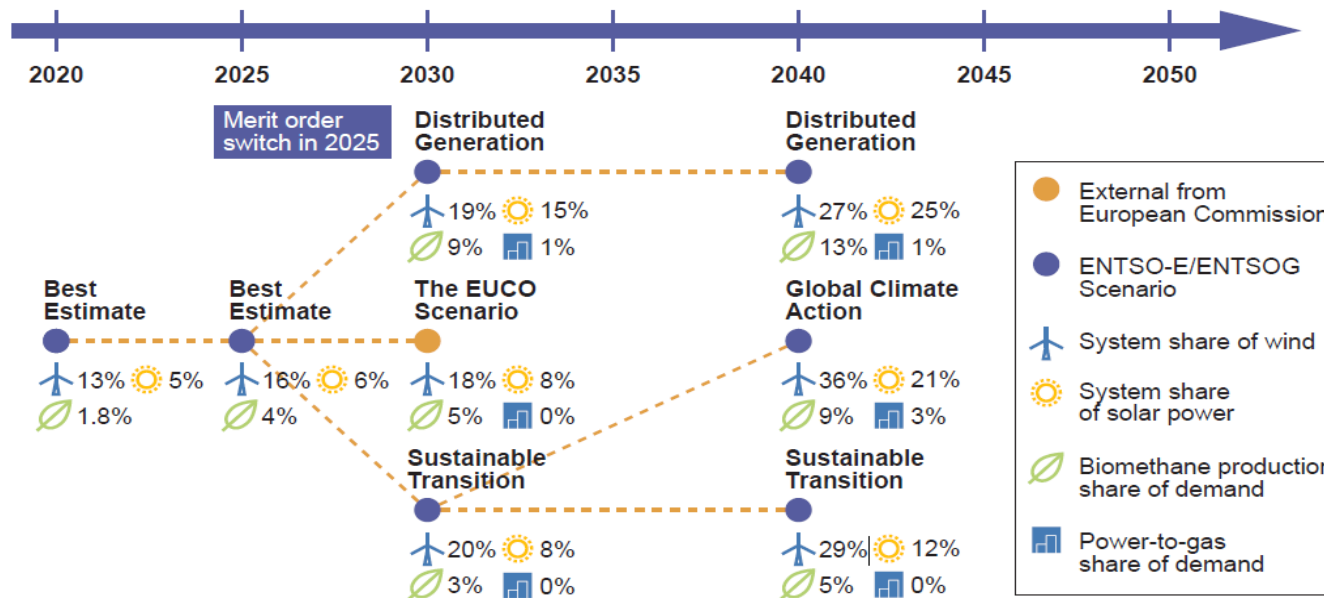
#### ➤ Bottom-Up Scenarios



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Organization	Publication	Storyline	Year	Capacities / Country	Consumption / Country	Fuel Prices	Carbon Price	Grid ext.	ACER approval
IEA	World Energy Outlook 2020	Stated Policies Scenario	2030	No	No	Yes	Yes	No	
ENTSOE	TYNDP2018	Sustainable Transition	2025/2030/2040	Yes	Yes	Yes	Yes	Yes	Yes
ENTSOE	TYNDP2018	Distributed Generation	2025/2030/2040	Yes	Yes	Yes	Yes	Yes	Yes
ENTSOE	TYNDP2018	Global Climate Action	2025/2030/2040	Yes	Yes	Yes	Yes	Yes	Yes
ENTSOE/European Commission	TYNDP2018	EUCO2030	2030	Yes	Yes	Yes	Yes	Yes	Yes
European Union	EUCO (2019)	EUCO3232.5	2030	Yes	Yes	No	Yes	No	
ENTSOE	TYNDP2020	National Trends	2025/2030/2040	Yes	Yes	Yes	Yes	Yes	No
ENTSOE	TYNDP2020	Distributed Energy	2025/2030/2040/2050	Yes	Yes	Yes	Yes	Yes	No
ENTSOE	TYNDP2020	Global Ambition	2025/2030/2040/2050	Yes	Yes	Yes	Yes	Yes	No
World Energy Council	WEC Scenario (2019)	Modern Jazz	2030/2040	No	No	No	No	No	
World Energy Council	WEC Scenario (2019)	Unfinished Symphony	2030/2040	No	No	No	No	No	
World Energy Council	WEC Scenario (2019)	Hard Rock	2030/2040	No	No	No	No	No	
Shell	Shell Scenarios (2018)	Sky	2030/2040/2050/2060/2070	No	No	No	Yes	No	
BP	Energy Outlook 2020	Net Zero	2030/2040/2050	No	No	No	Yes	No	
BP	Energy Outlook 2020	Buisness-as-Usual	2030/2040/2050	No	No	No	Yes	No	
BP	Energy Outlook 2020	Rapid	2030/2040/2050	No	No	No	Yes	No	
McKinsey	Global Energy Perspective 2019	Reference case	2016/2035/2050	Yes	Yes	No	No	No	
IRENA	Global Renewables Outlook (2020)	Planned Energy Scenario, Transforming Energy Scenario, Baseline Scenario	2030/2050	No	No	No	No	No	
Equinor	Energy Perspectives (2020)	Reform, Rebalance, Rivalry	(2030/2040/) 2050	No	No	No	No	No	
Greenpeace, Global Wind Energy Council, Soler Power Europe	energy [r]evolution (2015)	Reference Scenario, Energy [R]evolution Secenario, Advanced Energy [Revolution Scenario	2025/2030/2035/2040/2050	No	No	Yes	No	No	

