

Gas Quality Monitoring Outlook

Concept & Pilot Test

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Regulatory framework for Gas Quality Outlook

Long term monitoring on Gas Quality

EU REG 703-2015 , § 18:

- > EntsoG shall provide a „Long Term gas quality outlook in order to identify potential trends of gas quality parameters and respective potential variability within the next 10 years“
- > The GQ-Outlook shall:
 - include at least Wobbe-Index (WI) and Gross Calorific Value (GCV) as gas quality parameters
 - include new supply sources
 - published consistent and aligned with the upcoming TYNDP 2017
 - for every gas quality parameter and region include a range in which the parameters are likely to evolve
 - define reference values of gas quality depending upon an analysis of the previous years



Timeline



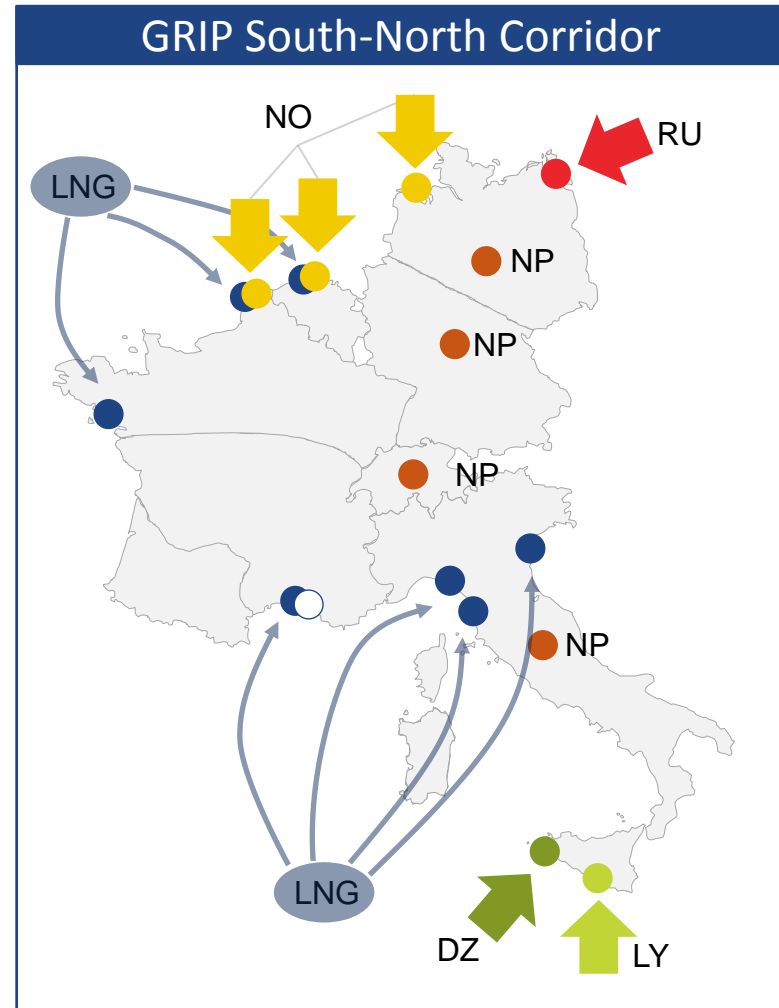
- > Cooperation between ENTSOG's System Operation and System Development areas with support of related working groups throughout the whole process.
- > Presentation of the concept of the gas quality outlook on the SJWS (first on 9 February and then get feedback on 23 February).
- > Data collection will take place from March to April through the same process as TYNDP 2017.
- > The publication of the report will be aligned with TYNDP 2017



