

# **Gas Market Modelling for the Quo Vadis Project**

## **26 July, Budapest, Hungary**

### *Memo on the Q&A session of the Workshop*

#### **Summary**

During the workshop, the European Gas Market Model (EGMM) was introduced to the audience in detail. Related presentations and background material are available here: [http://rekk.hu/event/149/gas\\_market\\_modelling\\_for\\_the\\_quo\\_vadis\\_project](http://rekk.hu/event/149/gas_market_modelling_for_the_quo_vadis_project)

Assumptions on reference scenario building were discussed and generally not questioned. The importance of LTC assumptions and the need for demand and supply sensitivities were stressed. Stakeholders expressed their need for transparency on infrastructure assumptions to be used in the reference scenario. The further possibility to comment on the modelling workshop will be announced by EC.

Beyond modelling issues questions were related to TCF and TSO revenue neutrality and cost assumptions on the different alternative scenarios. These questions were not addressed in detail but notes were taken on comments.

Below is a summary of the most relevant Q&As raised during the workshop. Please note that this is a consolidated summary based on Chatham House rules.

#### **Q&A**

##### *General*

**Q:** What is backhaul?

**A:** Possibility for virtual trade on existing pipelines against the main direction of LTC contracted gas.

**Q:** How do you represent interruptible capacities in your model?

**A:** We use only firm technical capacities.

**Q:** Modelled and actual market share data seem to slightly differ for the 2016 calibration of the EGMM. What have you learnt from this calibration exercise?

**A:** The modelled market share of Russian supply was indeed slightly lower than the actual share. We attribute this to flexible demand and/or the make-up deliveries in 2016 of some LTC contracts that are not reflected here as this is a yearly model.

**Q:** Is the external price for Asian markets fixed?

**A:** Yes, it is fixed but different for each modelled month.

**Q:** Are consecutive months modelled sequentially or simultaneously?

**A:** Simultaneously.

**Q:** How accurate is the model on a monthly level? Can you publish monthly figures?

**A:** We can, but the model performs better on annual level and monthly results should be taken with a grain of salt.

**Q:** You need sensitivities of LTC supply – what if all LTCs will disappear?

**A:** Sensitivities will be conducted at least for NS2, demand, LNG and LTC supply.

**Q:** What demand scenario are you using for the reference?

**A:** EUCO30 and PRIMES reference. They provide the same forecast for 2020.

**Q:** There is insufficient attention paid for the problems of the CEE region. The problem of Russian supply dominance is not sufficiently addressed.

**A:** This is an EU project and all regions are considered with the same attention. The model optimises for the overall European gas market. Russian supply dominance in CEE is reflected by normally higher priced LTC contracts in this region. Price of LTCs used in the model is based on foreign trade statistics.

**Q:** How Switzerland is considered in this exercise? Are Swiss IPs considered as they had intra-EU tariffs or are they handled as EU external border points, relevant for TCF revenue collection?

**A:** Not yet decided. Currently Switzerland is part of the modelling, but Swiss welfare change is not accounted for in EU28 welfare calculations. Thanks to its unique position we tend to think that Swiss IPs are better to handle as if they had intra-EU tariffs.

**Q:** How is the Energy Community considered in this study? Can we receive the results regarding EnC contracting parties?

**A:** EnC contracting parties are endogenous in the model, but we do not take their welfare into account in the analysis. For these countries, we use the same demand outlook as in the PECl report. We are open to update the data. We have the output for the EU-EnC CPs but it is up to the EC to decide about the use of this data.

**Q:** What kind of modelling outputs can we expect? On what timescale do you consider the effects of e.g. the tariff scenario?

**A:** We plan to provide at least for welfare changes for each stakeholder group for every modelled country. Timescale is typically one year.

**Q:** Do you see any possibility to transport LTC gas inside the EU more efficiently than now?

**A:** We do not exclude this possibility.

**Q:** How do you measure liquidity and the possible effects of a tariff reform on liquidity? What indicators do you use?

**A:** We do not apply liquidity measures.

### *Storage*

**Q:** How are Gazprom storages considered?

**A:** Gazprom storages are providing flexibility for the Russian long-term contracts. For the Bergermeer storage half of the capacity is offered to the market.

