

Drivers and Hurdles for Gas Market Integration in Europe: Evidence from Belgium-Luxembourg Pilot Market Merger Project

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ABSTRACT

The EU gas market reform aims at integration gas markets in order to create value that benefits gas consumers across Europe. There are various models for market integration going from eliminating restrictions on cross-border trade in gas to removing borders in order to create a single trading zone. The Belgium-Luxembourg gas market merger project is the first example of a gas market merging between two EU member states leading to a single entry/exit zone, a single trading zone and a single balancing zone. The experiences from the BeLux project highlight a list of market conditions that has to be established before markets could be merged. There are legal, technical, economical and organizational hurdles to overcome before a single market area without borders is in place.

Keywords: natural gas, market integration, European market design
JEL-code: K23, L51, L95

1. INTRODUCTION

This paper examines the various reasons for joining gas markets in Europe as well as the practical difficulties and concerns. It is true that an increasing number of transmission system operators (TSOs) are looking for cross-border opportunities to coordinate and eventually join activities. The impulse for this trend is clearly given by the implementation of the European Third Energy Package (EC, 2009 a,b) and the European Gas Target Model (ACER, 2015), both aiming at an effective European Energy Union. However, this political and regulatory framework leaves open whether this should be through coupling or through merging of markets. Coupling of gas markets aims to eliminate restrictions on cross-border trade in gas and enhance efficient price mechanisms. The European Third Energy Package brings changes to market design, for example the establishment of entry-exit regimes across Europe and provides European network codes to further harmonize capacity allocation, balancing and trading arrangements. Merging of gas markets, however, goes a step further and aims at removing borders in order to achieve an integrated cross-border zone in which interconnections between markets disappear, at least commercially. Merging may require large investments in transfer capacity in order to establish one integrated cross-border entry-exit and balancing zone. Sufficient transfer capacity is necessary in order to allow the dispatching of all gas flows within the integrated entry-exit zone.

The assessment is largely based on ongoing regulatory discussions in the various task forces of national regulatory authorities at EU Level which consider trends in European market integration. These assessments contribute to the setting of European targets in e.g. the revision of the 'EU Gas Target Model' (ACER, 2015) and the 'Bridge 2025' (ACER, 2014) and show the importance of cross-border coordination and solidarity in the context of security of supply.

Once the European scene has been set, the paper addresses the pilot market integration project between Belgium and Luxembourg. Since 1 October 2015, both countries share one common entry-exit zone, one common balancing zone and one common virtual trading point (ZTP - Zeebrugge Trading Platform). This achievement is the result of the harmonization of market rules and arrangements to remove the cross-border interconnection points from a commercial point of view. This project is the first cross-border merger between two TSOs of two different member States in the EU. The analysis of the Belgium-Luxembourg case, covering the development of the project as well as its implementation and the first market impacts, provides useful practical insights for considering further gas market merging projects in Europe.

Practical conclusions can be drawn since the paper combines a general assessment of the drivers and hurdles for cross-border gas market integration in Europe with a case study of the Belgium-Luxembourg gas market merger. A number of insights are provided to improve the understanding of gas market integration and to overcome the practical difficulties in order to realize efficient cross-border merging projects. The requirements for a full merger of two or more adjacent markets by merging their virtual trading points and balancing zones seem more complex than generally presented in European regulatory target-setting. Therefore, variants of market integration models should be considered in order to apply the most beneficial integration model according to the maturity, size, legislation and overall characteristics of the concerned countries.

The paper is organized as follows. First, section 2 discusses the regulatory context and the drivers for the BeLux project. The BeLux project objectives are presented in section 3. Next, section 4 addresses the challenges in order to realize the BeLux project objectives. A preliminary follow-up of the BeLux project since its implementation on 1 October 2015 is presented in section 5. Finally, section 6 provides conclusions.

2. REGULATORY CONTEXT

2.1 EU Market Design

Regulation (EC) No 715/2009 (EC, 2009b) requires the application of a network access model where entry and exit are no longer contractual coupled. Instead of booking capacity along contractual routes, network users may book entry capacity into a zone while offtakes may take place at booked exit points within the zone or to a cross-border zone. These zones correspond to the balancing zones where the gas injections must meet the gas offtakes within a predefined time horizon, generally on a daily basis. The zonal entry-exit model together with the balancing regime provide the conditions for the creation of a local market place in which selling and buying gas among network users is facilitated. The design of virtual trading points (hubs) improved the commercial flexibility of network users significantly and hence improved competition, market liquidity and economic efficiency.

2.2 Market Integration

Generally, the outcome of market integration is that the wholesale price of gas within the newly created larger market becomes uniform for the same traded product and the same trading time. Coupling of markets may already be sufficient to achieve these goals as could be seen in North West Europe (Cuijpers and Tirez, 2015b). Coupling of gas markets aims to eliminate restrictions on cross-border trade in gas and enhance efficient price mechanisms. This is particularly the aim of the European Third Energy Package (EC, 2009 a,b) which brings changes to market design, for example the establishment of entry-exit regimes across Europe and provides European network codes to further harmonize capacity allocation, balancing and trading arrangements.

Merging of gas markets is not a pre-condition for efficient gas trades within a region and the true application of the 'Law of One price'. However, merging of gas markets is the most literal form of market integration but therefore not necessarily the superior form. Merging gas markets goes

a step further than coupling and aims at removing borders in order to achieve an integrated cross-border zone in which interconnections between markets disappear, at least commercially. Merging may require large investments in transfer capacity in order to establish one integrated cross-border entry-exit and balancing zone. Sufficient transfer capacity is necessary in order to allow the dispatching of all gas flows within the integrated entry-exit zone. Merging requires a substantial harmonization of market rules while, in the case of cross-border mergers, different jurisdictions are still in place. One may argue that besides market integration objectives, strategic behavior of TSOs to attract or consolidate gas flows and positioning of countries within the EU policy of moving towards an internal energy market, play also a role in starting gas merging projects.