- Four Storylines
- Submitted to ACER and finally approved
- Global Climate Action not relevant



### ➤ Sustainable Transition

- Bottom-Up Approach
- Decarbonization in the energy sector is being driven primarily by the shutdown of coal fired power plants
- Coal power plants will be replaced by gas-fired power plants
- EU on track to 2030 targets

### Pros

- Bottom-up approach
- Installed capacity, consumption data per country
- Fuel and carbon prices included
- Data from World Energy Outlook already included
- Grid extension projects due to PCIs
- Close Stakeholder engagement
- Public consultation and ACER opinion already implemented
- ACER approved

### Cons

- No implementation of National Energy and Climate Plans (NECP)





### ➤ Distributed Generation

- Top-Down Approach
- Focus is on the so-called Prosumer
- E-mobility and a high proportion of photovoltaic systems, in combination with storage systems in buildings
- EU slightly beyond 2030 targets

### Pros

- Installed capacity, consumption data per country
- Fuel and carbon prices included
- Data from World Energy Outlook already included
- Grid extension projects due to PCs
- Close Stakeholder engagement
- Public consultation and ACER opinion already implemented
- ACER approved

### Cons

- Top-down approach due to fulfilment of predefined Storyline



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GENERATION**

### ➤ EUCO30

- 30% increase in energy efficiency
- Technological progress or possible political developments are not considered
- Different modelling methodology's between ENTSO-E and the European Commission

### Pros

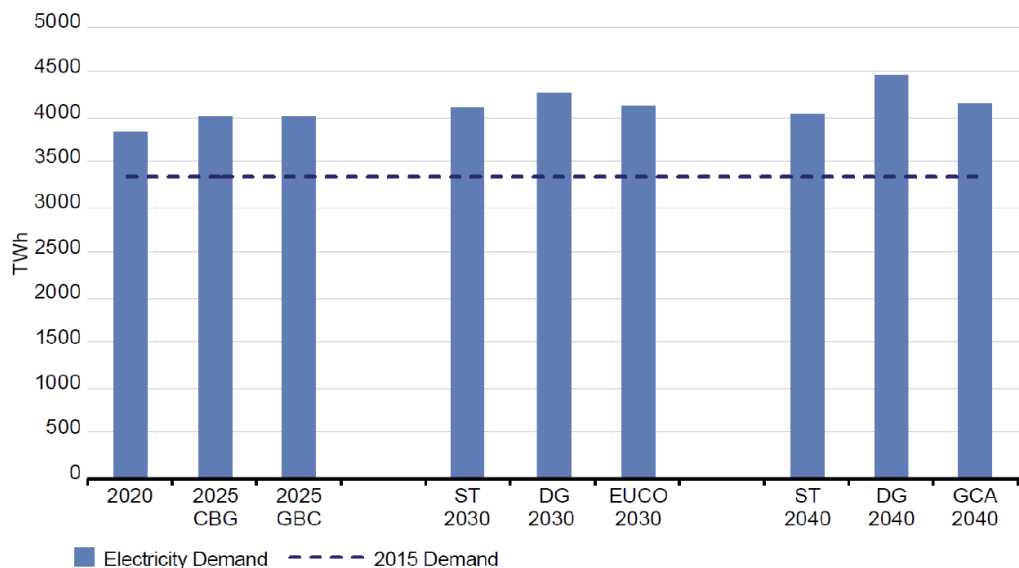
- Installed capacity, consumption data per country
- Fuel and carbon prices included
- Data from World Energy Outlook already included
- Grid extension projects due to PCIs
- Public consultation and ACER opinion already implemented
- ACER approved

### Cons

- Top-down approach due to fulfilment of predefined goals
- External scenario
- Data from ENTSO-E Best Estimates and EUCO30 are not consistent