Gas Quality Outlook Concept Inputs and Outputs

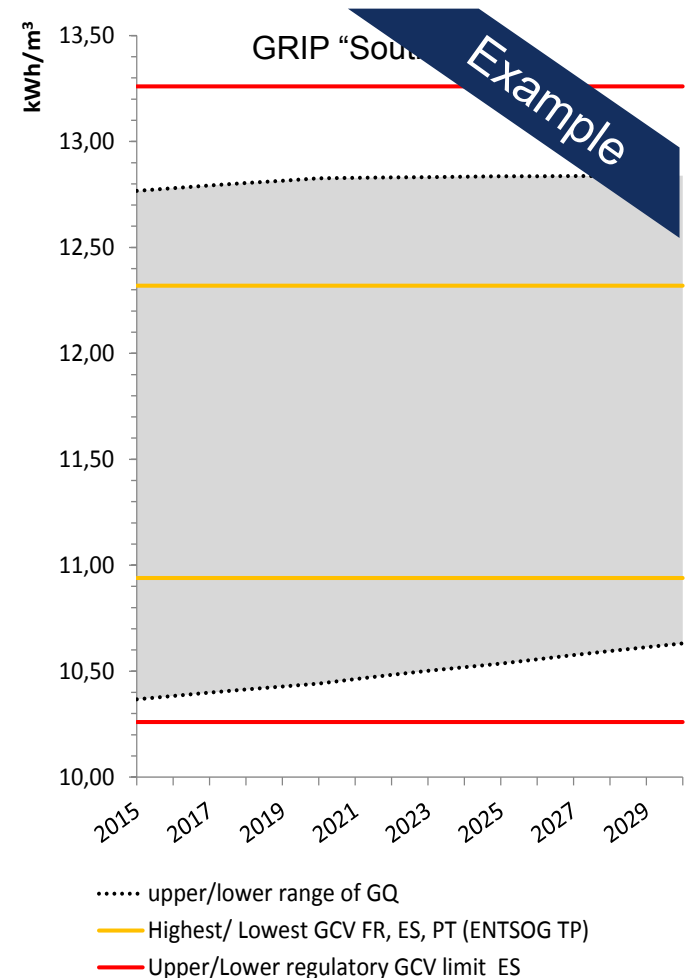
Concept for TYNDP 2017 based GQ- Outlook - Inputs

- > From TSOs: historic WI, GCV and flows for all import and national production points
 - Daily granularity
 - Time scope: past 3 to 5 years
- > From stakeholders: reference GQ values for new supply sources (Azerbaijan, new LNG supplies, shale gas, etc.)
- > Gas flows resulting from TYNDP 2017 modelling for a yet to be defined set of TYNDP configurations
- > *Results should be judged cautiously when using an economical model to forecast physical characteristics.*



Concept for TYNDP 2017 based GQ- Outlook - Outputs

- > Presented in charts showing:
 - Regional variation span for WI and GCV for next 10 years
 - Extreme values found in the past within the given region
 - Specification limits
- > Composition of regions will not match GRIPS. Instead adjacent countries with similar national specifications will be grouped
- > The results will be published in a standalone section of the TYNDP 2017 together with additional explanations and information (e.g. historic gas quality values, etc.)





Pilot test - Approach & assumptions



Pilot test – approach & assumptions (1)

- > Goal of the pilot test (PT) was to get a first impression on possible results of a TYNDP based GQ-Outlook (only for GCV) for the considered approach

- > Defined regions for the pilot test:
 - GRIP South: France, Portugal, Spain
 - Chosen for its sensitivity to LNG price scenarios
 - GRIP South-North Corridor: Belgium, France, Germany, Italy, Switzerland,
 - Chosen for the overlap with South Region and for its centrality

- > Historic GCV-Data used for the pilot test (for all relevant import points in the defined regions) was collected from [ENTSOG TP](#):
 - Statistical evaluation of GCV data for each supply source
 - Average, Median and Standard Deviation per import route and per source
 - Period covered: 01 Nov. 14 – 31 Oct 2015
 - Data quality issues: Missing data / wrong data / reference conditions not stated
 - Wobbe index data not available at ENTSOG TP