2.3 Gas Target Model

The ACER Gas Target Model – GTM (ACER, 2015) elaborates a vision of a competitive European gas market, comprising entry-exit zones with liquid virtual trading points, where market integration is served by appropriate levels of infrastructure, which is utilized efficiently and enables gas to move freely between market areas to the locations where it is most highly valued by gas market participants (see also Wagner, Elbling & Company, 2016a and 2016b for a broader discussion concerning market integration).

The GTM is based on three main European objectives: a) enabling wholesale market functioning, b) tightening connections of markets and c) enabling security of supply patterns.

Various market integration models are described in the GTM in addition of market coupling:

1. Full market merger: full merger of two or more adjacent markets by merging their virtual trading points and balancing zones creating one unified (cross-border) balancing zone covering all gas networks of the merged markets, which is underpinned by an integrated (cross-border) entry/exit system.
2. Trading region: partial merger of two or more adjacent markets at the wholesale level by merging their virtual trading points and establishing a cross-border trading balancing zone, including all gas transmission systems of the merged markets, which is underpinned by an integrated (cross-border) entry/exit system. End-user balancing remain separate in individual end-user balancing zones for each participating market.
3. Satellite market: substantial linking (via pipeline capacity) of a non-functioning gas market to a directly neighbouring well-functioning wholesale market, hence allowing the satellite market to co-use the neighbouring gas wholesale market on the basis of simplified processes while maintaining its own balancing zone.

The GTM does not envisage a particular market integration model but recommends that any reform undertaken by a Member State should be based on an appropriate cost-benefits analysis to ensure the economic viability. Furthermore, there may be variants of the described models according to the specifics of each situation. A market reform should be considered as a structural remedy for a gas market which is unlikely, without intervention, to establish a well-functioning wholesale market.

2.4 BeLux

In the context of the gas market developments in Europe (GTM), the application of harmonized rules (Network Codes) and security of supply requirements (Regulation (EC) No 994/2010 (EC, 2010) currently under revision (EC, 2016)) as well as ongoing cooperation between adjacent TSOs to improve interconnections, the Luxembourg NRA (ILR - Institut Luxembourgeois de Régulation) requested in May 2013 the Luxembourg TSO (Creos Luxembourg) to provide a

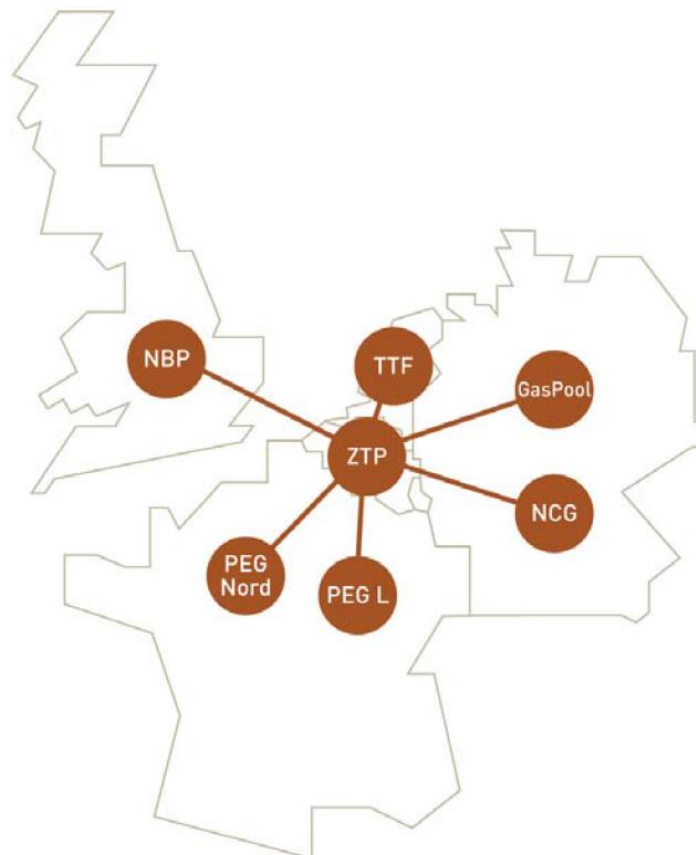
feasibility study concerning a potential merger with the Belgian TSO (Fluxys Belgium). Luxembourg could indeed be considered as a gas island in the EU because of i) the dependence on gas flows via Belgium (via interconnection points Bras and Pétange) and Germany (via interconnection point Remich) and ii) physical reverse flows are not possible (no border-to-border gas transmission).

After the delivery of the feasibility study in January 2014, both TSOs (Fluxys Belgium and Creos Luxembourg) took the initiative to create the BeLux market merging and start discussions with both involved NRAs (CREG and ILR). It was clear from the beginning that both promoters did not envisage a merger of their companies and that Creos Luxembourg and Fluxys Belgium remain two TSOs, commercializing services in their respective transmission networks.

The BeLux project corresponds to the GTM (ACER, 2015) definition since two neighbouring gas market areas fully merge their balancing zones into one unified cross-border balancing zone (underpinned by an integrated cross-border entry/exit system) and consequently also merge their virtual points, also termed hub (since one balancing zone can have only one virtual point).

The BeLux project is considered as a pilot since it is the 1st cross-border gas market merging between two EU Member States. Furthermore, the project has been elaborated with the vision to enlarge to merger by joining other adjacent gas markets and to materialize, as far as economic beneficial, a large-scale European gas trading zone. The Belux area enjoys a high level of interconnectivity with adjacent markets, offering extensive access to Northwest European market areas and production facilities (Figure 1).

Figure 1: BeLux Trading Zone ZTP in Northwest Europe



There are two gas qualities in Belgian with each a separate transmission grid. About 70% of the Belgian gas market is high-calorific gas (H-gas) and 30% is low-calorific gas (30%) sourced in

the Netherlands. Since Luxembourg is only depending on H-gas, the market merger covers obviously only the H-gas market.