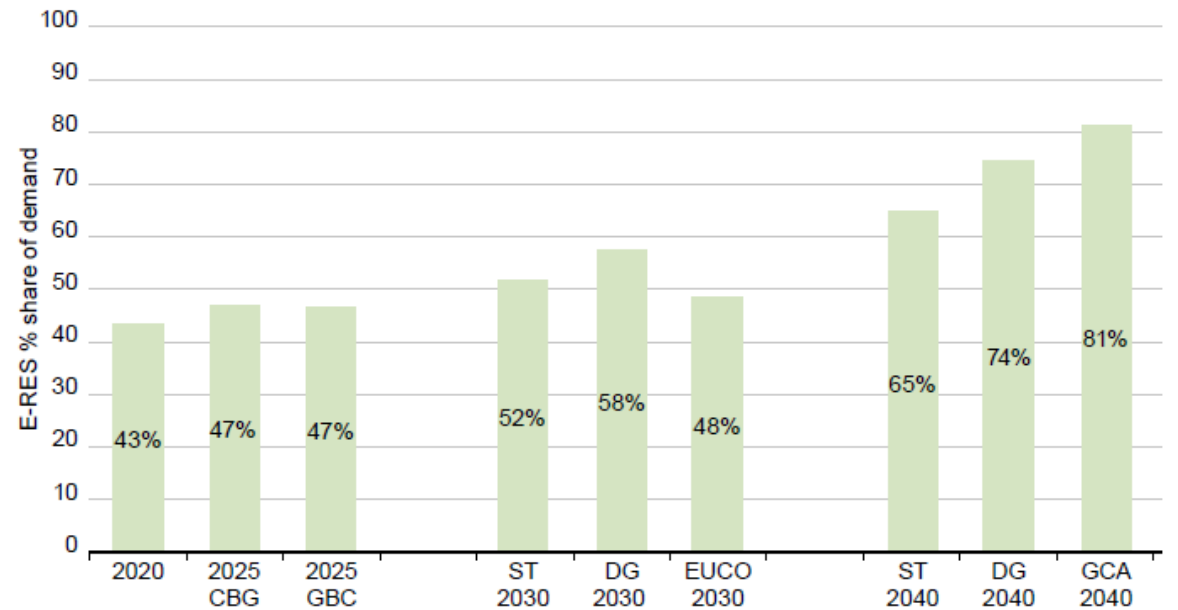
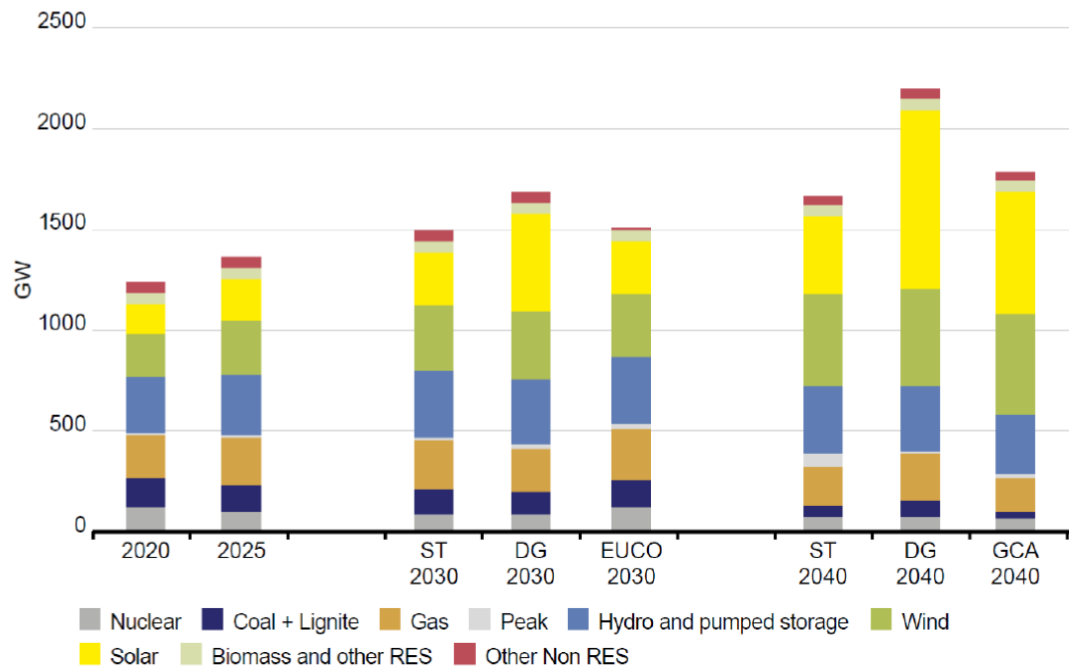
### ➤ Consumption

Scenario	2030	2040
Sustainable Transition	TSO data collection	Forecast based on TSO data extrapolation
Global Climate Action	-	Average value of ST2040 and DG2040
Distributed Generation	Usage of Composite Index	Usage of Composite Index