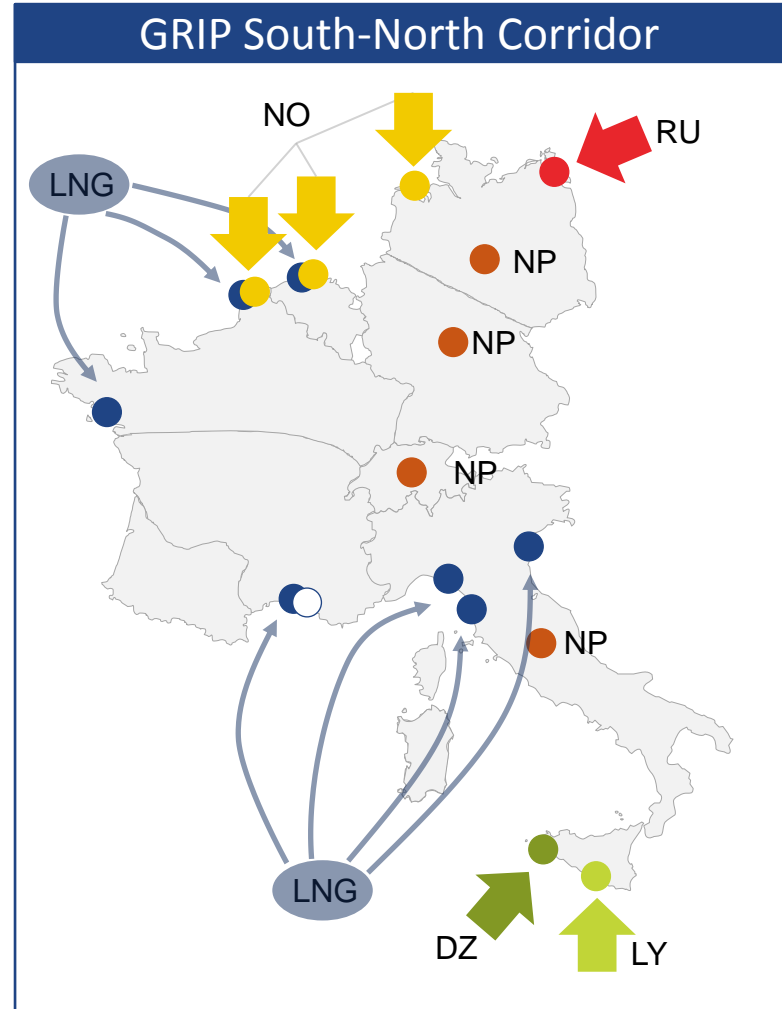
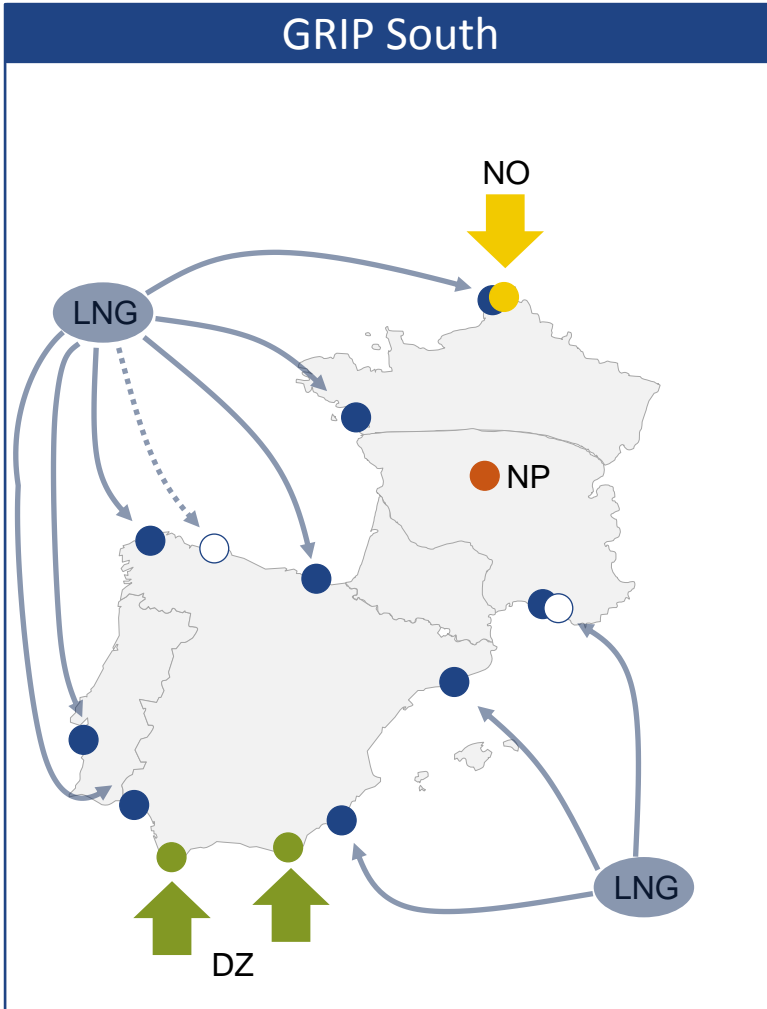