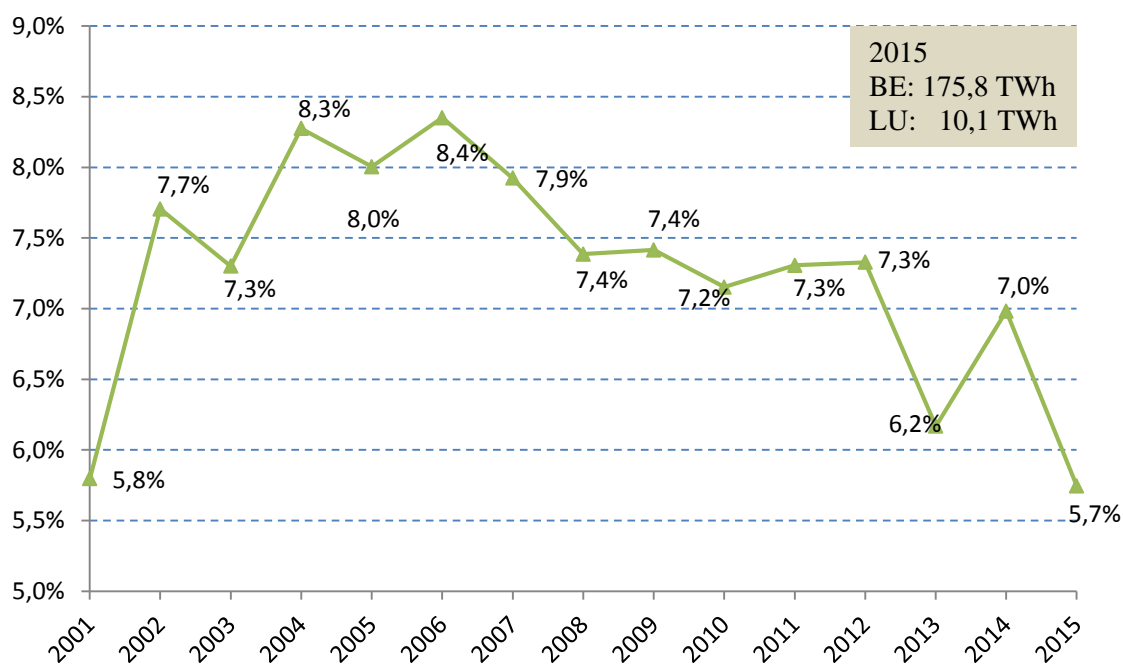
Both project promoters, Fluxys Belgium and Creos Luxembourg, created a common balancing company in Luxembourg (Balansys). Balansys is a 50/50 joint venture of both promoters. The Belgian Gas Act has been modified in order to allow Fluxys Belgium to a.o. delegate the responsibility of market-based balancing to another entity i.e. Balansys (new Belgian Gas Act of 8 July 2015, published 16 July 2015). The different unbundling status of both TSOs does affect the regulatory process: Fluxys Belgium is a full ownership unbundled company (OU) while Creos Luxembourg is a vertical integrated undertaking (VIU). According to the revised Belgian Gas Act, a compliance officer and a compliance program have to be in place before Fluxys Belgium may shift the market-based balancing responsibilities to the common balancing company. This regulatory process, including public consultation stages, is ongoing.

However, a transitory set-up has been developed to maintain launch of BeLux on the 1st of October 2015 to offer the market already the comfort of market merging as from that date. During the transition period imbalances of Belgium and Luxembourg are aggregated in one single balancing account by Fluxys Belgium. This option leads to minimal contractual and operational impacts for the market. The balancing position of the network user in Luxembourg is automatically transferred in its balancing position in Belgium.

The 1st of October 2015, BeLux is effectively in place as a single entry-exit zone, single trading zone and a single balancing zone. However, there are still some regulatory procedures going on to give the common balancing company Balansys full responsibility for market-based balancing in the merged market.

In terms of market impacts, the BeLux project did not reshuffle the market, at least not outside Luxembourg, since the Luxembourg market is relatively small (Figure 2). The Luxembourg market is an end-user market without physical reverse gas flows and no physical border-to-border gas transportation (gas island). However, the development of the framework for the market merging and the challenges faced were largely independent of the market size and therefore a precedent for further market merging exercises.

Figure 2: Luxembourg Gas Market Compared to Belgian Gas Market

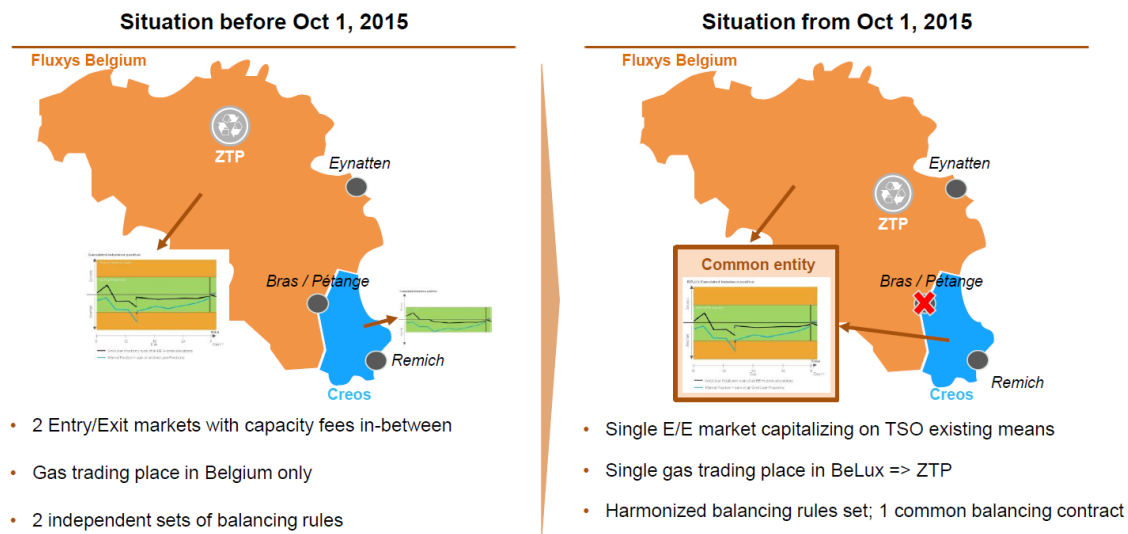


3. BELUX OBJECTIVES

3.1 Project Scope

The aim of both project promoters, Fluxys Belgium and Creos Luxembourg is the creation of a BeLux area as an entry-exit system with a notional trading point “Zeebrugge Trading Point” (ZTP) where no capacity must be subscribed to transport gas from Belgium to Luxembourg or inversely (Figure 3). The balancing regime within the BeLux area has been harmonized and both promoters created a common company Balansys to offer balancing services in the area.

