Use of the Input Data

TYNDP SJWS #2

Brussels – 18 February 2014

Supply scenarios

Use of the potential supply scenarios

➤ The multiple (minimum, maximum and intermediate) potential supply scenarios have a direct use as part of the Supply Adequacy Outlook.

➤ The use of these scenarios in the modelling is indirect: the supply cases come out of different calculations.

➤ Whereas in TYNDP 2013 the calculation of the supply cases was done based on the historical supply shares for the reference case, in TYNDP 2015 the introduction of the market layer will derive the calculation of the supply case to the price conditions of the different sources, as resulting from the network modelling.

➤ Nevertheless, in order to avoid unrealistic supply situations, constraints on the levels of supply of the different sources should be defined: the maximum and minimum supply levels.

➤ These constraints should be defined based on the potential supply scenarios by source

Supply case for average Winter/Summer - 1

Reference Case

➢ Average year:

- Minimum = min(minimum scenario, 60% intermediate scenario)

- Maximum = Intermediate scenario

➢ Average winter:

- Minimum as derived from the yearly minimum

- Maximum = 110% Intermediate scenario

➢ Average summer:

- As derived from the yearly average and winter average constraints

Supply case for average Winter/Summer - 2

Maximization cases

➢ Average year:

- Source maximized: Maximum = maximum scenario

- Other sources: Minimum = minimum scenario

➢ Average winter:

- Source maximized: Maximum = 110% maximum scenario

- Other sources: no constraints

➢ Average summer:

- No additional constraints, the values will derive from the constraints applied to the average year and average winter

Supply case for average Winter/Summer - 3

Minimization cases

➢ Average year:

- Source minimized: Maximum = minimum scenario

- Other sources: Maximum = maximum scenario

➢ Average winter:

- Source minimized: no constraint

- Other sources: maximum = 110% maximum scenario

➢ Average summer:

- No additional constraints, the values will derive from the constraints applied to the average year and average winter.

Supply case for High Daily Demand

Continuity with TYNDP 2013-2022 approach

➢ Maximum daily supply from the different sources linked to the historical maximum daily supply by source and route for the equivalent period.

➢ Increases in capacity from a certain source or route translated to proportional increases in the daily deliverability

➢ UGS defined by the deliverability curve for a predefined stock level

➢ LNG deliverability:

- On a single day : to be equal to the technical capacity of the terminal: LNG in tank is supposed to be enough as to keep the maximum regasification rate during a single day.

- On a 14-day average, the deliverability is the sum of 2 components:
  - The LNG send out in the winter average day
  - The storage capacity in the tanks: Increases in the send out are limited by the stock level in the tank (GLE approach for TYNDP 2013)

Scenarios for prices

Use of the price scenarios

➢ Demand elasticity: the relative level of the gas, coal and CO2 prices, in combination with the efficiencies of power generation facilities, will determine different level of use for the gas-fired power generation

➢ From an average import price for Europe, a set of prices by source (and route?) should be derived, targeting the maximization and minimization scenarios:

- Maximization of one source: the price of the source is lower than the price of the other sources therefore the model fosters the maximization of this source in order to minimize the objective function , minimizing the total costs for Europe.

- Minimization of one source: the price of thie source is higher than the price of the other sources therefore the model tries to avoid the use of this source – as much as possible for the complete coverage of gas demand – in order to minimize the objective function, the total cost for Europe

From an average European import price…

… to a reference price per source
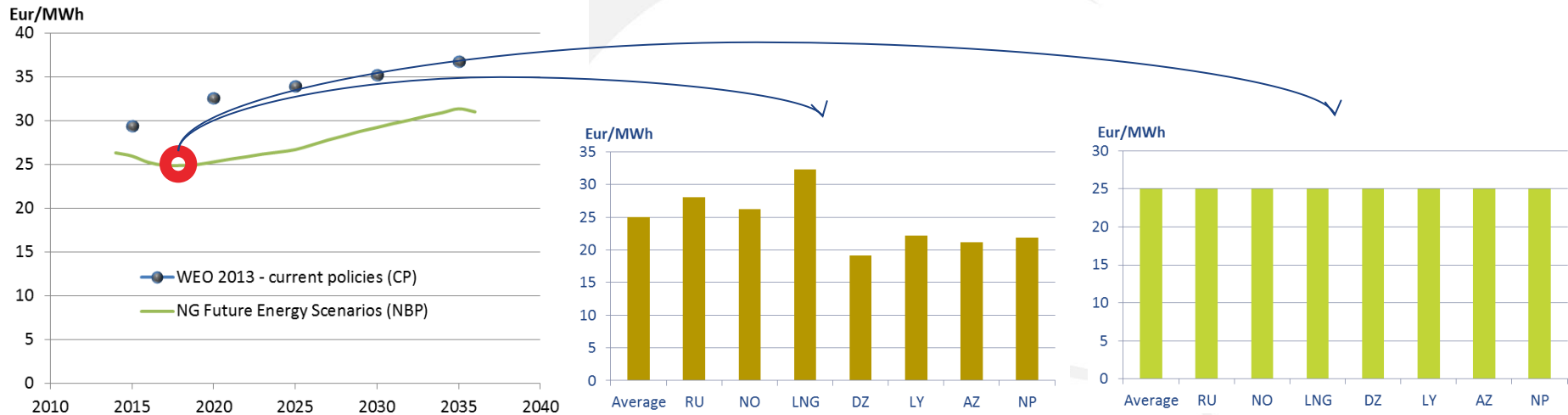
The modulation of the price of each source around the average supply price will determine the share of each of the sources in the Reference supply mix. This modulation can be based either on :

- Based on the historical price difference

- Flat (pragmatic approach)

Open Question: What are the right historical prices by source?

