



european network
of transmission system operators
for gas

Demand Scenarios and Cases

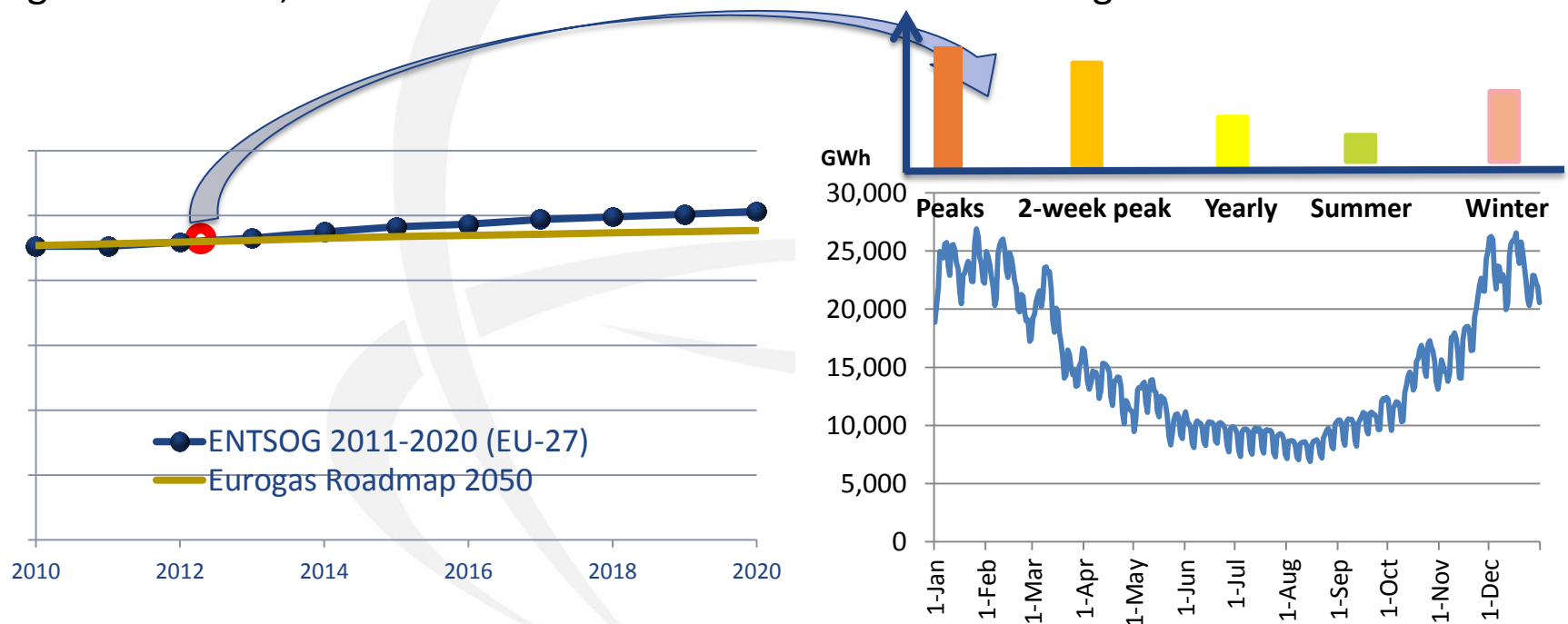
TYNDP SJWS #2

Brussels – 18 February 2014

Demand Scenarios vs. Cases

Scenarios and Cases

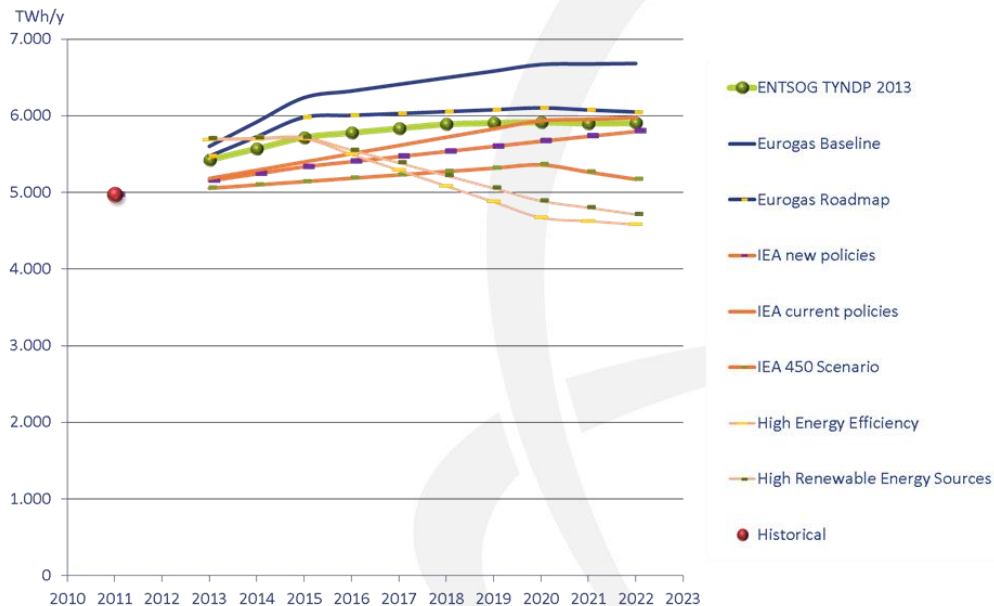
- > Difference between the best estimate (forecast) and pathways/options.
- > The different cases have to be understood as snapshots detailing a certain year in a given scenario, while a scenario is the evolution in time of a given variable.



The detail of the figure determines how it can be used: The network assessment requires disaggregation by country/balancing zone, as well as the different levels of consumption under different conditions: the peak day is not proportional to the yearly average.