Figure 3: The Belux project

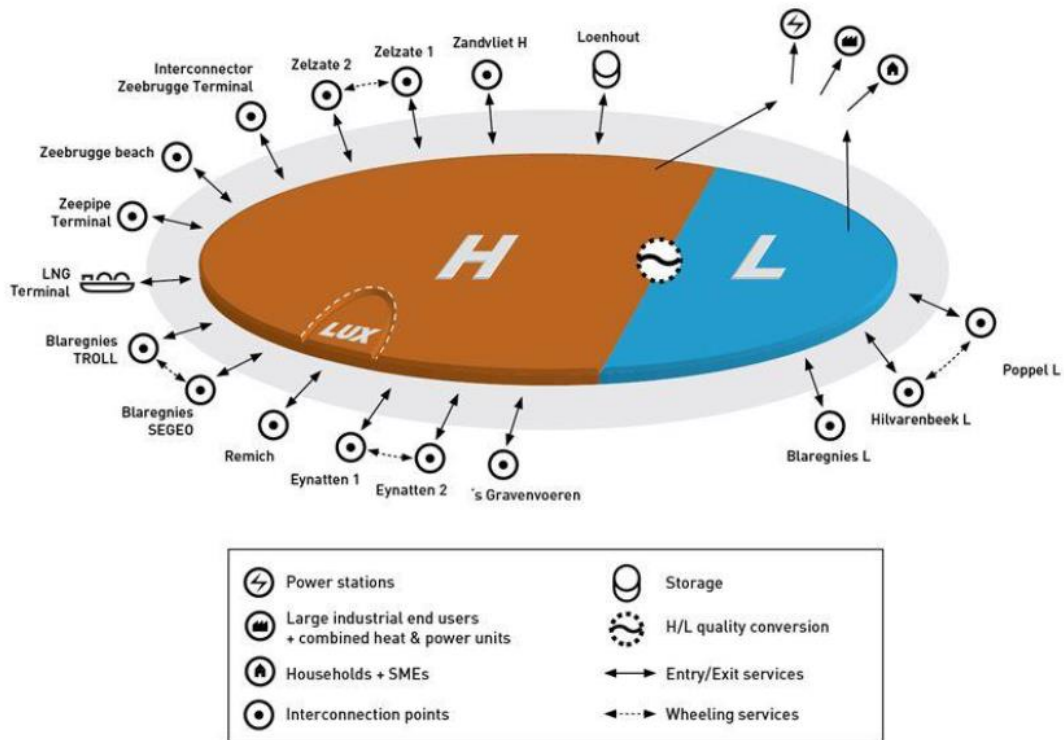


3.2 Target 1: single entry-exit zone

Figure 4 shows the integrated BeLux area where Luxembourg is part of the H-gas market area together with Belgium. Both interconnection points between Belgium and Luxembourg, Bras and Pétange, disappeared and Remich, the interconnection point on the border between Luxembourg and Germany, is now part of the list of interconnection points of the BeLux area. In this sense, the Belux market may source gas from Germany via Eynatten or Remich and within the integrated area the network user is free to choose which of both, the choice does not affect his balancing position.

The network user has several options to enter the BeLux area with natural gas: i) through the sole IP of Creos Luxembourg at Remich, ii) through an IP of Fluxys Belgium or iii) from ZTP. Within the BeLux area, the network user may i) supply an end consumer located in Luxembourg or, ii) supply an end consumer located in Belgium or, iii) leave the BeLux area to an adjacent market area through an interconnection point of, iv) trade this gas on the ZTP.

Figure 4: Belux Single Gas Market Area



The BeLux area consists in two entry/exit zones: the H-zone and the L-zone. The H-zone corresponds to the physical H-calorific gas transmission network of Creos Luxembourg and of the H-calorific gas transmission grid of Fluxys Belgium. The L-zone corresponds to the physical L-calorific gas transmission network of Fluxys Belgium.

3.3 Target 2: single gas trading place

The existing Zeebrugge Trading Platform (ZTP) is the notional trading platform for the Belux area. Network users in the Belux area may trade title of natural gas using the ZTP trading services. The natural gas traded through notional trading services in the BeLux area can be delivered via an entry service on any interconnection point at the border or an installation point within the BeLux area (e.g. underground storage at Loenhout) and can be re-delivered via an exit service to any interconnection point, an installation point of an exit point in Belgium or Luxembourg. This achievement enables Luxembourg gas consumers to trade gas on an organized platform and to improve economic efficiency.

With gas consumption of almost 190 TWh a year and over 70 suppliers operating in the Belux area, there will be more competition on the new integrated market and ZTP will see its liquidity and price signaling role enhanced. Furthermore, the BeLux market's strong links with its neighbouring gas markets (the UK, France, Germany and Netherlands) will reduce the risk of price isolation. Supply means for suppliers operating in Luxembourg will be simplified by having direct access to ZTP and the LNG and storage facilities in Belgium. The industrial consumers and electricity producers operating in the two countries will also be able to optimize their supply portfolio.

3.4 Target 3: single balancing zone

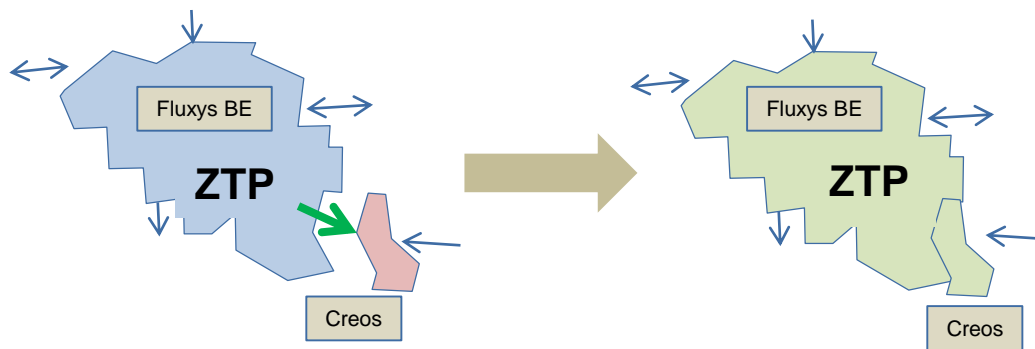
The Belgian and Luxembourg transmission network join a single balancing zone where the total quantity of natural gas entering the merged area must, on a daily basis, be in balance with the total quantities of natural gas leaving the merged area (e.g. border-to-border gas transmission) or being consumed in Belgium or Luxembourg.