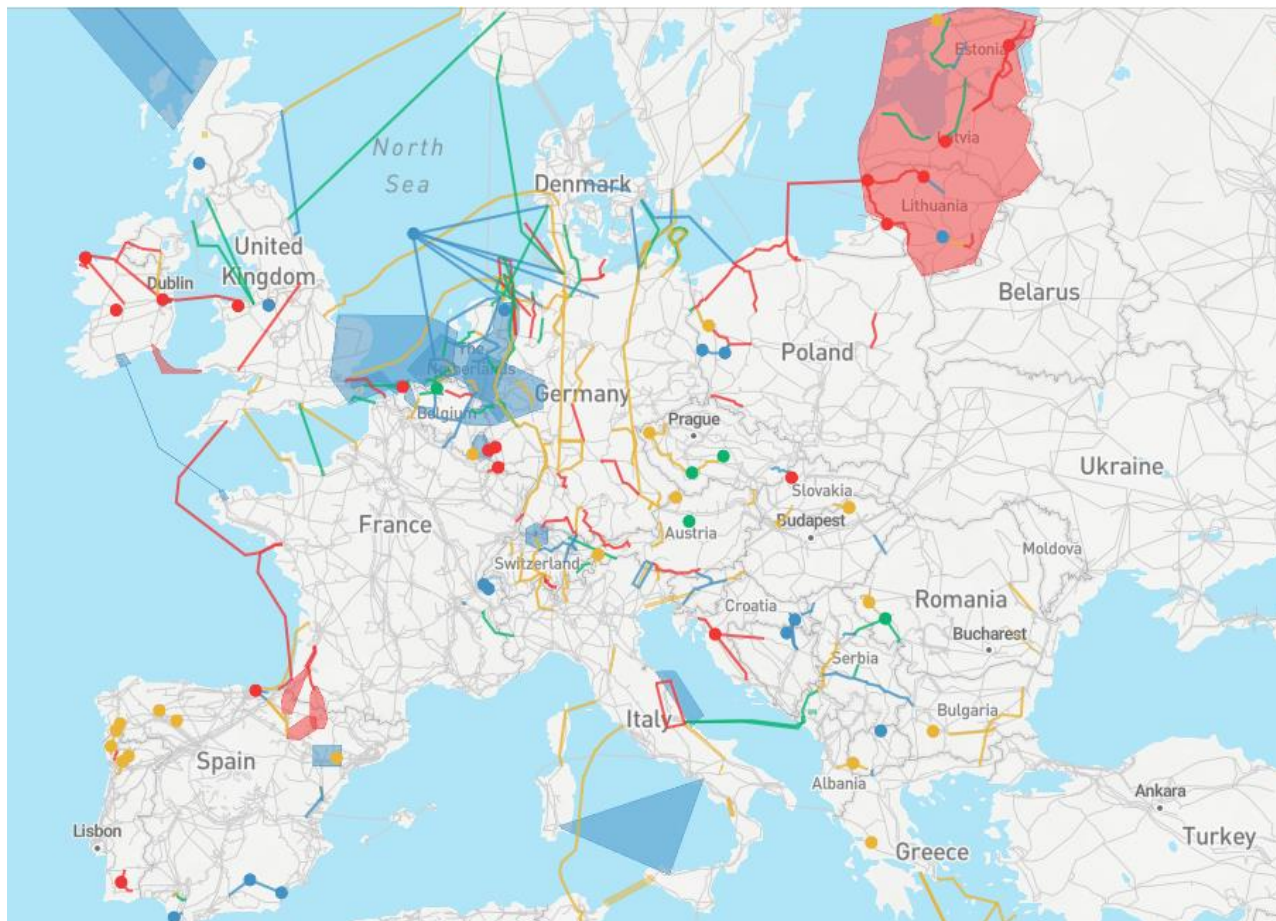


- Projected demand data per country
- Data provided by TSOs
- Higher demand in DG due to increased demand in the heating (heat pumps) and transport sector (electric vehicles)

### ➤ Power Park Development



### ➤ Grid Extension



➤ 166 Transmission Projects

➤ 15 Storage Projects

### ➤ Summary and Recommendation

- Specific data on consumption, installed power, fuel, CO2 prices and data available for all three scenarios
- EUCO30: Data inconsistencies and different methodologies between ENTSO-E and European Commission
- Distributed Generation: Top-Down Approach
- Sustainable Transition: Bottom-Up Approach
- Goal: Choosing "most likely" future scenario storyline → bottom-up scenarios
- **TYNDP 2018 Sustainable Transition scenario** defined as "most likely" and therefore recommended as an accurate benchmark scenario for the European electricity system.
  - Latest Final TYNDP
  - In Line with EU 2030 Targets

# START2030



## Thank you!

This project is funded by the Klima- und Energiefonds and carried out within the Austrian Climate Research Programm (ACRP)