Pilot test – approach & assumptions (2)

- > Use ENTSOG's existing model and scenarios for GQ-Outlook:
 - TYNDP 2015 modelling results for the following scenarios were used for the pilot test:
 - Green / FID / maximisation of LNG
 - Green / FID / minimisation of LNG
 - Period covered in pilot test: 2015 – 2030
- > Main assumptions:
 - Historic gas quality data are representative for the next 10 years
 - Pipeline gas qualities are grouped per country of origin.
 - LNG gas qualities are grouped per country of destination.
 - L gas effect is not taken into account.
- > Finally, the following data are plotted in graphs:
 - Resulting GCV average for two scenarios
 - Upper and lower limit for the average. These limits are calculated by propagating the standard deviation found in gas quality per source.



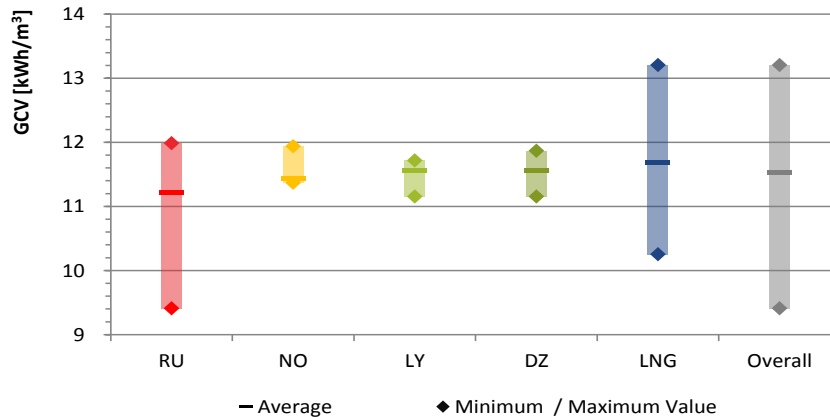
Regions used for the PT



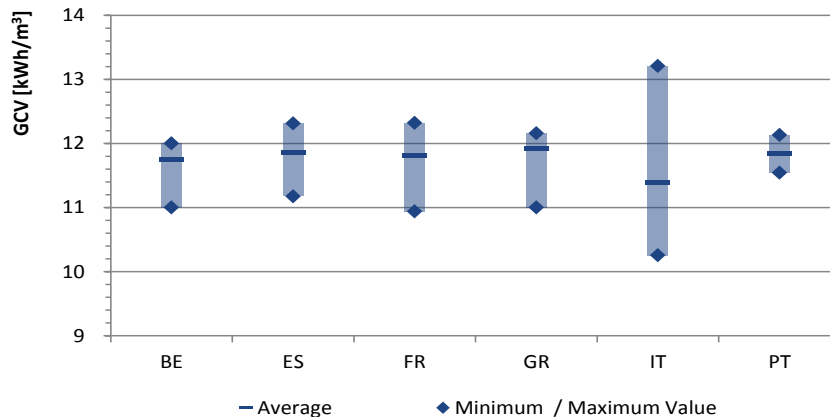


Example: GCV Data used for the PT (1)

GCV by source



LNG GCV by import country



- > Data collected from ENTSOG TP for almost all import points linked to the two studied regions
- > Period covered: 01 Nov. 14 - 31 Oct 2015
- > Short evaluation on GCV-data collection results:
 - Average GCVs by source are close together and ranging from 11,21 to 11,68 kWh/m³
 - Same holds true for LNG GCV average by importing country which ranges from 11,39 to 11,91 kWh/m³
- > Note that LNG qualities are evaluated per country