4. BeLUX CHALLENGES

4.1 No Commercial Interconnection Points

A major challenge of the BeLux project was the removal of the Bras/Pétange interconnection point between Belgium and Luxembourg from the commercial offer (Figure 5). The market integration requires that network users do no longer have to reserve capacity at that point to transport gas between Belgium and Luxembourg.

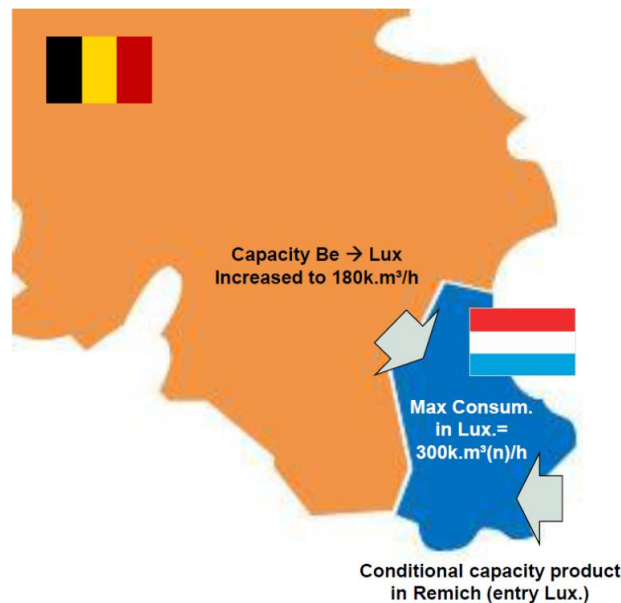
Figure 5: No Commercial interconnection points between Belgium and Luxembourg



However, the interconnection capacity between Belgium and Luxembourg is not sufficient to cover Luxembourg gas consumption in all circumstances. The maximum transportation capacity from Belgium to Luxembourg amounts to 180 000 m³(n)/h while the highest total peak demand in Luxembourg could achieve 297 000 m³(n)/h (February 2012). The economics of building additional transfer capacity between Belgium and Luxembourg show rapidly that this capacity solution was no option. Instead of putting additional steel in the ground, a conditional capacity product has been developed at the interconnection point between Luxembourg and Germany in order to safeguard sufficient entry capacity for Luxembourg as well as the functioning of the single entry-exit zone of BeLux (Figure 6).

Suppliers have the possibility to subscribe to a conditioned capacity product, with NCG (NetConnect Germany) being connected to ZTP via the interconnection point at Remich. On days when Luxembourg experiences high levels of consumption, the product offered will be subject to nomination obligations to guarantee the flows needed for the security of supply of Luxembourg customers. Up to 120 000 m³(n)/h entry flow must be secured during coldest periods in Remich. Moreover, the security of supply for Luxembourg is further enhanced thanks to a higher level of pressure being provided by Fluxys Belgium at the interconnection point between the two countries.

Figure 6: Capacity Solution, NCG/ZTP bundled product at Remich



The conditioned capacity product is a product for entry to the BeLux area via the Remich interconnection point which is offered by Creos Luxembourg to the market (via PRISMA booking platform) in the form of quarterly products. Suppliers do not need to subscribe to capacity for the Remich interconnection point at the German side. Creos Luxembourg subscribes to and operates this capacity on behalf of suppliers which subscribed to the conditioned capacity product, making it a bundled NCG/ZTP product. Use of the conditioned capacity product is subject to nomination obligations and restrictions applying to the use of the product.

Like Europe's other gas markets, the Belgian and Luxembourg markets currently make use of national entry/exit systems, with access fees applying between the two countries. In other words, to be able to transport gas from Belgium to Luxembourg, suppliers have to pay an exit fee for gas to leave Belgium and an entry fee for it to enter Luxembourg. With the creation of the BeLux area, these entry-exit access fees between Belgium and Luxembourg fall away. Fluxys Belgium is compensated for the loss of about 3 million euro return on an annual basis by Creos Luxembourg. This inter-TSO compensation is next reflected in the exit tariffs in Luxembourg. This settlement is price neutral for the gas consumers since the suppliers do no longer have to pay a fee to cross the Belgium-Luxembourg border. The same neutrality holds for the fee paid by Creos Luxembourg for the exit capacity on the German side at the interconnection point Remich which is also covered by the exit tariffs in Luxembourg.