Alternative supply mixes

Minimization an Maximization cases

No matter the reference case is flat, or follows any historical price modulation by source, the prices cases defining the minimization (and maximization) scenarios should cover the full range of potential price differentials (source by source).

These differentials can be based on a fixed or relative basis.

Example. Maximization 1

|	Ref	Max 1	Max 2		Max 7
Average	25	25	25	...	25
RU	25	=25+20%	23.5	...	21.5
NO	25	23	=25+20%	...	21.5
LNG	25	23	23.5	...	21.5
DZ	25	23	23.5	...	21.5
LY	25	23	23.5	...	21.5
AZ	25	23	23.5	...	21.5
NP	25	23	23.5	...	=25+20%
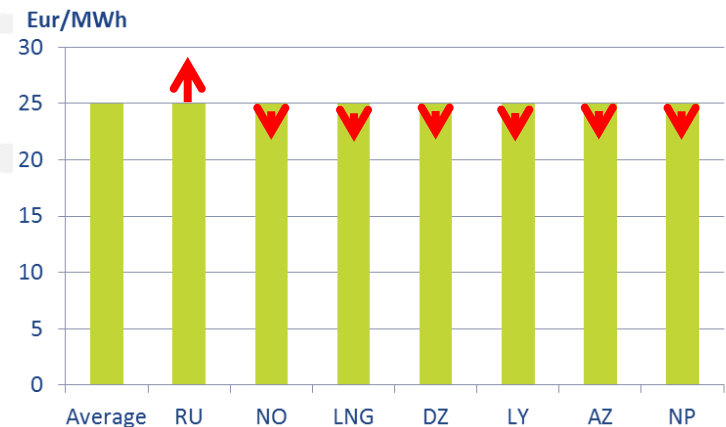
Open question: What are the right ranges: +/- x% vs +/- x, same values for every source?

Price and seasonal swing

Elasticity in gas supply and use of UGS

➢ A market-based modelling of UGS injection/withdraw requires the introduction of a seasonal swing in prices

➢ This effect can be defined as a supply price (by source) depending on the supply level (elasticity of gas supply) along the below principles:

- Summer> low demand> low supply> low supply prices

- Winter> high demand> high supply> high supply prices
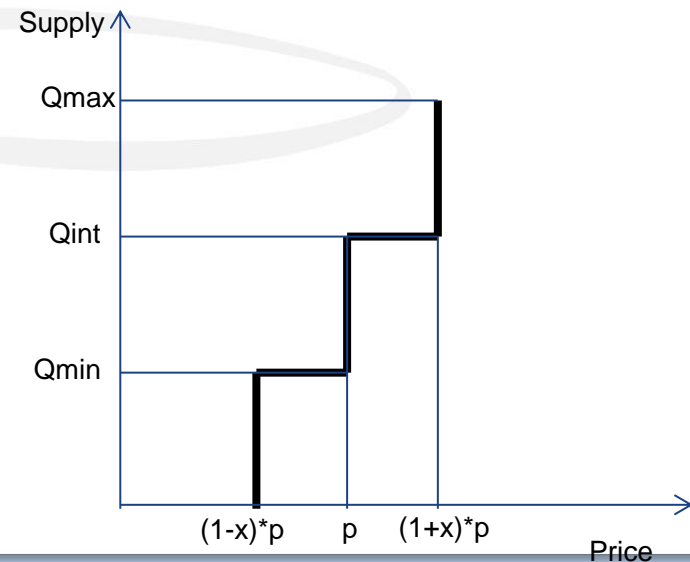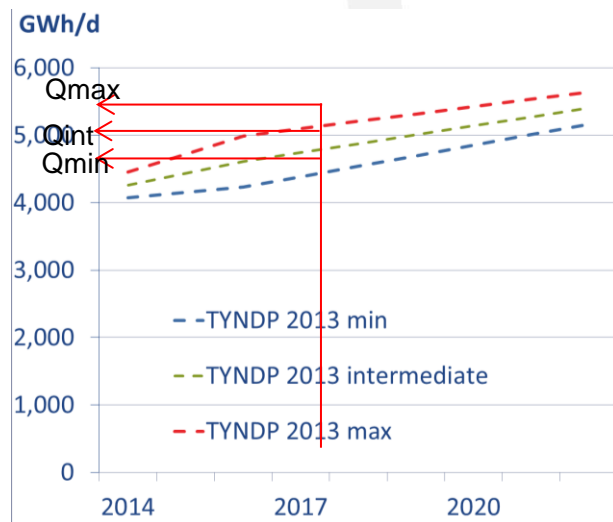
Open questions: The different supply levels should imply a price premium. Can this premium be linked to the potential supply scenarios? Should it be the same for each source?

Thank You for Your Attention

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