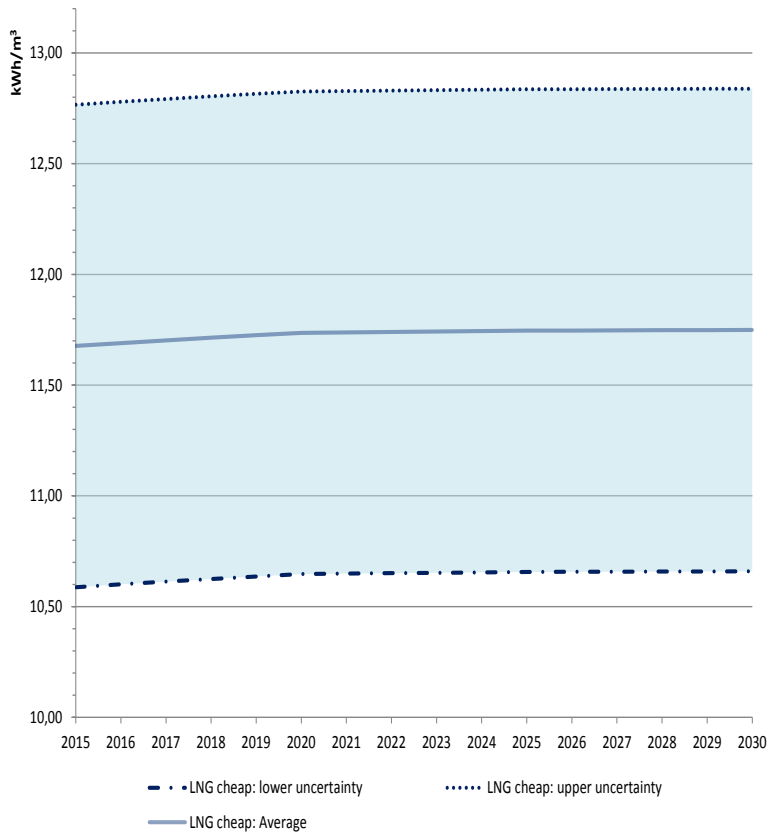
Pilot test - Results



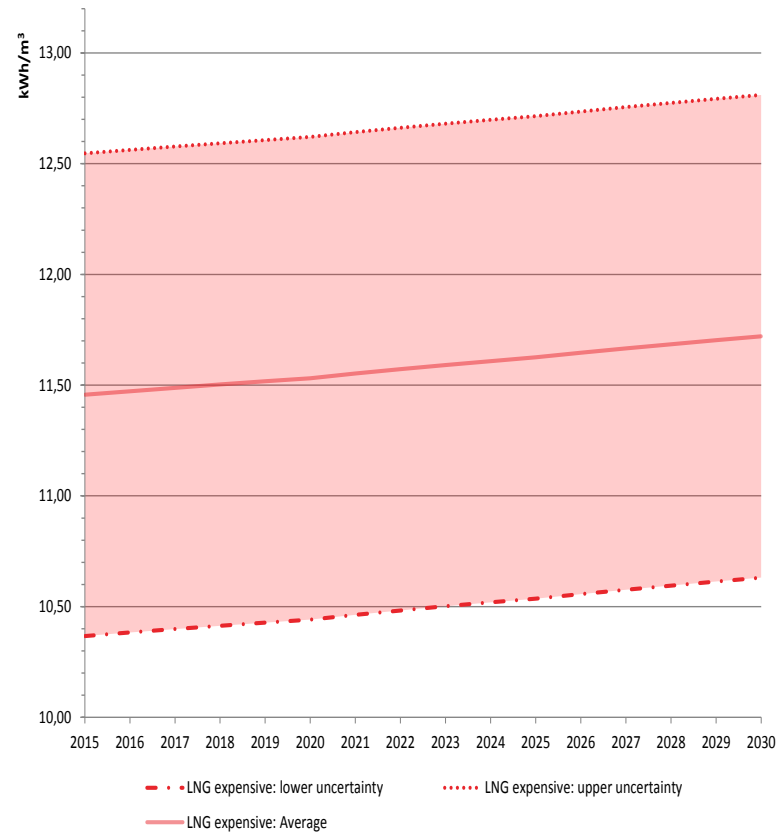
GCV Outlook - PT Results - GRIP 'South'