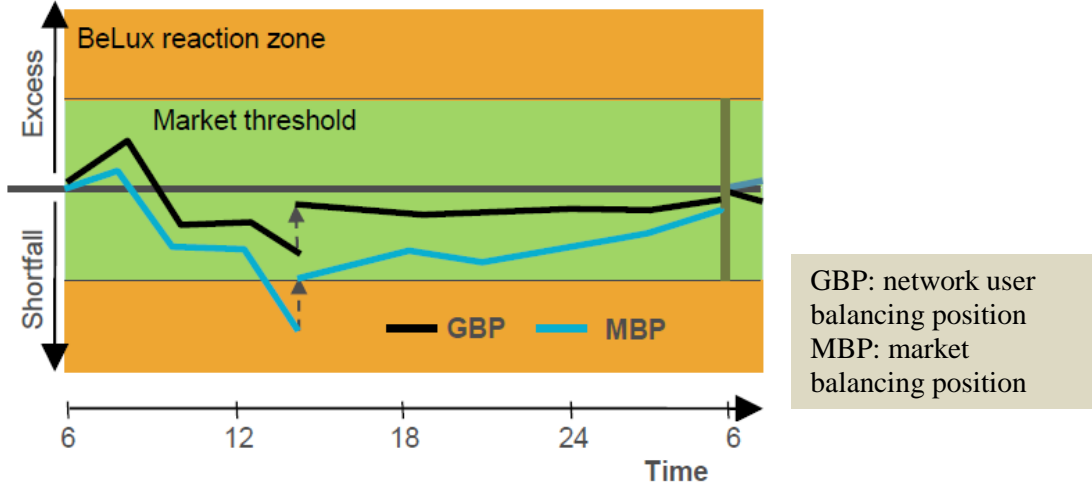
4.2 Market Based Balancing

Luxembourg enters into the same balancing practice as it is already the case in Belgium and compliant with the European Network Code on Gas Balancing (EC, 2014a) and has to harmonize the rules accordingly. The balance between entry in the Belux area and exit is monitored on a cumulative basis for all hours of a given gas day via the market balancing position, which is updated on an hourly basis (Figure 7). During the gas day, as long as the market balancing position remains within the predefined upper and lower market threshold, there is no intervention of the common balancing company Balansys. In case the market balancing position goes beyond the upper (or lower) market threshold, Balansys intervenes through a sale (or purchase) transaction on the commodity market for the quantity of the market excess (or shortfall) and settles in cash that quantity with the network user(s) contributing to such imbalance in proportion of their individual contribution. The price of the transaction done by Balansys on the market (ZTP) as well as the

gas price and eventual conversion costs are used for the determination of the price reference used for such settlement, hence reflecting the market value for that residual natural gas at that time.

At the end of each gas day, the difference between the total quantities entering the BeLux area and the total quantities consumed by network users' final customers or leaving the zone for an adjacent transmission network, taking into account the net confirmed trades of the network user, is settled to zero by a settlement in cash for each network user.

Figure 7: Belux Market Base Balancing



The network user balancing position (GBP) is computed for the Belux area on an hourly basis ($t=\text{hour}$) and a daily basis ($t=\text{day}$). GBP is calculated as the sum of the entry energy allocations (EEA) in the Belux area for network user increased by the exit energy allocations (negative values) and increased by the net confirmed title transfers (NCTT) of trades on ZTP. This sum is calculated per hour and per day in order to identify imbalances on hourly and daily basis for each network user g and this per hour and per day.

$$GBP_{g,t}^{BeLux} = \sum_{k=0}^n EEA_{t,k}^{BeLux} + \sum_{k=0}^n XEA_{t,k}^{BeLux} + NCTT_t^{BeLux}$$

The market balancing position (MBP) for hour t in the BeLux area is calculated by taking the sum of the network user balancing position:

$$MBP_t^{BeLux} = \sum_{l=0}^n GBP_{t,k}^{BeLux}$$

Balansys intervenes as residual balancer if the market balancing position is outside the market threshold (MT):

$$MBP_t^{BeLux} > \text{upper MT} \Rightarrow \text{Balansys sells gas on ZTP for settlement}$$

and alternatively,

$$MBP_t^{BeLux} < \text{lower MT} \Rightarrow \text{Balansys buys gas on ZTP for settlement}$$

At the end-of-day each network user must be in balance:

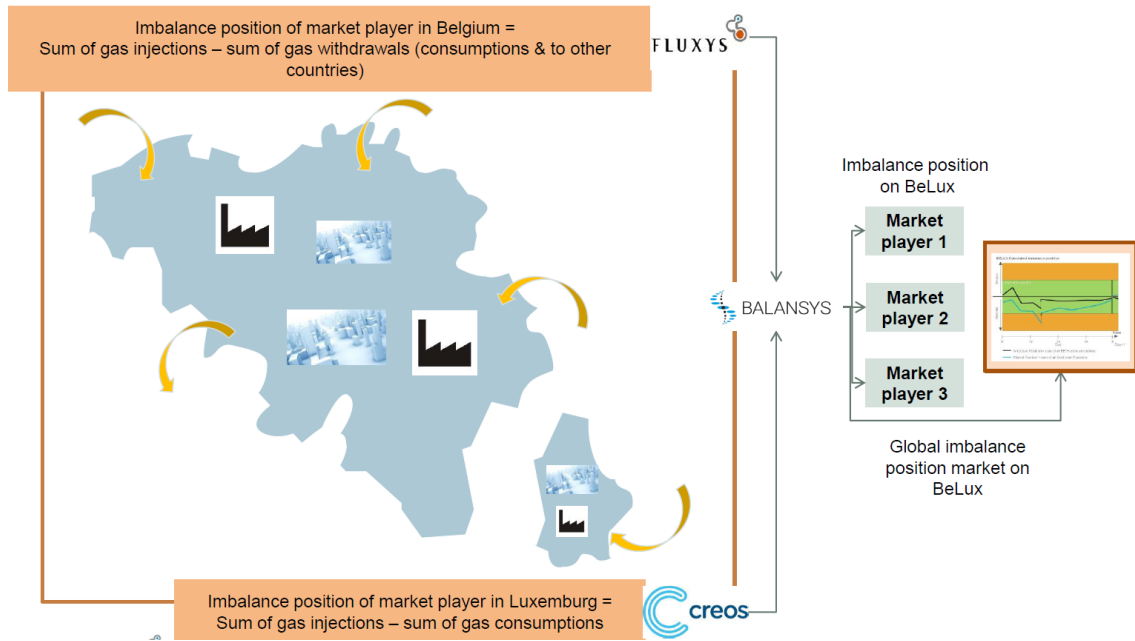
$$GBP_{g, 6am}^{BeLux} = 0 \quad \forall g$$

Consequently:

$$MBP_{6am}^{BeLux} = 0$$

Figure 8 illustrates the pooling of the balancing positions in the BeLux area. Suppliers are now able to manage their gas injections and the offtakes by their customers in one portfolio where the location within the Belux area does not matter anymore.