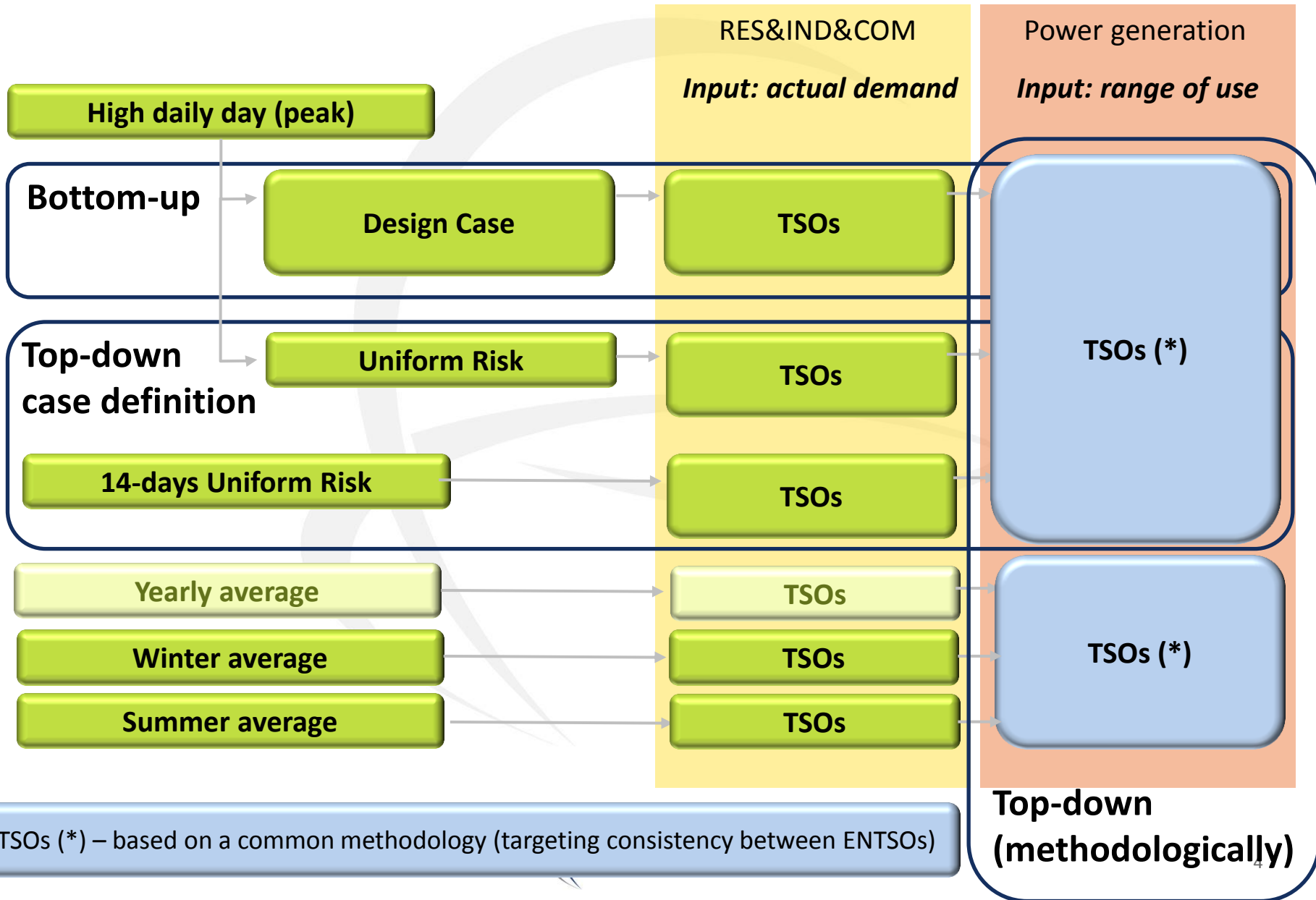
Demand Scenarios vs. Cases

A complete comparison of Scenarios requires the definition of cases



- > Until now, the comparison of scenarios has been limited to the annual volumes – (lack of necessary detail).
- > Ongoing discussion with other associations on the potential use (and release) of non-published disaggregated data (as country/ demand breakdown) for their potential utilization as alternative scenarios for the sensitivity analysis [e.g. Eurogas Long-term Outlook for Gas to 2035].

Definition of Cases



Definition of Cases

Climatic conditions

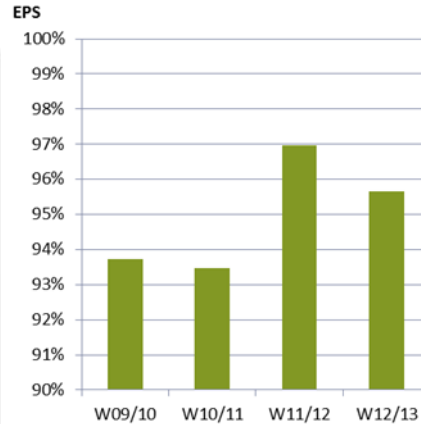
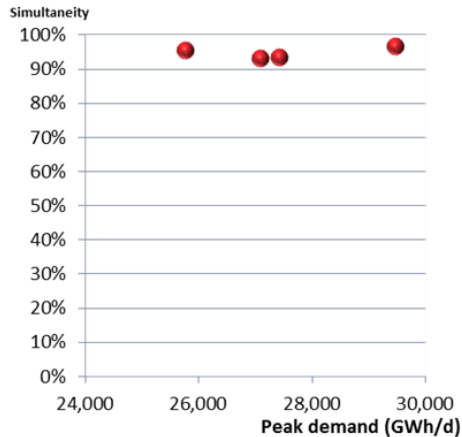
- From Yearly demand (Average daily demand) into Seasonal demand in order to better capture seasonality:
 - Winter daily average
 - Summer daily average
- High daily demand:
 - 1-day Design Conditions -- strictly bottom-up (national plans)
The peak demand design situation as calculated by TSOs and laid down in National Development Plans and TSO capacity outlooks where existing.
 - 1-day Uniform Risk
1-day based on a common probability occurrence using the percentile 5% on the climatic parameter (Top-down definition of climatic conditions).
 - 14-day Uniform Risk
simultaneous high daily demand on a 14-day period based on a common (Top-down) definition of climatic conditions.

Considering the ~3% difference between 1 day design case and uniform risk, the occurrence of peak and the need to keep the number of cases under control the decision of keeping or not this case should be discussed.