**Q:** Do you apply extrinsic value of storage? It seems that only intrinsic value is considered.

**A:** Only intrinsic value is used.

### *LNG*

**Q:** LNG market representation seems too simplistic in the model. How are re-exports considered?

**A:** There is no option to re-export in the model, all terminals receive only. It can be interpreted as net receive, re-export deducted.

**Q:** Will there be sensitivity tests for LNG supply?

**A:** Yes.

### *Reference infrastructure*

**Q:** Is the assumption of Nord Stream 2 commissioning and its inclusion into the Reference Scenario coming from the Commission or reflecting REKK's view?

**A:** It is not decided yet what new infrastructure shall be included into the Reference. The Commission will decide on this matter and the Final Report will contain full information on projects in the Reference. The inclusion of NS2 into the Reference can be based on the FID status of the project in the TYNDP. Whether it will be part of Reference for this project or not, a sensitivity run on infrastructure will be useful, as NS2 is a key and politically sensitive project.  
Comment: Gazprom will transit 30 bcm via Ukraine after commissioning Nord Stream 2 and rerouting major contracts.

**Q:** How do you consider TAP in the tariff reform scenario? Is there one entry or two entries to Europe?

**A:** We assume one entry at the TR-GR border.

### *Capacity booking, UIOLI*

**Q:** Is Use it Or Lose it implemented in the model?

**A:** Yes, model assumes perfect implementation of the UIOLI principle. Capacity use is associated with physical gas flows.

**Q:** How are capacity bookings handled?

**A:** EGMM models flows and assumes that bookings are optimal for those flows.

**Q:** How would you avoid capacity hoarding if the IP tariff is 0? Why not everyone would buy endless capacity and keep them in the fridge?

**A:** Capacity hoarding is not possible in the model; a perfect implementation of the UIOLI principle is assumed.

### *TSO assets, revenues, stranded assets*

**Q:** In several EU member states revenue cap regulation constrains TSO revenues and excess revenues are "given back" to consumers. How is this considered in modelling?

**A:** TSO revenue regulation is a national issue on which we do not have detailed information. We propose to focus on quantifying the total amount of TSO revenues and then to apply *revenue neutrality* in the QV simulations, meaning that the overall revenue of the TSOs are kept at the Reference scenario (or 2016) level when running the Regulatory scenarios. While we understand that significant changes in the utilization of transmission assets under certain regulatory scenarios might call for the revision of the TSO's revenue requirement, we also understand this issue is out of scope for this study.

**Q:** Do you consider DSO assets as well or only TSO assets?

**A:** We consider only TSOs in the modelling.

**Q:** TSO definition is fluid - in some countries it means a pure transit, in other cases it owns part of a distribution network. How do you control for that? How do you define a "fair" TSO asset base?

**A:** We assume that the issue of a fair TSO asset base definition is supervised by NRAs, who incorporate into a TSO only relevant TSO assets. Further, we assume any DSO-like assets would be attached to local customer needs and not linked with transit infrastructure and fees.

**Q:** Do you assume that flow\*tariff = TSO revenue? This is not the reality since TSO revenues are based on assets.

**A:** Yes, but regulated tariffs should allow exactly for the recovery of TSO justified costs including asset related capital costs plus O&M. In the model, we convert capacity-based tariffs to flow-based tariffs and assume that this allows for a good representation of reality.

**Q:** How will you consider TSO asset base and stranded assets?

**A:** A change in the level of asset utilization due to the implementation of certain regulatory scenarios will indicate the risk of certain assets becoming potentially stranded. General approach of how to handle the issue of stranded assets will be outlined.

#### *Transmission tariffs, EU entry tariffs, TCF*

**Q:** Does the model include domestic exit tariffs?

**A:** Yes, domestic exit tariffs from transmission to the distribution system are included. Distribution sector is not modelled.

**Q:** If we put all tariff on domestic exits and on LNG entry points, this will raise the marginal price in Europe and possibly increase the cost of gas on the European market. We should not handle LNG the same way as pipeline imports.

**A:** We do not propose to discriminate against pipeline gas in favour of LNG.

**Q:** For transmission tariff calculation, an average 56.2% utilization of booked capacities is assumed. Why? For 2020 it may be 100%!