Min LNG configuration



Max LNG configuration

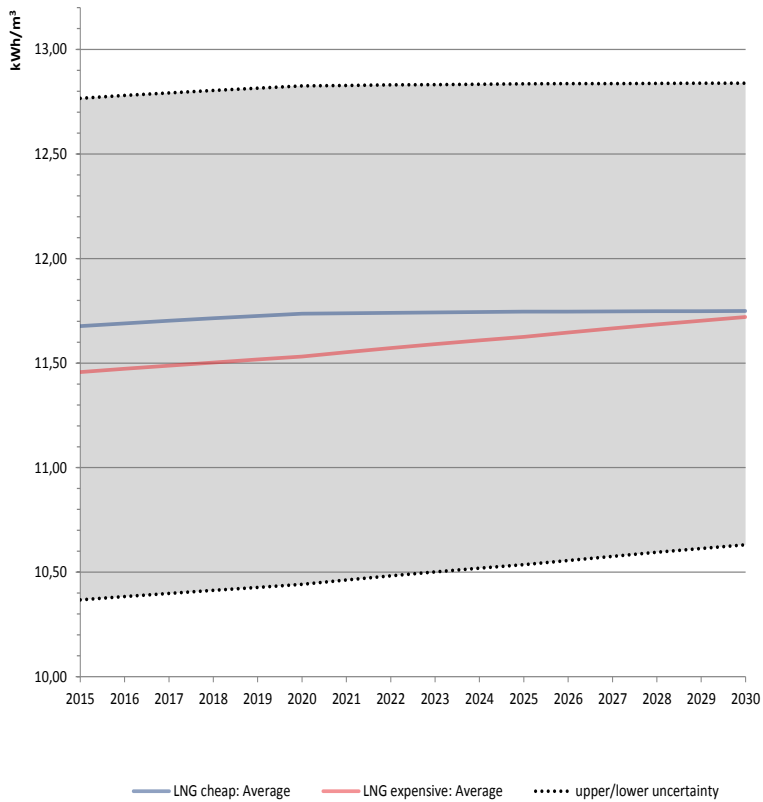




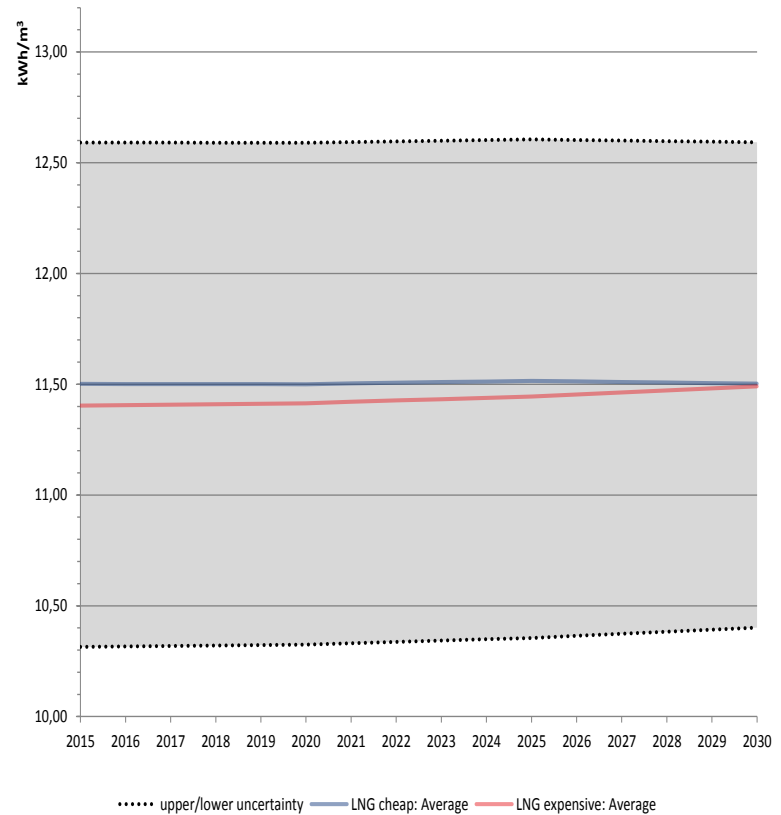
GCV Outlook - GRIPs 'South' & 'SN'



GRIP South



GRIP South-North





Gas Quality Outlook conclusions



Gas Quality Outlook – Conclusions

- > The proposed methodology is able to provide both trends and variability as required by Article 18
- > Pilot test results show that variability is mainly due to natural gas quality variations than future scenarios
- > Added value: the Gas Quality Outlook could provide insights on whether national specifications need to be changed in the coming years
- > Being based on TYNDP results:
 - Consistency and alignment, as required by regulation, is ensured
 - Results should be judged cautiously when using an economical model to forecast physical characteristics.
- > A strong involvement of ENTSOG members and stakeholders is key for the good quality of the results.