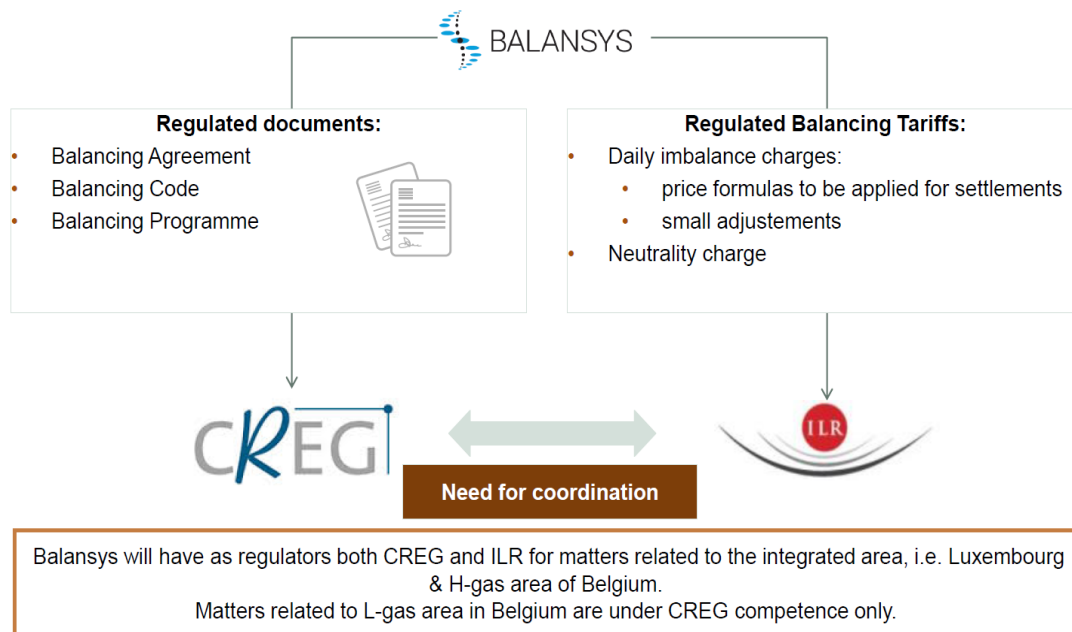
Figure 8: Aggregated Balancing Position



The balancing regime within the BeLux area has been harmonized (Figure 9). A common balancing programme is applicable for the whole area. This balancing programme describes the balancing services offered by Balansys within the Belux area in accordance with the balancing agreement (contractual terms and conditions) and the balancing code (access rules and procedures). These documents are to be developed by Balansys, and approved by both national regulatory authorities of Luxembourg (ILR) and of Belgium (CREG). These documents and the regulated tariffs in force regarding the balancing within the BeLux area will be available on the Balansys website (www.balansys.eu).

The fact that market balancing is common does not exclude that both transmission networks are still operated by each TSO and each TSO offers still transmission services under the supervision of the national regulatory authority.

Figure 9: CREG and ILR to Regulate BALANSYS



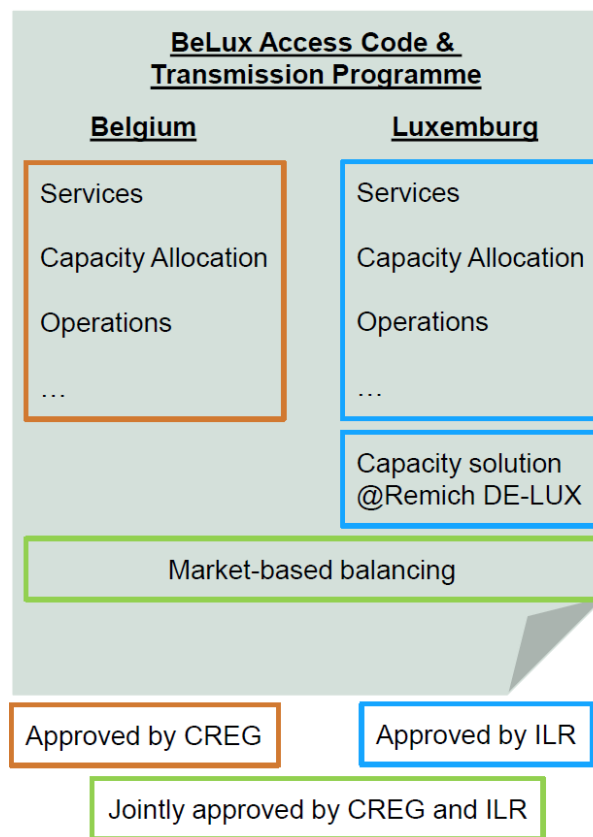
4.3 Balancing Tariff

The regulated balancing tariffs by CREG and ILR jointly, correspond to a neutrality charge applied to exits in the BeLux area. The neutrality charge compensates costs of providing balancing services as well as buy/sell gas for market-based balancing and, if needed, for ensuring balancing of the BeLux area by assuring entering gas flow in Remich in case of capacity constraint between Belgium and Luxembourg and if capacity product in Remich is not sufficient. This is in line with the European Network Code on Gas Balancing (EC, 2014a).