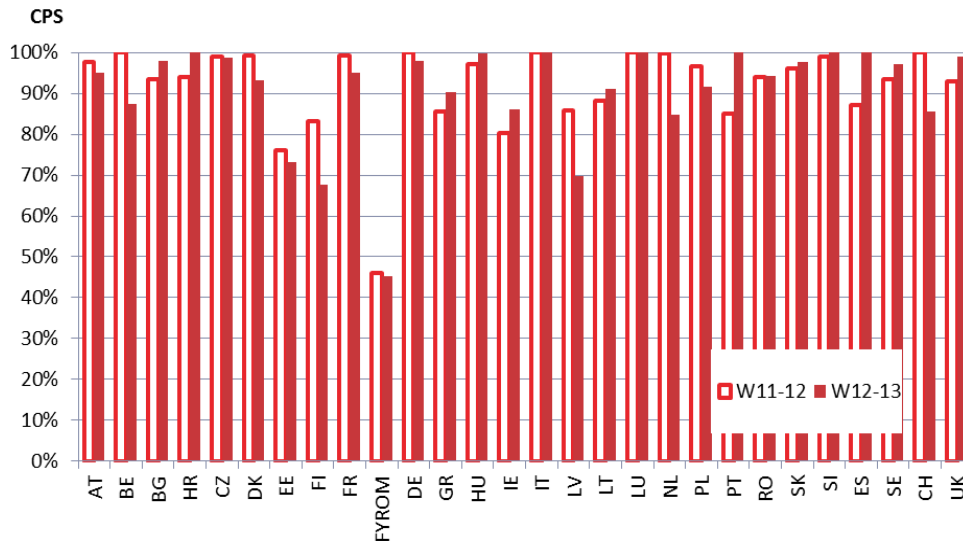
Definition of Cases

Simultaneity

➤ Evidence of high level of simultaneity in the European peak demand:



Winter	day	Peak demand (GWh/d)	EU simultaneity (%)
W09/10	26/01/2010	27,431	94%
W10/11	17/12/2010	27,091	93%
W11/12	7/02/2012	29,460	97%
W12/13	12/12/2012	25,775	96%



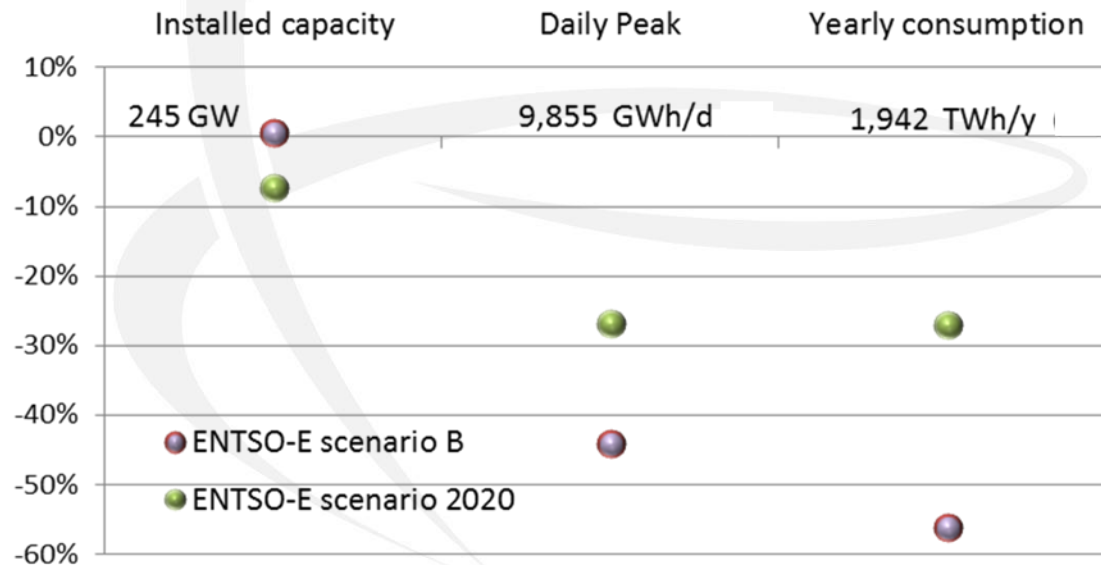
The high levels of simultaneity in the winter peak observed during the last 4 year, suggest maintaining 100% of simultaneity for the European peak.

What would be the added value of the modelling of different climatic repartitions of the same European occurrence?

Consistency between ENTOSOs

TYNDP 2013

- > Comparison of the TYNDP scenarios between ENTOSOG and ENTOSO-E
 - ENTOSO-E Scenario 20-20 (top-down, based on the European 20-20-20 objectives and the NREAPs)
 - ENTOSO-E Scenario B (bottom-up, extrapolates information from market players' present investments perspectives)
- > Consistency in the installed capacities, significant differences in the demand scenarios



Improved consistency for 2015: Installed capacities and net electricity production by country as base for the development of ranges of gas consumption for power generation