**A:** This assumption is based on the most recent ACER assessment of transmission capacity utilization (2016 Market Monitoring Report, weighted average). We consulted the ENTSOG transparency platform but data was insufficient and not published for all IPs. We prefer to use the average to help tariff comparability. A higher utilization of shorter term bookings by 2020 might result in similar tariffs calculated by assuming lower utilization of yearly bookings.

**Q:** If booked capacity usage ratio is 56% it means that 44% of the capacity booking costs are sunk for the traders. Do you think a higher capacity utilization level would modify their behaviour?

**A:** In the model, we do not represent capacity booking behaviour. The capacity utilization ratio is only used for transforming diverse capacity and energy based tariff schemes into standardized, comparable €/MWh based IP tariffs. Thus, we do not expect a behavioural change in our model. However, the spread of more efficient and shorter-term capacity utilization might impact TSO revenues.

**Q:** Adding a uniform x to every tariff on the EU entry points rather socializes the costs related to shipping gas to downstream markets instead of considering the differences in costs related to supply different markets (e.g. how far from a given entry point the gas molecules travel later). What about bottlenecks inside the system?

**A:** The entry-exit tariff system is fundamentally unrelated to transportation routes. We think uniform EU entry tariffs would distort more the internal gas market than applying an additive uniform x. This is like applying an “excise duty” logic.

**Q:** We don't need the regulation to be fair at this point, we just want to see what happens if we do this or that. Why not to check every possible EU entry tariff combinations?

**A:** This approach is unfortunately technically not possible.

**Q:** ...then choose the extremes, and see what happens at the edges.

**A:** Yes, this is our usual approach

**Q:** Why do you assume that transmission tariffs are to decrease by 2020? New investments will likely to be financed, this would indicate an increase in tariffs.

**A:** We have seen IP tariff decreases all around in the last year. We have received comments suggesting both increase and decrease of tariff level by 2020. Our assumption for 2020 is that IP tariffs will remain at the current (2016) level and only outlier (mean well above average) tariffs will be cut back to close to average levels.

**Q:** How will outlier tariffs be cut back? Depending on the utilization rate or flows?

**A:** Outliers above a certain threshold in excess of EU average or regional tariff levels are cut back, only tariff level matters...

**Q:** ...but lower tariffs will never generate enough income to recover IP costs.

**A:** We assume an inverse relationship between IP tariffs and utilisation rate.

**Q:** How do you foresee the operation of the TCF (TSO Compensation Fund)? How is this included in the modelling?

**A:** TCF operation should be as simple as possible. The Fund should collect part or full of the lost TSO revenues due to cutting IP tariffs to zero in the tariff reform scenario from EU entry tariffs. We foresee no inter-TSO payments, only payments between the Fund manager and the individual TSOs. There is an implicit assumption that the regulated revenue of all TSOs is fair at present. The impact of the proposed TCF scheme on the cost efficiency incentives of TSOs should be carefully analysed.

### *Market merger*

**Q:** What is the difference between conditional market merger and full market merger?

**A:** Conditional market merger could be modelled as a tariff reform scenario in a limited set of countries.

**Q:** How do you select regions for the market merger scenarios?

**A:** We have two options. We merge countries where there is no congestion on the IPs and/or we merge zones where there is strong existing cooperation among member states.

**Q:** How will the cost of marker mergers be accounted for through the analyses? Would it be possible to get information on market merger costs from TSOs? We observe preliminary cost estimates to double and commissioning times being delayed compared to original plans.

**A:** Modelling will only provide social benefit estimates. This can later be contrasted to available merger cost estimates analyses.

**Q:** What about the influence of zone mergers on neighbouring countries?

**A:** This will be one of the results of the modelling.

### *Welfare analysis*

**Q:** If a higher tariff is put on the EU border entry points, the commodity price may increase for EU consumers. Are you considering welfare for all EU28 or only some countries?

**A:** We optimise combined EU28 welfare, but the welfare impact for individual countries will be also part of the modelling result.

**Q:** If we evaluate regulatory scenarios based on EU28 overall welfare change, there will probably be losers and winners. What would the losers say? How can we make them to accept such regulation? What is your justification for this?

**A:** Welfare gains should exceed losses so that if the losers are fully compensated there should some benefit remain. The same principle is applied for cross border cost allocation rules regarding PCIs since there are always winners and losers in those cases either.