4.4 Regulatory Oversight

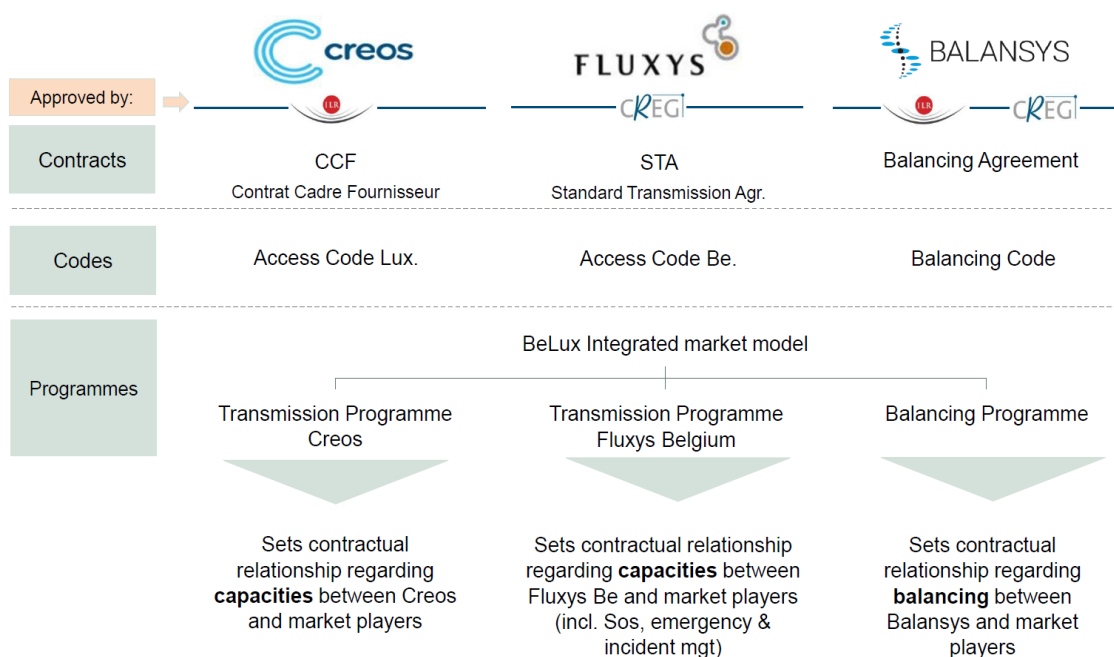
Each TSO retains its own identity and organizational structure within the integrated market area. System integrity of each network remains a responsibility of the TSO. In this sense, the NRA of each country remains responsible for the supervision of the TSO. Only the regulatory framework with regard to network balancing is common within the BeLux market area and jointly approved by ILR and CREG (Figure 10).

Figure 10: BeLux Area Regulatory Documents



Creos Luxembourg and Fluxys Belgium have set-up, together with ILR and CREG, a common regulatory document structure (Figure 11). A unique transmission programme and access code within the BeLux area where both regulators approve parts that must be common in the integrated market and where national autonomy and competences are maintained on the other topics.

Figure 11: BeLux Area Two TSOs and a Common Balancing Operator



5. BELUX FOLLOW-UP

5.1 Benefits

The period since 1 October 2015 does not yet provide strong evidence to show factual evolutions in market behavior indicating clear efficiency gains. However, the market participants experience more comfort and more possibilities to improve market functioning and to create added value for customers. There is a stronger foundation for competitive prices with increased number of suppliers. There are more opportunities to pool end-user and supplier portfolios as well as wider sourcing possibilities to guarantee a correct price at all times. The benefits seem not surprisingly more tangible in Luxembourg since the market integration did reform the Luxembourg gas market more drastically.

It is important to highlight that the BeLux project did not require significant capital expenditures since a commercial solution has been elaborated to avoid the investment in new pipelines to guarantee sufficient transfer capacity. The project has no impact on the transportation tariffs in Belgium since Creos Luxembourg compensates Fluxys Belgium for lost revenues of capacity bookings at the Belgium-Luxembourg interconnection points (which disappeared). The reshuffling of tariffs in Luxembourg where the costs of the network are now recovered by exit tariffs leads to a neutral impact on the final consumer prices.

The market integration creates synergies for TSOs to implement European network codes in an integrated setting. Obviously, it lifts Luxembourg from its gas island position into a well-interconnected trading zone and enhances security of supply. The Belux model is compliant with the European Balancing Network Code.

5.2 Lessons

The realization of the BeLux merger project provides a valuable experience for further market integration projects.

The legal blueprint before starting a cross-border merger is of major importance. The national gas laws are not necessarily convenient for cross-border mergers and may require some modifications, especially if new entities (e.g. common balancing company Balansys) will be created.

The transfer capacity issue is a hurdle and the related costs may outweigh the benefits of a market merger project. Building new capacity for market merger projects in order to create a common entry-exit zone is not necessarily underpinned by market capacity bookings and may therefore impact overall transmission tariffs and hence the competitiveness of gas. Fortunately, the BeLux project was able to safeguard neutrality in this respect. A full scale cost-benefit analysis based on realistic assumptions and best available data (including sensitivity analysis, identification of pre-conditions and their shadow costs) is necessary before starting the merger.

A cross-border market merger requires cooperation and coordination between the promoters (TSO), national regulatory authorities and governments in order to overcome hurdles and to find jointly solutions. The legislative and regulatory framework may require harmonization in order to apply the same rules across the merged market area.

Market merging becomes very complex in order to keep a legal and regulatory oversight when promoters (TSOs) wish to delegate TSO tasks to a new entity and when TSOs of different nature are involved. The BeLux case is a merger between an ownership unbundled TSO (Fluxys Belgium) and a vertical integrated undertaking (Creos Luxembourg). This explains for instance the necessity to nominate a compliance officer and to develop a compliance program in order to respect 'Chinese walls'.

A cross-border merger does not necessarily demonstrate obvious economic benefits in the short run and rather facilitate the market functioning. Hence, least cost solutions are important for the feasibility of a project. Efficient solutions generally require the early involvement and cooperation of impacted countries (neighbouring TSOs, NRAs and governments).

Market merging should fit within an effective process within the EU to realize an internal energy market. Value creation comes likely from larger scale market merging processes.

6. CONCLUSIONS

The paper discusses the objectives and challenges of the BeLux market merger project within a context put forward by the European Gas Target Model. The Belgium-Luxembourg gas market merger project is the first example of a gas market merging between two EU member states leading to a single entry/exit zone, a single trading zone and a single balancing zone. The project faced various legal, technical, economical and organizational hurdles and the success depended largely on finding coordinated solutions at least costs. Harmonization of rules and the availability of sufficient transfer capacity in order to allow the dispatching of gas flows within the integrated entry-exit zone, were two major challenges.

The BeLux market merger on 1 October 2015 did reform the Luxembourg market more drastically than the Belgian market. Luxembourg has been lifted from its gas island position and is now part of an integrated trading zone (within the existing Zeebrugge Trading Platform, ZTP) and compliant with the European Network Code on Balancing. Network users have nowadays more comfort to manage their customers in both countries and to pool their market positions. This in line with the EU efforts to harmonize gas market design and to promote regional cooperation. Whether the BeLux project is a first mover project for further wider market integration in Northwest Europe depends largely on the economics of potential market merger projects as well as the legal and regulatory framework and the political context. Market merging is obviously the most radical model for market integration but not necessarily a prerequisite for cross-border price convergence and economic efficiency

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