Consistency between ENTSOs

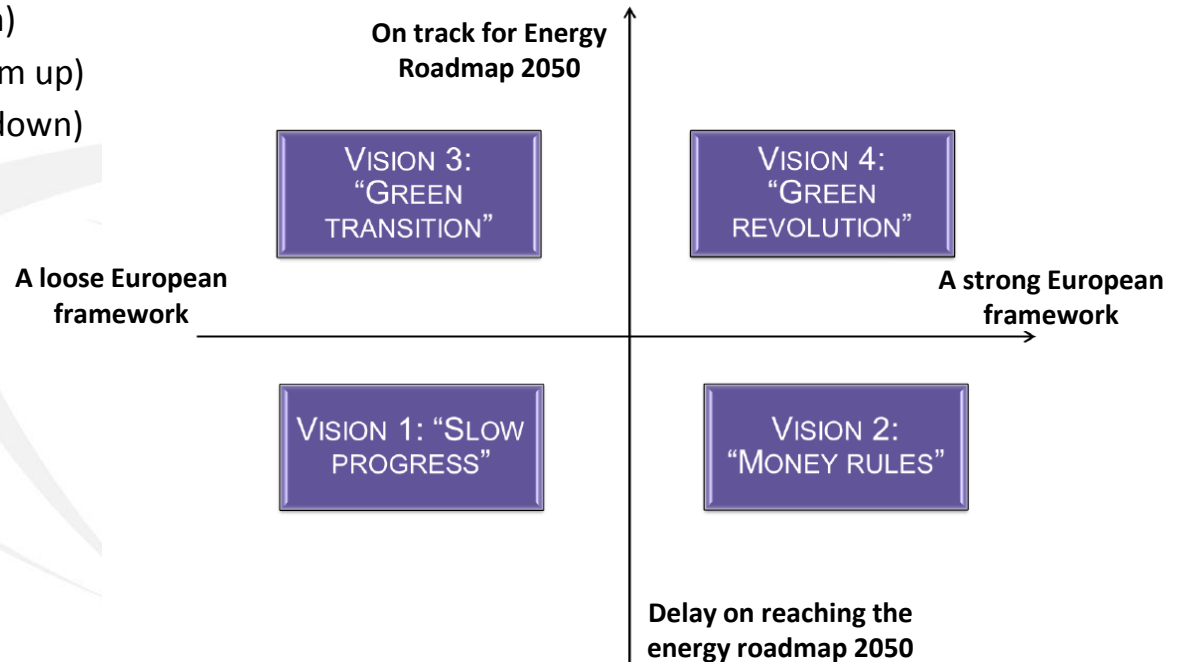
ENTSO-E TYNDP

➤ Horizon 2020 – Scenario 2020

➤ Horizon 2030:

> 4 extreme Visions for 2030 “a bridge between the EU 2020 and 2050 energy targets”:

- Vision 1 – Slow progress (bottom up)
- Vision 2 – Money Rules (top down)
- Vision 3 – Green Transition (bottom up)
- Vision 4 – Green Revolution (top down)



Scenarios of gas for power generation

Developing consistent scenarios

- > ENTSO-E public information:
 - Electricity consumption
 - Installed capacities by technology and year
- > Based on the observation of the historical load-factors:
 - Assumptions on the load-factors of the different technologies (RES, Nuclear...)
 - Estimation of the remaining thermal gap (mainly covered by gas + coal, with some exceptions like Estonia, where it would be covered between oil and gas)
 - Definition of ranges for coal and gas production (based on the utilization and installed capacities):
 - Upper scenario: market conditions favouring gas against coal
 - Lower scenario: market conditions favouring coal against gas

Freedom in the parameterization of load-factors and efficiencies will allow TSOs to adapt the methodology to the specificities of the electricity market in each country.

Scenarios of gas for power generation

Intermittency

- > Same methodology, when considering the changing load-factors of intermittent RES sources, would allow the quantification of the flexibility requirements associated to this intermittency.

Demand elasticity

- > Demand elasticity is defined by the two extreme market conditions (upper and lower scenarios) and the gradient to move from one to the other.
- > For a certain scenario of coal and CO2 prices, the variation in gas price would imply a change in the relative cost of power generation with gas, and therefore a change in the gas demand.

Sustainability

- > Role of gas in sustainability captured under two perspectives:
 - Market: CO2 emissions between the upper and lower scenarios
 - Flexibility: Link between RES production and Gas-fired installed capacities (intermittency)



Thank You for Your Attention

ENTSOG -- European Network of Transmission System Operators for Gas
Avenue de Cortenbergh 100, B-1000 Brussels

EML:

WWW: www.entsog.eu